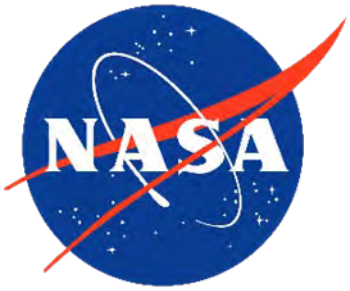
PER- AND POLYFLUOROALKYL SUBSTANCES CONFIRMATORY SAMPLING REPORT
SOUTH REPEATER BUILDING (SWMU 121)
KENNEDY SPACE CENTER, FLORIDA

Prepared for:



Environmental Assurance Branch
National Aeronautics and Space Administration
Kennedy Space Center, Florida 32899

A-E Contract 80KSC019D0010
Task Order 80KSC021F0096

February 2024
Revision 0

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In accordance with the provisions of Florida Statutes, Chapter 471, this Per- and Polyfluoroalkyl Substances Confirmatory Sampling Report for the South Repeater Building at the Kennedy Space Center in Merritt Island, Florida, has been prepared under the direct supervision of a Professional Engineer registered in the State of Florida. This work was performed in accordance with generally accepted professional engineering practices pursuant to Chapter 492 of the Florida Statutes. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of the National Aeronautics and Space Administration and the Florida Department of Environmental Protection. AECOM makes no other warranty, either expressed or implied, and is not responsible for the interpretation by others of these data.

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Digitally signed by Jennifer J Gootee
Date: 2024.03.01 10:50:18 -06'00'

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

6:2 FTS	6:2 Fluorotelomer Sulfonate
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
A3RB	Area 3 Repeater Building
AECOM	AECOM Technical Services, Inc
AFFF	Aqueous Film-Forming Foam
bls	Below Land Surface
CAS	Chemical Abstracts Service
CCF	Components Cleaning Facility
CS	Confirmatory Sampling
DO	Dissolved Oxygen
DPT	Direct Push Technology
EDS	Environmental Drilling Service, Inc.
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
GAC	Granular Activated Carbon
GCTL	Groundwater Cleanup Target Level
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid
IDW	Investigation Derived Waste
IHA	InoMedic Health Applications, Inc.
J	Estimated value
KSC	Kennedy Space Center
KSCRT	Kennedy Space Center Remediation Team
MDEQ	Michigan Department of Environmental Quality
mg/kg	milligrams per kilogram
MOTR	Multiple Object Tracking Radar Tower
NASA	National Aeronautics Space Administration
ng/L	nanograms per liter

ORP	Oxidation Reduction Potential
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutanesulfonic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFOSA	Perfluorooctanesulfonamide
PRL	Potential Release Location
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
RSL	Regional Screening Level
SCTL	Soil Cleanup Target Level
SGS	SGS Laboratory, Inc.
SIM	Selective Ion Monitoring
SOP	Standard Operating Procedure
SWMU	Solid Waste Management Unit
SWSL	Surface Water Screening Level
USDA	United States Department of Agriculture
USGS	United States Geological Survey

EXECUTIVE SUMMARY

This Per- and Polyfluoroalkyl Substances (PFAS) Confirmatory Sampling (CS) Report was prepared by AECOM Technical Services, Inc. (AECOM) for the National Aeronautics and Space Administration (NASA) under Contract 80KSC019D0010, Task Order 80KSC021F0096. The purpose of this report is to document CS activities at the South Repeater Building, Solid Waste Management Unit (SWMU) 121, formerly known as the Area 3 Repeater Building (A3RB).

A Phase I SWMU Assessment and Confirmatory Sampling Report (NASA 2019) and a Phase II and III SWMU Assessment and Confirmatory Sampling Report (NASA 2022b) were previously submitted detailing Center-Wide assessment activities performed at the John F. Kennedy Space Center (KSC) in Florida that identified 33 locations of concern and 19 areas of potential concern at KSC associated with the storage, use, or release of materials containing PFAS. A review of the analytical results from investigation derived waste samples collected in 2020 from the South Repeater Building area indicated concentrations of perfluorooctanesulfonic acid (PFOS) were above Florida Department of Environmental Protection (FDEP) provisional Groundwater Cleanup Target Levels of 70 nanograms per liter (ng/L) at a concentration of 1,750 ng/L. Following this review, the KSC Fire Chief was contacted; the Chief recalled fighting a brush fire in 1998 in the area, during which an unknown volume of aqueous film-forming foam was used to extinguish the fire. The Phase II and Phase III SWMU Assessment Report recommended this area proceed to CS. Historical results in this area are provided in **Appendix A**.

PFAS CS activities were contracted at the South Repeater Building. Initial CS activities were conducted in accordance with the PFAS Assessment and Mitigation Work Plan (AECOM 2022), which was submitted to the NASA Remediation Project Management team and accepted by the team on November 1 and 8, 2021.

The objectives of the PFAS CS were to:

- Confirm and begin to assess the extent of PFAS affected media in the South Repeater Building area.
- Identify locations for groundwater, soil, surface water, and soil core sampling.
- Qualitatively characterize the migration potential of released PFAS to environmental media (soil, groundwater, and surface water).

The following activities were completed to meet the PFAS CS objectives:

- Installation of monitoring wells via direct push technology (DPT) and rotosonic techniques
- Groundwater, soil, and surface water sampling
- Collection of soil cores to evaluate site lithology
- Development of initial PFAS plume characterization

A total of 24 normal soil samples (plus two field duplicates) were collected from 12 locations at the South Repeater Building, A3RB-SB0049 through A3RB-SB0060, at depths 0 to 0.5 foot below land surface (bls) and 0.5 foot to 2 feet bls. These soil boring locations were chosen to identify whether there is a residual source of soil contamination in the South Repeater Building source area and west of Tel-4 Road. An elevated concentration of PFOS above the July 2022 Environmental Protection Agency (EPA) Regional Screening Level (RSL) for residential soil was detected in 1 of the 24 samples collected, at a concentration of 0.0144 milligrams per kilogram (mg/kg), which did not exceed the EPA RSL for industrial soil nor the FDEP's provisional Soil Cleanup Target Level (pSCTL) for residential or industrial settings. The resultant concentration also exceeds the FDEP's pSCTL for protection of groundwater due to leachability for PFOS of 0.007 mg/kg.

Three soil borings (A3RB-SB0047, A3RB-SB0048, and A3RB-SB0061) were advanced to 58 feet bls, 61 feet bls, and 59 feet bls, respectively, to collect soil cores to evaluate lithology and confirm the depth of the confining unit. Two soil samples were collected from A3RB-SB0047 above a shallow clay lens and the deeper confining unit at depths of 21 feet bls and 58 feet bls, respectively. One soil sample was collected from A3RB-SB0048 above the deep confining unit at a depth of 61 feet bls. One soil sample was collected from A3RB-SB0061 above the deep confining unit at a depth of 59 feet bls. PFAS concentrations were not detected in the soil core samples.

DPT groundwater samples were collected from the South Repeater Building area. A total of 182 normal groundwater DPT samples (plus 17 field duplicates) were collected from five depth intervals (2 feet to 6 feet bls, 8 feet to 12 feet bls, 23 feet to 27 feet bls, 40 feet to 44 feet bls, 43 feet to 47 feet bls, and 55 feet to 59 feet bls) from 34 locations (A3RB-DPT0008 through A3RB-DPT0041). All DPT samples were collected from the center of a 4-foot screen. DPT locations and interval depths were chosen based on previous investigations, as well as lithologic data from the soil cores, to assess the area in and around the South Repeater Building area. At the time of the CS, of the 8 PFAS compounds with applicable screening criteria, 93 normal samples had detections at concentrations greater than the EPA RSLs for three of the compounds: PFOS, perfluorooctanoic acid (PFOA), and perfluorohexanesulfonic acid (PFHxS). The maximum PFHxS concentration was observed at 17,200 ng/L, which was the highest observed concentration of the three compounds detected above EPA RSLs. Additionally, PFOS and PFOA concentrations exceeded the FDEP pGCTL of 70 ng/L with maximum concentrations of 7,480 ng/L and 316 ng/L, respectively.

A total of 25 monitoring wells were installed at various locations surrounding the South Repeater Building via DPT and rotosonic drilling. Groundwater samples were collected from 2 existing (A3RB-MW0001 and A3RB-MW002) and 25 new monitoring wells (A3RB-MW0003 through A3RB-MW0027). Of the 8 PFAS compounds with applicable screening criteria, 11 monitoring wells sampled had results that contained compounds detected at concentrations greater than the

EPA RSLs: PFOS, PFOA, and PFHxS. Additionally, PFOS and PFOA concentrations exceeded the FDEP pGCTL of 70 ng/L with maximum concentrations of 7,480 ng/L and 316 ng/L, respectively. The maximum PFOS concentration was observed at 7,150 ng/L, which was the highest observed concentration of the eight analytes.

Ten normal surface water samples (plus one field duplicate) were collected from the South Repeater Building (A3RB-SW0001 through A3RB-SW0010). The surface water locations were chosen to evaluate data from stormwater drainage ditches surrounding the South Repeater Building. PFOS was detected at concentrations exceeding the FDEP provisional Surface Water Screening Levels (pSWSLs). The maximum concentration of PFOS was detected at 661 ng/L, and the maximum PFOA concentration was detected at 9 ng/L.

A summary of samples collected during the CS activities is presented in the following table, which presents results for the eight PFAS analytes with EPA RSLs as of June 2023.

	PFOS	**PFOA**	**PFBS**	**PFHxS**	**PFNA**	**HFPO-DA (GenX)**	**PFBA**	**PFHxA**
EPA RSLs, Soil (mg/kg)	**0.013**	**0.019**	**1.9**	**0.019**	**0.13**	**0.023**	**7.8**	**3.2**
Samples Collected	28	28	28	28	28	28	28	28
Number of Detections	20	1	2	10	0	0	2	2
Results above EPA RSL	1	0	0	0	0	0	0	0
FDEP pSCTL, Residential/Industrial Soil (mg/kg)	**1.3/25**	**1.3/25**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Samples Collected	28	28	28	28	28	28	28	28
Number of Detections	20	1	2	10	0	0	2	2
Results above FDEP pSCTL	0	0	NA	NA	NA	NA	NA	NA
FDEP pSCTL, Leachability Soil (mg/kg)	**0.007**	**0.002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Samples Collected	28	28	28	28	28	28	28	28
Number of Detections	20	1	2	10	0	0	2	2
Results above FDEP pSCTL	1	0	NA	NA	NA	NA	NA	NA
EPA RSLs, Tapwater (ng/L)	**4**	**6**	**601**	**6**	**39**	**6**	**1800**	**990**
DPT Groundwater Samples Collected	182	182	182	182	182	182	182	182
Number of Detections	112	56	54	112	3	0	64	52
Results above EPA RSL	91	16	0	45	0	0	0	0
FDEP pGCTLs, (ng/L)	**70**	**70**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
DPT Groundwater Samples Collected	182	182	182	182	182	182	182	182
Number of Detections	112	56	54	112	3	0	64	52

	PFOS	PFOA	PFBS	PFHxS	PFNA	HFPO-DA (GenX)	PFBA	PFHxA
Results above FDEP pGCTL	26	1	NA	NA	NA	NA	NA	NA
EPA RSLs, Tapwater (ng/L)	**4**	**6**	**601**	**6**	**39**	**6**	**1800**	**990**
Monitoring Well Groundwater Samples Collected	37	37	37	37	37	37	37	37
Number of Detections	24	17	18	22	3	0	14	17
Results above EPA RSL	18	8	0	14	0	0	0	0
FDEP pGCTL (ng/L)	**0.07**	**0.07**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Monitoring Well Groundwater Samples Collected	37	37	37	37	37	37	37	37
Number of Detections	24	17	18	22	3	0	14	17
Results above FDEP pGCTL	14	2	NA	NA	NA	NA	NA	NA
FDEP pSWSLs (ng/L)	**10**	**500**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Samples Collected	10	10	10	10	10	10	10	10
Number of Detections	10	7	4	9	1	0	10	6
Results above pSWSL	6	0	NA	NA	NA	NA	NA	NA

Notes:
Only results from normal samples are included in this table.
NA = Not applicable; no screening criteria established

Results of the PFAS CS indicate PFAS detections in soil, groundwater, and surface water. Based on the results of the CS activities, further sampling activities are needed to complete delineation in all media. The results for groundwater (A3RB-DPT0008 through A3RB-DPT0029 and A3RB-MW0001 through A3RB-MW0010), surface water (A3RB-SW0001 through A3RB-SW0008), and soil (A3RB-SB0047 through A3RB-SB0061) sampling locations were presented to the KSC Remediation Team in October 2022 and June 2023.

1. INTRODUCTION

1.1 OVERVIEW

This Per-and Polyfluoroalkyl Substances (PFAS) Confirmatory Sampling (CS) Report presents the CS activities performed at the John F. Kennedy Space Center (KSC) at the South Repeater Building in Florida (**Figure 1-1**), which has been designated as Solid Waste Management Unit (SWMU) 121. This PFAS CS Report was prepared by AECOM Technical Services, Inc. (AECOM) for the National Aeronautics and Space Administration (NASA) under Contract 80KSC019D0010, Task Order 80KSC021F0096.

NASA, through the Environmental Assurance Branch, is managing the PFAS assessment activities at KSC. A Phase I SWMU Assessment and CS Report (NASA 2019) and a Phase II and III SWMU Assessment and CS Report (NASA 2022b) were previously submitted detailing Center-Wide assessment activities that identified 33 locations of concern and 19 areas of potential concern at KSC associated with the storage, use, or release of materials containing PFAS. Following SWMU assessment activities, NASA contracted further PFAS assessment and mitigation activities at the South Repeater Building, formerly known as the Area 3 Repeater Building (A3RB). This report presents a summary of the CS activities performed from January 2022 through June 2023 at the South Repeater Building.

Sampling activities at the South Repeater Building were conducted in accordance with the PFAS Assessment and Mitigation Work Plan (NASA 2022a), which was submitted to the NASA Remediation Project Management team and accepted by the team on November 1 and 8, 2021. The objectives of these activities were to confirm and further assess the potential PFAS impacts to the South Repeater Building area, to qualitatively characterize migration potential of released PFAS to environmental media (soil, groundwater, and surface water), and to identify sample locations for PFAS-impacted environmental media.

Sampling activities included surface water sampling in the watersheds in and around the South Repeater Building area, direct push technology (DPT) groundwater sampling, monitoring well installation and groundwater sampling, and soil sampling to confirm the potential environmental impacts of PFAS in these areas.

1.2 PURPOSE

The purpose of this report is to provide a summary of CS activities and results completed from January 2022 through June 2023. The report provides recommendations for additional assessment.

1.3 REPORT ORGANIZATION

The report is organized as follows:

- Section 2: Site Description and Setting. This section provides a description of the site, including site topography, geology, hydrogeology, and overview of previous investigations.
- Section 3: PFAS Confirmatory Sampling Methodologies and Activities. This section discusses the confirmatory sampling protocols and methodologies.
- Section 4: Data Evaluation. This section provides sampling results overview and screening criteria for samples collected during these activities.
- Section 5: Conclusions and Recommendations. This section discusses conclusions based on recent and historical data and presents recommendations for future activities at the site.
- Section 6: References. This section provides a listing of the documents used in developing this report.

2. SITE DESCRIPTION AND SETTING

2.1 SITE LOCATION

KSC is located on the east coast of Florida, to the north and west of Cape Canaveral (**Figure 1-1**). It is situated in Brevard and Volusia Counties between the Merritt Island Barge Canal to the south, the town of Oak Hill to the north, the Atlantic Ocean and Cape Canaveral Space Force Station to the east, and the Indian River to the west. The site investigated for this report is located in the southern region of KSC.

The South Repeater Building is located outside of the KSC secure boundaries east of Tel-4 Road (**Figure 2-1**). The South Repeater Building area was identified during a review of investigation derived waste (IDW) sampling results for the Soil Interim Measure activities completed in 2020 by AECOM (NASA 2021a). The IDW sample contained concentrations of perfluorooctanesulfonic acid (PFOS) that were above the Florida Department of Environmental Protection (FDEP) provisional Groundwater Cleanup Target Level (pGCTL) of 70 nanograms per liter (ng/L) at a concentration of 1,750 ng/L. An interview with the KSC Fire Chief indicated that an unknown amount of aqueous film-forming foam (AFFF) was utilized to extinguish brush fires north-northeast of the South Repeater Building circa 1998. Therefore, this site was included in the PFAS Center-Wide Phase III assessment and was recommended for further site assessment activities (NASA 2022b).

2.2 SITE DESCRIPTION

2.2.1 Major Features

The South Repeater Building is located along the east side of Tel-4 Road, approximately 1.5 miles northwest of the Central Telemetry area. The site consists of the South Repeater Building (N6-1118) and the Multiple Object Tracking Radar Tower (MOTR) (N6-1120-95144). The South Repeater Building is surrounded by scrub and tree covered land to the north, east, and south, and private residential and agricultural properties are located to the southwest of the site. Wetlands are located to the east of the South Repeater Building, and stormwater drainage ditches are located along Tel-4 Road and D'albora Road southwest of the South Repeater Building. Two ponds are also located northwest of the South Repeater Building and west of Tel-4 Road.

2.2.2 Site Topography and Surface Features

The United States Department of Agriculture (USDA) Web Soil Survey describes the soils under the site as predominantly Immokalee with small areas of Anclote. The Immokalee series consists of deep and very deep, poorly drained and very poorly drained soils that formed in sandy marine sediments. They occur on flatwoods and in depressions of Peninsular Florida. The Anclote series consists of very deep, very poorly drained, rapidly permeable soils in depressions, poorly defined drainage ways, and floodplains. They formed in thick beds of sandy marine sediments. Other soil classes located within a 0.5 mile radius of the site include Bradenton, Copeland, Myakka,

Pomello, and St. Johns. Several stormwater conveyance structures or holding areas were observed at the South Repeater Building (USDA 2022). Storm sewer culvert lines are located under paved portions of the area. Additionally, a swale runs east to west between the South Repeater Building and Tel-4 Road, and an open drainage ditch runs from north to south between the east side of Tel-4 Road and the site. Potential wetlands within a 0.5 mile radius are located to the north, southeast, and west of the area (NASA 2012).

2.2.3 Geology and Hydrogeology

Merritt Island is a barrier island complex containing soils of differing ages relative to proximity to the Atlantic Ocean. Younger soils with ridge and swale topography are present on the eastern side of the island, while the western portion contains older soils that are flatter and devoid of ridges and swales (NASA 2010). Precipitation is routed to shallow stormwater ditches, streams, and/or swales prior to discharging to surrounding water bodies.

The shallow aquifer system of KSC consists of sand, shelly sand, silt, clay, and calcareous clay. Groundwater flow patterns in the Surficial Aquifer System are typical of an island aquifer system that is surrounded by high salinity water (United States Geological Survey [USGS] 2000). These patterns are termed “variable density flow”; freshwater infiltrates high topographic locations and flows downward and radially before discharging to surface water.

Three borings completed to collect soil cores (A3RB-SB0047, A3RB-SB0048, and A3RB-SB0061) by AECOM were located east and southwest of the South Repeater Building (N6-1118) to total depths of 58 feet, 61 feet, and 59 feet below land surface (bls). These soil cores indicated that soils are poorly graded dark grayish-brown sand from the surface to 5 feet bls. A white medium-grained sand with shell extends from 5 feet to 24 feet bls. From 24 feet to 31 feet bls, the cores consisted of greenish-gray clayey sand with a small amount of shell fragments. Soils from 31 feet to 55 feet bls consisted of gray poorly graded sand with shell fragments throughout. Soils transition into a dense gray clayey sand with shell fragments from 55 feet to 59 feet bls. A grey medium stiff lean clay extends to 65 feet bls. This information is represented in a cross section representing a southwest to northeast section of the South Repeater Building area. Soil boring logs for these soil cores are provided in **Appendix B,** and soil core photographs are provided in **Appendix C**. The cross section is depicted as **Figure 2-5** and **Figure 2-6**.

Water level measurements were collected from monitoring wells installed during these assessment activities to evaluate the groundwater flow direction and are provided in **Table 2-1**. As of May 2023, groundwater appears to flow in an east to west direction as depicted in **Figure 2-2**, **Figure 2-3** and **Figure 2-4**.

2.3 SUMMARY OF PREVIOUS INVESTIGATIONS

2.3.1 Previous RCRA Investigations

Prior to the construction of the South Repeater Building, the area was undeveloped. In 1962, the South Repeater Building was constructed and utilized as a workshop and storage area for the Fiber Optics department. It is currently used for telecommunications relay. The MOTR was constructed in 2003 after being relocated from the former Cape Canaveral Air Force Station. A SWMU assessment was conducted from March to May 2012. Several locations of concern were identified, and CS was subsequently performed. In 2018, additional samples were collected to delineate metals (lead and copper) and carcinogenic polynuclear aromatic hydrocarbons (PAHs)in soil that were identified above the FDEP Soil Cleanup Target Levels (SCTLs) in the 2019 CS report (NASA 2019). During the 2020 Soil Interim Measure, approximately 184.8 tons of contaminated soils were removed from areas north and south of the South Repeater Building (NASA 2021a). Subsequent monitoring well sampling indicated that groundwater was not impacted by lead or PAHs at concentrations exceeding the FDEP GCTLs (NASA 2021a).

2.3.2 Previous PFAS Investigations

Center-Wide SWMU Assessment and CS of PFAS was completed from 2018 through 2022. One monitoring well (A3RB-MW0002) located at the South Repeater Building was sampled for PFAS in advance of site closure in 2020 since IDW samples had indicated the presence of PFAS compounds. Perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS) concentrations were above the Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for tapwater at concentrations of 13.7 ng/L and 1,950 ng/L, respectively. Additionally, PFOS concentrations were above both the EPA RSL and FDEP pGCTL at a concentration of 1,750 ng/L. Initially, interviews and research for the South Repeater Building did not identify this site as a potential PFAS usage or storage location. Based on the elevated PFAS concentrations in the IDW samples and elevated groundwater concentrations in A3RB-MW0002, the KSC Fire Chief was contacted to inquire about any potential fires in the area. According to interviews with the fire chief, a brush fire occurred in the tree line north-northeast of the South Repeater Building, during which an unknown amount of AFFF was used to extinguish the fire.

Based on this information, DPT groundwater sampling activities were initiated. During these activities, 12 groundwater DPT samples were collected from four depth intervals (6 feet to 10 feet bls, 21 feet to 25 feet bls, 31 feet to 35 feet bls, and 41 feet to 45 feet bls) from three locations (A3RB-DPT0005A, A3RB-DPT0006, and A3RB-DPT0007). Results indicated that PFOS, PFOA, and the sum of PFOA+PFOS concentrations at A3RB-DPT0007 were above the FDEP pGCTL of 70 ng/L at concentrations of 280 ng/L, 10 ng/L, and 290 ng/L, respectively. These groundwater analytical results were compared to the 2016 EPA Lifetime Drinking Water Health Advisory Levels for PFOA, PFOS, and PFOA+PFOS of 70 ng/L (EPA 2016a, 2016b). Based on the sampling results, the South Repeater Building was recommended to advance to CS. The maximum detections during the monitoring well and DPT groundwater investigations for

five PFAS compounds with EPA RSLs are detailed in **Table 2-2**. Note that the sixth PFAS compound with an EPA RSL as of May 2022, hexafluoropropylene oxide dimer acid (HFPO-DA), was not analyzed for in any of the initial DPT samples collected from the South Repeater Building area. Sampling results for previous PFAS investigations are provided in **Appendix A**. An overview of historical PFAS sampling locations is provided on **Figure 2-7**.

Table 2-2. South Repeater Building Maximum PFAS Detections as of May 2022

	PFOA	PFOS	PFBS	PFNA	PFHxS
Groundwater (ng/L)	13.7	1,750	63.7	2.6 J	1,950

J = Estimated value

3. PFAS CONFIRMATORY SAMPLING METHODOLOGIES AND ACTIVITIES

3.1 PFAS SAMPLING PROTOCOL

Field activities were performed in general accordance with the PFAS Site Assessment and Mitigation Work Plan (NASA 2022a), FDEP Standard Operating Procedures (SOPs) (FDEP 2018), PFAS sampling guidelines, including a Quick Reference Field Guide provided by the Michigan Department of Environmental Quality (MDEQ) (MDEQ 2018), and KSC Sampling and Analysis Plan (NASA 2018). Field documentation is provided in **Appendix B,** and a photographic log of each sample location is provided in **Appendix C**.

Quality assurance (QA) and quality control (QC) samples were collected to evaluate laboratory precision, assess sampling equipment for potential sources of PFAS contamination, and evaluate potential impacts from cross-contamination. Groundwater, surface water, and soil samples were submitted to SGS North America, Inc. (SGS) of Orlando, Florida. Laboratory analytical reports are provided in **Appendix D**.

Validated groundwater and soil data were screened against the EPA RSLs for PFOA, PFOS, perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), PFHxS, HFPO-DA, perfluorobutanoic acid (PFBA), and perfluorohexanoic acid (PFHxA) as well as the FDEP pGCTLs and provisional soil cleanup target levels (pSCTLs) for PFOS and PFOA. Validated surface water data for PFOA and PFOS were compared to the FDEP provisional Surface Water Screening Levels (pSWSLs) to identify potential exposure pathways and/or sources that could be contributing PFOA or PFOS compounds to groundwater, depending on groundwater and surface water interactions.

Sampling locations selected for the South Repeater Building area were based on findings from interviews with the KSC Fire Chief and findings from monitoring well and DPT groundwater sampling activities completed in 2021. Prior to soil sampling, DPT sampling, and monitoring well installation, proposed locations were staked using a mobile Global Positioning System unit for proper clearance by utility locators.

The following sections document the sampling activities performed based on logistics and accessibility.

3.2 PFAS CONFIRMATORY SAMPLING ACTIVITIES

3.2.1 Soil Sampling

From January 2022 through March 2023, AECOM personnel collected 24 normal soil samples (plus two field duplicates) from 12 locations (A3RB-SB0049 through A3RB-SB0060) with a stainless steel hand auger. At each location, surface and subsurface samples were collected at 0 to 0.5 foot bls and 0.5 foot to 2 feet bls, respectively. In addition to the shallow soil sampling, AECOM personnel provided oversight for the collection of three soil cores (A3RB-SB0047,

A3RB-SB0048, and A3RB-SB0061) from borings completed to a total depth of 64 feet, 65 feet, and 60 feet bls, respectively. Confining units for cores collected from SB047 and SB048 were identified at approximately 58 feet bls and 61 feet bls, respectively. Two soil samples were collected from A3RB-SB0047 above a shallow clay lens and the deeper confining unit at depths of 21 feet bls and 58 feet bls, respectively. One soil sample was collected from A3RB-SB0048 above the deep confining unit at a depth of 61 feet bls. One soil sample was collected from A3RB-SB0061 above the deep confining unit at a depth of 59 feet bls. Lithological descriptions for the deep soil borings are provided in **Table 3-1**. A photographic log of each soil boring is provided in **Appendix C.** Soil sampling rationale is provided in **Table 3-2** and boring locations are depicted on **Figure 3-1**.

3.2.2 Direct Push Technology Groundwater Sampling

From January 2022 through May 2023, AECOM provided oversight for the installation of 34 temporary well point locations utilizing a DPT rig. The rig was operated by Environmental Drilling Service, Inc. (EDS), a licensed Florida drilling contractor. DPT groundwater location rationale and sample depth intervals from each point varied based on location, and are referenced in **Table 3-3**. Note that depth intervals correspond to the screen center point location. In total, 182 normal groundwater samples (plus 17 field duplicates) were collected. DPT groundwater locations are depicted on **Figure 3-1**. Groundwater sampling activities generally included purging each interval for 5 minutes prior to taking field parameters. Parameters were then subsequently collected in 5-minute increments. At some locations, low yield at one or more intervals sometimes reduced purge time. While utilizing a YSI multimeter, field parameters such as pH, temperature, conductivity, dissolved oxygen (DO), oxygen reduction potential (ORP), and salinity were measured for each interval prior to taking the field sample. Color and odor for each sample were also noted. Field sampling notes and groundwater sampling logs are provided in **Appendix B,** and photographic logs of each location are provided in **Appendix C**.

3.2.3 Surface Water Sampling

In December 2022 and March 2023, AECOM personnel collected 10 surface water samples (plus one field duplicate) utilizing a grab sampler from various drainage ditches across the South Repeater Building area. The samples were collected within the top 12 inches of the water column. Utilizing a YSI multimeter, field parameters such as pH, temperature, conductivity, DO, ORP, and salinity were collected for each surface water sample. Surface water sample rationales are provided in **Table 3-4** and locations are depicted on **Figure 3-1**.

3.2.4 Monitoring Well Installation

On May 23 and 24, 2022, AECOM personnel provided oversight for the installation of eight monitoring wells utilizing a DPT drill rig operated by EDS. Additionally, on March 27 through April 5, 2023, AECOM personnel provided oversight for the installation of 17 monitoring wells utilizing a sonic drill rig operated by Groundwater Protection Inc. Monitoring well location

rationale and depths for each location varied based on location, and are referenced in **Table 3-5**. The monitoring wells were installed using DPT and sonic and were constructed with 1-inch diameter, Schedule 40 polyvinyl chloride riser and 10 feet of 0.010-slot screen, prepacked with a 20/30 sand. The wells were sealed with 30/65 fine sand and finished with Type I/II Portland cement to the surface. They were completed with lockable well caps and enclosed in 8-inch round bolt-down vaults encased in 2-foot by 2-foot by 4-inch thick square concrete pads. The monitoring wells were installed to varying depths ranging from 12 feet bls to 59 feet bls. A professional land survey of these wells was conducted by SurvTech Solutions in June 2022 and April 2023. Field notes and well construction logs for the monitoring well installation activities, as well as the professional survey, are provided in **Appendix B**. Monitoring well locations are depicted on **Figure 2-1**.

3.2.5 Monitoring Well Groundwater Sampling

In May 2022 and May 2023, AECOM personnel collected 37 groundwater samples (plus four field duplicates) from 27 monitoring wells (A3RB-MW0001 through A3RB-MW0027). These wells range in depth between 12 and 59 feet bls. Monitoring well rationales are provided in **Table 3-5** and locations are depicted on **Figure 3-1**.

New high-density polyethylene tubing was used for each sample location. The monitoring wells were sampled utilizing a peristaltic pump and flow-through cell utilizing a low-flow purge technique. Utilizing a YSI, multimeter field parameters such as pH, temperature, conductivity, DO, ORP, and salinity were collected for each groundwater sample. Monitoring well groundwater sampling logs are provided in **Appendix B**.

3.3 PFAS Laboratory Analysis

Soil, groundwater, and surface water samples collected during the January 2022 through June 2023 sampling events were analyzed by EPA Method 537 Modified in accordance with the Department of Defense Quality Systems Manual 5.3 for the below 29-compound PFAS list. All samples were also submitted for perfluorooctanesulfonamide (PFOSA) analysis.

Analyte	Acronym	CAS Number
2-(N-Ethylperfluorooctanesulfonamido) acetic acid	N-EtFOSAA	2991-50-6
2-(N-Methylperfluorooctanesulfonamido) acetic acid	N-MeFOSAA	2355-31-9
Fluorotelomer sulphonic acid 4:2	4:2 FTS	757124-72-4
Fluorotelomer sulphonic acid 6:2	6:2 FTS	27619-97-2
Fluorotelomer sulphonic acid 4:2	8:2 FTS	39108-34-4
N-methylperfluorooctanesulfonamide	MeFOSA	31506-32-8
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorodecanoic acid	PFDA	335-76-2
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluorononanoic acid	PFNA	375-95-1
Perfluorooctanesulfonic acid	PFOS	1763-23-1

Analyte	Acronym	CAS Number
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorotetradecanoic acid	PFTeA	376-06-7
Perfluorotridecanoic acid	PFTriA	72629-94-8
Perfluoroundecanoic acid	PFUnA	2058-94-8
N-methylperfluorooctanesulfonamidoacetic	NMeFOSAA	2355-31-9
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
11-Chloroeiosafluoro-3oxaudecane-1-sulfonic acid	11Cl-PF3OudS	763051-92-9
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF2ONS	756426-58-1
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6

The samples were analyzed by SGS in Orlando, Florida. Stage 2A laboratory packages and the associated electronic data deliverables were provided by the laboratory per project-specific requirements.

Units for groundwater and surface water are reported in micrograms per liter (µg/L) in the laboratory analytical reports. Units were converted to ng/L in the tables and figures. Additionally, units for soil are reported in milligrams per kilogram (mg/kg) in the laboratory analytical report, tables, and text. However, units were converted to micrograms per kilogram (µg/kg) on the figures to maximize readability.

3.4 INVESTIGATION DERIVED WASTE

During the DPT groundwater sampling, soil core collection, and monitoring well installations, IDW was collected in 55-gallon steel drums (18 aqueous drums and 6 soil drums) and stored at the designated temporary waste storage area at the Components Cleaning Facility (CCF). In April and August 2022 and May 2023, AECOM personnel collected 18 water and 6 soil samples, one sample from each IDW drum. For disposal purposes, pH was measured from each drum with aqueous waste. Samples collected from these drums were submitted for analyses of volatile organic compounds by EPA Method SW8260B and EPA Method SW8260C selective ion monitoring (SIM), semi-volatile organic compounds by EPA Method SW8270D, PAHs by EPA Method SW8270C SIM, metals by EPA Methods SW6010B/6020A/SW7470A, and PFAS by EPA Method 537 Modified in accordance with the Department of Defense Quality Systems Manual 5.3 (2019).

NASA maintains a granular activated carbon (GAC) treatment system designed to treat aqueous IDW contaminated with PFAS. The IDW water was treated at CCF by the GAC treatment system. Following receipt of acceptable analytical results (non-detect for all analyzed compounds), the treated water is discharged at the Hydrocarbon Burn Facility. Soil IDW that had detections of PFAS was either returned to the site or to an area of PFAS-affected soil at the Hydrocarbon Burn Facility (KSC SWMU 007), which is currently in the PFAS Site Assessment process.

3.5 FIELD DATA QUALITY

QA/QC samples were collected to evaluate laboratory precision, assess sampling equipment for potential sources of PFAS contamination, and evaluate potential impacts from cross-contamination. To meet the QA/QC sampling objectives, duplicate samples were collected at an approximate ratio of 1:10 per groundwater, surface water, and soil media (total of 24 duplicate samples), equipment blank samples were collected at an approximate rate of 1:10 (total of 16 equipment blank samples), and field blanks were collected at an approximate rate of one per shipping cooler (total of 16 field blanks).

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4. DATA EVALUATION

4.1 DATA EVALUATION AND SCREENING PROCESS

Groundwater analytical sample results were compared to the EPA RSLs for tapwater and FDEP pGCTLs as of June 2023 for the following compounds:

Analyte	PFOS	PFOA	PFOA + PFOS	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA
EPA RSL	4 ng/L	6 ng/L	-	601 ng/L	6 ng/L	39 ng/L	6 ng/L	1800 ng/L	990 ng/L
FDEP pGCTL	70 ng/L	70 ng/L	70 ng/L	-	-	-	-	-	-

Soil analytical sample results were compared to the following EPA RSLs for residential and industrial settings and FDEP's pSCTLs for residential, industrial, and leachability:

Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA
EPA RSL, Residential	0.013 mg/kg	0.019 mg/kg	1.9 mg/kg	0.019 mg/kg	0.13 mg/kg	0.023 mg/kg
EPA RSL, Industrial	0.16 mg/kg	0.25 mg/kg	25 mg/kg	0.25 mg/kg	1.6 mg/kg	0.35 mg/kg
FDEP pSCTL, Residential	1.3 mg/kg	1.3 mg/kg	-	-	-	-
FDEP pSCTL, Industrial	25 mg/kg	25 mg/kg	-	-	-	-
FDEP pSCTL, Leachability	0.007 mg/kg	0.002 mg/kg	-	-	-	-

Surface water analytical sample results were compared to the FDEP pSWSLs for the following compounds:

Analyte	PFOS	PFOA
FDEP pSWSL	10 ng/L	500 ng/L

4.2 SOIL

From January through December 2022, 24 normal soil samples (plus two field duplicate samples) were collected from 12 soil boring locations (A3RB-SB0049 through A3RB-SB0060). Borings were also advanced for soil core collection in three locations (A3RB-SB0047, A3RB-SB0048, and A3RB-SB0061). Shallow soil boring locations A3RB-SB0049 through A3RB-SB0060 were completed at depth intervals of 0 to 0.5 foot bls and 0.5 foot to 2 feet bls. Two soil samples were collected from boring A3RB-SB0047 above a shallow clay lens and above a deeper confining unit at depths of 21 feet bls and 58 feet bls, respectively. One soil sample was collected from boring A3RB-SB0048 above the confining unit at a depth of 61 feet bls. Additionally, in March 2023, one soil sample was collected from boring A3RB-SB0061 above the confining unit at a depth of 59 feet bls. Soil analytical results indicate that PFOS concentrations were above the EPA RSL for residential soil and the FDEP leachability pSCTL

for PFOS in A3RB-SB0057. The maximum PFOS concentration was located in this sample at a depth interval 0 to 0.5 feet bls at a concentration of 0.0144 mg/kg. All other soil samples were below the EPA RSLs for residential and industrial soils and the FDEP pSCTLs. These analytical results are provided in **Table 4-1** and **Table 4-2** and the boring locations are depicted on **Figure 4-1**.

4.3 DIRECT PUSH TECHNOLOGY GROUNDWATER

From January 2022 through May 2023, 182 groundwater samples (plus 17 field duplicate samples) were collected from 34 DPT locations (A3RB-DPT0008 through A3RB-DPT0041). Groundwater analytical results indicated that PFOS concentrations were above the EPA RSL of 4 ng/L in all DPT locations, but not necessarily at all depth intervals. Additionally, PFOS concentrations were above the FDEP pGCTL of 70 ng/L in 17 DPT locations. Maximum concentrations were located within the DPT location A3RB-DPT0010 4-foot depth interval at a concentration of 7,480 ng/L. PFOA concentrations were also above the EPA RSL of 6 ng/L within 16 sample intervals. Additionally, PFOA concentrations were above the FDEP pGCTL of 70 ng/L in one DPT location. Maximum concentrations were located within the DPT location A3RB-DPT0010 4-foot depth interval at a concentration of 316 ng/L. Additionally, analytical results indicate PFHxS concentrations were above the EPA RSL of 39 ng/L within 39 sample intervals. Maximum concentrations are located within the DPT location A3RB-DPT0010 4-foot depth interval at a concentration of 17,200 ng/L. PFBS, PFNA, HFPO-DA, PFBA, and PFHxA concentrations were below the EPA RSLs in all sample locations. These analytical results are provided in **Table 4-3** and **Table 4-4** and are depicted on **Figure 4-2**.

4.4 SURFACE WATER

In December 2022 and March 2023, 10 surface water samples and one field duplicate sample (A3RB-SW0001 through A3RB-SW00010) were collected from this area. Analytical results indicate that PFOS concentrations were above the pSWSL of 10 ng/L in six surface water locations. Maximum PFOS concentrations were located in A3RB-SW0009 at a concentration of 661 ng/L. PFOA concentrations were below the FDEP pSWSL of 500 ng/L in all sample locations. These analytical results are provided in **Table 4-5** and **Table 4-6** and are depicted on **Figure 4-3**. The FDEP pSWSLs are based on consumption of finfish and shellfish. No fishing was observed in the ditches or ponds that were sampled.

4.5 MONITORING WELL SAMPLING

In May 2022 and May 2023, 37 normal groundwater samples (plus 4 field duplicate samples) were collected from 27 monitoring wells (A3RB-MW0001 through A3RB-MW0027). Analytical results indicate that PFOS concentrations were above the EPA RSL of 4 ng/L in 11 locations and above the FDEP pGCTL of 70 ng/L in eight locations. The maximum concentration of PFOS was located in A3RB-MW0003 at a concentration of 7,150 ng/L. PFOA concentrations were also above the EPA RSL of 6 ng/L in five locations and above the FDEP pGCTL of 70 ng/L in one

location. Maximum concentrations were located within A3RB-MW0003 at a concentration of 87.2 ng/L. Additionally, analytical results indicate PFHxS concentrations were above the EPA RSL of 39 ng/L in seven locations. Maximum concentrations were located in A3RB-MW0003 at a concentration of 5,100 ng/L. PFBS, PFNA, HFPO-DA, PFBA, and PFHxA concentrations were below the EPA RSLs in all sample locations. These analytical results are provided in **Table 4-4** and **Table 4-7** and are depicted on **Figure 4-2**

4.6 FIELD QUALITY ASSURANCE/QUALITY CONTROL EVALUATION

The results from the QA/QC samples collected during the CS activities were reviewed by a qualified chemist. Field sampling precision was measured using the field duplicate relative percent difference (RPD) of less than 30%. During PFAS analysis, field duplicates were performed on parent samples A3RB-SB0050 (0.5 foot to 2 feet bls), A3RB-SB0060 (0 to 0.5 foot bls), A3RB-DPT0010 (8 feet to 12 feet bls), A3RB-DPT0016 (2 feet to 6 feet bls), A3RB-DPT0017 (8 feet to 12 feet bls), A3RB-DPT0021 (40 feet to 44 feet bls), A3RB-DPT0023 (40 feet to 44 feet bls), A3RB-DPT0025 (8 feet to 12 feet bls), A3RB-DPT0027 (2 feet to 6 feet bls), A3RB-DPT0029 (23 feet to 27 feet bls), A3RB-DPT0031 (40 feet to 44 feet bls), A3RB-DPT0033 (40 feet to 44 feet bls), A3RB-DPT0035 (5 feet to 10 feet bls), A3RB-DPT0036 (40 feet to 44 feet bls), A3RB-DPT0037 (2 feet to 6 feet bls), A3RB-DPT0038 (23 feet to 27 feet bls), A3RB-DPT0039 (16 feet to 20 feet bls), A3RB-DPT0040 (40 feet to 44 feet bls), A3RB-MW0009 (20 feet to 30 feet bls), A3RB-MW0018 (35 feet to 45 feet bls), A3RB-MW0025 (35 feet to 45 feet bls), and A3RB-SW0007. All field duplicates and their parent samples met precision criteria except for A3RB-DPT0023 (PFOS and PFHxS), A3RB-DPT0017 (PFOS and PFHxS), and A3RB-MW0009 (PFBS). This does not effect the data usage for the normal samples.

Field and equipment blanks were used as negative controls to assess data quality. During the assessment activities, there were no detections in the field and equipment blanks, except A3RB-FB-20220119 and A3RB-EB-20221214-02. For equipment blank, A3RB-EB-20221214-02, PFBA was detected at 0.0027 J µg/L. This detection is an artifact from the laboratory extraction process as indicated by method blank contamination of PFBA detected at 0.0024 J µg/L. For field blank A3RB-FB-20220119, the following were detected:

Analyte	Amount Detected	Blank Contamination Action Level
PFBA	0.0075 J µg/L	0.0375 µg/L
PFPA	0.0061 J µg/L	0.0305 µg/L
PFHxA	0.0110 µg/L	0.0550 µg/L
PFHpA	0.0031 J µg/L	0.0155 µg/L
PFOA	0.0052 J µg/L	0.0260 µg/L
PFBS	0.0064 J µg/L	0.0320 µg/L
PFPeA	0.0078 J µg/L	0.0390 µg/L
PFHxS	0.126 µg/L	0.6300 µg/L
PFOS	0.201 µg/L	1.005 µg/L

J = Analytical result was greater than or equal to the reporting limit but less than the practical quantitation limit

All samples collected on January 19, 2022, that are less than five times the detected amount (blank contamination action level) in the field blank may be affected by blank contamination. QA/QC sample results are summarized in **Table 4-8**.

4.7 FORENSIC ANALYSIS

Forensic analysis of the groundwater and surface water data will be discussed in a separate document.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

In total, for this investigation, 219 normal groundwater samples (plus 21 field duplicates), 28 normal soil samples (plus 2 field duplicates), and 10 normal surface water samples (plus one field duplicate) were collected from this area. The presence of PFOS and PFOA in groundwater above FDEP pGCTLs has been confirmed at the South Repeater Building. Concentrations of PFOS, PFOA and PFHxS in groundwater are also above the EPA RSLs (as of June 2023). Soil results exceed the EPA RSL for residential settings and the FDEP leachability pSCTL for PFOS has been confirmed. In surface water, exceedance of the pSWSL for PFOS has been confirmed. The range of results are presented in the following table.

Media		PFOA	PFOS	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA
Groundwater (ng/L)	EPA RSL	4	6	601	6	39	6	1800	990
	FDEP pGCTL	70	70	N/A	N/A	N/A	N/A	N/A	N/A
	Results	1.1 J to 316	1.1 J to 7,480	1.7 J to 208	0.99 J to 4.9 J	1.1 J to 17,200	<3.7 to <44	2.3 J to 113	1.0 J to 626
Soil (mg/kg)	EPA RSL	0.019	0.013	1.9	0.019	0.13	0.023	N/A	N/A
	FDEP pSCTL, Residential	1.3	1.3	N/A	N/A	N/A	N/A	N/A	N/A
	FDEP pSCTL, Industrial	25	25	N/A	N/A	N/A	N/A	N/A	N/A
	FDEP pSCTL, Leachability	0.002	0.007	N/A	N/A	N/A	N/A	N/A	N/A
	Results	0.00043 J to 0.0144	<0.00054 to 0.00057 J	0.00031 J to 0.0012	<0.00051 to <0.00071	0.00035 J to 0.0274	<0.00051 to <0.00071	<0.00051 to 0.00070 J	<0.00051 to <0.00071
Surface Water (ng/L)	FDEP pSWSL	500	10	N/A	N/A	N/A	N/A	N/A	N/A
	Results	1.1 J to 9.0	2.9 J to 661	N/A	N/A	N/A	N/A	NA	NA

< = Less than detection limit
J = Analytical result was greater than or equal to the reporting limit but less than the practical quantitation limit
N/A = Not applicable

The groundwater (A3RB-DPT0008 through A3RB-DPT0041 and A3RB-MW0001 through A3RB-MW0010), surface water (A3RB-SW0001 through A3RB-SW0008), and soil sampling locations were presented during the Kennedy Space Center Remediation Team (KSCRT) meeting in October 2022 and June 2023. The KSCRT meeting minutes are included in **Appendix E**.

5.2 RECOMMENDATIONS

CS has identified the presence of PFAS in environmental media at the South Repeater Building area in concentrations above one or more screening criteria. Therefore, a Site Assessment is recommended. The collection of shallow soil samples is recommended at the South Repeater Building area to further determine whether there is a residual source of groundwater

contamination and to further screen whether PFAS concentrations exist above direct contact pSCTLs. A PFAS Site Assessment and Mitigation Sampling Work Plan for additional recommended sampling is provided in **Appendix F**. It is recommended that relevant geologic, hydrogeologic and hydrologic characteristics be studied to develop information on PFAS migration and transport. Exposure pathways should also be evaluated. Potential contributing sources of PFAS in addition to AFFF should be examined. The need for interim measures should also be considered.

6. REFERENCES

EPA. 2016a. *Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)*. Office of Water. EPA Document Number 822-R-16-004. May.

EPA. 2016b. *Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA)*. Office of Water. EPA Document Number 822-R-16-005. May.

FDEP. 2018. *Department of Environmental Protection Standard Operating Procedures for Field Activities*. DEP-SOP-001/01. Florida Department of Environmental Protection. April 2018.

FDEP. 2022. *Per- and Polyfluoroalkyl Substances (PFAS) Dynamic Plan*. Florida Department of Environmental Protection Division of Waste Management. March 2022.

MDEQ. 2018. *PFAS Sampling Guidelines*. Michigan Department of Environmental Quality.

NASA. 2010. *Environmental Resources Document*. March 2010.

NASA. 2012. *Area 3 Repeater Building (AR3B) (N6-1118) PRL 210 SWMU Assessment Report/Confirmatory Sampling Work Plan John F. Kennedy Space Center, Florida (Revision 0)*. Prepared by MESC/IHA Environmental Services Branch. August 2012.

NASA. 2018. *KSC Sampling and Analysis Plan.*

NASA. 2019. *Phase I Solid Waste Management Unit Assessment and Confirmatory Sampling Report Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Potential Release Location 237, John F. Kennedy Space Center, Florida (Revision 0)*. Prepared by Geosyntec Consultants. September 2019.

NASA. 2021a. *Interim Measures Report Area 3 Repeater Building Potential Release Location 210, John F. Kennedy Space Center, Florida (Revision 0)*. Prepared by AECOM. February 2021.

NASA. 2022a. *PFAS Site Assessment and Mitigation Sampling Work Plan Morpheus Test Area, Fire Station #2, Vehicle Assembly Building North, and Area 3 Repeater Building*. Prepared by AECOM. April 2022.

NASA. 2022b. *Phase II and III Solid Waste Management Unit Assessment and Confirmatory Sampling Report, Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Potential Release Location (PRL) 237, NASA Kennedy Space Center, Florida*. Prepared by AECOM.

USDA. 2022. *USDA Web Soil Survey*. Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

USGS. 2000. “Is Seawater Intrusion Affecting Ground Water on Lopez Island, Washington?” USGS Fact Sheet 057-00.

TABLES

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Table 2-1
Groundwater Elevation Table
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

SHALLOW WELL ID:	A3RB-MW0002		A3RB-MW0003		A3RB-MW0004		A3RB-MW0005		A3RB-MW0010		A3RB-MW0014		A3RB-MW0016		A3RB-MW0020	
Screened Interval (feet bls):	2 - 12		2 - 12		2 - 12		2 - 12		2 - 12		2 - 12		2 - 12		2 - 12	
TOC Elevation (feet NAVD88):	5.55		5.42		4.57		4.62		10.10		6.35		2.27		4.49	
Date:	Depth to Water (feet BTOC)	Water Elevation (feet NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)
5/31/2022	3.37	2.18	3.40	2.02	1.93	2.64	2.78	1.84	8.64	1.46						
5/23/2023	1.71	3.84	0.99	4.43	0.25	4.32	0.97	3.65	7.47	2.63	5.09	1.26	0.97	1.30	0.89	3.60

INTERMEDIATE WELL ID:	A3RB-MW0001		A3RB-MW0006		A3RB-MW0007		A3RB-MW0008		A3RB-MW0009		A3RB-MW0012		A3RB-MW0013		A3RB-MW0015	
Screened Interval (feet bls):	20 - 30		20 - 30		20 - 30		20 - 30		20 - 30		35 - 45		20 - 30		20 - 30	
TOC Elevation (feet NAVD88):	5.3		4.86		5.54		7.44		8.46		6.16		6.35		2.20	
Date:	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)
5/31/2022	3.32	1.98	3.24	1.62	3.80	1.74	5.88	1.56	7.63	0.83						
5/23/2023	2.07	3.23	1.56	3.30	2.58	2.96	4.65	2.79	6.09	2.37	4.98	1.18	5.17	1.18	1.15	1.05

INTERMEDIATE WELL ID:	A3RB-MW0018		A3RB-MW0019		A3RB-MW0021		A3RB-MW0024		A3RB-MW0025		A3RB-MW0026					
Screened Interval (feet bls):	35 - 45		30 - 40		20 - 30		35 - 45		35 - 45		35 - 45					
TOC Elevation (feet NAVD88):	4.59		4.60		6.30		5.16		6.90		6.99					
Date:	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)				
5/23/2023	1.25	3.34	1.04	3.56	3.15	3.15	2.81	2.35	4.25	2.65	4.24	2.75				

DEEP WELL ID:	A3RB-MW0011		A3RB-MW0017		A3RB-MW0022		A3RB-MW0023		A3RB-MW0027							
Screened Interval (feet bls):	54 - 59		54 - 59		54 - 59		54 - 59		54 -59							
TOC Elevation (feet NAVD88):	6.33		4.63		5.33		4.69		5.43							
Date:	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)	Depth to Water (ft BTOC)	Water Elevation (ft NAVD88)						
5/23/2023	5.06	1.27	1.28	3.35	2.28	3.05	1.48	3.21	2.51	2.92						

Notes:
A3RB = Area 3 Repeater Building
bls = below land surface
BTOC = Below top-of-casing
ft = Feet
MW = Monitoring well
NAVD88 = North American Vertical Datum of 1988
SWMU = Solid Waste Management Unit
TOC = top-of-casing

Table 3-1
Lithology Description
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Description
South Repeater Building	A3RB-SB0047	0.0 to 5.0	Black silty sand (SM) with organics throughout. Loose
		5.0 to 18.0	Light gray, poorly graded gravel with sand (GP), 30 to 40% shell hash, non-cohesive
		18.0 to 20.0	Gray, poorly graded gravel with sand (GP) with 5% shell, very hard silicified layer
		20.0 to 22.5	Greenish gray, clayey sand (SC) with 5% shell, loose
		22.5 to 24.0	Greenish gray, lean clay (CL), very soft
		24.0 to 31.0	Greenish gray, clayey sand with 30 to 40% clay, loose
		31.0 to 40.0	Gray, poorly graded sand with 15% shell, loose
		40.0 to 55.0	Gray, poorly graded sand, medium dense
		55.0 to 59.0	Greenish gray, clayey sand (SC) with 25 to 35% clay, loose
		59.0 to 64.0	Greenish gray, lean clay (CL) with interbedded shell layers, medium stiff
	A3RB-SB0048	0.0 to 9.5	Very dark grayish brown poorly graded sand (SP), loose
		9.5 to 24.0	Black, poorly graded sand (SP), 5-15% roots and organic materials, loose
		24.0 to 27.0	Gray, poorly graded gravel with sand (GP), Shell hash with 5% clay, dense
		27.0 to 30	Dark gray, poorly graded clayey sand (SC), dense
		30.0 to 42.0	White poorly graded gravel with sand (GP), shell hash, medium dense to very dense
		42.0 to 50.0	Gray / light olive gray, poorly graded sand with 5% shell fragments, medium dense to dense
		53.0 to 61.5	Gray, clayey sand (SC) with 15 to 25% clay with 5% shell fragments, dense
		61.5 to 65.0	Greenish gray, lean clay with sand (CL) with 15 to 25% fine sand with few shell fragments, medium stiff
	A3RB-SB0061	0.0 to 0.5	Light gray, poorly graded sand (SP), loose
		0.5 to 7.50	White poorly graded gravel with sand (GP), shell hash, medium dense to very dense
		7.50 to 10.0	Dark yellowish brown, poorly graded sand (SP) with 5-10% shell fragments, loose
		10.0 to 20.0	Light gray, poorly graded gravel with sand (GP), shell hash, loose
		20.0 to 28.0	Gray, poorly graded silty sand (SM)
		28.0 to 30.0	Gray, clayey sand (SC) with 25 to 35% clay with 5% shell fragments, dense
		30.0 to 38.0	Light gray, poorly graded gravel with sand (GP), shell hash, loose
		38.0 to 49.0	Light gray, poorly graded sand (SP) with 5% shell fragments
		49.0 to 55.0	Gray, silty sand with gravel (SM), 15-25% shell hash, loose
		55.0 to 60.0	Light greenish gray, sandy lean clay (CL) with 5-15% shell fragments, dense

Notes:
A3RB = Area 3 Repeater Building
ft = Feet
ft bls = Feet below land surface
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 3-2
Soil Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-SB0047	64	Determine lithology and sample just above confining unit
	A3RB-SB0048	65	Determine lithology and sample just above the confining unit
	A3RB-SB0049	0 to 0.5	Determine if there is a residual source of groundwater contamination west of Tel-4 Road
		0.5 to 2	
	A3RB-SB0050	0 to 0.5	Determine if there is a residual source of groundwater contamination west of Tel-4 Road
		0.5 to 2	
	A3RB-SB0051	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0052	0 to 0.5	Determine if there is a residual source of groundwater contamination south of source area
		0.5 to 2	
	A3RB-SB0053	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0054	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0055	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0056	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0057	0 to 0.5	Determine if there is a residual source of groundwater contamination in source area
		0.5 to 2	
	A3RB-SB0058	0 to 0.5	Determine if there is a residual source of groundwater contamination west of source area
		0.5 to 2	
	A3RB-SB0059	0 to 0.5	Determine if there is a residual source of groundwater contamination west of source area
		0.5 to 2	
	A3RB-SB0060	0 to 0.5	Determine if there is a residual source of groundwater contamination west of Tel-4 Road
		0.5 to 2	
	A3RB-SB0061	59	Determine lithology and sample just above the confining unit

Notes:
A3RB = Area 3 Repeater Building
ft = Feet
ft bls = Feet below land surface
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 3-3
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0005	6 to 10	Preliminary DPT in response to A3RB-MW0002 results
		21 to 25	
		31 to 35	
		41 to 45	
	A3RB-DPT0006	6 to 10	Preliminary DPT in response to A3RB-MW0002 results
		21 to 25	
		31 to 35	
		41 to 45	
	A3RB-DPT0007	6 to 10	Preliminary DPT in response to A3RB-MW0002 results
		21 to 25	
		31 to 35	
		41 to 45	
	A3RB-DPT0008	2 to 6	Delineate south of A3RB-MW0002-FD
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0009	2 to 6	Delineate southeast of A3RB-MW0002-FD
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0010	2 to 6	Delineate east of A3RB-MW0002-FD
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0011	2 to 6	Delineate east of A3RB-MW0002-FD
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0012	2 to 6	Delineate east of DPT0005
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0013	2 to 6	Delineate south of DPT0007
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0014	2 to 6	Delineate north of DPT0007
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0015	2 to 6	Delineate north of DPT0262
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0016	2 to 6	Delineate south of DPT0262
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	

Table 3-3
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0017	2 to 6	Delineate near south boundary
		8 to 12	
		23 to 27	
	A3RB-DPT0018	2 to 6	Delineate near south boundary
		8 to 12	
		23 to 27	
	A3RB-DPT0019	2 to 6	Delineate near south boundary
		8 to 12	
		23 to 27	
	A3RB-DPT0020	2 to 6	Step out east of hot spot
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0021	2 to 6	Step out east of hot spot
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0022	2 to 6	Delineate south of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0023	2 to 6	Delineate north of South Repeater Building
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0024	2 to 6	Delineate south of South Repeater Building
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0025	2 to 6	Delineate west of hot spot (west of Tel-4 Road)
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0026	2 to 6	Delineate west of hot spot (west of Tel-4 Road)
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0027	2 to 6	Delineate west of A3RB-MW0009 (west of Tel-4 Road)
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0028	2 to 6	Step out south of A3RB-DPT0005A
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	

Table 3-3
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0029	2 to 6	Step out west of A3RB-DPT0019 (west of Tel-4 Road)
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0030	2 to 6	Delineate northwest of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0031	2 to 6	Delineate northwest of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0032	2 to 6	Delineate northwest of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0033	2 to 6	Delineate near south boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0034	2 to 6	Delineate near south boundary
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0035	2 to 6	Delineate near west boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0036	2 to 6	Delineate near south boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0037	2 to 6	Delineate near south boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	

Table 3-3
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0038	2 to 6	Delineate north of A3RB-DPT0027
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0039	2 to 6	Delineate north of A3RB-DPT0027
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0040	2 to 6	Delineate south of Courtenay Parkway South
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0041	2 to 6	Delineate near west boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	

Notes:
A3RB - Area 3 Repeater Building
DPT = Direct Push Technology
ft = Feet
ft bls = Feet below land surface
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 3-4
Surface Water Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Rationale
South Repeater Building	A3RB-SW0001	Data from drainage ditches south of South Repeater Building
	A3RB-SW0002	Data from drainage ditches south of South Repeater Building
	A3RB-SW0003	Data from drainage ditches south of South Repeater Building
	A3RB-SW0004	Data from drainage ditches southeast of South Repeater Building
	A3RB-SW0005	Data from drainage ditches west of South Repeater Building/North of D'albora Road
	A3RB-SW0006	Data from drainage ditches west of South Repeater Building/North of D'albora Road
	A3RB-SW0007	Data from drainage ditches west of South Repeater Building/North of D'albora Road
	A3RB-SW0008	Data from drainage ditches west of South Repeater Building/North of D'albora Road
	A3RB-SW0009	Data from retention pond north west of South Repeater Building
	A3RB-SW0010	Data from retention pond north west of South Repeater Building

Notes:
A3RB = Area 3 Repeater Building
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 3-5
Monitoring Well Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth Interval (ft bls)	Rationale
South Repeater Building	A3RB-MW0001	20.0 - 30.0	Monitor groundwater south of A3RB-MW0002
	A3RB-MW0002	2.0 - 12.0	Continued monitoring of hot spot
	A3RB-MW0003	2.0 - 12.0	Monitor groundwater east of A3RB-MW0002
	A3RB-MW0004	2.0 - 12.0	Monitor groundwater southeast of A3RB-MW0002
	A3RB-MW0005	2.0 - 12.0	Monitor groundwater along south border
	A3RB-MW0006	20.0 - 30.0	Monitor groundwater along south border
	A3RB-MW0007	20.0 - 30.0	Monitor groundwater west of A3RB-MW0002 and east of PFAS-DPT0262
	A3RB-MW0008	20.0 - 30.0	Monitor hot spot detected by PFAS-DPT0262
	A3RB-MW0009	20.0 - 30.0	Monitor groundwater west of PFAS-DPT0262
	A3RB-MW0010	2.0 - 12.0	Monitor groundwater south of PFAS-DPT0262
	A3RB-MW0011	54.0 - 59.0	Monitor groundwater north of N6-1009 Central Industry Assistance Office
	A3RB-MW0012	35.0 - 45.0	Monitor groundwater north of N6-1009 Central Industry Assistance Office
	A3RB-MW0013	20.0 - 30.0	Monitor groundwater north of N6-1009 Central Industry Assistance Office
	A3RB-MW0014	2.0 - 12.0	Monitor groundwater north of N6-1009 Central Industry Assistance Office
	A3RB-MW0015	20.0 - 30.0	Monitor groundwater southwest of N6-1009 Central Industry Assistance Office
	A3RB-MW0016	2.0 - 12.0	Monitor groundwater southwest of N6-1009 Central Industry Assistance Office
	A3RB-MW0017	54.0 - 59.0	Monitor groundwater near PFAS-DPT0209
	A3RB-MW0018	35.0 - 45.0	Monitor groundwater near PFAS-DPT0209
	A3RB-MW0019	30.0 - 40.0	Monitor groundwater near PFAS-DPT0209
	A3RB-MW0020	2.0 - 12.0	Monitor groundwater near PFAS-DPT0209
	A3RB-MW0021	20.0 - 30.0	Monitor groundwater along west border
	A3RB-MW0022	54.0 - 59.0	Monitor groundwater east of A3RB-MW0002
	A3RB-MW0023	54.0 - 59.0	Monitor groundwater southeast of A3RB-MW0002
	A3RB-MW0024	35.0 - 45.0	Monitor groundwater west of PFAS-DPT0262
	A3RB-MW0025	35.0 - 45.0	Monitor hot spot detected by PFAS-DPT0262
	A3RB-MW0026	35.0 - 45.0	Monitor groundwater south of PFAS-DPT0262
	A3RB-MW0027	54.0 - 59.0	Monitor groundwater west of A3RB-MW0002 and east of PFAS-DPT0262

Notes:
A3RB = Area 3 Repeater Building
ft bls = Feet below land surface
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 4-1
Soil Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

				Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA
				EPA RSL, Residential (mg/kg)	0.013	0.019	1.9	0.019	0.13	0.023	--	--	--	--	--	--	--	--	--
				EPA RSL, Industrial (mg/kg)	0.16	0.25	25	0.25	1.6	0.35	--	--	--	--	--	--	--	--	--
				FDEP pSCTL for Leachability (mg/kg)	0.007	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--
				FDEP pSCTL, Residential (mg/kg)	1.3	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--
				FDEP pSCTL, Industrial (mg/kg)	25	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Location	Location ID	Sample Date	Depth Interval (ft bls)	Sample Type															
South Repeater Building	A3RB-SB0047	1/14/2022	21 - 21	NM	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U
	A3RB-SB0047	1/14/2022	58 - 58	NM	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0048	6/13/2022	61 - 61	NM	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0049	12/22/2022	0 - 0.5	NM	**0.0015**	**0.00057 J**	0.00070 U	0.00070 U	**0.002**	0.00070 U	0.0035 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U
	A3RB-SB0049	12/22/2022	0.5 - 2	NM	**0.0013 J**	0.00070 U	0.00070 U	0.00070 U	**0.0064**	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U
	A3RB-SB0050	12/22/2022	0 - 0.5	NM	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U
	A3RB-SB0050	12/22/2022	0.5 - 2	NM	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0050	12/22/2022	0.5 - 2	FD	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
	A3RB-SB0051	12/22/2022	0 - 0.5	NM	**0.0012 J**	0.00070 U	0.00070 U	0.00070 U	**0.00080 J**	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U
	A3RB-SB0051	12/22/2022	0.5 - 2	NM	**0.00061 J**	0.00068 U	0.00068 U	0.00068 U	**0.00057 J**	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U
	A3RB-SB0052	12/22/2022	0 - 0.5	NM	**0.0031**	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0052	12/22/2022	0.5 - 2	NM	**0.0018**	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0053	12/22/2022	0 - 0.5	NM	**0.005**	0.00060 U	0.00060 U	0.00060 U	**0.0038**	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0053	12/22/2022	0.5 - 2	NM	**0.0033**	0.00061 U	0.00061 U	0.00061 U	**0.00069 J**	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0054	12/22/2022	0 - 0.5	NM	**0.0015**	0.00052 U	0.00052 U	0.00052 U	**0.00053 J**	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0054	12/22/2022	0.5 - 2	NM	**0.0012**	0.00057 U	0.00057 U	0.00057 U	**0.00035 J**	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0055	12/22/2022	0 - 0.5	NM	**0.00044 J**	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.0028 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0055	12/22/2022	0.5 - 2	NM	**0.00040 J**	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0056	12/22/2022	0 - 0.5	NM	**0.00047 J**	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.0025 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U
	A3RB-SB0056	12/22/2022	0.5 - 2	NM	**0.00043 J**	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.0026 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0057	12/22/2022	0 - 0.5	NM	**0.0144**	0.00055 U	**0.0012**	0.00055 U	**0.0274**	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0057	12/22/2022	0.5 - 2	NM	**0.0061**	0.00060 U	**0.00031 J**	0.00060 U	**0.0091**	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0058	12/22/2022	0 - 0.5	NM	**0.0011**	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0058	12/22/2022	0.5 - 2	NM	**0.0014**	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U
	A3RB-SB0059	12/22/2022	0 - 0.5	NM	**0.00049 J**	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0059	12/22/2022	0.5 - 2	NM	**0.002**	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0060	12/22/2022	0 - 0.5	NM	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0060	12/22/2022	0 - 0.5	FD	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.0028 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0060	12/22/2022	0.5 - 2	NM	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
	A3RB-SB0061	3/8/2023	59 - 59	NM	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U

Notes:
Results in the table and the laboratory analytical report are in parts per million (milligram per kilogram, or mg/kg).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of EPA Regional Screening Levels for Residential setttings and FDEP pSCTL for leachability (mg/kg)
Depth intervals are measured in feet (ft) below land surface (bls)
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
Reporting Limit (also called Practical Quantitation Limit) is the lowest concentration that can be reliably detected during routine laboratory operating conditions, based on the precision and accuracy results for standards that are run with the sample.
-- indicates that a screening value is not available as of September 2023 for that compound.
J = Estimated value
U = Result was below the laboratory Reporting Limit

Abbreviations:
A3RB = Area 3 Repeater Building
EPA = Environmental Protection Agency
FD = Field Duplicate
FDEP - Florida Department of Environmental Protection
ft bls = Feet below land surface
NM = Normal Sample
PFAS = Per-and polyfluoroalkyl substances
pGCTL = Provisional Groundwater Cleanup Target Level
pSCTL = Provisional Soil Cleanup Target Level
RSL = Regional Screening Level
SWMU = Solid Waste Management Unit

PFAS - Compounds
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CL-PF3ONS)
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPES)
Perfluoropentanoic acid (PFPEA)
Perfluorotetradecanoic acid (PFTEA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-1
Soil Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

					Analyte	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPES	PFPEA	PFTEA	PFTRIA	PFUNA
					EPA RSL, Residential (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
					EPA RSL, Industrial (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
					FDEP pSCTL for Leachability (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
					FDEP pSCTL, Residential (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
					FDEP pSCTL, Industrial (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Location	**Location ID**	**Sample Date**	**Depth Interval (ft bls)**	**Sample Type**															
South Repeater Building	A3RB-SB0047	1/14/2022	21 - 21	NM		0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U	0.00071 U
	A3RB-SB0047	1/14/2022	58 - 58	NM		0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0048	6/13/2022	61 - 61	NM		0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0049	12/22/2022	0 - 0.5	NM		**0.00070 J**	0.0035 U	0.00070 U	0.0035 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.0035 U	**0.00053 J**	0.00070 U	0.00070 U	0.0035 U	0.0035 U
	A3RB-SB0049	12/22/2022	0.5 - 2	NM		**0.00055 J**	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	**0.00038 J**	0.00070 U	0.00070 U	0.00070 U	0.00070 U
	A3RB-SB0050	12/22/2022	0 - 0.5	NM		0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U	0.00054 U
	A3RB-SB0050	12/22/2022	0.5 - 2	NM		0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0050	12/22/2022	0.5 - 2	FD		0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
	A3RB-SB0051	12/22/2022	0 - 0.5	NM		0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.0035 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U
	A3RB-SB0051	12/22/2022	0.5 - 2	NM		0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U
	A3RB-SB0052	12/22/2022	0 - 0.5	NM		0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0052	12/22/2022	0.5 - 2	NM		0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0053	12/22/2022	0 - 0.5	NM		0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0053	12/22/2022	0.5 - 2	NM		0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U	0.00061 U
	A3RB-SB0054	12/22/2022	0 - 0.5	NM		0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0054	12/22/2022	0.5 - 2	NM		0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0055	12/22/2022	0 - 0.5	NM		0.00057 U	0.00057 U	0.00057 U	0.0028 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.0028 U	0.00057 U
	A3RB-SB0055	12/22/2022	0.5 - 2	NM		0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U
	A3RB-SB0056	12/22/2022	0 - 0.5	NM		0.00051 U	**0.00034 J**	0.00051 U	0.0025 U	0.00051 U	0.00051 U	0.00051 U	0.00051 U	0.0025 U	0.00051 U	0.00051 U	0.00051 U	0.0025 U	0.00051 U
	A3RB-SB0056	12/22/2022	0.5 - 2	NM		0.00052 U	0.00052 U	0.00052 U	0.0026 U	0.00052 U	0.00052 U	0.00052 U	0.00052 U	0.0026 U	0.00052 U	0.00052 U	0.00052 U	0.0026 U	0.00052 U
	A3RB-SB0057	12/22/2022	0 - 0.5	NM		0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	**0.00060 J**	**0.00045 J**	0.00055 U	**0.0027**	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0057	12/22/2022	0.5 - 2	NM		0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	0.00060 U	**0.00050 J**	**0.00041 J**	0.00060 U	**0.00057 J**	0.00060 U	0.00060 U	0.00060 U	0.00060 U
	A3RB-SB0058	12/22/2022	0 - 0.5	NM		0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0058	12/22/2022	0.5 - 2	NM		0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U
	A3RB-SB0059	12/22/2022	0 - 0.5	NM		0.00057 U	**0.00047 J**	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U
	A3RB-SB0059	12/22/2022	0.5 - 2	NM		0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0060	12/22/2022	0 - 0.5	NM		0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U
	A3RB-SB0060	12/22/2022	0 - 0.5	FD		0.00057 U	0.0028 U	0.00057 U	0.0028 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.0028 U	0.0028 U
	A3RB-SB0060	12/22/2022	0.5 - 2	NM		0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U	0.00053 U
	A3RB-SB0061	3/8/2023	59 - 59	NM		0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U	0.00070 U

Notes:
Results in the table and the laboratory analytical report are in parts per million (milligram per kilogram, or mg/kg).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of EPA Regional Screening Levels for Residential setttings and FDEP pSCTL for leachability (mg/kg
Depth intervals are measured in feet (ft) below land surface (bls)
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
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-- indicates that a screening value is not available as of September 2023 for that compound.
J = Estimated value
U = Result was below the laboratory Reporting Limit

Abbreviations:
A3RB = Area 3 Repeater Building
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PFAS - Compounds
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CL-PF3ONS)
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPES)
Perfluoropentanoic acid (PFPEA)
Perfluorotetradecanoic acid (PFTEA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-2
Soil Frequencies of Detection
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	PFAS	Soil Samples[1]	Detects	Non-Detects	EPA RSL, Residential HQ = 0.1 (mg/kg)	EPA RSL, Industrial HQ = 0.1 (mg/kg)	FDEP pSCTL, Residential (mg/kg)	FDEP pSCTL, Industrial (mg/kg)	FDEP pSCTL, Leachability (mg/kg)	Max Concentration (mg/kg)
South Repeater Building	PFOS	30	20	10	0.013	0.16	1.3	25	0.007	0.0144
	PFOA	30	1	29	0.019	0.25	1.3	25	0.002	0.00071
	PFBS	30	2	28	1.9	25	--	--	--	0.0012
	PFNA	30	0	30	0.019	0.25	--	--	--	0.00071
	PFHxS	30	10	20	0.13	1.6	--	--	--	0.0274
	HFPO-DA	30	0	30	0.023	0.35	--	--	--	0.00071

Notes:
[1] Includes two field duplicate samples
EPA = Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
HFPO-DA = hexafluoropropylene oxide dimer acid
HQ = Hazard Quotient
mg/kg = Milligram per Kilogram
PFAS = Per-and polyfluoroalkyl substances
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexane sulfonate
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
pSCTL = provisional Soil Cleanup Target Level
RSL = Risk Screening Level
SWMU = Solid Waste Management Unit
-- indicates that a screening value is not available as of September 2023 for that compound.

Table 4-3
DPT Groundwater Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location ID	Sample Date	Depth Interval (ft bls)	Sample Type / Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPES	PFPEA	PFTEA	PFTRIA	PFUNA
			EPA RSL for tapwater (ng/L)	4	6	601	6	39	6	1800	990	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			FDEP pGCTL (ng/L)	70	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
A3RB-DPT0008	1/19/2022	2 - 6	NM	***212***	**5.3 J**	**6.6 J**	5.5 U	**132**	11 U	**7.7 J**	**11.4**	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	5.5 U	5.5 U	5.5 U	**3.5 J**	**3.3 J**	5.5 U	5.5 U	**8.2 J**	**6.0 J**	5.5 U	5.5 U	5.5 U
A3RB-DPT0008	1/19/2022	2 - 6	FD	***201***	**5.2 J**	**6.4 J**	4.2 U	**126**	8.3 U	**7.5 J**	**11**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	**3.1 J**	4.2 U	4.2 U	**7.8 J**	**6.1 J**	4.2 U	4.2 U	4.2 U
A3RB-DPT0008	1/19/2022	8 - 12	NM	**10.3**	4.2 U	4.2 U	4.2 U	**10.3**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0008	1/19/2022	23 - 27	NM	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	9.1 U	9.1 U	4.5 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
A3RB-DPT0008	1/19/2022	40 - 44	NM	**3.5 J**	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0008	1/19/2022	55 - 59	NM	***107***	**3.4 J**	4.2 U	4.2 U	**54**	8.3 U	**5.9 J**	**4.7 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**2.6 J**	**2.3 J**	4.2 U	4.2 U	4.2 U
A3RB-DPT0009	1/19/2022	2 - 6	NM	***227***	**27.9**	**208**	5.0 U	**3770**	10 U	**25.5**	**186**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	5.0 U	5.0 U	5.0 U	**32.7**	**27**	5.0 U	5.0 U	**291**	**54.1**	50 U	5.0 U	5.0 U
A3RB-DPT0009	1/19/2022	8 - 12	NM	4.2 U	4.2 U	**3.5 J**	4.2 U	**17.4**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0009	1/19/2022	23 - 27	NM	4.2 U	4.2 U	4.2 U	4.2 U	**10.9**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0009	1/19/2022	40 - 44	NM	**4.6 J**	4.2 U	4.2 U	4.2 U	**12.9**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0009	1/19/2022	55 - 59	NM	**39.3**	4.2 U	4.2 U	4.2 U	**141**	8.3 U	8.3 U	**8.0 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**10.3**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0010	1/24/2022	2 - 6	NM	***7480***	***316***	**439**	**3.4 J**	**17200**	10 U	**60**	**626**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	500 U	5.0 U	5.0 U	5.0 U	**267**	**113**	5.0 U	5.0 U	**639**	**147**	5.0 U	5.0 U	5.0 U
A3RB-DPT0010	1/24/2022	8 - 12	NM	**17.3**	4.2 U	**2.7 J**	4.2 U	**38.1**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**2.4 J**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0010	1/24/2022	8 - 12	FD	**15.1**	4.2 U	**3.1 J**	4.2 U	**38**	8.3 U	8.3 U	**2.1 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**2.2 J**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0010	1/24/2022	23 - 27	NM	**54.1**	4.2 U	**3.0 J**	4.2 U	**64.8**	8.3 U	8.3 U	**2.9 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**2.9 J**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0010	1/24/2022	40 - 44	NM	**5.2 J**	4.2 U	4.2 U	4.2 U	**9**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0010	1/24/2022	55 - 59	NM	***333***	**9.0 J**	**25.2**	4.5 U	**417**	9.1 U	9.1 U	**13.1**	45 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	45 U	45 U	4.5 U	4.5 U	23 U	**6.9 J**	**2.3 J**	4.5 U	4.5 U	**18.2**	**3.6 J**	4.5 U	23 U	4.5 U
A3RB-DPT0011	1/24/2022	2 - 6	NM	**4.8 J**	4.6 U	**35.5**	4.6 U	**145**	9.2 U	9.2 U	**28**	9.2 U	9.2 U	9.2 U	9.2 U	9.2 U	9.2 U	9.2 U	9.2 U	45 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	**32.8**	**7.8 J**	4.6 U	4.6 U	4.6 U
A3RB-DPT0011	1/24/2022	8 - 12	NM	4.2 U	4.2 U	4.2 U	4.2 U	**4.0 J**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0011	1/24/2022	23 - 27	NM	**14.4**	4.2 U	4.2 U	4.2 U	**2.2 J**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0011	1/24/2022	40 - 44	NM	**10.3**	4.2 U	4.2 U	4.2 U	**3.0 J**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0011	1/24/2022	55 - 59	NM	**47.6**	4.2 U	4.2 U	4.2 U	**13.4**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0012	1/26/2022	2 - 6	NM	4.2 U	4.2 U	4.2 U	4.2 U	**3.5 J**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0012	1/26/2022	8 - 12	NM	**7.6 J**	**2.4 J**	4.2 U	4.2 U	**14.3**	8.3 U	**6.7 J**	**4.5 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	**3.9 J**	4.2 U	4.2 U	4.2 U
A3RB-DPT0012	1/26/2022	23 - 27	NM	**2.8 J**	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0012	1/26/2022	32 - 36	NM	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0012	1/26/2022	55 - 59	NM	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0013	3/29/2022	2 - 6	NM	**21.0 J**	**13.5 J**	22 U	22 U	**24.1 J**	44 U	**62.6 J**	22 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
A3RB-DPT0013	3/29/2022	8 - 12	NM	***126***	**4.5 J**	**4.0 J**	4.4 U	**101**	8.7 U	**4.7 J**	**5.9 J**	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	43 U	4.4 U	4.4 U	4.4 U	**2.7 J**	4.4 U	4.4 U	4.4 U	**4.8 J**	4.4 U	4.4 U	4.4 U	4.4 U
A3RB-DPT0013	3/29/2022	23 - 27	NM	**27**	**3.4 J**	**3.0 J**	4.0 U	**35.9**	8.0 U	8.0 U	**3.4 J**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**3.1 J**	**2.2 J**	4.0 U	4.0 U	4.0 U
A3RB-DPT0013	3/29/2022	40 - 44	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0013	3/29/2022	55 - 59	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0014	3/29/2022	2 - 6	NM	21 U	21 U	21 U	21 U	21 U	42 U	42 U	21 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
A3RB-DPT0014	3/29/2022	8 - 12	NM	**47.6**	4.5 U	4.5 U	4.5 U	**20.1**	9.1 U	9.1 U	4.5 U	9.1 U	9.1 U	9.1 U	**5.1 J**	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
A3RB-DPT0014	3/29/2022	23 - 27	NM	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	8.7 U	8.7 U	4.4 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	43 U	43 U	43 U	4.4 U	4.4 U	22 U	4.4 U	4.4 U	4.4 U	22 U	4.4 U	4.4 U	4.4 U	22 U	22 U
A3RB-DPT0014	3/29/2022	40 - 44	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0014	3/29/2022	55 - 59	NM	**6.6 J**	4.5 U	4.5 U	4.5 U	4.5 U	9.1 U	9.1 U	4.5 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
A3RB-DPT0015	3/29/2022	2 - 6	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0015	3/29/2022	8 - 12	NM	**12.2**	4.0 U	4.0 U	4.0 U	**3.0 J**	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0015	3/30/2022	23 - 27	NM	**47.9**	4.0 U	4.0 U	4.0 U	**26.3**	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0015	3/30/2022	40 - 44	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0015	3/30/2022	55 - 59	NM	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	9.5 U	9.5 U	4.8 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	48 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
A3RB-DPT0016	3/30/2022	2 - 6	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0016	3/30/2022	2 - 6	FD	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0016	3/30/2022	8 - 12	NM	***205***	**5.7 J**	**12.6**	4.0 U	**293**	8.0 U	**6.0 J**	**12.2**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	**4.9 J**	**2.5 J**	4.0 U	4.0 U	**17.4**	**3.8 J**	20 U	4.0 U	4.0 U
A3RB-DPT0016	3/30/2022	23 - 27	NM	**55.8**	**5.9 J**	**10.6**	4.2 U	**141**	8.3 U	8.3 U	**8.0 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	**4.7 J**	**2.4 J**	4.2 U	4.2 U	**11.2**	**3.3 J**	4.2 U	4.2 U	4.2 U
A3RB-DPT0016	3/30/2022	40 - 44	NM	**3.4 J**	4.2 U	4.2 U	4.2 U	**3.6 J**	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0016	3/30/2022	55 - 59	NM	**21.6**	5.0 U	5.0 U	5.0 U	**18.7**	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0017	6/10/2022	3 - 6	NM	**11.6**	**3.8 J**	**4.9 J**	4.3 U	**8.2 J**	43 U	**31.2**	22 U	8.7 U	8.7 U	43 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	43 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	4.3 U	22 U	22 U	4.3 U	4.3 U
A3RB-DPT0017	6/10/2022	8 - 12	NM	**48.9**	**3.4 J**	**3.6 J**	4.0 U	**41.8**	8.0 U	**7.4 J**	**4.3 J**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**3.8 J**	**3.5 J**	4.0 U	4.0 U	4.0 U
A3RB-DPT0017	6/10/2022	8 - 12	FD	**37**	**3.0 J**	**3.4 J**	4.5 U	**30.7**	9.1 U	**6.2 J**	**3.1 J**	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	45 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	**3.1 J**	4.5 U	4.5 U	4.5 U
A3RB-DPT0017	6/13/2022	23 - 27	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0017	3/7/2023	40 - 44	NM	**10.7**	2.2 U	**3.3 J**	2.2 U	**10.9**	4.3 U	**5.3 J**	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	**2.7 J**	2.2 U	2.2 U	2.2 U	2.2 U
A3RB-DPT0017	3/7/2023	55 - 59	NM	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0018	6/10/2022	2 - 6	NM	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	4.2 U	4.2 U
A3RB-DPT0018	6/10/2022	8 - 12	NM	***164***	**4.7 J**	**6.8 J**	4.2 U	**153**	8.3 U	**5.9 J**	**7.1 J**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	**2.2 J**	4.2 U	4.2 U	4.2 U	**7.8 J**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0018	6/10/2022	23 - 27	NM	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	8.7 U	8.7 U	4.3 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	43 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
A3RB-DPT0019	6/10/2022	2 - 6	NM	***260***	**4.6 J**	**11.1**	4.2 U	**236**	8.3 U	**5.8 J**	**10.6**	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	42 U	4.2 U	4.2 U	4.2 U	**4.1 J**	**2.6 J**	4.2 U	4.2 U	**15.5**	4.2 U	4.2 U	4.2 U	4.2 U
A3RB-DPT0019	6/10/2022	8 - 12	NM	***523***	**7.1 J**	**18.6**	4.0 U	**402**	8.0 U	**7.0 J**	**17**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	**8**	**4.0 J**	4.0 U	4.0 U	**26.3**	**8.2**	4.0 U	4.0 U	4.0 U
A3RB-DPT0019	6/10/2022	23 - 27	NM	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	9.1 U	9.1 U	4.6 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	9.1 U	45 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U
A3RB-DPT0019	3/9/2023	40 - 44	NM	**4.9**	2.1 U	11 U	2.1 U	**3.0 J**	21 U	21 U	2.1 U	21 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	21 U	21 U	21 U	11 U	11 U	11 U	2.1 U	2.1 U	2.1 U	11 U	11 U	11 U	2.1 U	11 U	11 U
A3RB-DPT0019	3/9/2023	55 - 59	NM	2.3 U	2.3 U	12 U	2.3 U	2.3 U	4.7 U	4.7 U	2.3 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	23 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	12 U	2.3 U	2.3 U	2.3 U	2.3 U
A3RB-DPT0020	12/12/2022	2 - 6	NM	5.0 U	5.0 U	25 U	5.0 U	**28.7**	10 U	**10.3 J**	25 U	10 U	10 U	50 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	25 U	25 U	25 U	25 U	5.0 U	5.0 U
A3RB-DPT0020	12/12/2022	8 - 12	NM	1.9 U	1.9 U	9.3 U	1.9 U	**2.0 J**	3.7 U	**2.3 J**	9.3 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0020	12/12/2022	23 - 27	NM	5.0 U	5.0 U	25 U	5.0 U	5.0 U	10 U	50 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0020	12/12/2022	40 - 44	NM	5.0 U	5.0 U	25 U	5.0 U	5.0 U	10 U	50 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0020	12/12/2022	55 - 59	NM	**24.6**	**8.1 J**	28 U	5.6 U	**29.9**	11 U	**113**	**8.2 J**	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	56 U	5.6 U	5.6 U	5.6 U	5.6 U	**5.0 J**	5.6 U	28 U	28 U	**7.7 J**	5.6 U	5.6 U	5.6 U
A3RB-DPT0021	12/12/2022	2 - 6	NM	5.0 U	5.0 U	25 U	5.0 U	**7.8 J**	10 U	50 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	25 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0021	12/12/2022	8 - 12	NM	**2.0 J**	1.9 U	19 U	1.9 U	19 U	3.7 U	**4.8 J**	19 U	37 U	3.7 U	37 U	3.7 U	37 U	37 U	37 U	37 U	37 U	19 U	19 U	19 U	1.9 U	19 U	1.9 U	19 U	19 U	19 U	19 U	19 U	19 U
A3RB-DPT0021	12/12/2022	23 - 27	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	19 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0021	12/12/2022	40 - 44	NM	5.0 U	5.0 U	25 U	5.0 U	5.0 U	10 U	50 U	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0021	12/12/2022	40 - 44	FD	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	19 U	9.3 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0021	12/12/2022	55 - 59	NM	**10.4**	**2.9 J**	25 U	5.0 U	**9.2 J**	10 U	**7.6 J**	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	**3.5 J**	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	5.0 U	5.0 U	5.0 U
A3RB-DPT0022	12/12/2022	2 - 6	NM	5.0 U	5.0 U	25 U	5.0 U	5.0 U	10 U	**6.9 J**	25 U	50 U	10 U	50 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	5.0 U	25 U	5.0 U	25 U	5.0 U	25 U	25 U	25 U	25 U	25 U	5.0 U
A3RB-DPT0022	12/13/2022	8 - 12	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	**2.6 J**	9.3 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	9.3 U	9.3 U	9.3 U	9.3 U	1.9 U	1.9 U
A3RB-DPT0022	12/13/2022	16 - 20	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	19 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0022	12/13/2022	23 - 27	NM	5.0 U	5.0 U	50 U	5.0 U	5.0 U	10 U	100 U	5.0 U	100 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	100 U	50 U	5.0 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	50 U	50 U	5.0 U	50 U	50 U
A3RB-DPT0022	12/13/2022	40 - 44	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	19 U	1.9 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	9.3 U	9.3 U	9.3 U	1.9 U
A3RB-DPT0022	12/13/2022	55 - 59	NM	**3.8 J**	3.0 U	15 U	3.0 U	**1.8 J**	6.1 U	**6.8 J**	15 U	30 U	6.1 U	30 U	6.1 U	6.1 U	6.1 U	30 U	6.1 U	30 U	15 U	3.0 U	15 U	3.0 U	15 U	3.0 U	15 U	15 U	15 U	15 U	15 U	15 U
A3RB-DPT0023	12/13/2022	2 - 6	NM	**7.8**	**1.9 J**	9.3 U	1.9 U	**13.6**	3.7 U	**7.3 J**	**2.3 J**	19 U	19 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	9.3 U	1.9 U	9.3 U	1.9 U	**2.3 J**	1.9 U	9.3 U	9.3 U	9.3 U	9.3 U	9.3 U	9.3 U
A3RB-DPT0023	12/13/2022	8 - 12	NM	***993***	**6.8**	**11.4**	**2.1 J**	**375**	3.7 U	**5.4 J**	**13.9**	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	9.3 U	**15.6**	**3.7**	1.9 U	9.3 U	**25.4**	**3.8**	9.3 U	1.9 U	9.3 U
A3RB-DPT0023	12/13/2022	23 - 27	NM	**1.4 J**	2.0 U	10 U	2.0 U	2.0 U	4.1 U	20 U	10 U	4.1 U	4.1 U	20 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	20 U	10 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	10 U	10 U	10 U	10 U	2.0 U	10 U
A3RB-DPT0023	12/13/2022	40 - 44	NM	**23.4**	1.9 U	9.6 U	1.9 U	**12.5**	3.8 U	19 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.6 U	9.6 U	9.6 U	9.6 U	1.9 U	1.9 U
A3RB-DPT0023	12/13/2022	40 - 44	FD	**7.7**	2.3 U	7.2 U	2.3 U	**2.9 J**	4.5 U	14 U	2.3 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	22 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	7.2 U	7.2 U	7.2 U	2.3 U	2.3 U	2.3 U

Table 4-3
DPT Groundwater Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

			Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPES	PFPEA	PFTEA	PFTRIA	PFUNA
			EPA RSL for tapwater (ng/L)	4	6	601	6	39	6	1800	990	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			FDEP pGCTL (ng/L)	70	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Location ID	Sample Date	Depth Interval (ft bls)	Sample Type																													
A3RB-DPT0023	12/13/2022	55 - 59	NM	28.1	2.0 U	3.9 U	2.0 U	14.9	3.9 U	7.8 U	2.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	7.8 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.9 U	3.9 U	3.9 U	3.9 U	2.0 U	2.0 U
A3RB-DPT0024	12/14/2022	2 - 6	NM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10 U	5.1 J	5.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U	25 U	5.0 U	5.0 U
A3RB-DPT0024	12/14/2022	8 - 12	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	4.2 J	1.9 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	9.3 U	9.3 U	9.3 U	1.9 U
A3RB-DPT0024	12/14/2022	23 - 27	NM	5.6	2.0 U	10 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	20 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	10 U	10 U	10 U	10 U	10 U	2.0 U
A3RB-DPT0024	12/14/2022	40 - 44	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0024	12/14/2022	55 - 59	NM	3.7 J	2.5 U	13 U	2.5 U	2.5 U	5.0 U	5.0 U	2.5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	13 U	13 U	2.5 U	2.5 U	2.5 U
A3RB-DPT0025	12/14/2022	2 - 6	NM	1.9 U	1.9 U	10.9	1.9 U	2.3 J	3.7 U	7.9	1.9 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	9.3 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 J	1.9 U	9.3 U	9.3 U	9.3 U
A3RB-DPT0025	12/14/2022	8 - 12	NM	6.5	1.9 U	3.0 J	1.9 U	10.9	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	2.4 J	9.3 U	9.3 U	1.9 U	1.9 U
A3RB-DPT0025	12/14/2022	8 - 12	FD	6.3	1.9 U	3.0 J	1.9 U	10.6	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	2.3 J	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0025	12/14/2022	16 - 20	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0025	12/14/2022	23 - 27	NM	2.3 J	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	2.0 U	2.0 U
A3RB-DPT0025	12/14/2022	40 - 44	NM	3.6 J	2.5 U	13 U	2.5 U	1.4 J	5.0 U	4.0 J	2.5 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	25 U	25 U	25 U	13 U	2.5 U	13 U	2.5 U	2.5 U	2.5 U	2.5 U	13 U	13 U	2.5 U	13 U	13 U
A3RB-DPT0025	12/14/2022	55 - 59	NM	2.0 U	2.0 U	10 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	10 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0026	12/15/2022	2 - 6	NM	5.2	1.9 U	9.5	1.9 U	20.1	3.7 U	11.5	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	4.8	1.9 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0026	12/15/2022	8 - 12	NM	2.3 J	1.9 U	2.4 J	1.9 U	8.8	3.7 U	3.1 J	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 J	1.9 U	9.3 U	1.9 U	1.9 U
A3RB-DPT0026	12/15/2022	23 - 27	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0026	12/15/2022	40 - 44	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0026	12/15/2022	55 - 59	NM	3.3 J	2.6 U	13 U	2.6 U	1.4 J	5.3 U	3.7 J	2.6 U	26 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	26 U	26 U	26 U	13 U	2.6 U	13 U	2.6 U	2.6 U	2.6 U	2.6 U	13 U	13 U	13 U	13 U	13 U
A3RB-DPT0027	12/14/2022	2 - 6	NM	745 E	7.9	12.1 J	0.99 J	285	3.7 U	18.8 J	14.8	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	9.2	3.5 J	1.9 U	9.3 U	14.5 J	6.3 J	1.9 U	1.9 U	1.9 U
A3RB-DPT0027	12/15/2022	2 - 6	FD	582	6.9	11.8	1.9 U	259	3.7 U	19.4	14.1	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	7.9	3.4 J	1.9 U	1.9 U	17.3	5.9	1.9 U	1.9 U	1.9 U
A3RB-DPT0027	12/15/2022	8 - 12	NM	812	7.5	23.8	2.2 U	487	4.3 U	7.3 J	20.3	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	11 U	12	4.1 J	2.2 U	2.2 U	37.4	6.4	2.2 U	2.2 U	2.2 U
A3RB-DPT0027	12/20/2022	16 - 20	NM	107	7.8	29.2	2.1 U	285	4.3 U	5.0 J	19.3	4.3 U	4.3 U	21 U	21 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	2.1 U	2.1 U	2.1 U	6.9	5	2.1 U	11 U	30	6.5	2.1 U	2.1 U	2.1 U
A3RB-DPT0027	12/20/2022	23 - 27	NM	142	9.7	30.2	2.4 U	417	4.9 U	4.5 J	19.2	24 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	24 U	24 U	24 U	12 U	2.4 U	12 U	13.6	4.3 J	2.4 U	2.4 U	35.8	5.9	2.4 U	12 U	12 U
A3RB-DPT0027	12/20/2022	55 - 59	NM	1.2 J	2.1 U	10 U	2.1 U	2.1 U	4.2 U	21 U	2.1 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	10 U	10 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0028	12/19/2022	2 - 6	NM	4.9	2.4 U	2.4 U	2.4 U	2.3 J	4.8 U	11.1	1.2 J	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U		2.4 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	2.4 U
A3RB-DPT0028	12/19/2022	8 - 12	NM	2.2 U	2.2 U	11 U	2.2 U	2.2 U	4.3 U	22 U	11 U	4.3 U	4.3 U	22 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	11 U	11 U	2.2 U	2.2 U
A3RB-DPT0028	12/19/2022	16 - 20	NM	2.4 U	2.4 U	12 U	2.4 U	2.4 U	4.8 U	24 U	12 U	4.8 U	4.8 U	24 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	24 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	12 U	2.4 U	2.4 U	2.4 U
A3RB-DPT0028	12/19/2022	23 - 27	NM	2.1 U	2.1 U	11 U	2.1 U	2.1 U	4.3 U	21 U	11 U	4.3 U	4.3 U	21 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	11 U	11 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0028	12/19/2022	40 - 44	NM	2.2 U	2.2 U	11 U	2.2 U	2.2 U	4.4 U	22 U	11 U	22 U	4.4 U	22 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	22 U	2.2 U	2.2 U	11 U	2.2 U	11 U	2.2 U	2.2 U	11 U	11 U	2.2 U	11 U	2.2 U
A3RB-DPT0028	12/19/2022	55 - 59	NM	2.6 U	2.6 U	5.2 U	5.2 U	5.2 U	5.3 U	6.0 JB	5.2 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	26 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
A3RB-DPT0029	12/20/2022	2 - 6	NM	35	5.6	10.6	2.2 U	48.8	4.3 U	43.5	4.0 J	4.3 U	4.3 U	22 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	2.7 J	2.2 U	11 U	6.1	4.3	2.2 U	2.2 U	2.2 U
A3RB-DPT0029	12/20/2022	8 - 12	NM	43	1.8 J	3.8 J	2.4 U	32.9	4.8 U	7.3 JB	1.9 J	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	3.4 J	1.2 J	2.4 U	2.4 U	2.4 U
A3RB-DPT0029	12/20/2022	16 - 20	NM	2.1 U	2.1 U	10 U	2.1 U	2.1 U	4.2 U	21 U	10 U	4.2 U	4.2 U	21 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	10 U	10 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0029	12/20/2022	23 - 27	FD	2.3 U	2.3 U	12 U	2.3 U	1.4 J	4.7 U	23 U	12 U	4.7 U	4.7 U	23 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	23 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	12 U	12 U	12 U	2.3 U	2.3 U
A3RB-DPT0029	12/20/2022	23 - 27	NM	2.3 U	2.3 U	11 U	2.3 U	2.3 U	4.5 U	23 U	11 U	4.5 U	4.5 U	23 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	23 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	11 U	11 U	11 U	2.3 U	2.3 U	2.3 U
A3RB-DPT0029	12/20/2022	40 - 44	NM	7.3	2.4 U	12 U	2.4 U	3.1 J	4.9 U	3.0 J	2.4 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	24 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	12 U	2.4 U	2.4 U	2.4 U
A3RB-DPT0029	12/20/2022	55 - 59	NM	4.2 J	2.3 U	11 U	2.3 U	2.1 J	4.5 U	23 U	2.3 U	23 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	23 U	11 U	2.3 U	11 U	2.3 U	2.3 U	2.3 U	11 U	11 U	11 U	11 U	11 U	11 U
A3RB-DPT0030	3/6/2023	2 - 6	NM	82.2	3.0 J	5.0 J	4.0 U	112	8.0 U	5.0 J	7.5 J	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	3.2 J	4.0 U	4.0 U	4.0 U	2.1 J	7.7 J	4.0 U	4.0 U	4.0 U
A3RB-DPT0030	3/6/2023	8 - 12	NM	9.0 B	1.9 U	9.4 U	1.9 U	8.9	3.8 U	19 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.4 U	9.4 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0030	3/6/2023	16 - 20	NM	2.1 U	1.9 U	1.9 U	1.9 U	1.3 J	3.8 U	3.8 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0030	3/6/2023	23 - 27	NM	42.1	1.1 J	2.1 U	2.1 U	9.2	4.3 U	7.2 J	1.5 J	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.9 U	2.1 U	2.1 U	2.4 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0030	3/6/2023	40 - 44	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.9 U	3.9 U	2.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0030	3/6/2023	55 - 59	NM	1.7 J	2.1 U	2.1 U	2.1 U	1.6 J	4.3 U	4.3 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0031	3/6/2023	2 - 6	NM	635	12.8	67.9	4.0 U	735	8.0 U	13.3 J	37.5	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	23.7	6.2 J	4.0 U	4.0 U	8.7	89.9	4.0 U	4.0 U	4.0 U
A3RB-DPT0031	3/6/2023	8 - 12	NM	116	2.3 J	9.8 J	2.0 U	105	3.9 U	4.8 J	7.0	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	20 U	2.0 U	2.0 U	2.0 U	4.6	1.3 J	2.0 U	2.0 U	1.9 J	16.3 J	2.0 U	2.0 U	2.0 U
A3RB-DPT0031	3/6/2023	16 - 20	NM	5.9	2.1 U	2.1 U	2.1 U	4.6	4.3 U	4.3 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0031	3/6/2023	23 - 27	NM	62.5	1.2 J	2.4 J	2.0 U	42.4	3.9 U	20 U	1.9 J	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	20 U	2.0 U	2.0 U	2.0 U	1.4 J	2.0 U	2.0 U	9.8 U	9.8 U	5.0 J	2.0 U	2.0 U	2.0 U
A3RB-DPT0031	3/6/2023	40 - 44	NM	136	1.2 J	4.2 J	2.1 U	47.1	4.3 U	21 U	2.2 J	21 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	4.3 U	21 U	11 U	2.1 U	11 U	2.1 J	2.1 U	2.1 U	11 U	11 U	6.0 J	2.1 U	11 U	11 U
A3RB-DPT0031	3/6/2023	40 - 44	FD	148	1.1 J	9.3 U	1.9 U	51.2	3.7 U	19 U	2.2 J		3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	3.7 U	19 U	9.3 U	1.9 U	9.3 U	2.4 J	1.9 U	1.9 U	9.3 U	9.3 U	5.2 J	1.9 U	9.3 U	9.3 U
A3RB-DPT0031	3/6/2023	55 - 59	NM	10.1	2.1 U	2.1 U	2.1 U	4.5	4.3 U	4.3 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
A3RB-DPT0032	3/7/2023	2 - 6	NM	50.2	4.0 U	4.0 U	4.0 U	28.1	8.0 U	8.0 U	2.4 J	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0032	3/7/2023	8 - 12	NM	37.9	4.0 U	2.7 J	4.0 U	27.1	8.0 U	6.2 J	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0032	3/7/2023	16 - 20	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.7 J	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0032	3/7/2023	23 - 27	NM	3.5 J	4.0 U	4.0 U	4.0 U	6.8 J	8.0 U	4.1 J	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0032	3/7/2023	40 - 44	NM	10.2	4.0 U	4.0 U	4.0 U	4.1 J	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0032	3/7/2023	55 - 59	NM	4.7	2.2 U	2.2 U	2.2 U	1.6 J	4.3 U	4.3 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
A3RB-DPT0033	3/8/2023	2 - 6	NM	66.6	5.5	5.7	2.3 U	47.6	23 U	18.3 J	2.0 J	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	23 U	2.3 U	2.3 U	2.3 U	1.9 J	1.6 J	2.3 U	11 U	2.0 J	4.3 J	2.3 U	2.3 U	2.3 U
A3RB-DPT0033	3/8/2023	8 - 12	NM	36.0	3.8 J	3.4 J	2.2 U	20.8	22 U	6.9 J	2.3 J	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	1.6 J	2.2 U	11 U	2.1 J	2.2 J	2.2 U	2.2 U	2.2 U
A3RB-DPT0033	3/8/2023	16 - 20	NM	2.2 U	2.2 U	11 U	2.2 U	2.2 U	4.3 U	22 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	11 U	2.2 U	2.2 U	2.2 U
A3RB-DPT0033	3/9/2023	23 - 27	NM	2.2 U	2.2 U	11 U	2.2 U	2.2 U	4.3 U	22 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	11 U	2.2 U	2.2 U	2.2 U
A3RB-DPT0033	3/9/2023	40 - 44	NM	6.0	2.6 U	13 U	2.6 U	2.6 J	5.3 U	5.3 U	2.6 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	26 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	13 U	13 U	13 U	13 U	2.6 U	2.6 U
A3RB-DPT0033	3/9/2023	40 - 44	FD	2.5 J	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0033	3/9/2023	55 - 59	NM	7.5	2.4 U	12 U	2.4 U	3.2 J	4.8 U	24 U	2.4 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	24 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	2.4 U	2.4 U	2.4 U
A3RB-DPT0034	3/10/2023	2 - 6	NM	103	7.4	15 U	3.0 U	132	6.0 U	36.9 J	9.8	29 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	29 U	29 U	29 U	15 U	3.0 U	15 U	7.7	2.7 J	3.0 U	3.0 U	5.7 J	15.8 J	3.0 U	15 U	15 U
A3RB-DPT0034	3/10/2023	8 - 12	NM	203	7.2	18.8 J	1.9 U	240	19 U	13.6 J	13.6	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	8.3	3.2 J	1.9 U	1.9 U	9.0 J	28.6	1.9 U	1.9 U	1.9 U
A3RB-DPT0034	3/10/2023	23 - 27	NM	8.0	1.6 J	14 U	2.7 U	8.0	5.5 U	27 U	2.7 U	27 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	27 U	27 U	27 U	14 U	2.7 U	14 U	2.7 U	2.7 U	2.7 U	14 U	14 U	2.0 J	2.7 U	14 U	14 U
A3RB-DPT0034	3/10/2023	40 - 44	NM	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	11 U	11 U	5.5 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	55 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
A3RB-DPT0034	3/10/2023	55 - 59	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.1 U	8.1 U	4.0 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
A3RB-DPT0035	3/10/2023	2 - 6	NM	14.0	1.3 J	7.1 J	2.4 U	17.3	4.8 U	28.5	2.4 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	24 U	2.4 U	2.4 U	2.4 U	2.9 J	2.4 U	2.4 U	2.4 U	12 U	6.5	2.4 U	2.4 U	2.4 U
A3RB-DPT0035	3/10/2023	8 - 12	NM	23.2	1.3 J	16.7	1.9 U	52.2	3.7 U	6.5 J	2.8 J	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	2.6 J	1.9 U	1.9 U	1.9 U	1.1 J	12.7	1.9 U	1.9 U	1.9 U
A3RB-DPT0035	3/10/2023	8 - 12	FD	21.1	1.3 J	15.8	1.9 U	49.6	3.7 U	6.2 J	2.7 J	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	2.5 J	1.9 U	1.9 U	1.9 U	1.1 J	12.2	1.9 U	1.9 U	1.9 U
A3RB-DPT0035	3/10/2023	16 - 20	NM	7.7 U	4.3 J	33.9	7.7 U	147	15 U	15 U	18.3	77 U	15 U	15 U	15 U	15 U	15 U	15 U	77 U	15 U	7.7 U	7.7 U	7.7 U	7.7 U	4.0 J	7.7 U	7.7 U	6.0 J	34.2	7.7 U	38 U	7.7 U
A3RB-DPT0035	3/13/2023	23 - 27	NM	2.6 U	2.6 U	13 U	2.6 U	2.6 U	5.2 U	25 U	13 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	25 U	2.6 U	2.6 U	13 U	2.6 U	2.6 U	2.6 U	2.6 U	13 U	2.6 U	2.6 U	2.6 U	13 U
A3RB-DPT0035	3/13/2023	40 - 44	NM	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	3.7 U	19 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	9.3 U
A3RB-DPT0035	3/13/2023	55 - 59	NM	4.0 U	4.0 U	20 U	4.0 U	4.0 U	8.1 U	40 U	4.0 U	40 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	8.1 U	40 U	20 U	4.0 U	20 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	20 U	4.0 U	20 U	20 U
A3RB-DPT0036	3/13/2023	2 - 6	NM	8.2	2.3 J	11.5 J	1.9 U	60.0	3.7 U	15.7 J	7.7 J	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	9.3 U	14.5 J	12.4 J	1.9 U	1.9 U	1.9 U
A3RB-DPT0036	3/13/2023	8 - 12	NM	12.7	2.6 J	9.3 U	1.9 U	19.8	3.7 U	11.2 J	9.3 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	9.3 U	9.3 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0036	3/13/2023	16 - 20	NM	3.5 U	3.5 U	17 U	3.5 U	3.5 U	7.0 U	7.0 U	3.5 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	34 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	17 U	17 U	3.5 U	3.5 U	3.5 U
A3RB-DPT0036	3/13/2023	23 - 27	NM	5.2 U	5.2 U	26 U	5.2 U	5.2 U	10 U	53 U	26 U	10 U	10 U	10 U	10 U	10 U	10 U	53 U	53 U	53 U	5.2 U	5.2 U	26 U	5.2 U	5.2 U	5.2 U	5.2 U	26 U	26 U	5.2 U	5.2 U	26 U
A3RB-DPT0036	3/13/2023	40 - 44	NM	3.4 U	3.4 U	17 U	3.4 U	3.4 U	6.8 U	34 U	17 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	34 U	3.4 U	3.4 U	3.4 U	3.4 U	17 U	3.4 U	3.4 U	17 U	17 U	3.4 U	3.4 U	3.4 U
A3RB-DPT0036	3/13/2023	40 - 44	FD	2.0 U	2.0 U	10 U	2.0 U	2.0 U	4.1 U	21 U	10 U	4.1 U	4.1 U	21 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	21 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	10 U	10 U	10 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0036	3/13/2023	55 - 59	NM	4.3 U	4.3 U	22 U	4.3 U	4.3 U	8.6 U	44 U	4.3 U	44 U	8.6 U	8.6 U	8.6 U	8.6 U	8.6 U	44 U	8.6 U	44 U	22 U	4.3 U	22 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	22 U	4.3 U	22 U	22 U
A3RB-DPT0037	3/15/2023	2 - 6	NM	14.2	2.1 J	10.8 J	1.9 U	68.1	3.7 U	19 U	9.3 U	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.4 J	9.3 U	1.9 U	1.9 U	9.3 U	9.5 J	1.9 U	1.9 U	1.9 U
A3RB-DPT0037	3/15/2023	2 - 6	FD	15.7	2.0 J	10.1 J	1.9 U	66.8	3.7 U	19 U	9.3 U	19 U	3.7 U	19 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	9.3 U	1.5 J	9.3 U	1.9 U	9.3 U	9.3 U	10 J	9.3 U	9.3 U	1.9 U

Table 4-3
DPT Groundwater Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Analyte				PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPES	PFPEA	PFTEA	PFTRIA	PFUNA
EPA RSL for tapwater (ng/L)				4	6	601	6	39	6	1800	990	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FDEP pGCTL (ng/L)				70	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Location ID	Sample Date	Depth Interval (ft bls)	Sample Type																													
A3RB-DPT0037	3/15/2023	8 - 12	NM	***70.7***	**4.5 J**	**22.3 J**	2.4 U	**162**	4.8 U	98 U	24 U	4.8 U	4.8 U	4.8 U	4.8 U	49 U	4.8 U	49 U	49 U	49 U	2.4 U	24 U	24 U	**3.8 J**	24 U	2.4 U	24 U	24 U	**18.6 J**	2.4 U	2.4 U	24 U
A3RB-DPT0037	3/15/2023	16 - 20	NM	4.3 U	4.3 U	22 U	4.3 U	**3.9 J**	8.7 U	43 U	4.3 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	43 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	22 U	4.3 U	4.3 U	4.3 U
A3RB-DPT0037	3/15/2023	23 - 27	NM	3.1 U	3.1 U	15 U	3.1 U	3.1 U	6.2 U	30 U	3.1 U	30 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	30 U	6.2 U	30 U	15 U	3.1 U	15 U	3.1 U	3.1 U	3.1 U	3.1 U	15 U	15 U	3.1 U	15 U	15 U
A3RB-DPT0037	3/15/2023	40 - 44	NM	1.9 U	1.9 U	9.6 U	1.9 U	1.9 U	3.8 U	19 U	1.9 U	19 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	19 U	9.6 U	1.9 U	9.6 U	1.9 U	1.9 U	1.9 U	1.9 U	9.6 U	9.6 U	1.9 U	9.6 U	9.6 U
A3RB-DPT0037	3/15/2023	55 - 59	NM	4.2 U	4.2 U	21 U	4.2 U	4.2 U	8.5 U	42 U	4.2 U	42 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	42 U	21 U	4.2 U	21 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	21 U	4.2 U	21 U	21 U
A3RB-DPT0038	5/2/2023	2 - 6	NM	**47.0**	**3.9 J**	**4.5**	2.1 U	**47.8**	4.3 U	**31.5**	**3.3 J**	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	20 U	2.1 U	2.1 U	2.1 U	**1.4 J**	**2.2 J**	2.1 U	2.0 U	**4.0 J**	**4.8**	2.1 U	2.1 U	2.1 U
A3RB-DPT0038	5/2/2023	8 - 12	NM	***191***	**2.4 J**	**5.8**	1.9 U	**93.3**	3.8 U	**6.0 J**	**4.7**	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	1.9 U	1.9 U	1.9 U	**2.1 J**	**1.4 J**	1.9 U	1.9 U	**2.0 J**	**5.9**	1.9 U	1.9 U	1.9 U
A3RB-DPT0038	5/2/2023	23 - 27	NM	**3.5 J**	**2.3 J**	**11.4**	2.0 U	**65.6**	4.0 U	20 U	**6.9**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U	**2.0 J**	**1.8 J**	2.0 U	2.0 U	**2.2 J**	**10.1**	2.0 U	2.0 U	2.0 U
A3RB-DPT0038	5/2/2023	23 - 27	FD	**2.8 J**	**2.3 J**	**12.7**	2.0 U	**72.2**	4.0 U	20 U	**7.4**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	**1.9 J**	**2.0 J**	2.0 U	2.0 U	**2.2 J**	**11.4**	2.0 U	2.0 U	2.0 U
A3RB-DPT0038	5/2/2023	40 - 44	NM	**7.6**	**1.3 J**	**3.8 J**	2.4 U	**10.3**	4.8 U	**24.1**	**1.9 J**	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	24 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	**1.5 J**	2.4 U	2.4 U	2.4 U
A3RB-DPT0038	5/2/2023	55 - 59	NM	**7.1**	2.2 U	2.2 U	2.2 U	**4.1 J**	4.4 U	**4.2 J**	2.2 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
A3RB-DPT0039	5/2/2023	2 - 6	NM	**5.5**	**2.8 J**	**2.0 J**	1.9 U	**9.3**	3.8 U	**22.8 J**	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	**1.1 J**	1.9 U	1.9 U	9.6 U	1.9 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0039	5/2/2023	8 - 12	NM	**15.6**	1.9 U	**2.3 J**	1.9 U	**23.4**	3.8 U	19 U	**1.6 J**	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	**2.2 J**	1.9 U	1.9 U	1.9 U
A3RB-DPT0039	5/2/2023	16 - 20	NM	**1.1 J**	1.9 U	1.9 U	1.9 U	**2.4 J**	3.8 U	19 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
A3RB-DPT0039	5/2/2023	16 - 20	FD	**1.6 J**	2.0 U	2.0 U	2.0 U	**2.5 J**	4.1 U	20 U	2.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0039	5/2/2023	23 - 27	NM	**2.4 J**	2.1 U	2.1 U	2.1 U	**8.1**	4.2 U	21 U	**1.0 J**	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	**1.6 J**	2.1 U	2.1 U	2.1 U
A3RB-DPT0039	5/2/2023	40 - 44	NM	**1.8 J**	2.0 U	2.0 U	2.0 U	2.0 U	4.1 U	**4.9 J**	2.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0039	5/2/2023	55 - 59	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.9 U	3.9 U	2.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0040	5/3/2023	2 - 6	NM	***131***	**2.5 J**	2.0 U	2.0 U	**12.9**	4.0 U	**3.0 J**	**1.1 J**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0040	5/3/2023	8 - 12	NM	***90.8***	**4.6**	**26.2**	2.2 U	**178**	4.3 U	**12.2 J**	**4.0 J**	22 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	11 U	2.2 U	11 U	**7.3**	**1.3 J**	2.2 U	2.2 U	**2.0 J**	**27.8**	2.2 U	11 U	11 U
A3RB-DPT0040	5/3/2023	16 - 20	NM	**1.5 J**	2.4 U	12 U	2.4 U	2.4 U	24 U	24 U	2.4 U	24 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	24 U	2.4 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	2.4 U	12 U	2.4 U
A3RB-DPT0040	5/3/2023	23 - 27	NM	**1.6 J**	2.4 U	2.4 U	2.4 U	2.4 U	4.9 U	4.9 U	2.4 U	24 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	24 U	2.4 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U	12 U	2.4 U
A3RB-DPT0040	5/3/2023	40 - 44	NM	**3.1 J**	2.2 U	11 U	2.2 U	**3.0 J**	4.4 U	22 U	11 U	22 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	22 U	4.4 U	22 U	11 U	2.2 U	11 U	2.2 U	2.2 U	2.2 U	11 U	11 U	11 U	2.2 U	11 U	11 U
A3RB-DPT0040	5/3/2023	40 - 44	FD	**2.0 J**	2.3 U	12 U	2.3 U	**1.9 J**	4.7 U	23 U	12 U	23 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	23 U	12 U	2.3 U	12 U	2.3 U	2.3 U	2.3 U	2.3 U	12 U	12 U	12 U	12 U	12 U
A3RB-DPT0040	5/3/2023	55 - 59	NM	**6.4**	2.4 U	2.4 U	2.4 U	**1.8 J**	4.8 U	23 U	2.4 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U
A3RB-DPT0041	5/3/2023	2 - 6	NM	***101***	**8.7**	**1.7 J**	2.2 U	**79.3**	4.3 U	**20.5**	**1.5 J**	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	2.2 U	2.2 U	2.2 U	**31.9**	2.2 U	2.2 U	2.2 U	2.2 U	**2.1 J**	2.2 U	2.2 U	2.2 U
A3RB-DPT0041	5/3/2023	8 - 12	NM	***158***	**15.0**	10 U	2.0 U	**17.4**	4.0 U	**22.0**	**2.1 J**	20 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.4 U	2.0 U	2.0 U	2.0 U	**18.2**	**2.0 J**	2.0 U	10 U	**2.3 J**	10 U	2.0 U	2.0 U	2.0 U
A3RB-DPT0041	5/3/2023	16 - 20	NM	**19.8**	2.2 U	**3.6 J**	2.2 U	**27.4**	4.3 U	22 U	2.2 U	22 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	11 U	**2.3 J**	2.2 U	2.2 U	2.2 U	2.2 U	**4.2 J**	2.2 U	11 U	2.2 U
A3RB-DPT0041	5/3/2023	23 - 27	NM	**13.0**	**1.7 J**	**3.1 J**	2.1 U	**17.6**	4.2 U	21 U	**1.8 J**	21 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	10 U	2.1 U	10 U	**1.1 J**	2.1 U	2.1 U	2.1 U	10 U	**2.9 J**	10 U	10 U	10 U
A3RB-DPT0041	5/3/2023	40 - 44	NM	**28.1**	**2.3 J**	2.3 U	2.3 U	**3.6 J**	4.7 U	23 U	2.3 U	23 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	23 U	12 U	2.3 U	12 U	**2.7 J**	2.3 U	2.3 U	2.3 U	12 U	2.3 U	12 U	12 U	12 U
A3RB-DPT0041	5/3/2023	55 - 59	NM	**3.4 J**	2.2 U	11 U	2.2 U	2.2 U	4.3 U	22 U	11 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	11 U	2.2 U	11 U	2.2 U	2.2 U	2.2 U	11 U	11 U	11 U	11 U	11 U	11 U

Notes:
Results in the table above and the laboratory analytical report are in parts per trillion (nanogram per liter, or ng/L).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of EPA Regional Screening Level for Tapwater (ng/L) as of May 2023
Yellow highlighted cell with *italics* indicates an exceedance of FDEP provisional Groundwater Cleanup Target Levels (ng/L)
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
Reporting Limit (also called Practical Quantitation Limit) is the lowest concentration that can be reliably detected during routine laboratory operating conditions, based on the precision and accuracy results for standards that are run with the sample.
Depth intervals are measured in feet (ft) below land surface (bls).
-- indicates that a screening value is not available as of September 2023 for that compound.

Abbreviations:
A3RB = Area 3 Repeater Building
DPT = Direct Push Technology
EPA = Environmental Protection Agency
FD = Field Duplicate
FDEP = Florida Department of Environmental Protection
J = Estimated value
NM = Normal Sample
PFAS = Per-and polyfluoroalkyl substances
pGCTL = Provisional Groundwater Cleanup Target Level
RSL = Regional Screening Level
SWMU = Solid Waste Management Unit
U = Result was below the laboratory Reporting Limit

PFAS - Compounds
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesulfonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11CL-PF3OUDS)
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9CL-PF3ONS)
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPES)
Perfluoropentanoic acid (PFPEA)
Perfluorotetradecanoic acid (PFTEA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-4
Groundwater Frequencies of Detection
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	PFAS	Groundwater Samples[1]	Detects	Non-Detects	EPA RSL for Tapwater HQ = 0.1 (ng/L)	FDEP pGCTLs (ng/L)	Max Concentration (ng/L)
South Repeater Building	PFOS	240	153	87	4	70	7480
	PFOA	240	81	159	6	70	316
	PFBS	240	81	159	601	-	439
	PFNA	240	7	233	6	-	4.9
	PFHxS	240	149	91	39	-	17200
	HFPO-DA	240	0	240	6	-	22
	PFBA	240	84	156	1800	-	62.6
	PFHxA	240	78	162	990	-	626

Notes:
[1]Samples were collected via monitoring well or DPT. Count includes 21 field duplicate samples.
-- indicates that a screening value is not available as of September 2023 for that compound.
DPT = Direct Push Technology
EPA = Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
HFPO-DA = hexafluoropropylene oxide dimer acid
HQ = Hazard Quotient
ng/L = Nanogram per liter
PFAS = Per-and polyfluoroalkyl substances
PFBA = perfluorobutanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxA = perfluorhexanoic acid
PFHxS = perfluorohexane sulfonate
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
pGCTL = provisional Groundwater Cleanup Target Level
RSL = Regional Screening Level
SWMU = Solid Waste Management Unit

Table 4-5
Surface Water Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

			Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS
			FDEP pSWSL (ng/L)	10	500	--	--	--	--	--	--	--	--	--	--	--	--
Location	Location ID	Sample Date	Sample Type	--	--	--	--	--	--	--	--	--	--	--	--	--	--
South Repeater Building	A3RB-SW0001	12/16/2022	NM	**7.6**	2.4 U	12 U	2.4 U	**2.2 J**	4.9 U	24 U	4.9 U	4.9 U	**61.3**	4.9 U	4.9 U	4.9 U	4.9 U
	A3RB-SW0002	12/16/2022	NM	**5.5 J**	3.2 U	16 U	3.2 U	**1.6 J**	6.5 U	32 U	6.5 U	6.5 U	**27.1**	6.5 U	6.5 U	6.5 U	6.5 U
	A3RB-SW0003	12/16/2022	NM	**2.9 J**	**1.1 J**	11 U	2.2 U	**1.3 J**	4.4 U	4.4 U	4.4 U	4.4 U	**19.7**	4.4 U	4.4 U	4.4 U	4.4 U
	A3RB-SW0004	12/16/2022	NM	**3.3 J**	2.4 U	12 U	2.4 U	2.4 U	4.9 U	4.9 U	4.9 U	4.9 U	**9.4 J**	4.9 U	4.9 U	4.9 U	4.9 U
	A3RB-SW0005	12/16/2022	NM	**72.3**	**4.9**	11 U	2.2 U	**64.6**	4.4 U	4.4 U	4.4 U	4.4 U	**16.4**	4.4 U	4.4 U	4.4 U	4.4 U
	A3RB-SW0006	12/16/2022	NM	**49.6**	**5.8**	9.3 U	1.9 U	**15**	3.7 U	3.7 U	3.7 U	3.7 U	**11.4**	3.7 U	3.7 U	3.7 U	3.7 U
	A3RB-SW0007	12/16/2022	NM	**69.7**	**5.5**	9.3 U	1.9 U	**31.5**	3.7 U	3.7 U	3.7 U	3.7 U	**16.9**	3.7 U	3.7 U	3.7 U	3.7 U
	A3RB-SW0007	12/16/2022	FD	**71.6**	**5.4**	**3.5 J**	1.9 U	**31.2**	3.7 U	3.7 U	3.7 U	3.7 U	**11.9**	3.7 U	3.7 U	3.7 U	3.7 U
	A3RB-SW0008	12/16/2022	NM	**86.1**	**5.5**	**7.1**	1.9 U	**78.3**	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
	A3RB-SW0009	3/15/2023	NM	**661**	**9**	**21.3**	**1.0 J**	**385**	3.7 U	3.7 U	3.7 U	3.7 U	**141**	3.7 U	3.7 U	3.7 U	3.7 U
	A3RB-SW0010	3/15/2023	NM	**562**	**8.9**	**19.9**	1.9 U	**367**	3.7 U	3.7 U	3.7 U	3.7 U	**41**	3.7 U	3.7 U	3.7 U	3.7 U

Notes:
Results in the table above and the laboratory analytical report are in parts per trillion (nanogram per liter, or ng/L).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of Provisional Surface Water Cleanup Target Levels
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
Reporting Limit (also called Practical Quantitation Limit) is the lowest concentration that can be reliably detected during routine laboratory operating conditions, based on the precision and accuracy results for standards that are run with the sample.

-- indicates that a screening value is not available as of September 2023 for that compound.
A3RB = Area 3 Repeater Building
J = Estimated value
FDEP = Florida Department of Environmental Protection
NM = Normal Sample
PFAS = Per-and polyfluoroalkyl substances
pSWSL = Provisional Surface Water Screening Level
SWMU = Solid Waste Management Unit
U = Result was below the laboratory Reporting Limit

PFAS - Compounds
Perflurooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)

PFAS - Compounds
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPES)
Perfluoropentanoic acid (PFPEA)
Perfluorotetradecanoic acid (PFTEA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-5
Surface Water Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

			Analyte	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPES	PFPEA	PFTEA	PFTRIA	PFUNA
			FDEP pSWSL (ng/L)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Location	**Location ID**	**Sample Date**	**Sample Type**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
South Repeater Building	A3RB-SW0001	12/16/2022	NM	24 U	**10.6**	12 U	2.4 U	12 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	12 U	2.4 U	12 U	12 U
	A3RB-SW0002	12/16/2022	NM	32 U	**10.8 J**	3.2 U	3.2 U	16 U	3.2 U	3.2 U	3.2 U	3.2 U	16 U	16 U	16 U	3.2 U	16 U	3.2 U
	A3RB-SW0003	12/16/2022	NM	22 U	**8.5 J**	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	11 U	**2.2 J**	11 U	2.2 U	2.2 U
	A3RB-SW0004	12/16/2022	NM	24 U	**9.3 J**	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12 U	12 U	**1.3 J**	12 U	2.4 U	2.4 U
	A3RB-SW0005	12/16/2022	NM	22 U	**8.0 J**	2.2 U	2.2 U	2.2 U	**1.1 J**	**2.1 J**	**4.6**	2.2 U	11 U	11 U	**3.7 J**	2.2 U	2.2 U	2.2 U
	A3RB-SW0006	12/16/2022	NM	19 U	**7.7**	1.9 U	1.9 U	1.9 U	1.9 U	**1.6 J**	**1.9 J**	1.9 U	9.3 U	9.3 U	**2.1 J**	1.9 U	1.9 U	1.9 U
	A3RB-SW0007	12/16/2022	NM	19 U	**8.3**	1.9 U	1.9 U	1.9 U	**0.94 J**	**1.7 J**	**2.9 J**	1.9 U	9.3 U	9.3 U	**2.6 J**	1.9 U	1.9 U	1.9 U
	A3RB-SW0007	12/16/2022	FD	19 U	**8.3**	1.9 U	1.9 U	9.3 U	**0.98 J**	**1.9 J**	**2.9 J**	1.9 U	9.3 U	**2.7 J**	**2.3 J**	9.3 U	9.3 U	1.9 U
	A3RB-SW0008	12/16/2022	NM	19 U	**9.4**	1.9 U	1.9 U	1.9 U	**2.7 J**	**1.8 J**	**5.3**	1.9 U	9.6 U	**8**	**3.1 J**	1.9 U	1.9 U	1.9 U
	A3RB-SW0009	3/15/2023	NM	19 U	**10.1 J**	1.9 U	1.9 U	1.9 U	**13.9 J**	**4.1**	**21**	9.3 U	9.3 U	**38.5**	**8.6 J**	9.3 U	1.9 U	1.9 U
	A3RB-SW0010	3/15/2023	NM	19 U	**10.2**	1.9 U	1.9 U	1.9 U	**14.9 J**	**4**	**20.2**	9.3 U	9.3 U	**35.3**	**9.3 J**	9.3 U	1.9 U	1.9 U

Notes:
Results in the table above and the laboratory analytical report are in parts per trillion (nanogram per liter, or ng/L).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of Provisional Surface Water Cleanup Target Levels
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
Reporting Limit (also called Practical Quantitation Limit) is the lowest concentration that can be reliably detected during routine laboratory operating conditions, based on the precision and accuracy results for standards that are run with the sample.

-- indicates that a screening value is not available as of September 2023 for that compound.
A3RB = Area 3 Repeater Building
J = Estimated value
FDEP = Florida Department of Environmental Protection
NM = Normal Sample
PFAS = Per-and polyfluoroalkyl substances
pSWSL = Provisional Surface Water Screening Level
SWMU = Solid Waste Management Unit
U = Result was below the laboratory Reporting Limit

PFAS - Compounds
Perflurooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)

PFAS - Compounds
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPES)
Perfluoropentanoic acid (PFPEA)
Perfluorotetradecanoic acid (PFTEA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-6
Surface Water Frequencies of Detection
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	PFAS	Surface Water Samples[1]	Detects	Non-Detects	FDEP pSWSL (ng/L)	Max Concentration (ng/L)
South Repeater Building	PFOS	11	11	0	10	661
	PFOA	11	8	3	500	9

Notes:
[1] Count includes one field duplicate sample.
FDEP = Florida Department of Environmental Protection
ng/L = Nanograms per liter
PFAS = Per-and polyfluoroalkyl substances
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
pSWSL = Provisional Surface Water Screening Level
SWMU = Solid Waste Management Unit

Table 4-7
Monitoring Well Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Sample Date	Depth Interval (ft bls)	Sample Type	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHPS	PFHpA	PFNS	PFOSA	PFPeS	PFPeA	PFTeA	PFTRIA	PFUNA
				Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHPS	PFHpA	PFNS	PFOSA	PFPeS	PFPeA	PFTeA	PFTRIA	PFUNA
				EPA RSL for Tapwater (ng/L)	4	6	601	6	39	6	1800	990																					
				FDEP pGCTL (ng/L)	70	70																											
South Repeater Building	A3RB-MW0001	5/31/2022	20.0 - 30.0	NM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-MW0001	5/25/2023	20.0 - 30.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0002	5/31/2022	2.0 - 12.0	NM	***3330***	**20.6**	**30.9**	**4.5 J**	**1550**	8.0 U	**12.6 J**	**50.2**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	**2.2 J**	4.0 U	**26.9**	**8.1**	**20.6**	4.0 U	**62.1**	**15.4**	4.0 U	4.0 U	4.0 U
	A3RB-MW0002	5/23/2023	2.0 - 12.0	NM	***880***	**6.1**	**16.3**	2.1 U	**389**	4.3 U	**3.6 J**	**13.4**	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	20 U	2.1 U	2.1 U	2.1 U	**8.7**	**2.1 J**	2.1 U	10 U	**27.6**	**3.7 J**	2.1 U	2.1 U	2.1 U
	A3RB-MW0003	5/31/2022	2.0 - 12.0	NM	***6290***	***76.8***	**116**	4.0 U	**3720**	8.0 U	**14.6 J**	**127**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	80 U	4.0 U	4.0 U	4.0 U	**78.2**	**24**	4.0 U	4.0 U	**195**	**32.9**	4.0 U	4.0 U	4.0 U
	A3RB-MW0003	5/23/2023	2.0 -12.0	NM	***7150***	***87.2***	**173**	**4.9 J**	**5100**	19 U	**36.4 J**	**175**	19 U	19 U	19 U	19 U	19 U	19 U	19 U	19 U	93 U	9.3 U	9.3 U	9.3 U	**106**	**29.7**	9.3 U	46 U	**283**	**48.4 J**	46 U	9.3 U	9.3 U
	A3RB-MW0004	5/31/2022	2.0 - 12.0	NM	***79.3***	**5.5 J**	**64**	4.0 U	**726**	8.0 U	**12.7 J**	**10.6**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	**9.2**	**3.1 J**	4.0 U	4.0 U	**68.2**	**10.8**	4.0 U	4.0 U	4.0 U
	A3RB-MW0004	5/23/2023	2.0 - 12.0	NM	**45.6**	**3.0 J**	**26.5**	2.0 U	**288**	4.1 U	**6.1 J**	**4.3**	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	19 U	2.0 U	2.0 U	2.0 U	**5.1**	**1.5 J**	2.0 U	9.3 U	**29.0**	**4.0 J**	2.0 U	2.0 U	2.0 U
	A3RB-MW0005	5/31/2022	2.0 - 12.0	NM	**3.4 J**	4.0 U	4.0 U	4.0 U	**3.1 J**	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-MW0005	5/25/2023	2.0 - 12.0	NM	**3.5 J**	1.9 U	**1.2 J**	1.9 U	**5.2**	3.7 U	**8.9**	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0006	5/31/2022	20.0 - 30.0	NM	**2.7 J**	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-MW0006	5/25/2023	20.0 - 30.0	NM	**4.1 J**	2.2 U	2.2 U	2.2 U	**2.1 J**	4.3 U	4.3 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
	A3RB-MW0007	5/31/2022	20.0 - 30.0	NM	***260***	**3.9 J**	**10.5**	4.0 U	**229**	8.0 U	8.0 U	**12.7**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	**2.8 J**	4.0 U	4.0 U	**3.3 J**	**2.0 J**	4.0 U	4.0 U	**16**	**4.9 J**	4.0 U	4.0 U	4.0 U
	A3RB-MW0007	5/25/2023	20.0 - 30.0	NM	***263***	**3.7**	**8.6**	1.9 U	**251**	3.7 U	**2.4 J**	**9.0**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	**4.7**	**1.6 J**	1.9 U	1.9 U	**15.2**	**2.8 J**	1.9 U	1.9 U	1.9 U
	A3RB-MW0008	5/31/2022	20.0 - 30.0	NM	***186***	**2.3 J**	**7.0 J**	4.0 U	**141**	8.0 U	8.0 U	**6.9 J**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**9.9**	**3.3 J**	20 U	4.0 U	4.0 U
	A3RB-MW0008	5/25/2023	20.0 - 30.0	NM	**156**	**2.0 J**	**6.6**	1.9 U	**120**	3.7 U	3.7 U	**5.8**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	**2.3 J**	**1.1 J**	1.9 U	1.9 U	**10.2**	**1.9 J**	1.9 U	1.9 U	1.9 U
	A3RB-MW0009	5/31/2022	20.0 - 30.0	NM	***1500***	**15.5**	**49.1**	4.0 U	**1070**	8.0 U	**11.1 J**	**42.2**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	80 U	4.0 U	4.0 U	4.0 U	**17.1**	**6.6 J**	4.0 U	40 U	**65.6**	**16.8**	4.0 U	4.0 U	4.0 U
	A3RB-MW0009	5/31/2022	20.0 - 30.0	FD	***1110***	**11.6**	**39**	4.0 U	**856**	8.0 U	**9.1 J**	**34.2**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	80 U	4.0 U	4.0 U	4.0 U	**14.6**	**5.8 J**	**4.1 J**	4.0 U	**51.1**	**12.9**	4.0 U	4.0 U	4.0 U
	A3RB-MW0009	5/24/2023	20.0 - 30.0	NM	***858***	**9.5**	**33.2**	**1.3 J**	**680**	3.7 U	**7.7**	**28.0**	3.7 U	3.7 U	19 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	**12.8**	**4.7**	1.9 U	9.3 U	**44.1**	**9.1 J**	1.9 U	1.9 U	1.9 U
	A3RB-MW0009	5/24/2023	20.0 - 30.0	FD	***795***	**9.4**	**30.9**	**1.2 J**	**633**	3.7 U	**7.0 J**	**26.1**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	**14.0**	**4.5**	1.9 U	9.3 U	**49.1**	**8.6 J**	9.3 U	1.9 U	1.9 U
	A3RB-MW0010	5/31/2022	2.0 - 12.0	NM	***331***	**6.5 J**	**14.8**	4.0 U	**429**	8.0 U	**5.8 J**	**15.3**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	**5.8 J**	**3.2 J**	4.0 U	4.0 U	**22.9**	**5.3 J**	4.0 U	4.0 U	4.0 U
	A3RB-MW0010	5/24/2023	2.0 - 12.0	NM	***174***	**2.1 J**	**3.9**	1.9 U	**85.4**	3.7 U	**3.5 J**	**4.2**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	**2.1 J**	**1.2 J**	1.9 U	1.9 U	**5.9**	**1.7 J**	1.9 U	1.9 U	1.9 U
	A3RB-MW0011	5/24/2023	54.0 - 59.0	NM	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	4.3 U	22 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	22 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
	A3RB-MW0012	5/24/2023	35.0 - 45.0	NM	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	4.3 U	21 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	11 U	2.1 U	11 U	2.1 U	2.1 U	2.1 U
	A3RB-MW0013	5/24/2023	20.0 - 30.0	NM	**6.2**	2.1 U	2.1 U	2.1 U	**2.8 J**	4.3 U	21 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	21 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	11 U	2.1 U	2.1 U	2.1 U
	A3RB-MW0014	5/24/2023	2.0 - 12.0	NM	**2.6 J**	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0015	5/24/2023	20.0 - 30.0	NM	**12.2**	**1.3 J**	**3.2 J**	1.9 U	**18.2**	3.7 U	3.7 U	**1.4 J**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	**1.7 J**	1.9 U	1.9 U	9.3 U	**3.1 J**	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0016	5/24/2023	2.0 - 12.0	NM	***133***	**11.0**	**1.3 J**	2.1 U	**12.7**	4.2 U	**8.7**	**1.7 J**	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	21 U	2.1 U	2.1 U	2.1 U	**14.0**	**1.7 J**	2.1 U	2.1 U	2.1 U	**1.5 J**	2.1 U	2.1 U	2.1 U
	A3RB-MW0017	5/23/2023	54.0 - 59.0	NM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.1 U	4.1 U	2.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	A3RB-MW0018	5/23/2023	35.0 - 45.0	NM	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	4.5 U	4.5 U	2.3 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	22 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
	A3RB-MW0019	5/23/2023	30.0 - 40.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0019	5/23/2023	30.0 - 40.0	FD	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0020	5/23/2023	2.0 - 12.0	NM	**2.8 J**	**0.99 J**	1.9 U	1.9 U	**1.1 J**	3.7 U	**8.1**	**1.0 J**	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	9.3 U	9.3 U	1.9 U
	A3RB-MW0021	5/23/2023	20.0 - 30.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0022	5/23/2023	54.0 - 59.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0023	5/23/2023	54.0 - 59.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	21 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	10 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0024	5/24/2023	35.0 - 45.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0025	5/24/2023	35.0 - 45.0	NM	**1.3 J**	1.9 U	1.9 U	1.9 U	**2.6 J**	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0025	5/24/2023	35.0 - 45.0	FD	**1.6 J**	1.9 U	1.9 U	1.9 U	**3.0 J**	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0026	5/25/2023	35.0 - 45.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	19 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	1.9 U	9.3 U	1.9 U	1.9 U	1.9 U
	A3RB-MW0027	5/24/2023	54.0 - 59.0	NM	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U

Notes:
Results in the table above and the laboratory analytical report are in parts per trillion (nanogram per liter, or ng/L).
Bolded type indicates the compound was detected.
Yellow highlighted cell indicates an exceedance of EPA Regional Screening Level for Tapwater (ng/L) as of May 2023
Yellow highlighted cell with *italics* indicates an exceedance of FDEP provisional Groundwater Cleanup Target Levels (ng/L)
Method Detection Limit is the lowest concentration that can be detected if a compound is present at a pre-determined confidence level.
Reporting Limit (also called Practical Quantitation Limit) is the lowest concentration that can be reliably detected during routine laboratory operating conditions, based on the precision and accuracy results for standards that are run with the sample.
Depth intervals are measured in feet (ft) below land surface (bls).
-- indicates that a screening value is not available as of September 2023 for that compound.
J = Estimated value
U = Result was below the laboratory Reporting Limit

Abbreviations:
A3RB = Area 3 Repeater Building
EPA = Environmental Protection Agency
FD = Field Duplicate
FDEP = Florida Department of Environmental Protection
NM = Normal Sample
RSL = Regional Screening Level
PFAS = Per-and polyfluoroalkyl substances
pGCTL = provisional Groundwater Cleanup Target Level
SWMU = Solid Waste Management Unit

PFAS - Compounds
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)

PFAS - Compounds Continued
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHPS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPeS)
Perfluoropentanoic acid (PFPeA)
Perfluorotetradecanoic acid (PFTeA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

Table 4-8
Field QA/QC Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

			Analyte	PFOS	PFOA	PFBS	PFNA	PFHxS	HFPO-DA	PFBA	PFHxA	11CL-PF3OUDS	ADONA	4:2FTS	6:2FTS	8:2FTS	9CL-PF3ONS	NEFOSA	NMFOSA	MeFOSA	PFDS	PFDA	PFDOA	PFHpS	PFHpA	PFNS	PFOSA	PFPeS	PFPeA	PFTeA	PFTRIA	PFUNA
			EPA RSL for Tapwater (ng/L)	4	6	600	5.9	39	6	1800	990																					
			FDEP pGCTL (ng/L)	70	70																											
Location	Location ID	Sample Date	Sample Type																													
South Repeater Building	A3RB-EB01-20221216	12/16/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	7.4 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB01-20221222	12/22/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB02-20221222	12/22/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB-20220119	1/19/2022	EB	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
	A3RB-EB-20220124-01	1/24/2022	EB	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
	A3RB-EB-20220330-01	3/30/2022	EB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-EB-20220330-02	3/30/2022	EB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-EB-20220531-01	5/31/2022	EB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-EB-20220610-01	6/10/2022	EB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-EB-20220613-01	6/13/2022	EB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-EB-20221212-01	12/12/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	1.9 U	1.9 U
	A3RB-EB-20221213-02	12/13/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB-20221214-02	12/14/2022	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	**2.7 JB**	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB-20230523	5/23/2023	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB-20230524-02	5/24/2023	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-EB-20230524-03	5/24/2023	EB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB01-20221216	12/16/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	7.4 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB01-20221222	12/22/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB-20220114-01	1/14/2022	FB	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
	A3RB-FB-20220124-01	1/24/2022	FB	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.5 U	8.5 U	4.2 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
	A3RB-FB-20220330-01	3/30/2022	FB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-FB-20220330-02	3/30/2022	FB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-FB-20220531-01	5/31/2022	FB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-FB-20220610-01	6/10/2022	FB	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	8.3 U	8.3 U	4.2 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	8.3 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
	A3RB-FB-20220613-01	6/13/2022	FB	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	8.0 U	4.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
	A3RB-FB-20221213-01	12/13/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	7.4 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	1.9 U	1.9 U
	A3RB-FB-20221213-02	12/13/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	1.9 U	1.9 U
	A3RB-FB-20221214-03	12/14/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB-20221220-04	12/20/2022	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB-20230523-01	5/23/2023	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB-20230523-02	5/23/2023	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
	A3RB-FB-20230525-03	5/25/2023	FB	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	3.7 U	19 U	19 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
Results are presented in nanograms per liter (ng/L).
A3RB = Area 3 Repeater Building
EB = Equipment Blank
EPA = Environmental Protection Agency
FB = Field Blank
FDEP = Florida Department of Environmental Protection
pGCTL = provisional Groundwater Cleanup Target Level
J = Estimated value
ng/L = nanogram per liter
PFAS = Per-and polyfluoroalkyl substances
RSL = Regional Screening Level
SWMU = Solid Waste Management Unit
U = Result was below the laboratory Reporting Limit

PFAS - Compounds
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorobutanesulfonic acid (PFBS)
Perfluorononanoic acid (PFNA)
Perfluorohexanesufonic acid (PFHxS)
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)
Perfluorobutanoic acid (PFBA)
Perfluorohexanoic acid (PFHxA)
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4,8-Dioxa-3H-Perfluorononanoic acid (ADONA)
4:2 Fluorotelomer sulfonate (4:2FTS)
6:2 Fluorotelomer sulfonate (6:2FTS)
8:2 Fluorotelomer sulfonate (8:2FTS)
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
N-Ethylperfluorooctane sulfonamidoacetate (NEFOSA)

PFAS - Compounds Continued
N-Methylperfluoroactane sulfonamidoacetate (NMFOSA)
N-Methylperfluorooctane-sulfonamide (MeFOSA)
Perfluorodecanesulfonic acid (PFDS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDOA)
Perfluoroheptanesulfonic acid (PFHpS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanesulfonic acid (PFNS)
Perfluorooctane sulfonamide(PFOSA)
Perfluoropentanesulfonic acid (PFPeS)
Perfluoropentanoic acid (PFPeA)
Perfluorotetradecanoic acid (PFTeA)
Perfluorotridecanoic acid (PFTRIA)
Perfluoroundecanoic acid (PFUNA)

FIGURES

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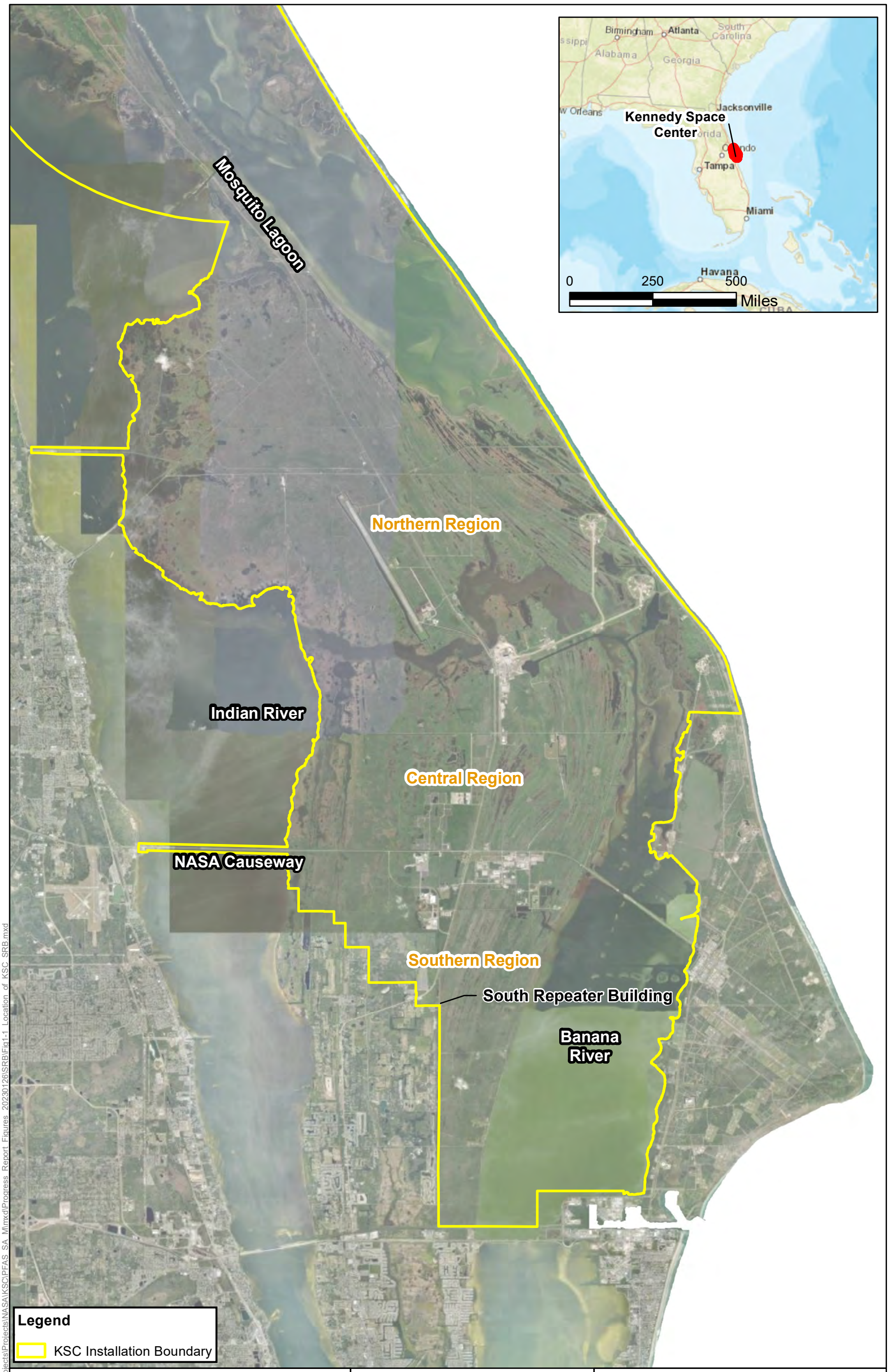

Mapping Notes:
-Orthoimagery Source: Brevard County, 2018.
-Projection: NAD 1983 StatePlane Florida East FIPS 0901
-Scale: 1 Inch = 11,000 Feet

AECOM

0 5,500 11,000 Feet

N

JOHN F. KENNEDY SPACE CENTER
MERRITT ISLAND, FLORIDA

DATE: 12/27/2023 | DRWN BY: SD / AD

FIGURE 1-1
LOCATION OF KENNEDY SPACE CENTER
AND SOUTH REPEATER BUILDING

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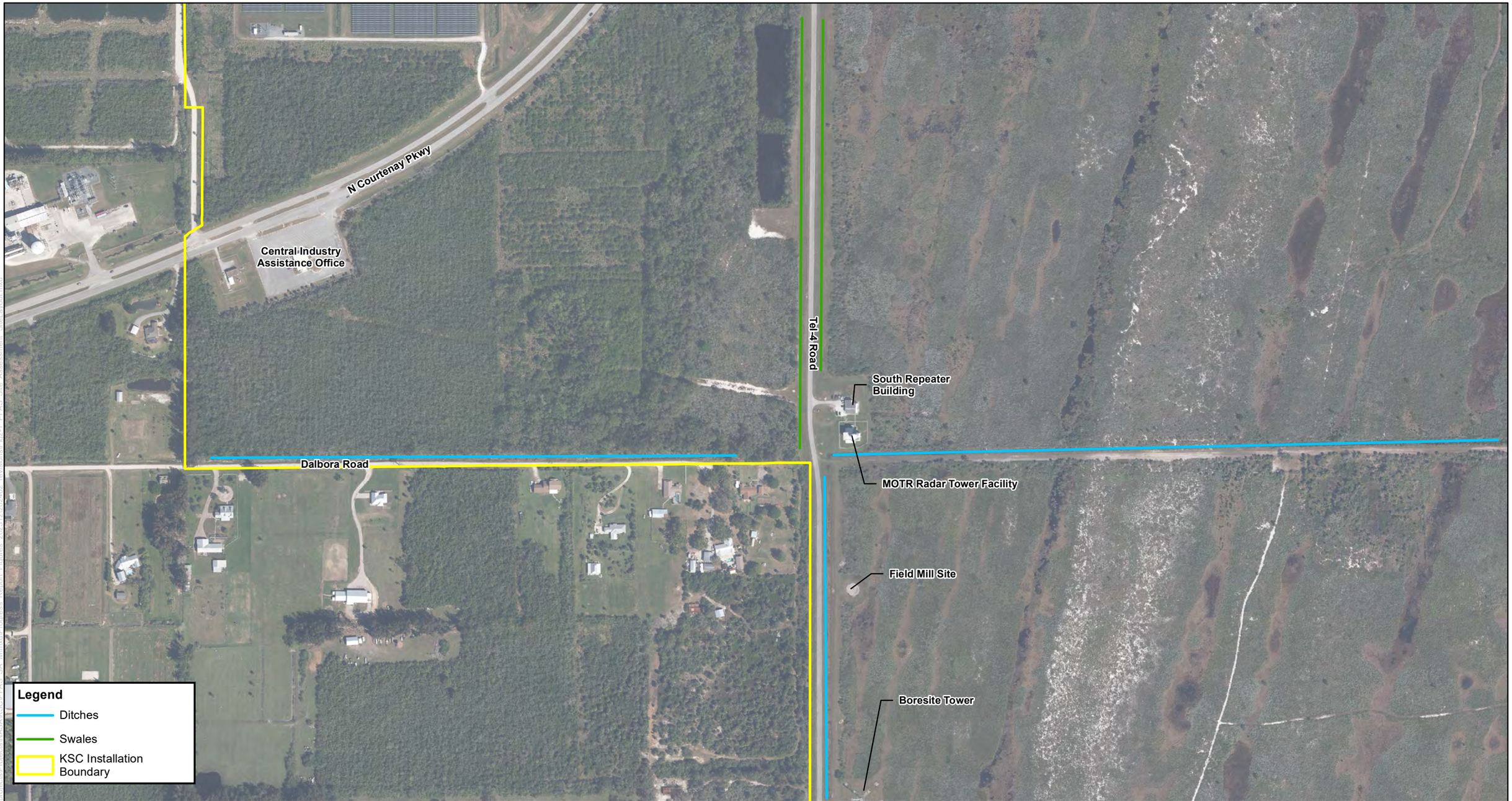

MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 400 Feet

0 200 400 800 Feet

N

AECOM

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SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: AD | Date Saved: 2/7/2024

FIGURE 2-1
PFAS SITE ASSESSMENT
SITE LAYOUT
SOUTH REPEATER BUILDING

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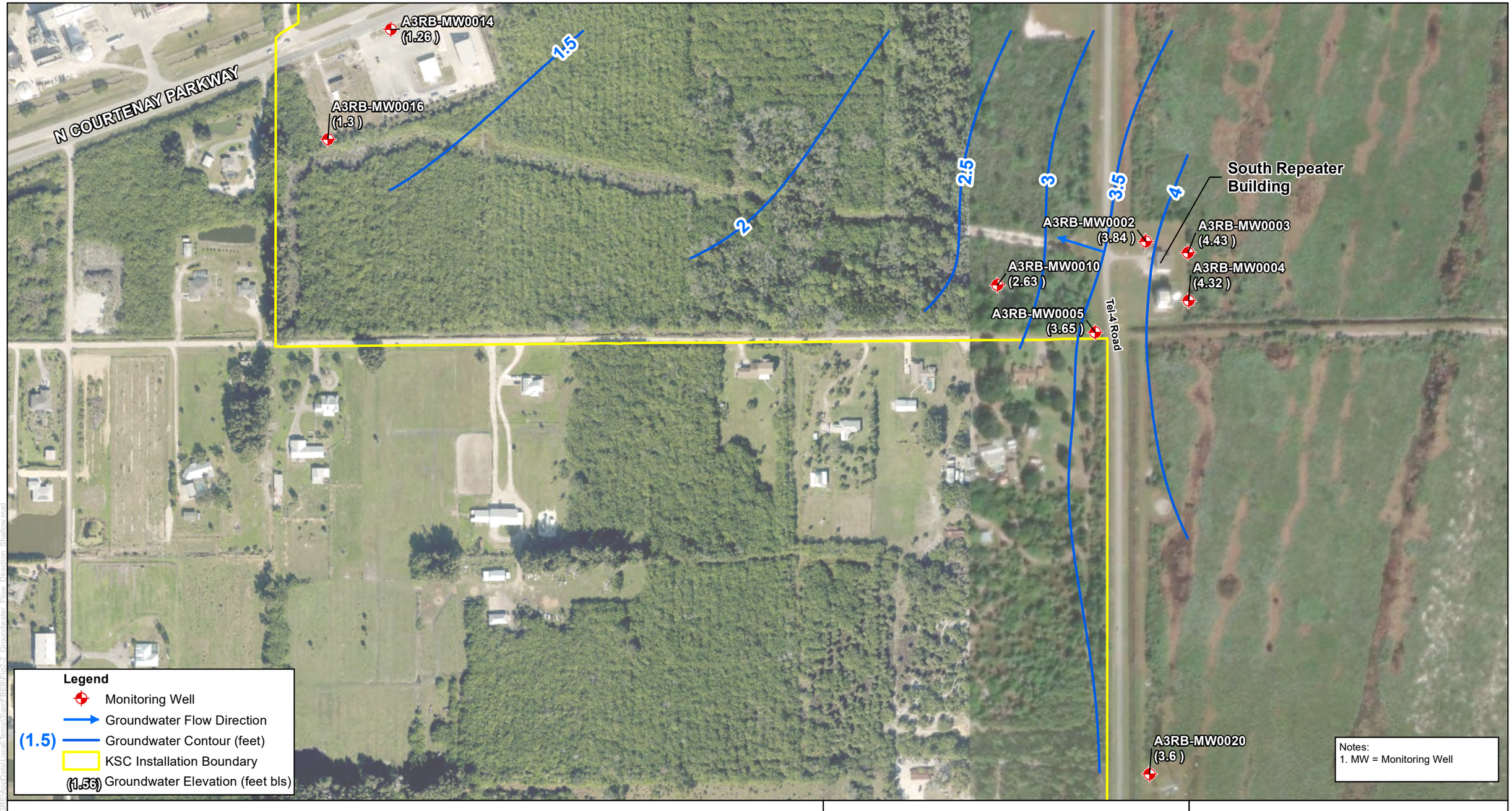

MAPPING NOTES:
*Well Was Not Included in GW Flow Direction Mapping
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 300 Feet

0 150 300 600 Feet

N

AECOM

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SPACE CENTER
MERRITT ISLAND, FLORIDA

Date Saved: 12/27/2023

FIGURE 2-2
GROUNDWATER FLOW DIRECTION
SHALLOW ZONE
MAY 2023
SOUTH REPEATER BUILDING

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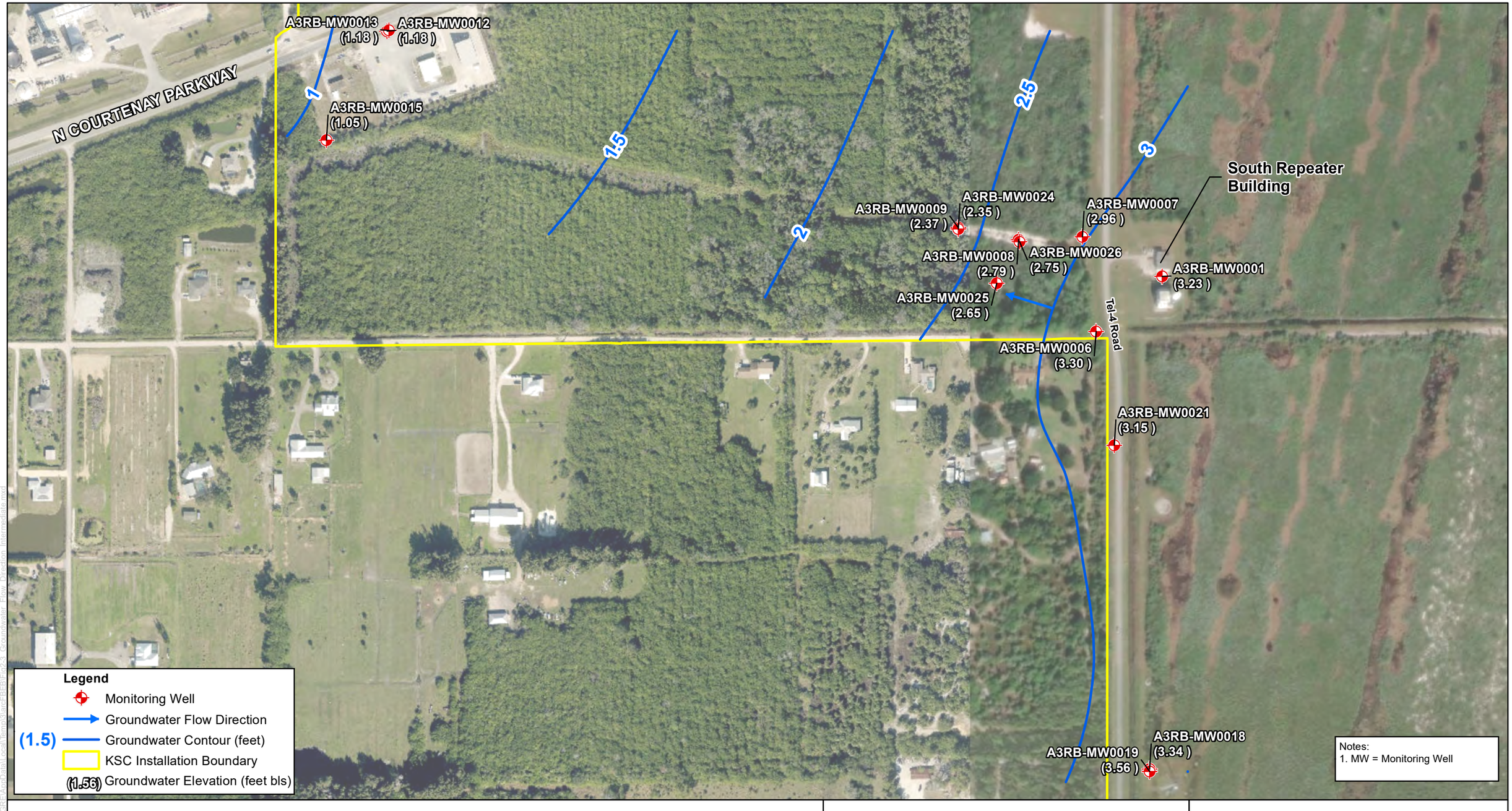

MAPPING NOTES:
*Well Was Not Included in GW Flow Direction Mapping
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 300 Feet

0 150 300 600 Feet

N

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MERRITT ISLAND, FLORIDA

Date Saved: 12/27/2023

FIGURE 2-3
GROUNDWATER FLOW DIRECTION
INTERMEDIATE ZONE
MAY 2023
SOUTH REPEATER BUILDING

A3RB-MW0011
(1.27)

N COURTENAY PARKWAY

1.5

2

2.5

A3RB-MW0027
(2.92)

3

South Repeater
Building

A3RB-MW0022
(3.05)

A3RB-MW0023
(3.21)

Tel-4 Road

A3RB-MW0017
(3.35)

Legend

- Monitoring Well
- Groundwater Flow Direction
- (1.5) Groundwater Contour (feet)
- KSC Installation Boundary
- (1.56) Groundwater Elevation (feet bls)

Notes:
1. MW = Monitoring Well

MAPPING NOTES:
*Well Was Not Included in GW Flow Direction Mapping
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 300 Feet

0 150 300 600 Feet

N

AECOM

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SPACE CENTER
MERRITT ISLAND, FLORIDA

Date Saved: 12/27/2023

FIGURE 2-4
GROUNDWATER FLOW DIRECTION
DEEP ZONE
MAY 2023
SOUTH REPEATER BUILDING

Document Path: M:\Gisprojects\Projects\NASA\KSC\PFAS_SA_Mlm\mxd\Progress_Report_Figures_202312\Fig2-4_Groundwater_Flow_Direction_Deep.mxd

Document Path: M:\Gisprojects\Projects\NASA\KSC\PFAS_SA_M\mxd\Progress_Report_Figures_20231212\F2-5_Litho_LocationV3.mxd

AECOM

Notes:
1. Aerial Source: FDOT 2018
2. Vertical Datum is NAVD88 (US foot)

0 40 80 Feet

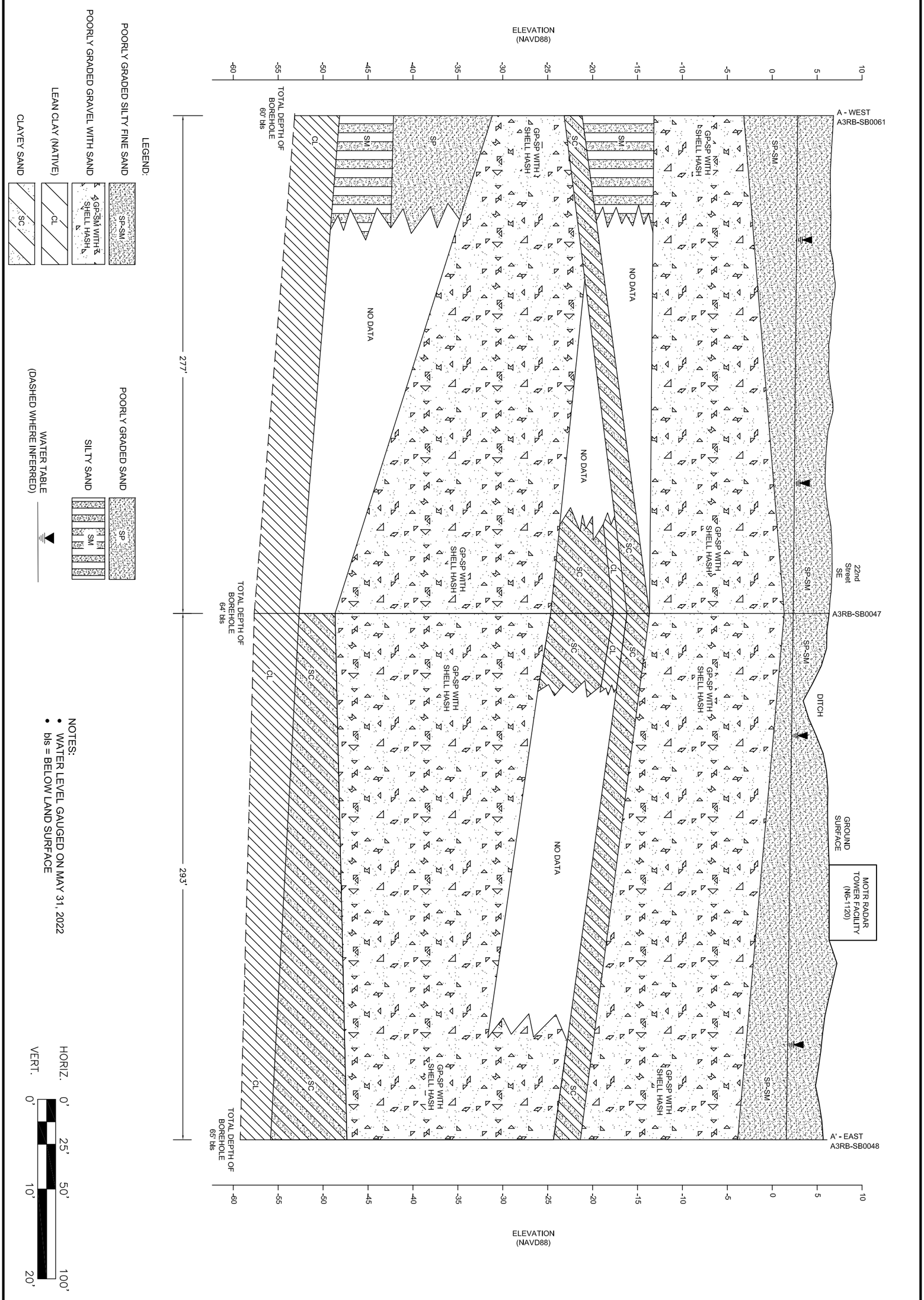
N

Source
Orthoimagery from Brevard County, 2018.

JOHN F. KENNEDY
SPACE CENTER
MERRITT ISLAND, FLORIDA

DATE: 12/27/2023 | DRWN: SD / AD

FIGURE 2-5
LITHOLOGIC CROSS-SECTION LOCATION



SOUTH REPEATER BUILDING
KENNEDY SPACE CENTER, FLORIDA

LITHOLOGICAL CROSS SECTION

AECOM

Figure: 2-6

Date: 2023-03-30

MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 125 Feet

0 45 90 180 Feet

N

AECOM

JOHN F. KENNEDY
SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: SD / AD | Date Saved: 12/27/2023

FIGURE 2-7
HISTORICAL PFAS SAMPLE LOCATIONS
SOUTH REPEATER BUILDING

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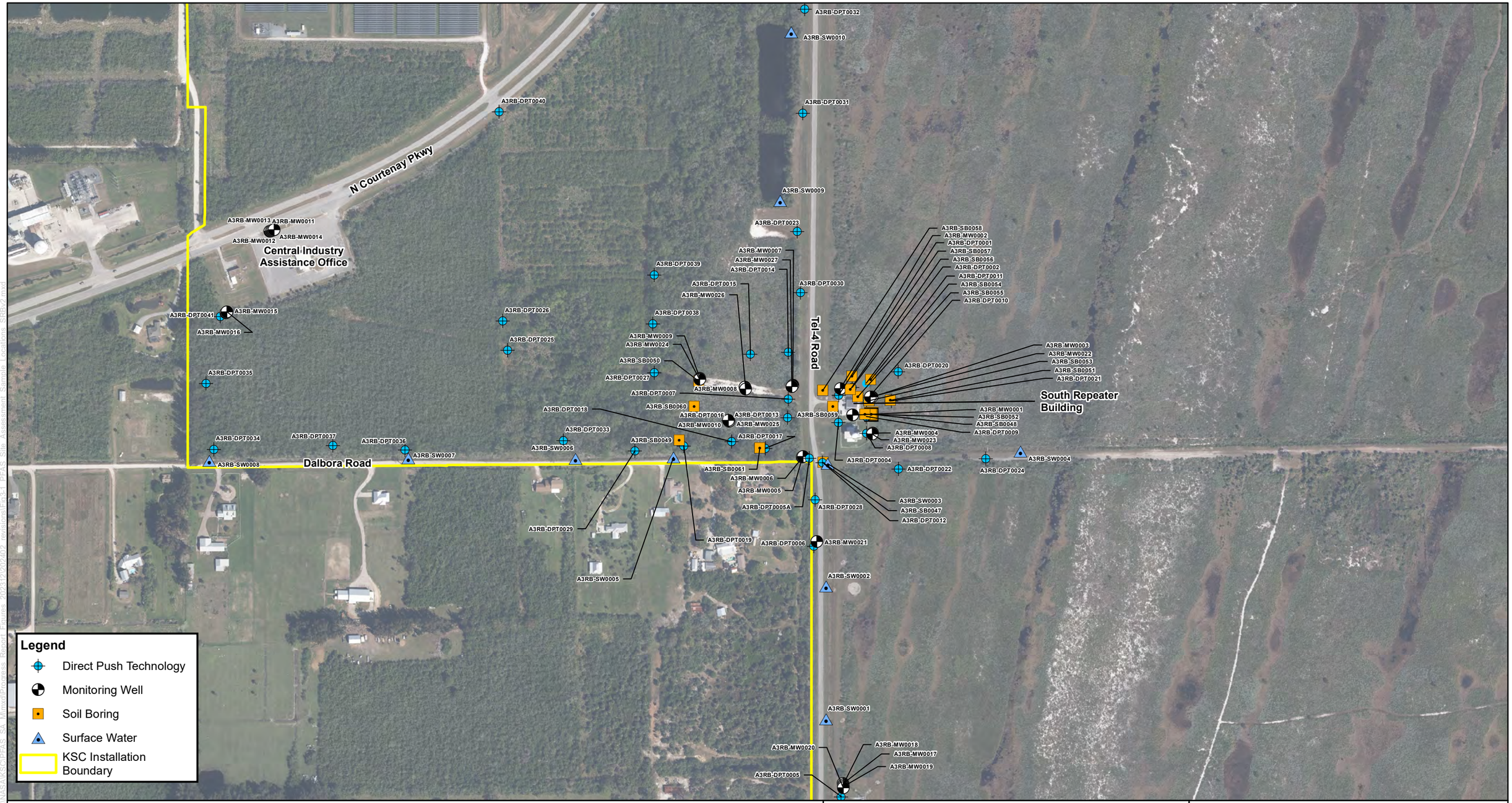


MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 400 Feet

0 200 400 800 Feet

N

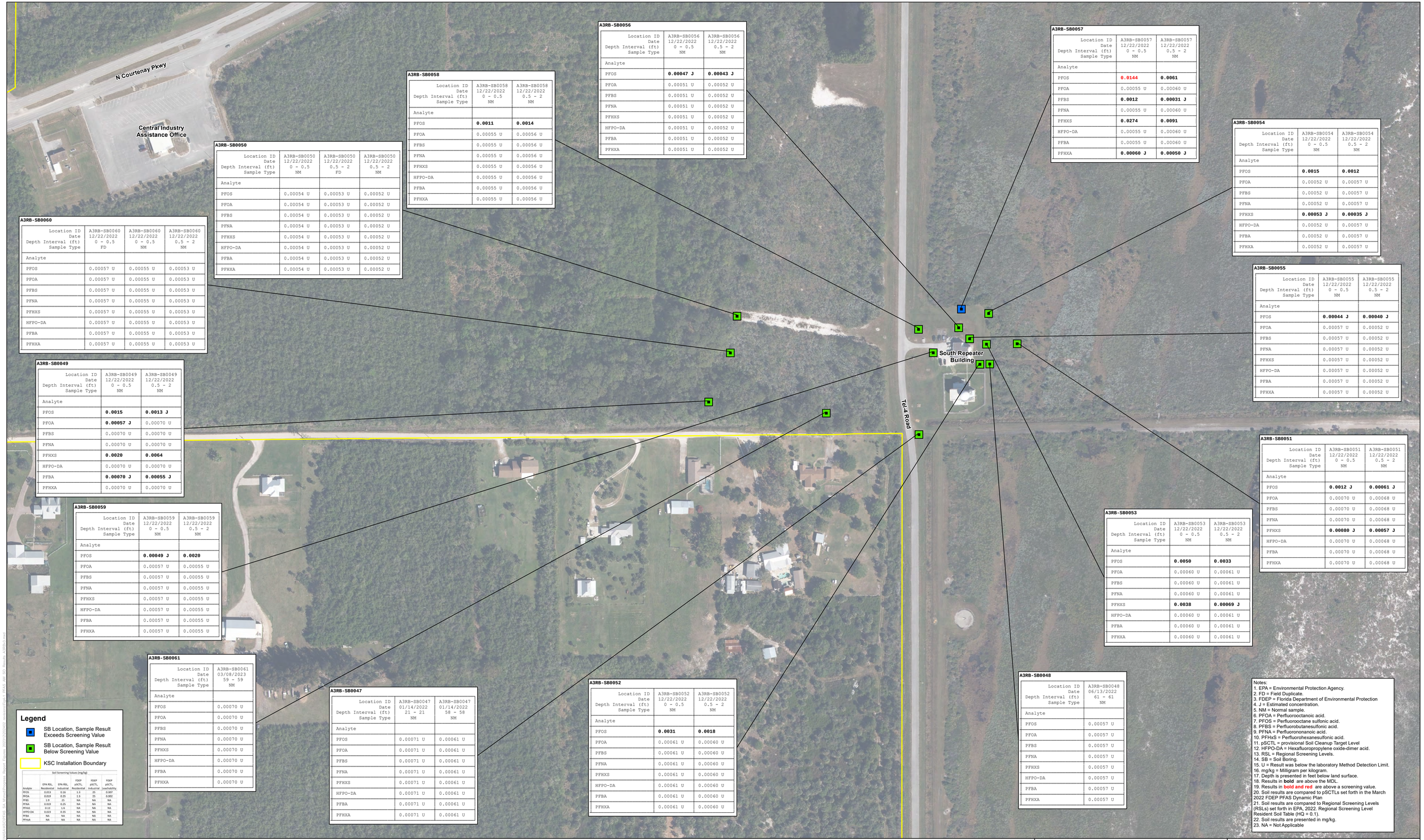
AECOM

JOHN F. KENNEDY
SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: AD | Date Saved: 2/5/2024

FIGURE 3-1
PFAS SITE ASSESSMENT
SAMPLE LOCATIONS
SOUTH REPEATER BUILDING

Document Path: M:\Gisprojects\Projects\NASA\KSC\PFAS_SA_Mlmxd\Progress_Report_Figures_20231202\20240202_revisions\Fig3-1_PFAS_Site_Assessment_Sample_Locations_SRBv2.mxd



A3RB-SB0060

Location ID	A3RB-SB0060	A3RB-SB0060	A3RB-SB0060
Date	12/22/2022	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0 - 0.5	0.5 - 2
Sample Type	FD	NM	NM
Analyte			
PFOS	0.00057 U	0.00055 U	0.00053 U
PFOA	0.00057 U	0.00055 U	0.00053 U
PFBS	0.00057 U	0.00055 U	0.00053 U
PFNA	0.00057 U	0.00055 U	0.00053 U
PFHXS	0.00057 U	0.00055 U	0.00053 U
HFPO-DA	0.00057 U	0.00055 U	0.00053 U
PFBA	0.00057 U	0.00055 U	0.00053 U
PFHXA	0.00057 U	0.00055 U	0.00053 U

A3RB-SB0049

Location ID	A3RB-SB0049	A3RB-SB0049
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0015**	**0.0013 J**
PFOA	**0.00057 J**	0.00070 U
PFBS	0.00070 U	0.00070 U
PFNA	0.00070 U	0.00070 U
PFHXS	**0.0020**	**0.0064**
HFPO-DA	0.00070 U	0.00070 U
PFBA	**0.00070 J**	**0.00055 J**
PFHXA	0.00070 U	0.00070 U

A3RB-SB0059

Location ID	A3RB-SB0059	A3RB-SB0059
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.00049 J**	**0.0020**
PFOA	0.00057 U	0.00055 U
PFBS	0.00057 U	0.00055 U
PFNA	0.00057 U	0.00055 U
PFHXS	0.00057 U	0.00055 U
HFPO-DA	0.00057 U	0.00055 U
PFBA	0.00057 U	0.00055 U
PFHXA	0.00057 U	0.00055 U

A3RB-SB0050

Location ID	A3RB-SB0050	A3RB-SB0050	A3RB-SB0050
Date	12/22/2022	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2	0.5 - 2
Sample Type	NM	FD	NM
Analyte			
PFOS	0.00054 U	0.00053 U	0.00052 U
PFOA	0.00054 U	0.00053 U	0.00052 U
PFBS	0.00054 U	0.00053 U	0.00052 U
PFNA	0.00054 U	0.00053 U	0.00052 U
PFHXS	0.00054 U	0.00053 U	0.00052 U
HFPO-DA	0.00054 U	0.00053 U	0.00052 U
PFBA	0.00054 U	0.00053 U	0.00052 U
PFHXA	0.00054 U	0.00053 U	0.00052 U

A3RB-SB0058

Location ID	A3RB-SB0058	A3RB-SB0058
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0011**	**0.0014**
PFOA	0.00055 U	0.00056 U
PFBS	0.00055 U	0.00056 U
PFNA	0.00055 U	0.00056 U
PFHXS	0.00055 U	0.00056 U
HFPO-DA	0.00055 U	0.00056 U
PFBA	0.00055 U	0.00056 U
PFHXA	0.00055 U	0.00056 U

A3RB-SB0056

Location ID	A3RB-SB0056	A3RB-SB0056
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.00047 J**	**0.00043 J**
PFOA	0.00051 U	0.00052 U
PFBS	0.00051 U	0.00052 U
PFNA	0.00051 U	0.00052 U
PFHXS	0.00051 U	0.00052 U
HFPO-DA	0.00051 U	0.00052 U
PFBA	0.00051 U	0.00052 U
PFHXA	0.00051 U	0.00052 U

A3RB-SB0057

Location ID	A3RB-SB0057	A3RB-SB0057
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0144**	**0.0061**
PFOA	0.00055 U	0.00060 U
PFBS	**0.0012**	**0.00031 J**
PFNA	0.00055 U	0.00060 U
PFHXS	**0.0274**	**0.0091**
HFPO-DA	0.00055 U	0.00060 U
PFBA	0.00055 U	0.00060 U
PFHXA	**0.00060 J**	**0.00050 J**

A3RB-SB0054

Location ID	A3RB-SB0054	A3RB-SB0054
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0015**	**0.0012**
PFOA	0.00052 U	0.00057 U
PFBS	0.00052 U	0.00057 U
PFNA	0.00052 U	0.00057 U
PFHXS	**0.00053 J**	**0.00035 J**
HFPO-DA	0.00052 U	0.00057 U
PFBA	0.00052 U	0.00057 U
PFHXA	0.00052 U	0.00057 U

A3RB-SB0055

Location ID	A3RB-SB0055	A3RB-SB0055
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.00044 J**	**0.00040 J**
PFOA	0.00057 U	0.00052 U
PFBS	0.00057 U	0.00052 U
PFNA	0.00057 U	0.00052 U
PFHXS	0.00057 U	0.00052 U
HFPO-DA	0.00057 U	0.00052 U
PFBA	0.00057 U	0.00052 U
PFHXA	0.00057 U	0.00052 U

A3RB-SB0051

Location ID	A3RB-SB0051	A3RB-SB0051
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0012 J**	**0.00061 J**
PFOA	0.00070 U	0.00068 U
PFBS	0.00070 U	0.00068 U
PFNA	0.00070 U	0.00068 U
PFHXS	**0.00080 J**	**0.00057 J**
HFPO-DA	0.00070 U	0.00068 U
PFBA	0.00070 U	0.00068 U
PFHXA	0.00070 U	0.00068 U

A3RB-SB0053

Location ID	A3RB-SB0053	A3RB-SB0053
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0050**	**0.0033**
PFOA	0.00060 U	0.00061 U
PFBS	0.00060 U	0.00061 U
PFNA	0.00060 U	0.00061 U
PFHXS	**0.0038**	**0.00069 J**
HFPO-DA	0.00060 U	0.00061 U
PFBA	0.00060 U	0.00061 U
PFHXA	0.00060 U	0.00061 U

A3RB-SB0048

Location ID	A3RB-SB0048
Date	06/13/2022
Depth Interval (ft)	61 - 61
Sample Type	NM
Analyte	
PFOS	0.00057 U
PFOA	0.00057 U
PFBS	0.00057 U
PFNA	0.00057 U
PFHXS	0.00057 U
HFPO-DA	0.00057 U
PFBA	0.00057 U
PFHXA	0.00057 U

A3RB-SB0061

Location ID	A3RB-SB0061
Date	03/08/2023
Depth Interval (ft)	59 - 59
Sample Type	NM
Analyte	
PFOS	0.00070 U
PFOA	0.00070 U
PFBS	0.00070 U
PFNA	0.00070 U
PFHXS	0.00070 U
HFPO-DA	0.00070 U
PFBA	0.00070 U
PFHXA	0.00070 U

A3RB-SB0047

Location ID	A3RB-SB0047	A3RB-SB0047
Date	01/14/2022	01/14/2022
Depth Interval (ft)	21 - 21	58 - 58
Sample Type	NM	NM
Analyte		
PFOS	0.00071 U	0.00061 U
PFOA	0.00071 U	0.00061 U
PFBS	0.00071 U	0.00061 U
PFNA	0.00071 U	0.00061 U
PFHXS	0.00071 U	0.00061 U
HFPO-DA	0.00071 U	0.00061 U
PFBA	0.00071 U	0.00061 U
PFHXA	0.00071 U	0.00061 U

A3RB-SB0052

Location ID	A3RB-SB0052	A3RB-SB0052
Date	12/22/2022	12/22/2022
Depth Interval (ft)	0 - 0.5	0.5 - 2
Sample Type	NM	NM
Analyte		
PFOS	**0.0031**	**0.0018**
PFOA	0.00061 U	0.00060 U
PFBS	0.00061 U	0.00060 U
PFNA	0.00061 U	0.00060 U
PFHXS	0.00061 U	0.00060 U
HFPO-DA	0.00061 U	0.00060 U
PFBA	0.00061 U	0.00060 U
PFHXA	0.00061 U	0.00060 U

Legend

- SB Location, Sample Result Exceeds Screening Value
- SB Location, Sample Result Below Screening Value
- KSC Installation Boundary

Soil Screening Values (mg/kg)

Analyte	EPA RSL, Residential	EPA RSL, Industrial	FDEP pSCTL, Residential	FDEP pSCTL, Industrial	FDEP pSCTL, Leachability
PFOS	0.013	0.16	1.3	25	0.007
PFOA	0.019	0.25	1.9	25	0.002
PFBS	1.9	25	NA	NA	NA
PFNA	0.019	0.25	NA	NA	NA
PFHxS	0.13	1.6	NA	NA	NA
HFPO-DA	0.023	0.35	NA	NA	NA
PFBA	NA	NA	NA	NA	NA
PFHxA	NA	NA	NA	NA	NA

Notes:
1. EPA = Environmental Protection Agency.
2. FD = Field Duplicate.
3. FDEP = Florida Department of Environmental Protection
4. J = Estimated concentration.
5. NM = Normal sample.
6. PFOA = Perfluorooctanoic acid.
7. PFOS = Perfluorooctane sulfonic acid.
8. PFBS = Perfluorobutanesulfonic acid.
9. PFNA = Perfluorononanoic acid.
10. PFHxS = Perfluorohexanesulfonic acid.
11. pSCTL = provisional Soil Cleanup Target Level
12. HFPO-DA = Hexafluoropropylene oxide-dimer acid.
13. RSL = Regional Screening Levels.
14. SB = Soil Boring.
15. U = Result was below the laboratory Method Detection Limit.
16. mg/kg = Milligram per kilogram.
17. Depth is presented in feet below land surface.
18. Results in **bold** are above the MDL.
19. Results in **bold and red** are above a screening value.
20. Soil results are compared to pSCTLs set forth in the March 2022 FDEP PFAS Dynamic Plan.
21. Soil results are compared to Regional Screening Levels (RSLs) set forth in EPA, 2022. Regional Screening Level Resident Soil Table (HQ = 0.1).
22. Soil results are presented in mg/kg.
23. NA = Not Applicable

MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 125 Feet

0 62.5 125 250 Feet

N

AECOM

JOHN F. KENNEDY SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: LG/AD | Date Saved: 2/22/2024

FIGURE 4-1
PFAS SOIL SAMPLING RESULTS
SOUTH REPEATER BUILDING

Legend

- MW Location, Sample Result Exceeds 1000x RSL
- MW Location, Sample Result Exceeds 100x RSL
- MW Location, Sample Result Exceeds 10x RSL
- MW Location, Sample Result Exceeds RSL
- MW Location, Sample Result Exceeds but Below MDL
- KSC Installation Boundary
- DPT Location, Sample Result Exceeds 1000x RSL
- DPT Location, Sample Result Exceeds 100x RSL
- DPT Location, Sample Result Exceeds 10x RSL
- DPT Location, Sample Result Exceeds RSL
- DPT Location, Sample Results Below RSL
- DPT Location, Sample Result Exceeds but Below MDL

Groundwater Screening Values (ng/L)		
Analyte	EPA RSL for Tapwater	FDEP pGCTL
PFOS	4	70
PFOA	6	70
PFBS	600	NA
PFNA	5.9	NA
PFHxS	39	NA
HFPO-DA	1.5	NA
PFBA	1800	NA
PFHxA	990	NA

Notes:
1. DPT = Direct Push Technology.
2. E = Indicates value exceeds calibration range.
3. EPA = Environmental Protection Agency.
4. FD = Field Duplicate.
5. FDEP = Florida Department of Environmental Protection
6. J = Estimated concentration.
7. MW = Monitoring Well
8. NM = Normal sample.
9. PFOA = Perfluorooctanoic acid.
10. PFOS = Perfluorooctane sulfonic acid.
11. PFBA = Perfluorobutanoic acid.
12. PFBS = Perfluorobutanesulfonic acid.
13. PFNA = Perfluorononanoic acid.
14. PFHxA = Perfluorohexanoic acid.
15. PFHxS = Perfluorohexanesulfonic acid.
16. pGCTL = provisional Groundwater Cleanup Target Level
17. HFPO-DA = Hexafluoropropylene oxide-dimer acid.
18. RSL = Regional Screening Levels.
19. U = Result was below the laboratory Method Detection Limit.
20. ng/L = Nanogram per liter.
21. Depth is presented in feet below land surface.
22. Depth of monitoring well screen interval is presented in feet below land surface.
23. Groundwater results are presented in ng/L. Units have been converted from values reported in micrograms per liter (µg/L).
24. Groundwater results are compared to pGCTLs set forth in the March 2022 FDEP PFAS Dynamic Plan
25. Groundwater results are compared to Regional Screening Levels (RSLs) set forth in EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1).
26. Results in **bold** are above the MDL
27. Results in **bold and red** are above a screening value.

MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 300 Feet

0 150 300 600 Feet

N

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JOHN F. KENNEDY
SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: A. Dudas | Date Saved: 2/22/2024

FIGURE 4-2
PFAS GROUNDWATER SAMPLING RESULTS
SOUTH REPEATER BUILDING

A3RB-SW0005

Location ID / Date / Sample Type	A3RB-SW0005 12/16/2022 NM
Analyte	
PFOA	**4.9**
PFOS	**72.3**

A3RB-SW0006

Location ID / Date / Sample Type	A3RB-SW0006 12/16/2022 NM
Analyte	
PFOA	**5.8**
PFOS	**49.6**

A3RB-SW0010

Location ID / Date / Sample Type	A3RB-SW0010 03/15/2023 NM
Analyte	
PFOA	**8.9**
PFOS	**562**

A3RB-SW0009

Location ID / Date / Sample Type	A3RB-SW0009 03/15/2023 NM
Analyte	
PFOA	**9.0**
PFOS	**661**

A3RB-SW0003

Location ID / Date / Sample Type	A3RB-SW0003 12/16/2022 NM
Analyte	
PFOA	**1.1 J**
PFOS	**2.9 J**

A3RB-SW0008

Location ID / Date / Sample Type	A3RB-SW0008 12/16/2022 NM
Analyte	
PFOA	**5.5**
PFOS	**86.1**

A3RB-SW0004

Location ID / Date / Sample Type	A3RB-SW0004 12/16/2022 NM
Analyte	
PFOA	2.4 U
PFOS	**3.3 J**

A3RB-SW0007

Location ID / Date / Sample Type	A3RB-SW0007 12/16/2022 FD	A3RB-SW0007 12/16/2022 NM
Analyte		
PFOA	**5.4**	**5.5**
PFOS	**71.6**	**69.7**

A3RB-SW0002

Location ID / Date / Sample Type	A3RB-SW0002 12/16/2022 NM
Analyte	
PFOA	3.2 U
PFOS	**5.5 J**

A3RB-SW0001

Location ID / Date / Sample Type	A3RB-SW0001 12/16/2022 NM
Analyte	
PFOA	2.4 U
PFOS	**7.6**

N Courtenay Pkwy

Cental Industry Assistance Office

Dalbora Road

South Repeater Building

Tel-4 Road

Legend

Media Type, Exceedance Level

- SW Location, Sample Result Exceeds 10x SWSL
- SW Location, Sample Result Exceeds SWSL
- SW Location, Sample Result Below SWSL
- KSC Installation Boundary

Surface Water Screening Level Values		
Analyte	Human Health (ng/L)	Ecological Health (ng/L)
PFOA	500	1,300,000
PFOS	10	37,000

Notes:
1. FD = Field Duplicate.
2. FDEP = Florida Department of Environmental Protection.
3. J = Estimated concentration.
4. NM = Normal sample.
5. PFOA = Perfluorooctanoic acid.
6. PFOS = Perfluorooctane sulfonic acid.
7. SWSL = Surface Water Screening Level.
8. U = Result was below the laboratory Method Detection Limit.
9. ng/L = Nanogram per liter.
10. Results in **bold** are above the MDL.
11. Results in **bold and red** are above a screening value.
12. Surface water results are compared to screening values set forth in Table 5 of FDEP PFAS Dynamic Plan dated March 2022, for Human Health based on Probabilistic Risk Assessment.
13. Surface water results are presented in ng/L. Units have been converted from values reported in micrograms per liter (µg/L) and Dynamic Plan screening values have been converted

MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 200 Feet

0 100 200 400 Feet

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FIGURE 4-3
PFAS SURFACE WATER SAMPLING RESULTS

APPENDIX A
HISTORICAL PFAS ANALYTICAL RESULTS

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Historical PFAS Analytical Results
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Analyte					PERFLUOROOCTANESULFONIC ACID (PFOS)	PENTADECAFLUOROOCTANOIC ACID (PFOA)	PERFLUOROBUTANESULFONIC ACID (PFBS)	PERFLUORONONANOIC ACID (PFNA)	PERFLUOROHEXANESULFONIC ACID (PFHXS)	HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)
EPA Residential Regional Screening Levels Tapwater (ng/L)					**4**	**6**	601	6	39	6
Location	**Location ID**	**Sample Date**	**Sample Depth (feet-bls)**	**Sample Type**						
South Repeater Building	A3RB-MW0002	9/21/2021	2 to 12	NM	**1750**	**13.7**	**63.7**	**2.6 J**	**1950**	8.0 U
		9/21/2021		FD	**1630**	**13.2**	**60.7**	**2.3 J**	**1820**	8.0 U
	A3RB-DPT0005A	10/18/2021	6 to 10	NM	**3.0 J**	0.89 U	0.89 U	0.89 U	**2.9 J**	1.8 U
		10/18/2021	21 to 25	NM	**5.0**	0.86 U	0.86 U	0.86 U	0.86 U	1.7 U
		10/18/2021	31 to 35	NM	**1.6 J**	0.86 U	0.86 U	0.86 U	0.86 U	1.7 U
		10/18/2021	41 to 45	NM	**1.3 J**	0.88 U	0.88 U	0.88 U	0.88 U	1.8 U
	A3RB-DPT0006	10/18/2021	6 to 10	NM	**16**	**4.2**	**2.8 J**	**1.5 J**	**23.0**	1.8 U
		10/18/2021	21 to 25	NM	**1.3 J**	0.93 U	0.93 U	0.93 U	0.93 U	1.9 U
		10/18/2021	31 to 35	NM	**3.2 J**	0.87 U	0.87 U	0.87 U	0.87 U	1.7 U
		10/18/2021	41 to 45	NM	**3.7**	0.87 U	0.87 U	0.87 U	**1.0 J**	1.7 U
	A3RB-DPT0007	10/19/2021	6 to 10	NM	**280**	10.0 U	10.0 U	10.0 U	**150**	20 U
		10/19/2021	21 to 25	NM	**30**	**10**	**32**	0.87 U	**370**	1.7 U
		10/19/2021	31 to 35	NM	**1.2 J**	0.87 U	0.87 U	0.87 U	0.87 U	1.7 U
		10/19/2021	41 to 45	NM	**2.4 J**	0.89 U	0.89 U	0.89 U	**1.0 J**	1.8 U
	PFAS-DPT0262	11/22/2021	6 to 10	NM	**45.5**	4.0 U	**2.0 J**	4.0 U	**46.7**	8.0 U
		11/22/2021	21 to 25	NM	**252**	**3.0 J**	**9.5**	4.0 U	**191**	8.0 U
		11/22/2021	31 to 35	NM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10.0 U
		11/23/2021	41 to 45	NM	**71.9**	**4.3 J**	**4.5 J**	5.6 U	**79.7**	10.0 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
EPA = United Sates Environmental Protection Agency
ft = Feet
ft bls = Feet Below Land Surface
A3RB = Area 3 Repeater Building
J = Estimated value
NM - Normal Sample
PFAS = Per-and polyfluoroalkyl substances
Results are presented in nanograms per liter (ng/L)
U = Result was below the laboratory Reporting Limit
Yellow Highlighted cell indicates an exceedance Provisional Surface Water Cleanup Target Levels

APPENDIX B
FIELD DOCUMENTATION

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BORING NUMBER A3RB-SB0047

AECOM

TOTAL DEPTH 64 FT BGS
PAGE 1 OF 1

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER KSC
SITE NAME A3RB
DATE STARTED 01/14/2022 **COMPLETED** N/A
SURVEYING BY
DRILLING CONTRACTOR EDS
ON **GROUND ELEVATION** N/A
DRILLING EQUIPMENT Geoprobe 7822DT
EASTING N/A **NORTHING** N/A
DRILLING METHOD Direct-push
HOLE DIAMETER long by wide
LOGGED BY Chris Marshall **CHECKED BY** N/A
CASING TYPE N/A

DEPTH (ft)	SAMPLE	RECOVERY %	FID (ppm)	GRAPHIC LOG		MATERIAL DESCRIPTION
0	HA	100	89		0.00	Silty sand (SM), fine, poorly graded, subangular, 25-35% silt, Organics throughout [NATIVE] - 10YR 2/1 (black), wet - no odour, no staining - non-cohesive, loose
			94			
			465		5.00	Poorly graded gravel with sand (GP), medium to coarse, subangular, 30-40% subangular, fine sand, Shell (hash) with sand [NATIVE] - 10YR 7/2 (light gray), wet - no odour, no staining - non-cohesive
	DP	100	269			
10			152			
	DP	60	120			
			127			
	DP	80	119			
			110			
20			116		18.00	Poorly graded gravel (GP), very coarse, angular, <5% shell, very hard silicified layer. [NATIVE] - 10YR 5/1 (gray), moist - hydrocarbon odour, no staining - cohesive
	DP	80	130		20.00	
			140		22.50	
	DP	80	89		24.00	Clayey sand (SC), poorly graded, subangular, 30-40% clay, Sampled at 21 for lab analyses [NATIVE] - 10BG 5/1 (greenish gray), wet - hydrocarbon odour, no staining - non-cohesive, loose
			63			
30			122			
	DP	80	144		31.00	Lean clay (CL) [NATIVE] - 10BG 5/1 (greenish gray), wet - hydrocarbon odour, no staining - cohesive, very soft
			118			
	DP	50	106			Clayey sand (SC), poorly graded, subangular, 30-40% clay, Sampled at 21 for lab analyses [NATIVE] - 10BG 5/1 (greenish gray), wet - hydrocarbon odour, no staining - non-cohesive, loose
40			94			
	DP	50	25		40.00	Poorly graded sand (SP), fine, subangular, <10% subangular, medium gravel, There is a band of 15% shell within this unit at 36.5-37'. [NATIVE] - 10YR 5/1 (gray), wet - no odour, no staining - non-cohesive, loose
			16			
	DP	50	11			
			16			
50			17			
	DP	50	12			Poorly graded sand (SP), very fine, subrounded [NATIVE] - 10YR 6/1 (gray), wet - no odour, no staining - non-cohesive, medium dense
			10			
	DP	90	12		55.00	Clayey sand (SC), very fine, poorly graded, subrounded, 25-35% clay, Samples collected at 58' for lab analyses [NATIVE] - 10BG 5/1 (greenish gray), wet - no odour, no staining - non-cohesive, loose
			3			
60			3		59.00	
	DP	100	5			Lean clay (CL), Interbedded shell layers within interval. End of boring at 64' (refusal). [NATIVE] - 10BG 5/1 (greenish gray), wet - no odour, no staining - cohesive, medium stiff
			5			

Bottom of borehole at 64 feet.

PFAS SA+M
OPT Event

1/14/22 — Pg 1 of 1 — SM EDS CM

0650 Arrive at Raptor Facility. Tailgate/Safety meeting + Call back
0700 Navigate to Soil Core location
0730 Begin Soil Core ASRB-SB0047
0820 Drill and Stuck at ground 20' BGS due to subsurface debris/concrete. Driller Calling for assistance removing equipment
1120 Additional EDS personnel arrived with equipment to remove drilling rods
ASRB-SB0047-0010 1206
ASRB-20220114-01 1212
1200 Removed drilling. Found possible Confining layer ≈ 21'-24' BLS
2nd Confining Layer (Silt Clay) at 58'-65
1435 Sampled ASRB-SB0047-058.0-20220114
1512 Backfilled Reboard @ 64' BLS
1630 All personnel off Site

PFAS CAPA
OPT Event

1/17/22 — Pg 1 of 2 — SM EDS

0800 Arrive at Badger to pick up Safety Binder for RFSF
0740 Arrive at drilling rig to mobilize equipment.
0800 Breakfast at RFSF. No entrance or Guards found. Cannot get access
0830 Arrive at point #3 on Fig 2a at VABN. Not Cleared with utilities, too many underground utilities in the area. Mobilize to next point
0850 Arrive at point #4 of Fig 2a at VABN. Cleared and Mobilized drill rig.
0915 Begin drilling + HA to 5' @ VABN-DPT0003
Sampled 9' @ 0950
23' @ 1025
MS/MSD 01 → 32' @ 1105
41' @ 1140
48' @ 1305
1310 Clean up + Grout hole and Mobilize to next location at FS2
1341 Arrive at Location #7 at FS2. Location is too steep to reach with rig. Called Megan to discuss moving to next pt

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0008-004.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0008	Analysis:	PFAS
Remark:	FD & EB collected		

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	8:09	6.81	516	4.33	800	19.28	-105.8			
1/19/2022	8:15	6.79	507	4.66	800	19.48	-112.7			
1/19/2022	8:20	6.75	512	3.25	800	19.52	-116.4			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:09	8:20	11	6.75	512	3.25	800	19.52	-116.4

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0008-010.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0008	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	8:35	7.3	701	8.5	800	18.16	-57.7			
1/19/2022	8:40	7.32	692	8.44	800	18.02	-58.9			
1/19/2022	8:45	7.35	693	8.81	800	18.07	-59.1			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:35	8:45	10	7.35	693	8.81	800	18.07	-59.1

DPT SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS Investigation SA & Mitigation

Site Name: Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)

Project No: 60667657

Sample ID: A3RB-DPT0008-025.0-20220119 Sampler: Chris Marshall

Well ID: A3RB-DPT0008 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	9:10	7.31	584	0.62	800	22.7	-153.2			
1/19/2022	9:15	7.23	571	0.84	800	22.7	-160.8			
1/19/2022	9:20	7.22	575	2.04	800	22.63	-163.9			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:10	9:20	10	7.22	575	2.04	800	22.63	-163.9

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0008-042.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0008	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	10:00	7.3	2480	1.28	800	23.77	-147.9			
1/19/2022	10:05	7.32	2531	0.7	800	23.88	-161.4			
1/19/2022	10:10	7.34	2577	1.08	800	23.53	-29.2			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:00	10:10	10	7.34	2577	1.08	800	23.53	-29.2

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0009-004.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0009	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	11:00	5.88	543	4.6	800	20.38	-31.7			
1/19/2022	11:55	5.94	536	2.46	800	20.67	-40.4			
1/19/2022	12:05	5.92	551	5.27	800	20.51	-35.7			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:00	12:05	65	5.92	551	5.27	800	20.51	-35.7

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0009-010.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0009	Analysis:	PFAS
Remark:	MS MSD Collected		

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	12:25	7.19	736	7.38	380	25.21	-45.7			
1/19/2022	12:30	7.38	723	8.13	299	24.05	-36.3			
1/19/2022	12:35	7.39	714	8.2	289	24	-31.4			
1/19/2022	12:40	7.44	709	8.21	288	24.17	-32.4			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:25	12:40	15	7.44	709	8.21	288	24.17	-32.4

DPT SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS Investigation SA & Mitigation

Site Name: Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)

Project No: 60667657

Sample ID: A3RB-DPT0009-025.0-20220119 Sampler: Chris Marshall

Well ID: A3RB-DPT0009 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	13:10	6.99	712	1.4	800	28.01	-136			
1/19/2022	13:15	7.06	711	1.77	800	27.53	-142.5			
1/19/2022	13:20	7.06	707	1.73	800	27.11	-141.9			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:10	13:20	10	7.06	707	1.73	800	27.11	-141.9

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0009-042.0-20220119	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0009	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/19/2022	13:55	7.31	3016	0.59	800	25.6	-191.5			
1/19/2022	14:00	7.32	3107	0.74	800	25.38	-203			
1/19/2022	14:05	7.3	3272	0.98	800	25.31	-188.5			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:55	14:05	10	7.3	3272	0.98	800	25.31	-188.5

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0010-004.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0010	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	7:00	5.42	302	5.99	800	17.25	-1			
1/24/2022	8:05	5.41	301	5.42	504	17.29	-8.6			
1/24/2022	8:10	5.41	299	5.38	457	17.27	-10.6			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
7:00	8:10	70	5.41	299	5.38	457	17.27	-10.6

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0010-010.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0010	Analysis:	PFAS
Remark:	FD/EB Collected		

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	8:30	7.08	663	7.86	323	17.46	-13.6			
1/24/2022	8:35	7.27	652	7.55	235	16.75	-39.3			
1/24/2022	8:40	7.36	641	8.66	55.9	16.44	-40.4			
1/24/2022	8:45	7.34	631	7.4	55.8	16.37	-40.5			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:30	8:45	15	7.34	631	7.4	55.8	16.37	-40.5

DPT SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS Investigation SA & Mitigation

Site Name: Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)

Project No: 60667657

Sample ID: A3RB-DPT0010-025.0-20220124 Sampler: Chris Marshall

Well ID: A3RB-DPT0010 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	9:20	7.36	771	0.98	800	14.4	-143.6			
1/24/2022	9:25	7.29	770	1.69	800	15.14	-147.2			
1/24/2022	9:30	7.25	769	3.07	800	15.54	-144.8			
1/24/2022	9:35	7.28	764	3.18	800	15.45	-137.2			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:20	9:35	15	7.28	764	3.18	800	15.45	-137.2

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0010-042.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0010	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	10:05	7.62	2692	1.21	800	21.28	-141.4			
1/24/2022	10:10	7.56	2853	1.18	800	21.25	-143.3			
1/24/2022	10:15	7.53	2884	1.3	800	21.24	-145.1			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:05	10:15	10	7.53	2884	1.3	800	21.24	-145.1

DPT SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS Investigation SA & Mitigation

Site Name: Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)

Project No: 60667657

Sample ID: A3RB-DPT0010-057.0-20220124 Sampler: Chris Marshall

Well ID: A3RB-DPT0010 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	10:55	7.75	3031	1.18	800	23.45	-221.2			
1/24/2022	11:00	7.69	3096	0.73	800	24.05	-231.4			
1/24/2022	11:05	7.65	3157	0.65	800	24.17	-236.6			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:55	11:05	10	7.65	3157	0.65	800	24.17	-236.6

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0011-004.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0011	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	11:40	6.52	600	5.2	671	20.3	-41.6			
1/24/2022	11:45	6.5	557	4.9	216	20.41	-46.1			
1/24/2022	11:50	6.52	557	3.65	189	20.3	-52.6			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:40	11:50	10	6.52	557	3.65	189	20.3	-52.6

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0011-010.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0011	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	12:10	7.05	697	4.51	118	21.36	-57.8			
1/24/2022	12:15	7.1	688	7.38	56.1	21.3	-56.1			
1/24/2022	12:20	7.13	683	7.6	7.59	21.62	-53.8			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:10	12:20	10	7.13	683	7.6	7.59	21.62	-53.8

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0011-025.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0011	Analysis:	PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	12:50	7.21	725	1.12	800	22.46	-131.1			
1/24/2022	12:55	7.22	704	0.61	800	22.57	-114.6			
1/24/2022	13:00	7.16	692	3.06	800	22.89	-82.5			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:50	13:00	10	7.16	692	3.06	800	22.89	-82.5

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0011-042.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0011	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/24/2022	13:25	7.44	2569	0.63	800	23.27	-173.2			
1/24/2022	13:30	7.4	2569	0.89	800	23.09	-179.1			
1/24/2022	13:35	7.45	2770	1.11	800	22.54	-172.2			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:25	13:35	10	7.45	2770	1.11	800	22.54	-172.2

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0012-004.0-20220124	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0012	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/26/2022	7:45	6.53	448	7.21	702	18.42	-43.7			
1/26/2022	7:50	6.49	440	5.22	561	18.51	-43.4			
1/26/2022	7:55	6.45	435	3.8	523	18.49	-42.7			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
7:45	7:55	10	6.45	435	3.8	523	18.49	-42.7

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0012-010.0-20220126	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0012	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/26/2022	8:15	6.98	558	5.46	172	20.3	-63.4			
1/26/2022	8:20	6.99	550	5.41	110	20.39	-60.6			
1/26/2022	8:25	7	549	5.85	98	19.94	-60.2			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:15	8:25	10	7	549	5.85	98	19.94	-60.2

DPT SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS Investigation SA & Mitigation

Site Name: Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)

Project No: 60667657

Sample ID: A3RB-DPT0012-025.0-20220126 Sampler: Chris Marshall

Well ID: A3RB-DPT0012 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/26/2022	8:50	7.1	614	2.1	800	21.92	-113.6			
1/26/2022	8:55	7.12	613	2.27	800	21.97	-115.9			
1/26/2022	9:00	7.13	612	2.15	800	21.98	-115.2			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:50	9:00	10	7.13	612	2.15	800	21.98	-115.2

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0012-034.0-20220126	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0012	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/26/2022	9:45	7.38	2543	1.5	800	22.43	-99.9			
1/26/2022	9:50	7.34	2655	1.29	800	22.43	-108.6			
1/26/2022	9:55	7.32	2708	1.23	800	22.35	-111.8			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:45	9:55	10	7.32	2708	1.23	800	22.35	-111.8

DPT SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS Investigation SA & Mitigation
Site Name:	Per- and Polyfluoroalkyl Substances (PFAS) Investigation (PRL 237)
Project No:	60667657

Sample ID:	A3RB-DPT0012-057.0-20220126	Sampler:	Chris Marshall
Well ID:	A3RB-DPT0012	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
1/26/2022	10:30	7.83	3658	0.55	800	20.76	-217.6			
1/26/2022	10:35	7.82	3817	0.48	800	20.22	-52.8			
1/26/2022	10:40	7.79	3866	0.47	800	20.14	-222.5			

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:30	10:40	10	7.79	3866	0.47	800	20.14	-222.5

PFAS SAIM

5/23/22 Well Install BF/CL

0640 Br. Henry Tollett and Chad Lee arrive at AECOM depot to pick up truck

0650 Depart AECOM depot

0800 BF and CL arrive at KSC South Repeater Building
- ~~H&S~~ meeting
- Weather: 81°F Sunny
- SOW: Install 8 shallow (2-12) and intermediate (20-30) wells with direct push technology drill rig.

0835 Begin A3RB-MW0040 well install Screen 2-12 ft bls. See Well construction logs for details

0850 Complete A3RB-MW0040. Mobilize to A3RB-MW0009

0900 Start well install at A3RB-MW0009 with screen at 20-30 ft bls. See well construction log for details

0935 Complete A3RB-MW0009. Mobilize to A3RB-MW0008

→

5/23/22 PFAS SA+M BF/CL
Well install Pg 2 of 8

1000 Complete A3RB-MW0008. Mobilize to A3RB-MW0007

1005 Start A3RB-MW0007 well install. Screen at 20-30 Ft bls.
0-16 Ft Concrete/grout/portland cement
16-18 Ft Fine Sand
18-30 Ft Filter Pack Sand
1-inch diameter SCH 40 PVC with 10ft 0.01 Screen

1040 Complete A3RB-MW0007, Mobilize to A3RB-MW0009 to begin development

1050 Begin development at A3RB-MW0009

1055 EDS off-site for lunch and to pick up concrete items for pads

1200 EDS arrives back on-site

1204 Complete development of A3RB-MW0009
15 gallons purged = 0.20 gpm

1240 Begin development of A3RB-~~MW0010~~ MW0008
~~Initial DTW = 8.41~~ at

1320 Complete development at A3RB-MW0008

5/23/22 PFAS-SA+M BF/CL
Well Install
Pg 3 of 8

1255 Begin well pad construction at A3RB-MW0009
3'x 3'x 4" concrete pad
Final DTW = 7.38

1325 Complete well pad construction at A3RB-MW0009

1350 Begin well pad construction on A3RB-MW0008
2'x 2'x 4" Concrete pad

1400 Begin well development at A3RB-MW0010. Initial DTW = 8.41'
- Begin well pad construction at A3RB-MW0008
2'x 2'x 4" Concrete pad

1415 Complete concrete pad for A3RB-MW0008

1444 Complete development of A3RB-MW0010

1445 Begin construction of A3RB-MW0010 well pad
3'x 3'x 4" Concrete pad

1515 Begin development of A3RB-MW0007

1534 Complete development of A3RB-MW0007
5 gallons purged = 0.36 gpm

1536 Begin well pad construction at A3RB-MW0007

1550 Complete well pad construction →

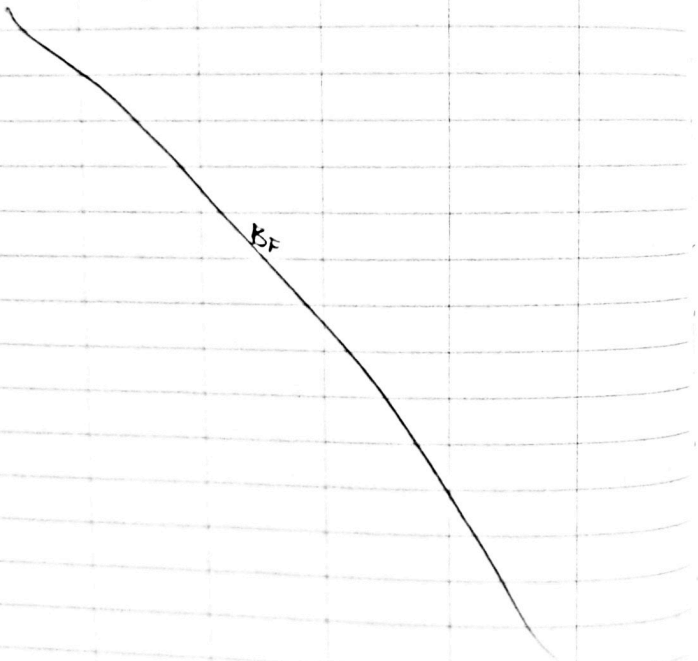
5/23/22 PFAS SA+M Well Install PS 4 of 8 BF/CL

1600 Depart A3RB for CCF to drop off IDW Drums and purge water
- CL off-site
- BF to Logistics to pick up drum labels

1630 BF and EDS arrive at CCF

1645 BF and EDS depart CCF

1800 BF arrives at depot. End of day



5/24/22 PFAS SA+M Well Install PS 5 of 8 BF/CL

0640 Depart AECOM depot for KSC South Repeater Building

0800 Arrive at KSC ~~Arrive~~ South Repeater Building to meet EDS
- H+S meeting
- Weather: 80°F Partly Cloudy
- SOW: Install 4 Shallow and Intermediate monitoring wells

0820 Begin installation of A3RB MW0006
0-5 Hand auger
0-16 Concrete/Grout - Portland Cement
16-18 Fine Sand
18-30 Filter Pack
Flush mount well with 2x2x4' Concrete pad and 8" manhole bolt down

0830 Dede Johansen KSC RPM arrives on-site to scope extra DPT locations

0850 Complete A3RB-MW0006

~~0905~~

0900 Start development of A3RB-MW0006

0905 Begin the 0-5 Hand Auger for A3RB-MW0005

0920 Complete A3RB-MW0005
0-0.5 Concrete/Grout - Portland Cement
0.5-1 Fine Sand
1-12 Filter Pack

A3RB-MW0005 construction details continued -

10 ft PVC slot 0.01 screen (2-12')

2 ft PVC (SCH 40) Riser

0928 ~~Begin development~~ Complete development of A3RB-MW0006

5 gallons purged = 0.33 gpm

0935 Begin development of A3RB-MW0005

0945 Complete development of A3RB-MW0005

5 gallons = 0.25 gpm

0949 Mobilize to A3RB-~~MW0004~~ MW0003

0957 Begin installation of A3RB-MW0003

- Hand auger 0-5 ft bls
- 0-0.5 ft Concrete|Grout - Portland Cement
- 0.5-1 ft Fine Sand
- 1-12 Filter pack
- 10 Foot PVC (SCH 40) Slot 0.01 Screen (2-12')
- 2 Ft PVC (SCH 40) Riser

1010 Complete A3RB-MW0003, ~~DI off-site~~

1012 Begin development of A3RB-MW0003

1040 Complete development of A3RB-MW0003 mobilize to A3RB-MW0004

5 gallons = 0.18 gpm

1050 Reda Johansen off-site

1050 Begin installation of A3RB-MW0004

- 0-5' feet hand auger
- 0-0.5 : Concrete|Grout - Portland
- 0.5-1 : Fine Sand (30/65)
- 1-12 : Filter Pack (20/30)
- 10 Foot SCH 40 PVC Slot (0.01) Screen (2-12)
- 2 Foot SCH 40 PVC Riser

1110 Complete A3RB-MW0004

1112 Begin development of A3RB-MW0004

1125 Complete development of A3RB-MW0004

5 gallons = 0.38 gpm

1130 Lunch Break

1150 Back from Lunch

1152 Begin well pad construction at A3RB-MW0004

2'x2'x4" concrete pad

1228 Complete well construction and at A3RB-MW0004 Mob to A3RB-MW0003

1232 Begin well pad construction at A3RB-MW0003 (2'x2'x4")

1250 Complete concrete pad for A3RB-MW0003 Mobilize to MW0005 + MW0006

5/24/22 PFAS SAIM Well Install BF/CL

1312 Begin construction of well pads for A3RB-MW0005 + A3RB-MW0006

1340 Complete well pads for A3RB-MW0005 and MW0006

1400 Mobilize to CLF to dump purge water. CL off-site.

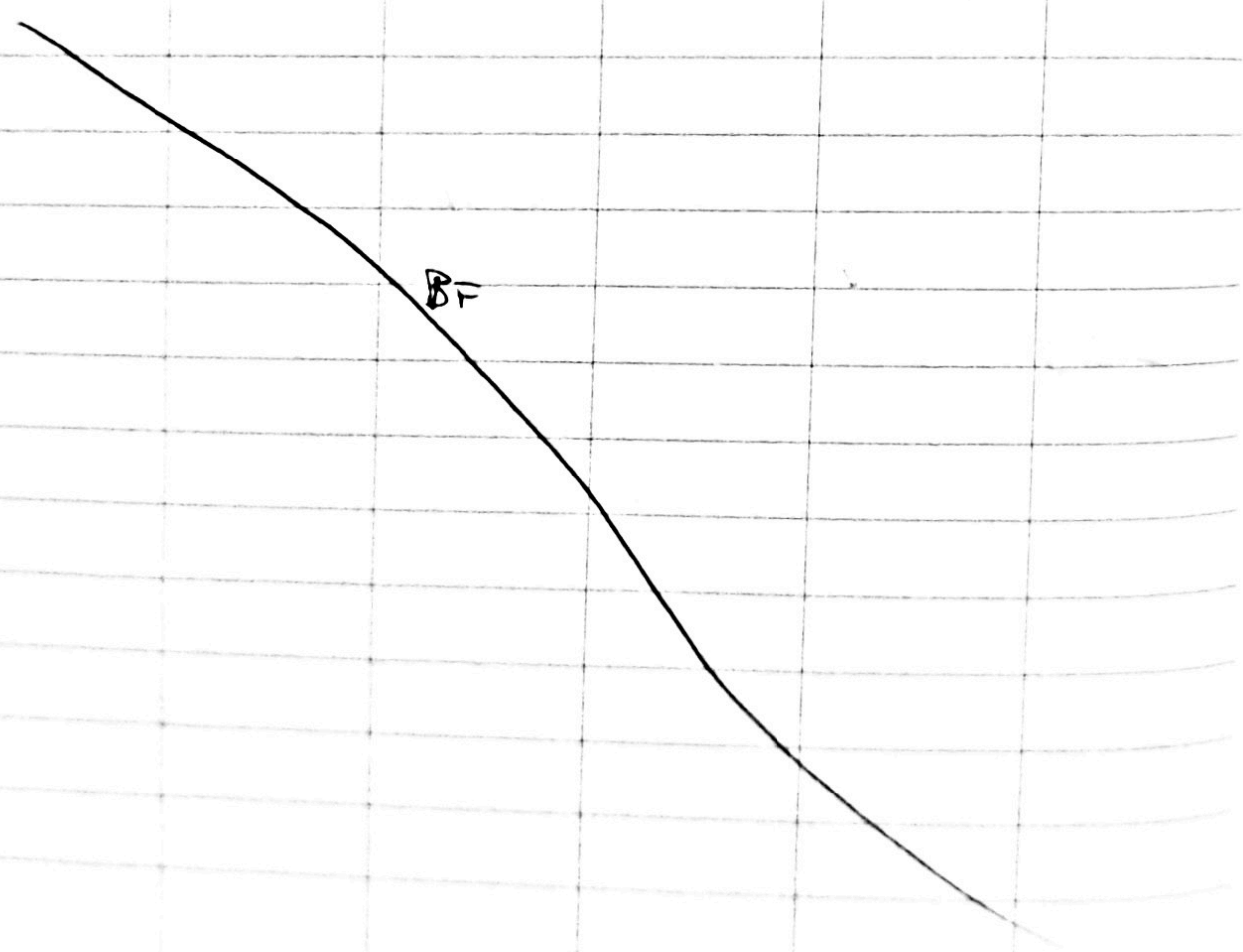
1428 Arrive at CLF

1443 Depart CCF for South Repeater Building to pack up remainder of equipment

1500 Arrive at South Repeater Building

1530 Depart South Repeater Building

1628 Arrive at depot. End of day



WELL NUMBER A3RB-MW0003

AECOM

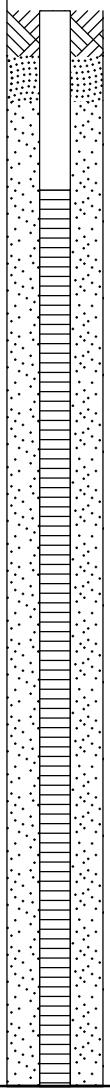
TOTAL DEPTH 12 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/24/2022 **COMPLETED** 05/24/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 5.7 ft
DRILLING METHOD Direct Push
EASTING 231860.9 **NORTHING** 459333.9
TOTAL DEPTH 12 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12

Well Diagram



Well Casing A3RB-MW0003
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 2 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 0.5 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 0.5 ft bgs
Bottom: 1 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 1 ft bgs
Bottom: 12 ft bgs
20/30

Well Screen A3RB-MW0003
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 2 ft bgs
Bottom: 12 ft bgs
Pre-Packed; Water level was after development

WELL NUMBER A3RB-MW0004

AECOM

TOTAL DEPTH 12 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/24/2022 **COMPLETED** 05/24/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 4.8 ft
DRILLING METHOD Direct Push
EASTING 231861.7 **NORTHING** 459286.9
TOTAL DEPTH 12 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
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6
7
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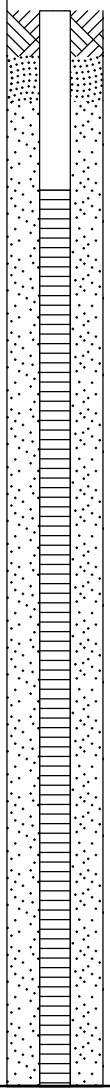
9
10
11
12

Well Diagram



Well Casing
A3RB-MW0004
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 2 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 0.5 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 0.5 ft bgs
Bottom: 1 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 1 ft bgs
Bottom: 12 ft bgs
20/30

Well Screen
A3RB-MW0004
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 2 ft bgs
Bottom: 12 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0005

AECOM

TOTAL DEPTH 12 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/24/2022 **COMPLETED** 05/24/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 4.8 ft
DRILLING METHOD Direct Push
EASTING 231770.3 **NORTHING** 459256.2
TOTAL DEPTH 12 ft bgs
HOLE DIAMETER in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
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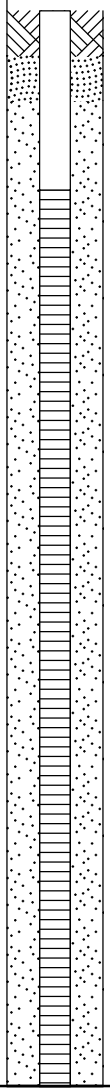
11
12

Well Diagram



Well Casing
A3RB-MW0005
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 2 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 0.5 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 0.5 ft bgs
Bottom: 1 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 1 ft bgs
Bottom: 12 ft bgs
20/30

Well Screen
A3RB-MW0005
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 2 ft bgs
Bottom: 12 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0006

AECOM

TOTAL DEPTH 30 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/24/2022 **COMPLETED** 05/24/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 5.1 ft
DRILLING METHOD Direct Push
EASTING 231771.2 **NORTHING** 459256.6
TOTAL DEPTH 30 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12
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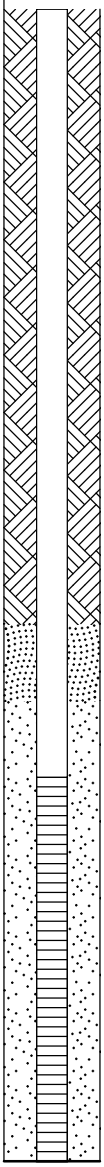
Well Diagram



Well Casing
A3RB-MW0006
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 20 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 16 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 16 ft bgs
Bottom: 18 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 18 ft bgs
Bottom: 30 ft bgs
20/30

Well Screen
A3RB-MW0006
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 20 ft bgs
Bottom: 30 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0007

AECOM

TOTAL DEPTH 30 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/23/2022 **COMPLETED** 05/23/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 5.8 ft
DRILLING METHOD Direct Push
EASTING 231757.9 **NORTHING** 459349.1
TOTAL DEPTH 30 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
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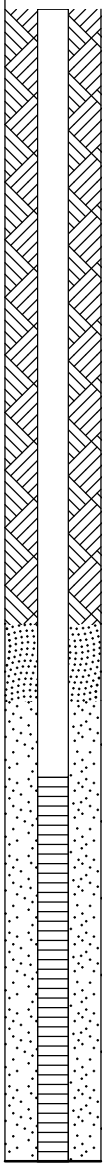
Well Diagram



Well Casing
A3RB-MW0007
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 20 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 16 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 16 ft bgs
Bottom: 18 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 18 ft bgs
Bottom: 30 ft bgs
20/30

Well Screen
A3RB-MW0007
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 20 ft bgs
Bottom: 30 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0008

AECOM

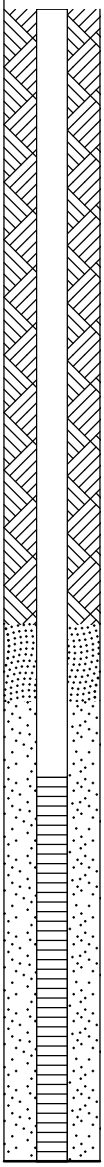
TOTAL DEPTH 30 FT BGS
PAGE 1 OF 1

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/23/2022 **COMPLETED** 05/23/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 7.7 ft
DRILLING METHOD Direct Push
EASTING 231695.7 **NORTHING** 459346.3
TOTAL DEPTH 30 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Flushmount

DEPTH (ft)

-3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Well Diagram



Well Casing
A3RB-MW0008
Type: Schedule 40 PVC
Diameter: 1 in
Top: 0 ft bgs
Bottom: 20 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 16 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 16 ft bgs
Bottom: 18 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 18 ft bgs
Bottom: 30 ft bgs
20/30

Well Screen
A3RB-MW0008
Type: Schedule 40 PVC
Top: 20 ft bgs
Bottom: 30 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0009

AECOM

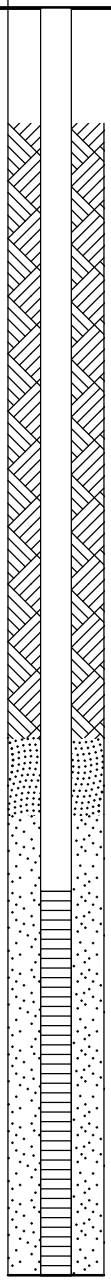
TOTAL DEPTH 30 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/23/2022 **COMPLETED** 05/23/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 5.5 ft
DRILLING METHOD Direct Push
EASTING 231637 **NORTHING** 459357.9
TOTAL DEPTH 30 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Monument (stickup)

DEPTH (ft)

-3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

Well Diagram



Well Casing A3RB-MW0009
Type: Schedule 40 PVC
Diameter: 1 in
Top: -3 ft bgs
Bottom: 20 ft bgs

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 16 ft bgs
Type I/II

Transition Sand
Type: Fine Sand
Top: 16 ft bgs
Bottom: 18 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 18 ft bgs
Bottom: 30 ft bgs
20/30

Well Screen A3RB-MW0009
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 20 ft bgs
Bottom: 30 ft bgs
Pre-Packed

WELL NUMBER A3RB-MW0010

AECOM

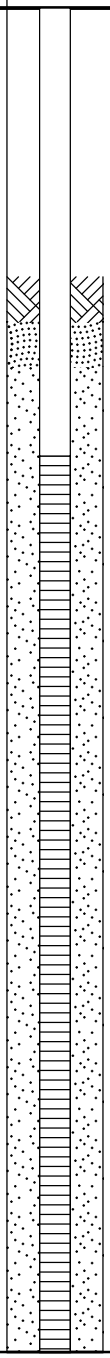
TOTAL DEPTH 12 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60610905
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 05/23/2022 **COMPLETED** 05/23/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
TOC Elevation **Ground Elevation** 7.3 ft
DRILLING METHOD Direct Push
EASTING 231675 **NORTHING** 459302.1
TOTAL DEPTH 12 ft bgs
HOLE DIAMETER 0.27 in
LOGGED BY Brittany Follett **CHECKED BY** Megan Garcia
CASING TYPE Monument (stickup)

DEPTH (ft)

-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12

Well Diagram



Well Casing
A3RB-MW0010
Type: Schedule 40 PVC
Diameter: 1 in
Top: -3 ft bgs
Bottom: 2 ft bgs
Pre-Packed

Surface Seal
Type: Portland Cement
Top: 0 ft bgs
Bottom: 0.5 ft bgs
TypeI/II

Transition Sand
Type: Fine Sand
Top: 0.5 ft bgs
Bottom: 1 ft bgs
30/65

Filter Pack
Type: #1 Filter Sand
Top: 1 ft bgs
Bottom: 12 ft bgs
20/30

Well Screen
A3RB-MW0010
Type: Schedule 40 PVC
Slot Size: 0.01 in
Top: 2 ft bgs
Bottom: 12 ft bgs

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10220 U.S. Highway 92 East
Tampa, Florida 33610
Florida Licensed Business No. 7340

Phone: 813-621-4929
Fax: 813-621-7194
Web: www.survtechsolutions.com

Thursday, July 21, 2022

Lisa Stone
AECOM
10 Patewood Drive, Building VI, Suite 500
Greenville, SC 29615

RE: **PFAS Site Assessment and Mitigation – Surveying of monitoring wells**

Ms. Stone,

The purpose of this report is to explain the procedures SurvTech Solutions, Inc. utilized in surveying the wells for the PFAS Site Assessment and Mitigation, Kennedy Space Center, FL.

Task 1 (Horizontal and Vertical Control):
SurvTech researches State, County and City websites in order to find the best survey control needed to perform the surveying work. Below is a list of the control stations utilized on this project.

Horizontal Control:

Florida Permanent Reference Network (FPRN)

Vertical Control:

"Z-207" – Brevard County Benchmark

Task 2 (Horizontal Location of Sampling Points)
SurvTech utilized Real Time Kinematic (RTK) GPS for location of the aforementioned sampling points. The equipment used was a Champion TKO receiver with an accuracy of ±0.1 feet.

Task 3 (Vertical Location of the Sampling Points):
All of the sampling points for this project are monitoring wells, and must be elevated to an accuracy of ±0.01 feet. To obtain this level of accuracy a closed loop differential level run was performed through all of the wells. The equipment used was a Sokkia SDL 30 digital level reading a bar coded rod.

Task 4 (Data Reporting, and Datum's):
Below is a table depicting the horizontal and vertical data that SurvTech obtained for each of the sampling points. The horizontal datum used for this project was NAD 83 Florida East State Plane coordinate system. The vertical datum used was NAVD 1988. Datum conversion from NGVD 1929 to NAVD 1988 is:
NAVD 1988 = NGVD 1929 - 0.931'

Monitoring Well Information:

Designation	Northing	Easting	Ground	Rim
	Florida East	Florida East	Elevation	Elevation
	NAD 1983	NAD 1983	NAVD 1988	NAVD 1988
	US Survey Feet	US Survey Feet	US Survey Feet	US Survey Feet
MW-0003	1506998.0	760696.9	5.7	5.42
MW-0004	1506843.8	760699.5	4.8	4.57
MW-0005	1506742.9	760399.8	4.8	4.62
MW-0006	1506744.3	760402.7	5.1	4.86
MW-0007	1507047.9	760359.1	5.8	5.54
MW-0008	1507038.6	760155.1	7.7	7.44
MW-0009	1507076.8	759962.5	5.5	8.46
MW-0010	1506893.5	760087.0	7.3	10.10

Note: The rim elevation depicted hereon refers to the north rim of the pvc pipe inside the well casing.

SurvTech Project Number: 202-210773-S
Field Date: Wednesday, June 29, 2022
Field Crew: V. Brooks – A. Fitzsimmons
Field Book: 21-13, Pages 26

Respectfully submitted,
And Certified By:
SurvTech Solutions, Inc.

Stacy L. Brown, P.S.M. #6516
Vice President

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GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0001-025.0-20220531 Sampler: Greg Kusel

Well ID: A3RB-MW0001 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	3.32
Top of Screen (ft-BTOR):	20	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	30	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	30	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	13:43			0	3.32									
5/31/2022	13:53	0.1	1	1	3.4	7.06	557	0.31	7.18	25.8	-76.5	0.27	None	None
5/31/2022	13:55	0.1	0.2	1.2	3.4	7.06	559	0.29	5.96	25.9	-75.2	0.27	None	None
5/31/2022	13:57	0.1	0.2	1.4	3.4	7.05	560	0.29	5.37	25.9	-74.9	0.27	None	None
5/31/2022	13:59	0.1	0.2	1.6	3.4	7.05	561	0.28	5.32	25.9	-73.9	0.27	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:43	13:59	16	1.6	7.05	561	0.28	5.32	25.9	-73.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0002-007.0-20220531 Sampler: Brittany Follett

Well ID: A3RB-MW0002 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	2	Static Water Level (ft-BTOR):	3.37
Top of Screen (ft-BTOR):	2	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	12	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	12	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	12:18			0	3.37									
5/31/2022	12:56	0.04	1.5	1.5	4.32	6.23	285.7	0.56	9.55	27.9	-95.1	0	Yellow	None
5/31/2022	12:59	0.04	0.12	1.62	4.32	6.27	287	0.62	7.07	28.1	-94.1	0	Yellow	None
5/31/2022	13:02	0.04	0.12	1.74	4.32	6.27	285	0.69	6.89	28.1	-91.3	0	Yellow	None
5/31/2022	13:05	0.04	0.12	1.86	4.32	6.27	290.3	0.74	7.03	28.1	-92.4	0	Yellow	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:18	13:05	47	1.86	6.27	290.3	0.74	7.03	28.1	-92.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0003-007.0-20220531 Sampler: Brittany Follett

Well ID: A3RB-MW0003 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	3.4
Top of Screen (ft-BTOR):	2	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	12	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	12	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	13:20			0	3.4									
5/31/2022	13:32	0.04	0.5	0.5	3.51	6.46	527	0.28	8.35	26.3	-89.8	0	Yellow	None
5/31/2022	13:35	0.04	0.12	0.62	3.51	6.54	544	0.26	7.81	26.1	-98.8	0	Yellow	None
5/31/2022	13:38	0.04	0.12	0.74	3.51	6.58	561	0.21	6.83	26.2	-105.1	0	Yellow	None
5/31/2022	13:41	0.04	0.12	0.86	3.51	6.63	570	0.19	6.04	26.2	-114.2	0	Yellow	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:20	13:41	21	0.86	6.63	570	0.19	6.04	26.2	-114.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0004-007.0-20220531 Sampler: Brittany Follett

Well ID: A3RB-MW0004 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	1.93
Top of Screen (ft-BTOR):	2	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	12	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	12	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	14:10	0.04	0.5	0.5	2.08	4.82	291.7	0.26	57.8	27.4	-54.8	0	Brownish yellow	None
5/31/2022	14:13	0.04	0.12	0.62	2.08	4.88	290.3	0.24	48.6	27.6	-56.2	0	Brownish yellow	None
5/31/2022	14:16	0.04	0.12	0.74	2.08	4.93	289.5	0.18	55.1	27.6	-62	0	Brownish yellow	None
5/31/2022	14:19	0.04	0.12	0.86	2.08	4.92	293.1	0.19	57	27.8	-62	0	Brownish yellow	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:10	14:19	9	0.86	4.92	293.1	0.19	57	27.8	-62

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0005-007.0-20220531 Sampler: Brittany Follett

Well ID: A3RB-MW0005 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	2.78
Top of Screen (ft-BTOR):	2	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	12	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	12	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	10:37			0	2.78									
5/31/2022	10:48	0.05	0.5	0.5	2.81	6.28	306.3	0.71	2.7	29.3	-100.6	0	None	None
5/31/2022	10:51	0.05	0.1	0.6	2.81	6.28	306.3	0.51	3.49	29.4	-99.8	0	None	None
5/31/2022	10:54	0.05	0.15	0.75	2.81	6.28	307.3	0.5	3.34	29.4	-99.8	0	None	None
5/31/2022	10:57	0.05	0.15	0.90	2.81	6.28	311.3	0.45	2.89	29.5	-102.9	0	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:37	10:57	20	0.90	6.28	311.3	0.45	2.89	29.5	-102.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0006-025.0-20220531 Sampler: Brittany Follett

Well ID: A3RB-MW0006 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	3.24
Top of Screen (ft-BTOR):	20	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	30	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	30	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	11:11			0	3.24									
5/31/2022	11:48	0.04	1.5	1.5	3.41	7.17	668	0.09	38	28.5	-140.2	0	Cloudy	None
5/31/2022	11:51	0.04	0.12	1.62	3.41	7.17	667	0.09	40.1	28.3	-140.8	0	Cloudy	None
5/31/2022	11:54	0.04	0.12	1.74	3.41	7.17	667	0.08	35.7	28.4	-141.3	0	Cloudy	None
5/31/2022	11:57	0.04	0.12	1.86	3.41	7.17	666	0.09	36.9	28.4	-139.1	0	Cloudy	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:11	11:57	46	1.86	7.17	666	0.09	36.9	28.4	-139.1

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0007-025.0-20220531 Sampler: Greg Kusel

Well ID: A3RB-MW0007 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	3.8
Top of Screen (ft-BTOR):	20	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	30	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	30	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	12:57	0.05		0	3.8									
5/31/2022	13:07	0.1	1	1	3.84	7.05	609	0.16	10.1	26.7	-109.6	0.29	None	None
5/31/2022	13:09	0.1	0.2	1.2	3.84	7.06	601	0.15	8.64	26.6	-110.4	0.29	None	None
5/31/2022	13:11	0.1	0.2	1.4	3.84	7.05	605	0.15	8.36	26.7	-114.1	0.29	None	None
5/31/2022	13:13	0.1	0.2	1.6	3.84	7.06	607	0.16	8.11	26.7	-116.8	0.29	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:57	13:13	16	1.6	7.06	607	0.16	8.11	26.7	-116.8

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0008-025.0-20220531 Sampler: Greg Kusel

Well ID: A3RB-MW0008 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	5.88
Top of Screen (ft-BTOR):	20	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	30	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	30	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	12:23	0.5		0	5.88									
5/31/2022	12:33	0.05	0.5	0.5	5.89	7.04	609	0.14	8.62	26.6	-86.1	0.29	None	None
5/31/2022	12:35	0.05	0.1	0.6	5.89	7.04	608	0.14	7.54	26.5	-89.5	0.29	None	None
5/31/2022	12:37	0.05	0.1	0.7	5.89	7.04	608	0.15	7.42	26.5	-91.3	0.29	None	None
5/31/2022	12:39	0.05	0.1	0.8	5.89	7.04	606	0.12	7.67	26.5	-92.8	0.29	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:23	12:39	16	0.8	7.04	606	0.12	7.67	26.5	-92.8

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0009-025.0-20220531 Sampler: Greg Kusel

Well ID: A3RB-MW0009 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	7.63
Top of Screen (ft-BTOR):	20	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	30	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	30	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	11:33	0.5		0	7.63									
5/31/2022	11:43	0.5	0.5	0.5	7.71	6.98	570	0.22	8.56	25.5	-74.3	0.27	None	None
5/31/2022	11:45	0.5	0.1	0.6	7.71	6.89	567	0.2	7.98	25.6	-75	0.27	None	None
5/31/2022	11:47	0.05	0.1	0.7	7.71	6.98	564	0.19	8.05	25.5	-76.1	0.27	None	None
5/31/2022	11:49	0.05	0.1	0.8	7.71	6.98	565	0.2	7.65	25.6	-76.2	0.27	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:33	11:49	16	0.8	6.98	565	0.2	7.65	25.6	-76.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-MW0010-007.0-20220531 Sampler: Greg Kusel

Well ID: A3RB-MW0010 Well Type: Monitoring Well

Remark:

Well Information

Well Diameter (in.):	1	Static Water Level (ft-BTOR):	8.64
Top of Screen (ft-BTOR):	2	H/S PID Monitor Reading (ppm):	0
Bottom of Screen (ft-BTOR):	12	Purge/Sample Method:	Low flow - peristalic
Total Depth of Well (ft-BTOR):	12	Sample Analysis:	Select PFAS

Purge Information

Date	Time	Purge Rate (gal/min)	Volume Purged (gal)	Cum Vol Purged (gal)	Depth To Water (ft)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
5/31/2022	10:40	0.05		0	8.64									
5/31/2022	11:00	0.05	1	1	8.65	6.89	520	0.1	9.43	25.5	-130.2	0.25	None	None
5/31/2022	11:02	0.05	0.1	1.1	8.65	6.89	520	0.09	9.46	25.5	-131.1	0.25	None	None
5/31/2022	11:04	0.05	0.1	1.2	8.65	6.89	520	0.09	9.65	25.7	-131.2	0.25	None	None
5/31/2022	11:06	0.05	0.1	1.3	8.65	6.89	522	0.09	9.54	25.7	-131.6	0.25	None	None

Start Purge	End Purge	Duration (min)	Total Vol (gal)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:40	11:06	26	1.3	6.89	522	0.09	9.54	25.7	-131.6

5/31/22

PFAS SA+M
MW Sampling
Pg 1 of 2

BP/GK

0750 Brittany Folleh and ~~Dustin Slatter~~ Greg Kusel meet at AECOM depot to pack trucks and pick up sample coolers

0800 Depart AECOM depot for KSC South Repeater Building

0915 Arrive at KSC South Repeater Building
- HASP meeting
- Weather: Sunny 80°F

0925 Begin opening wells and taking Depth to water measurements

Well ID	Time	DTW	Stick up
~~A3RB~~-MW0001	0946	3.32	
-MW0002	0945	3.37	
-MW0003	0941	3.40	
-MW0004	0943	1.93	
-MW0005	0948	2.78	
-MW-0006	0948	3.24	
-MW0007	0958	3.80	
-MW0008	0957	5.88	
-MW0009	0951	7.63	2.89 - 0.14
-MW0010	0955	8.64	2.65 - 0.13

1008 Begin Calibrating and Sampling monitoring wells

5/31/22 PFAS SAIM MW Sampling PJ 2 of 2 BF/GK

1430 Complete sampling monitoring wells
- A3RB-FD-20220531-01 taken at A3RB-MW00009 @ 1155
- MS/MSD taken at A3RB-MW00003
- ~~FB~~ A3RB-FB-20220531 taken @ ~~1417~~ BF 0920
- A3RB-EB-20220531-01 taken at A3RB-MW00004 @ 1428

1440 Mobilize to CLF to dump purge water in IDW drums

1500 Arrive at CLF
Drum # 226849 ~ 50% full after purge water added
Clam shell: 226847
2nd drum undershell # 226850 ~80% full

1515 GK off-site for AECOM depot
BF to badging office to wait for courier (lab)

1700 Drop off samples at lab because courier couldn't pick up today

1725 Arrive at AECOM depot
End of day

BF

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0017-004.0-20220610	Sampler:	Brittany Follett
Well ID:	A3RB-DPT0017	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	13:28									
6/10/2022	13:33	5.34	776	1.15	1000	24.7	34.5			None
6/10/2022	13:36	5.28	769	1.22	1000	24.6	23.4			None
6/10/2022	13:39	5.23	756	1.36	939	24.4	9.9			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:28	13:39	11	5.23	756	1.36	939	24.4	9.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0017-010.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0017 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	13:52									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:52	13:52	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0017-025.0-20220613	Sampler:	Brittany Follett
Well ID:	A3RB-DPT0017	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/13/2022	8:42									
6/13/2022	8:47	7.27	689	0.61	1000	24.5	-143.4			None
6/13/2022	8:50	7.27	684	0.48	1000	24.3	-144.9			None
6/13/2022	8:53	7.26	681	0.31	1000	24.3	-147.1			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:42	8:53	11	7.26	681	0.31	1000	24.3	-147.1

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0018-004.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0018 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	11:32	6.38	137.9	1.62	1000	24.4	-15.9			None
6/10/2022	11:35	6.34	130.7	5.21	863	24.4	-19.3			None
6/10/2022	11:38	6.35	129.6	5.85	592	24.3	-24.4			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:32	11:38	6	6.35	129.6	5.85	592	24.3	-24.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0018-010.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0018 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	11:53									
6/10/2022	11:58	7.21	623	6.42	209	24.7	-99.6			None
6/10/2022	12:01	7.23	617	6.69	121	24.5	-98.5			None
6/10/2022	12:04	7.25	612	7.05	87.2	24.5	-97.3			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:53	12:04	11	7.25	612	7.05	87.2	24.5	-97.3

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0018-025.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0018 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	12:39									
6/10/2022	12:44	7.36	684	0.97	1000	30.8	-96.5			None
6/10/2022	12:47	7.35	688	0.57	1000	30.7	-119.7			None
6/10/2022	12:50	7.32	693	0.32	1000	29.9	-132.9			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:39	12:50	11	7.32	693	0.32	1000	29.9	-132.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0019-004.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0019 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	9:52									
6/10/2022	9:57	7.04	587	0.87	79.1	23.4	129			None
6/10/2022	10:00	7.04	582	0.56	31.1	23.3	-137.1			None
6/10/2022	10:02	7.05	580	0.43	31.4	23.2	-142.2			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:52	10:02	10	7.05	580	0.43	31.4	23.2	-142.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0019-010.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0019 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	10:14									
6/10/2022	10:19	7.45	640	4.88	642	23.7	-94.3			None
6/10/2022	10:22	7.35	640	2.65	143	23.7	-95.3			None
6/10/2022	10:25	7.35	635	2.54	169	23.7	-91.4			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:14	10:25	11	7.35	635	2.54	169	23.7	-91.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0019-025.0-20220610 Sampler: Brittany Follett

Well ID: A3RB-DPT0019 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
6/10/2022	10:40									
6/10/2022	10:45	7.33	841	0.16	1000	24.9	-138.2			None
6/10/2022	10:48	7.32	838	0.18	1000	24.6	-141.1			None
6/10/2022	10:51	7.3	836	0.31	1000	24.7	-143.1			None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:40	10:51	11	7.3	836	0.31	1000	24.7	-143.1

6/10/22 PFAS SA+M DPT Sampling Pg 1 of 2 BF

0640 Battery Follett arrives at AECOM depot to pack truck and pick up sample coolers

0650 Depart AECOM depot for KSC South repeater building

0800 Arrive at KSC South Repeater Building to meet with EDS (Keith Olson and Chris Phelps) and NASA RPM Deda Johansen
- H+S meeting
- Weather 86°F with chance of storms
- SOW - complete 3 DPT borings with 3 sample intervals at 4', 10' and 25' bls

0820 DJ Calls BOSS utility locate to find out when they will be on-site

0915 Alfredo George on-site to clear ~~utility~~ utilities

0925 Utilities clear

0936 Begin HA for DPT0019
- 4' @ 1005
- 10' @ 1026
- 25' 1052

PFAS SA+M DPT Sampling BF

6/10/22 2 of 2

1100 Complete DPT0019 - Grout and fill hole - mobilize to DPT0018

1114 Arrive at DPT0018
- Begin HA to 5'
  - 4' @ 1139 - MS/MSD
  - 10' @ 1206
  - 25' @ 1251

1303 Complete Boring for DPT0018 Grout and fill hole

1317 Begin HA for DPT0017
- 4' @ 1340 - EB-01 @ 1319
- 10' @ 1340
- 25' -> Not sampled today

1345 Storms rolling in - Deda Johansen and BF talked and called off work for the day

1400 All off-site to CCF to drop off purge water
Drum # 226849

1530 Arrive at SGS to drop off samples

1550 Arrive at AECOM depot - End of day

BF

BORING NUMBER A3RB-SB0048

AECOM

TOTAL DEPTH 65 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER 60667657
SITE NAME South Repeater Building (Formerly Area 3 Repeater Building)
DATE STARTED 06/13/2022 **COMPLETED** 06/13/2022
SURVEYING BY N/A
DRILLING CONTRACTOR Environmental Drilling Service
ON N/A **GROUND ELEVATION** N/A
DRILLING EQUIPMENT Geoprobe 7822DT
EASTING N/A **NORTHING** N/A
DRILLING METHOD Direct Push
HOLE DIAMETER 2 in
LOGGED BY Brittany Follett **CHECKED BY** Chad Lee
CASING TYPE N/A

DEPTH (ft)	SAMPLE	RECOVERY %	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0	HA	100	0		0.00 Poorly graded sand (SP), fine, subangular [NATIVE] - 10YR 3/2 (very dark grayish brown), wet - no odor, no staining - non-cohesive, loose
			0.6		
	DP	80	1.1		
10			0.2		
			0.3		
	DP	54	0.6		9.50 Poorly graded gravel with sand (GP), subangular, 10-20% subangular, medium to coarse sand, Shell Hash [NATIVE] - 10YR 8/1 (white), wet - no odor, no staining - non-cohesive, medium dense to very dense
			0.1		
	DP	56	0.2		
20			0.2		
			0.4		
	DP	60	0.4		
			0.2		
	DP	68	0.4		24.00 Poorly graded gravel with sand (GP), subangular, 10-20% subangular, fine sand, Shell Hash with 5% clay [NATIVE] - 10YR 6/1 (gray), wet - no odor, no staining - non-cohesive, dense
30			0.3		27.00 Clayey sand (SC), fine, poorly graded, subangular, 15-25% clay [NATIVE] - 10YR 4/1 (dark gray), wet - no odor, no staining, - non-cohesive, dense
			0.3		
	DP	40	0.4		30.00 Poorly graded gravel with sand (GP), subangular, 10-20% subangular, medium to coarse sand, Shell Hash [NATIVE] - 10YR 8/1 (white), wet - no odor, no staining - non-cohesive, medium dense to very dense
			0.3		
	DP	58	0.7		
40			0.5		
			0.9		
	DP	56	0.1		
			0.3		42.00 Poorly graded sand (SP), fine, subangular, <10% clay, Few Shell Fragments, <5% [NATIVE] - 5Y 6/1 (gray / light olive gray), moist - no odor, no staining - non-cohesive, medium dense to dense
	DP	68	0.1		
			0.3		
50			0.6		
	DP	100	0.1		
			0.2		53.00 Clayey sand (SC), fine, poorly graded, subangular, 15-25% clay, Few Shell Fragments, <5% [NATIVE] - 5Y 5/1 (gray), wet - no odor, no staining - non-cohesive, dense
	DP	78	0.1		
			0.3		
60			0.1		
	DP	70	0.2		
			0.2		61.50 Lean clay with sand (CL), 15-25% fine sand, <10% subangular, medium to coarse gravel, Few shell fragments; <5% [NATIVE] - 10GY 5/1 (greenish gray), wet - no odor, no staining - cohesive, medium stiff
			0.4		

Bottom of borehole at 65 feet.

6/13/22 PFAS SA+M Soil Core Pg 1 of 2 BF CL

~~0730~~

0630 Depart AECOM depot for KSC South Repeater Building

0730 Arrive at South Repeater Building to meet with EDS and NASA RPM Deda Johensen
- Keith Olson indicated that Iris will not be on-site - waiting on additional Driller (Carl Leonhardt)

0831 Carl Leonhardt on-site

0840 Begin 25' interval for DPT0017 Sample at ~~0840~~ 0854

0902 Complete and grout DPT0017

0935 Begin A3RB-~~D~~SB0048
- HA first 5 feet

1330 Complete depth to 50Ft bls to 55 ft bls - No confining unit reached yet
- Called Megan Garcia to see how deep the maximum depth we should go
- Continue on to ~65' feet bls

1500 Complete bore hole at 65' feet bls Collect Sample at 61'. Confining unit at ~62 feet bls.

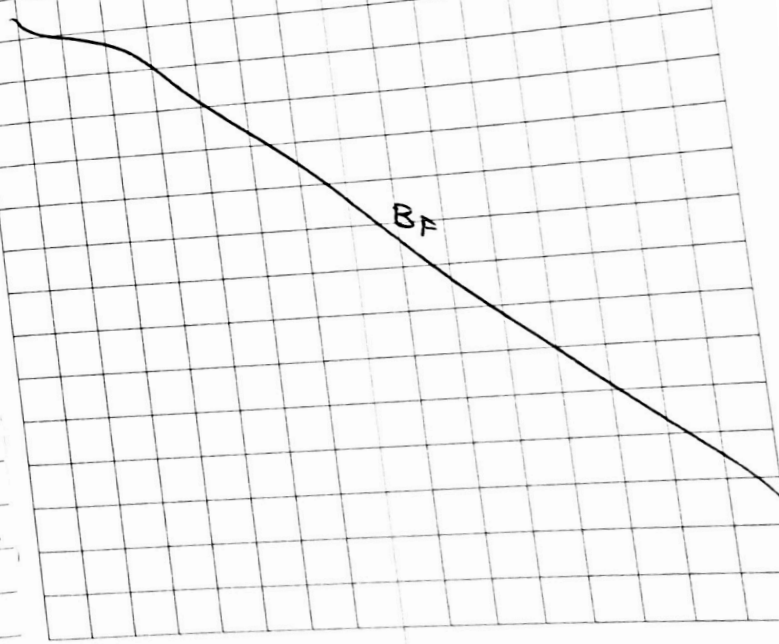
6/13/22 PFAS SA+M Soil Core Pg 2 of 2 CL

1515 Grout and complete bore hole

1530 BF depart Site for SGS to drop off samples. CL to CCF with drillers to drop of excess soil borings and pdecon water

1647 Complete 3rd Drop off Samples at SGS

1700 Arrive at AECOM depot. End of Day



GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0020-004.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0020 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	9:19	6.55	297.8	0.14	1000	21.9	-93.4	0.15		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:19	9:19	0	6.55	297.8	0.14	1000	21.9	-93.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0020-010.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0020 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	9:40	8.78	610	0.36	91.2	21.5	-94.3	0.32		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:40	9:40	0	8.78	610	0.36	91.2	21.5	-94.3

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0020-025.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0020 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	10:08	7.7	598	0.03	765	21.6	-131.7	0.31		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:08	10:08	0	7.7	598	0.03	765	21.6	-131.7

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0020-042.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0020 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	10:47	7.65	2432	0.02	1000	24.4	-157.5	1.27		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:47	10:47	0	7.65	2432	0.02	1000	24.4	-157.5

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0020-057.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0020 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	11:27									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:27	11:27	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0021-004.0-20221212	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0021	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	12:59	6.88	389.5	0.16	1000	24.4	-56.4	0.18		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:59	12:59	0	6.88	389.5	0.16	1000	24.4	-56.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0021-010.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0021 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	13:16									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:16	13:16	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0021-025.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0021 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	13:56	7.69	635	0.13	123	25.7	-130.9	0.31		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:56	13:56	0	7.69	635	0.13	123	25.7	-130.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0021-042.0-20221212	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0021	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	14:24	7.74	2946	0.01	943	25.6	-168.6	1.53		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:24	14:24	0	7.74	2946	0.01	943	25.6	-168.6

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0021-057.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0021 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	14:54									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:54	14:54	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0022-004.0-20221212 Sampler: Dustin Slater

Well ID: A3RB-DPT0022 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/12/2022	15:58	7.03	315.3	0.13	1000	23.2	-52.4	0.16		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
15:58	15:58	0	7.03	315.3	0.13	1000	23.2	-52.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0022-010.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0022 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	7:48	5.93	660	2.84	71.4	22.4	-97	0.34		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
7:48	7:48	0	5.93	660	2.84	71.4	22.4	-97

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0022-018.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0022 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	8:10	7.86	617	0.04	207	22.5	-145.3	0.33		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:10	8:10	0	7.86	617	0.04	207	22.5	-145.3

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0022-025.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0022 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	8:38									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:38	8:38	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0022-057.0-20221213	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0022	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	9:33	9.31	1372	0.03	1000	23.2	-185.2	0.72		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:33	9:33	0	9.31	1372	0.03	1000	23.2	-185.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0023-004.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0023 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	12:16	7.02	285.1	0.08	566	21.7	-42	0.14		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:16	12:16	0	7.02	285.1	0.08	566	21.7	-42

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0023-010.0-20221213	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0023	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	13:08	7.04	545	0.14	85.6	21.5	-93.7	0.28		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:08	13:08	0	7.04	545	0.14	85.6	21.5	-93.7

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0023-025.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0023 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	13:31	8.13	675	0.03	763	23.7	-108.2	0.34		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:31	13:31	0	8.13	675	0.03	763	23.7	-108.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0023-042.0-20221213 Sampler: Dustin Slater

Well ID: A3RB-DPT0023 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	14:04	7.5	1180	0.03		23	-292.7	0.61		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:04	14:04	0	7.5	1180	0.03		23	-292.7

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0023-057.0-20221213	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0023	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/13/2022	14:44									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:44	14:44	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0024-004.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0024	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	8:09	4.96	89.4	0.14	1000	21.7	-356.2	0.05		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:09	8:09	0	4.96	89.4	0.14	1000	21.7	-356.2

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0024-010.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0024	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	8:41	6.76	596	0.43	121	23	-82.5	0.3		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:41	8:41	0	6.76	596	0.43	121	23	-82.5

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0024-025.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0024	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	9:22	7.49	614	0.33	1000	23.4	-299.8	0.31		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:22	9:22	0	7.49	614	0.33	1000	23.4	-299.8

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0024-042.0-20221214 Sampler: Dustin Slater

Well ID: A3RB-DPT0024 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	9:44	6.97	1944	0.03	1000	24.9	-208.4	0.99		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:44	9:44	0	6.97	1944	0.03	1000	24.9	-208.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0024-057.0-20221214 Sampler: Dustin Slater

Well ID: A3RB-DPT0024 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	10:10									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:10	10:10	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0025-004.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0025	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	11:23	7.54	901	1.17	531	23.8	17.9	0.45		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:23	11:23	0	7.54	901	1.17	531	23.8	17.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0025-010.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0025	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	11:47	7.01	1311	0.66	39.6	25.2	-58	0.65		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:47	11:47	0	7.01	1311	0.66	39.6	25.2	-58

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0025-018.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0025	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	12:54	7.91	1661	0.32	29.1	25	-74.5	0.84		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:54	12:54	0	7.91	1661	0.32	29.1	25	-74.5

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0025-025.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0025	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	13:18	7.99	1419	0.07	1000	24.8	-198.7	0.71		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:18	13:18	0	7.99	1419	0.07	1000	24.8	-198.7

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0025-042.0-20221214 Sampler: Dustin Slater

Well ID: A3RB-DPT0025 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	13:55									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:55	13:55	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0025-057.0-20221214	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0025	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/14/2022	14:33									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:33	14:33	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0026-004.0-20221215 Sampler: Dustin Slater

Well ID: A3RB-DPT0026 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	7:58	5.45	1345	0.28	1000	23.2	-42.5	0.71		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
7:58	7:58	0	5.45	1345	0.28	1000	23.2	-42.5

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0026-010.0-20221215 Sampler: Dustin Slater

Well ID: A3RB-DPT0026 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	8:24	6	1314	2.56	67.8	23.1	-92.4	0.68		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:24	8:24	0	6	1314	2.56	67.8	23.1	-92.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0026-025.0-20221215	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0026	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	8:41	5.93	1569	0.19	987	22.6	-202.9	0.83		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:41	8:41	0	5.93	1569	0.19	987	22.6	-202.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0026-042.0-20221215	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0026	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	9:21	6.05	2936	0.08	236	23.5	-172	1.57		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:21	9:21	0	6.05	2936	0.08	236	23.5	-172

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0026-057.0-20221215 Sampler: Dustin Slater

Well ID: A3RB-DPT0026 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	9:54									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:54	9:54	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0027-004.0-20221215	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0027	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	11:29	6.04	739	0.55	98.5	22.5	-91.9	0.36		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:29	11:29	0	6.04	739	0.55	98.5	22.5	-91.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0027-010.0-20221215 Sampler: Dustin Slater

Well ID: A3RB-DPT0027 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/15/2022	12:01	6.39	644	0.24	1000	24.5	-147.5	0.32		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:01	12:01	0	6.39	644	0.24	1000	24.5	-147.5

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0027-018.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0027 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	12:50	7.23	870	3.31	66.3	23.6	-54.6	0.44		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
12:50	12:50	0	7.23	870	3.31	66.3	23.6	-54.6

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0027-025.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0027 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	13:12	7.89	392.8	8.2	1000	22.5	60.4	0.2		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:12	13:12	0	7.89	392.8	8.2	1000	22.5	60.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0027-042.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0027 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	13:58									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:58	13:58	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0027-057.0-20221220	Sampler:	Greg Kusel
Well ID:	A3RB-DPT0027	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	14:34	7.75	3746	2.45	756	22.7	-115.9	2.13		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:34	14:34	0	7.75	3746	2.45	756	22.7	-115.9

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0028-004.0-20221219 Sampler: Dustin Slater

Well ID: A3RB-DPT0028 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	13:38	6.52	198	0.23	1000	24	82.6	0.1		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
13:38	13:38	0	6.52	198	0.23	1000	24	82.6

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0028-010.0-20221219	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0028	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	14:04	8.18	535	1.79	233	23.9	13.1	0.27		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:04	14:04	0	8.18	535	1.79	233	23.9	13.1

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0028-018.0-20221219	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0028	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	14:54									

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
14:54	14:54	0						

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0028-025.0-20221219 Sampler: Dustin Slater

Well ID: A3RB-DPT0028 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	15:26	7.62	619	0.06	1000	24.7	-136.1	0.3		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
15:26	15:26	0	7.62	619	0.06	1000	24.7	-136.1

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0028-042.0-20221219 Sampler: Dustin Slater

Well ID: A3RB-DPT0028 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	15:56	7.74	2073	0.03	1000	25.7	-160.6	1.52		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
15:56	15:56	0	7.74	2073	0.03	1000	25.7	-160.6

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project No:	60615493

Sample ID:	A3RB-DPT0028-057.0-20221219	Sampler:	Dustin Slater
Well ID:	A3RB-DPT0028	Analysis:	PFAS
Remark:			

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/19/2022	16:33	7.96	3226	0.02	1000	23.5	-231	1.75		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
16:33	16:33	0	7.96	3226	0.02	1000	23.5	-231

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-004.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	8:25	7.33	1619	6.94	263	17	-35.4	0.96		None

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:25	8:25	0	7.33	1619	6.94	263	17	-35.4

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-010.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	8:49	7.45	840	7.88	108	21.1	-70.8	0.45		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
8:49	8:49	0	7.45	840	7.88	108	21.1	-70.8

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-018.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	9:13	7.55	819	6.98	172	18.8	-29.7	0.46		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
9:13	9:13	0	7.55	819	6.98	172	18.8	-29.7

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-025.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	10:02	7.18	961	3.93	1000	22.2	-100.8	0.5		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:02	10:02	0	7.18	961	3.93	1000	22.2	-100.8

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-042.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	10:27	7.86	832	3.54	1000	19.8	-160.1	0.46		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
10:27	10:27	0	7.86	832	3.54	1000	19.8	-160.1

GROUNDWATER SAMPLE LOG SHEET

AECOM

Event: Kennedy Space Center PFAS SA&M

Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)

Project No: 60615493

Sample ID: A3RB-DPT0029-057.0-20221220 Sampler: Greg Kusel

Well ID: A3RB-DPT0029 Analysis: PFAS

Remark:

Purge Information

Date	Time	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)	Salinity (S.U.)	Color	Odor
12/20/2022	11:08	7.68	3665	2.27	1000	23	-127.1	2.01		

Start Purge	End Purge	Duration (min)	pH (S.U.)	S.C. (µS/cm)	DO (mg/l)	Turbidity (NTUs)	Temp (C)	ORP (mV)
11:08	11:08	0	7.68	3665	2.27	1000	23	-127.1

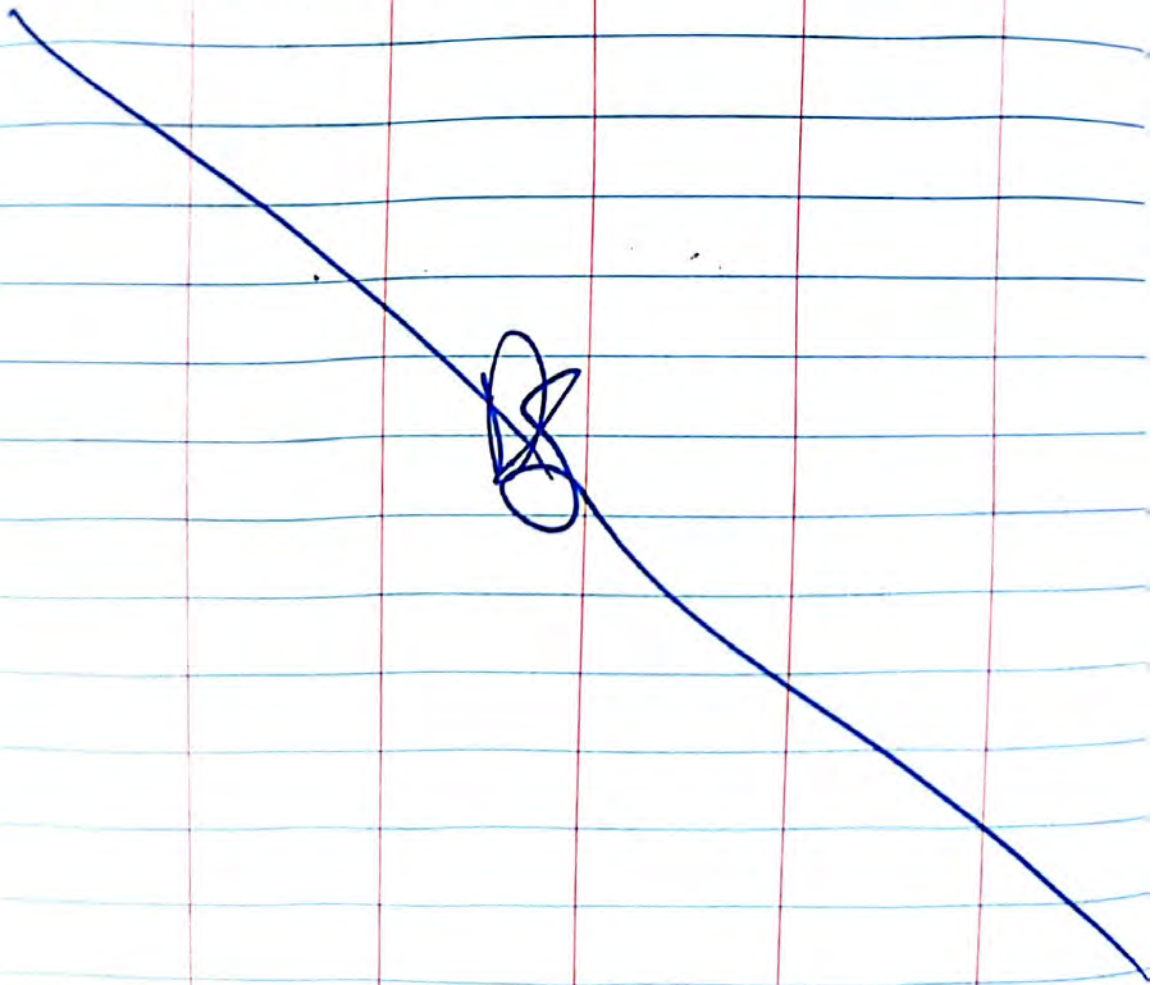
12/12/22 PFAS SAFM p.1 of 13 AS/EDS

DPT Work at A3RB

0720- Dustin Slaton onsite.
Weather: Sunny 60°F.
0730- Deda onsite. Discuss how to access first DPT locations behind building.
- Calibrate equipment.
0800- EDS (Chris-Driller, Keith-Helper) onsite.
- H&S meeting.
0820- Move rig to A3RB-DPT0020 location.
0921- Collect A3RB-DPT0020-004.0 sample
0941- Collect A3RB-DPT0020-010.0 Sample
1009- Collect A3RB-DPT0020-025.0 sample
1048- Collect A3RB-DPT0020-042.0 Sample
1130- Collect A3RB-DPT0020-057.0 Sample
↳ Not enough water coming out to collect readings from 57' interval.
1140- Begin grouting A3RB-DPT0020 location
1215- Break for lunch.
1245- Back from lunch.
- Begin on A3RB-DPT0021
1300- Collect A3RB-DPT0021-004.0 sample
1320- Collect A3RB-DPT0021-010.0 Sample
↳ Not enough water to collect readings
1357- Collect A3RB-DPT0021-025.0 sample-
1425- Collect A3RB-DPT0021-042.0 Sample.
↳ Collect A3RB-FD-20221212-01 @ 1415 from A3RB-DPT0021-042.0.

DPT Work at A3RB

1455 - Collect A3RB-DPT0021-057.0 sample.
1510 - Collect A3RB-EB-2022-12-12-01
- Begin grouting A3RB-DPT0021 location
1530 - Move to A3RB-DPT0022 location.
1559 - Collect A3RB-DPT0022-004.0-sample.
1610 - Finished with what can be done for the day before the gate is locked.
- Clean up. Hook up driller's trailer.
1620 - DS/EDS offsite.



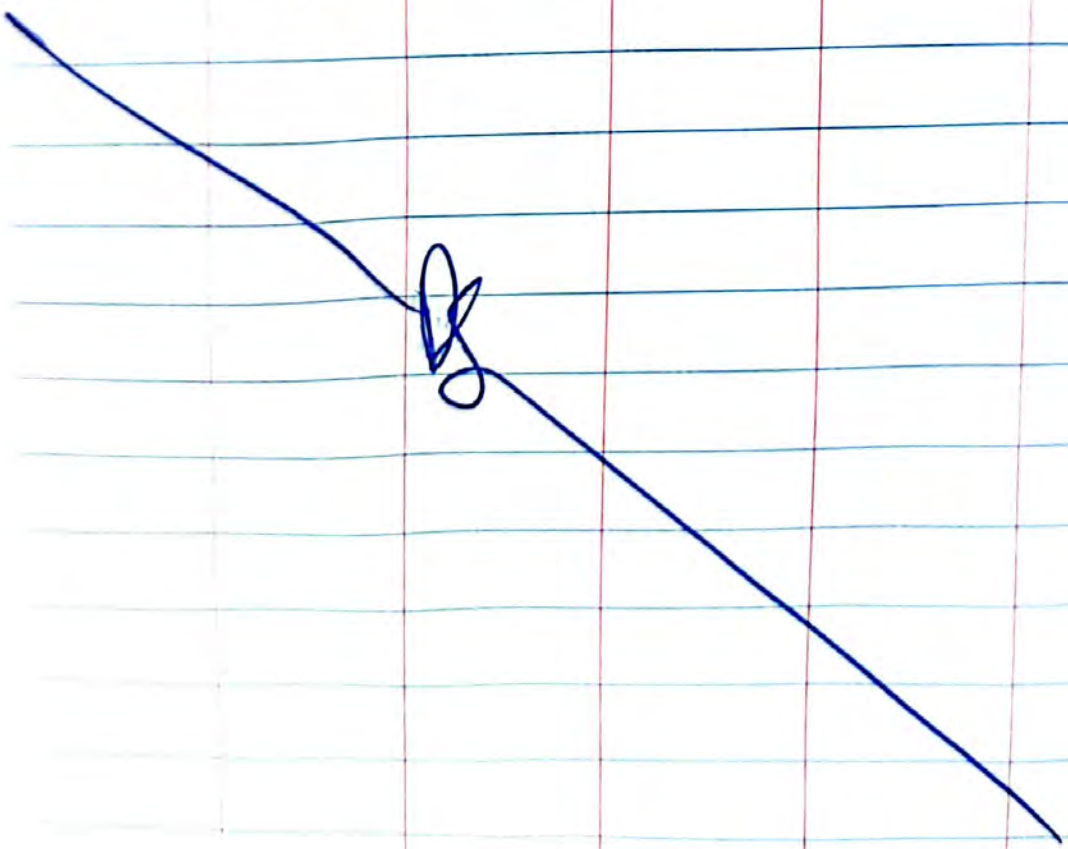
12/13/22 PFAS SA+M p.3 of 13 OS/EDS
DPT work at A3RB

0715- Briefing Status, EDS onsite.
Weather: Cloudy, cool, 42°F.
HAS meeting.
0715- Collect A3RB-FB-20221213-01
- Begin again at A3RB-DPT0022.
0750- Collect A3RB-DPT0022-010.0 sample.
0812- Collect A3RB-DPT0022-018.0 sample.
0840- Collect A3RB-DPT0022-025.0 sample.
0907- Collect A3RB-DPT0022-042.0 sample
0934- Collect A3RB-DPT0022-057.0 sample.
↳ Not enough water to collect readings.
0940- Begin grouting A3RB-DPT0022 location
1000- Move to A3RB-DPT0023 location
1005- Begins to rain. Head to CCP to dump water
1055- Back at site. Still raining pretty heavy.
1145- Move to location number 7 on the map
↳ this will now be A3RB-DPT0023.
- After the rain the drillers could not get back to location number 5 on the map.
1220- Collect A3RB-DPT0023-004.0 sample
1225- Collect A3RB-MS/MSD-20221213-01 sample from A3RB-DPT0023-004.0.
1235- Begins raining heavily again.

OS

DPT Work at A3RB

1309 - Collect A3RB-DPT0023-010.0 sample
1332 - Collect A3RB-DPT0023-025.0 sample
1405 - Collect A3RB-DPT0023-042.0 sample
Is collect A3RB-FD-20221213-02 from this interval. Time is 1360.
1445 - Collect A3RB-DPT0023-057.0 sample.
1450 - Begin grouting A3RB-DPT0023 location
1515 - Move rig to trailer to load up & stage for the morning start.
1540 - Drop samples off with lab courier
1600 - Offsite.



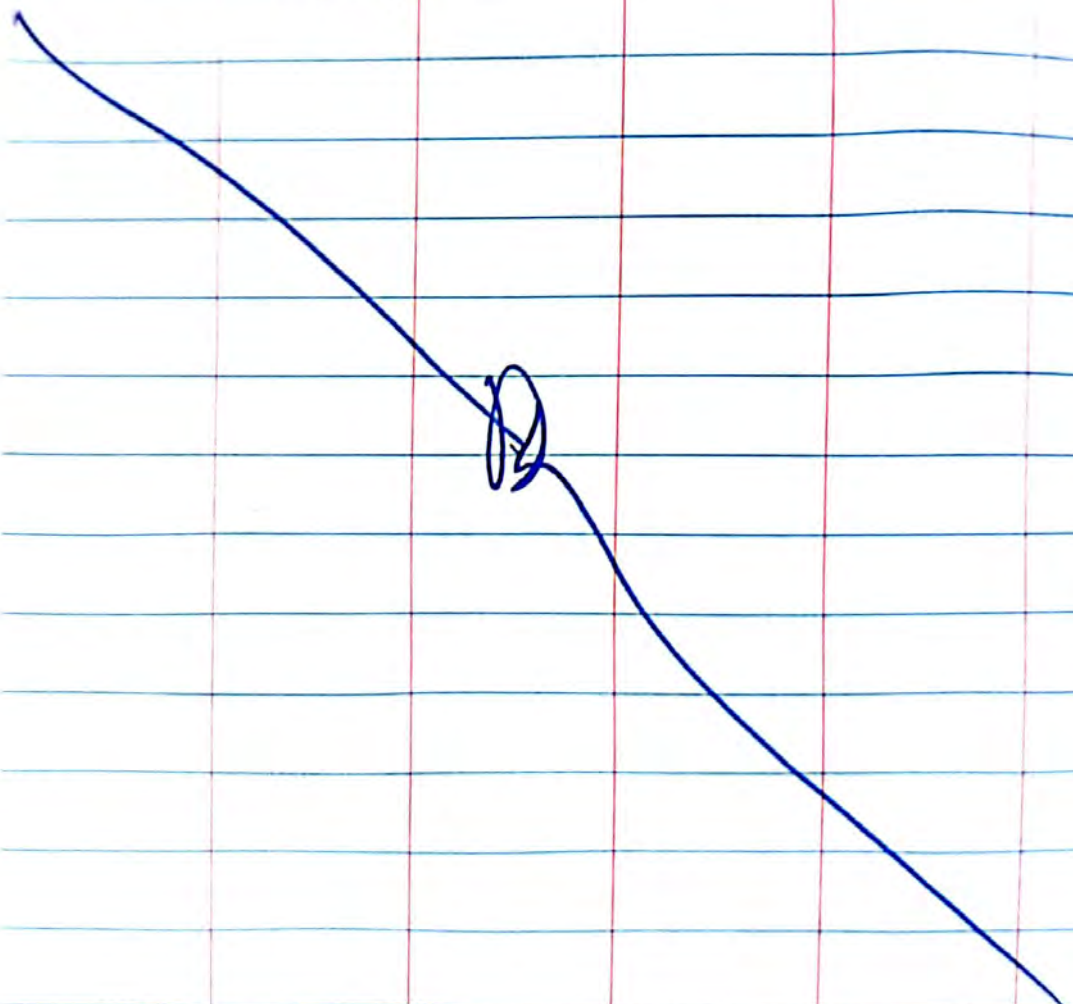
DPT Work at A3RB

0720- Austin Slater, EDS onsite.
Weather: Cloudy, Rain likely, 65°F.
H&S meeting
- Move to A3RB-DPT0024 (Numbers on map)
0810- Collect A3RB-DPT0024-004.0 Sample
0842- Collect A3RB-DPT0024-010.0 Sample
0923- Collect A3RB-DPT0024-025.0 Sample
0945- Collect A3RB-DPT0024-042.0 Sample
1011- Collect A3RB-DPT0024-057.0 Sample
↳ Not enough water to collect Readings
1015- Begin grouting A3RB-DPT0024 location.
1040- Move to A3RB-DPT0025 location
1125- Collect A3RB-DPT0025-004.0 sample
1148- Collect A3RB-DPT0025-010.0 Sample
↳ Collect A3RB-FD-20221214-03 @ 1100
1200 Break for lunch.
1230- Back from lunch.
1255- Collect A3RB-DPT0025-018.0 sample
1314- Collect A3RB-DPT0025-025.0 Sample
1356- Collect A3RB-DPT0025-042.0 Sample
↳ Not enough water to collect readings
1434- Collect A3RB-DPT0025-057.0 Sample
1438- Collect A3RB-MS/MSD-20221214-03
from A3RB-DPT0025-057.0

DS

DPT work at A3RB

1445 - Collect A3RB-EB-20221214-03
1455 - Collect A3RB-FB-20221214-03
1500 - Finished grouting A3RB-DPT0025 location
- Move Rig to A3RB-DPT0024 location
1530 - Head to CCF to dump water out.
1600 - Work complete for the day.
Offsite.



12/15/22 PFAS SA+M p. 7 of 17 CS/EDS
DPT Work at A3RB

0705- Dustin, Skeeter, EDS onsite.
Weather: Cloudy, cool 68°F. Rain this afternoon.
0715- H&S meeting.
0720- Onsite. Discuss DPT locations to not being cleaned.
0735- Onsite.
- DS/EDS head back to A3RB-DPT0026 location.
0759- Collect A3RB-DPT0026-004.0 Sample
0825- Collect A3RB-DPT0026-010.0 Sample
0849- Collect A3RB-DPT0026-025.0 Sample
0922- Collect A3RB-DPT0026-042.0 Sample
0955- Collect A3RB-DPT0026-057.0 Sample
↳ Not enough water to collect readings
1005- Begin grouting A3RB-DPT0026 location
1100- Move rig to A3RB-DPT0027 location
1130- Collect A3RB-DPT0027-004.0 Sample
↳ Collect A3RB-FD-20221215-04 from this interval
1215- Megan informs us there is a tornado watch in effect. Time to stop work.
- Begin loading truck & cleaning up.
1250- Offsite. Dustin will drop samples off at SGS.

12/12/22 PFAS SAM p.8 of 13 OS/PB

Srf Sampling A3RB

0715 - Dustin Slater & Patrick Bendl onsite.
Weather: Sunny, cool 62°F.
HAS meeting

0745 - Collect A3RB-SW0001
0805 - Collect A3RB-SW0002
0820 - Collect A3RB-SW0003
0835 - Collect A3RB-SW0004
0855 - Collect A3RB-SW0005
0910 - Collect A3RB-SW0006
0925 - Collect A3RB-SW0007
0940 - Collect A3RB-SW0008
- Collect A3RB-FD01 from SW0007
labeled it @ 0800
0940 - Collect A3RB-MS/MSD from
A3RB-SW0008
1000 - Collect A3RB-FB01-20221216
1010 - Collect A3RB-EB01-20221216
1025 - Work complete -
OS/PB offsite -
- Samples will be dropped off at
SGS.

JP

DPT Work at A3RB

1015- Austin Slator onsite.
Weather: Sunny, 64°F.
1030- Alfredo with BOSS onsite for locates at location #3.
1105- Alfredo offsite.
1130 - EDS onsite.
1155- H&S meeting
1305 - Begin at location #3
1315 - Deda onsite.
1340 - Collect A3RB-DPT0028-004.0 sample
1415 - Collect A3RB-DPT0028-010.0 sample
1455 - Collect A3RB-DPT0028-018.0 sample
1530 - Collect A3RB-DPT0028-025.0 sample
1600 - Collect A3RB-DPT0028-042.0 sample
1640 - Collect A3RB-DPT0028-057.0 sample.
1645 - Deda offsite.
- Will leave rig setup on A3RB-DPT0028 & grout it in the morning.
1700- OS / EDS Offsite.

12/20/22 AECOM SAIM 3.10 of 13

Dpt work at A3RB

0715 Greg Kusel onsite with EDS
- Safety mitigate meeting
- EDS preps equipment
- GK organizes paperwork.

0730 EDS grouts up Dpt0028 boring.

0735 GK calibrates YSI and turbidimeter

0740 Drive to Dpt0021 location.
- continue to calibrate.

0820 Dede onsite

0825 Collect A3RB-Dpt0029-004.0-20221220

0850 Collect A3RB-Dpt0029-010.0-20221220

0912 Collect A3RB-Dpt0029-018.0-20221220

0915 Collect A3RB-MS/MSD-20221220-03

1005 Collect A3RB-Dpt0029-025.0-20221220

1010 Collect A3RB-FD-20221220-05
@ Dpt0029-025.0

1050 Collect A3RB-Dpt0029-042.0-20221220

1115 Collect A3RB-Dpt0029-057.0-20221220

1125 Grout up Dpt0029 boring

1145 DCda offsite. GK, EDS move to A3RB.

1155 Break for lunch.

1225 Move to Dpt0027 location.

1255 Collect A3RB-Dpt0027-018.0-20221220

1330 Collect A3RB-Dpt0027-025.0-20221220

1340 Collect A3RB-FB-20221220-04

DPT work at A3RB

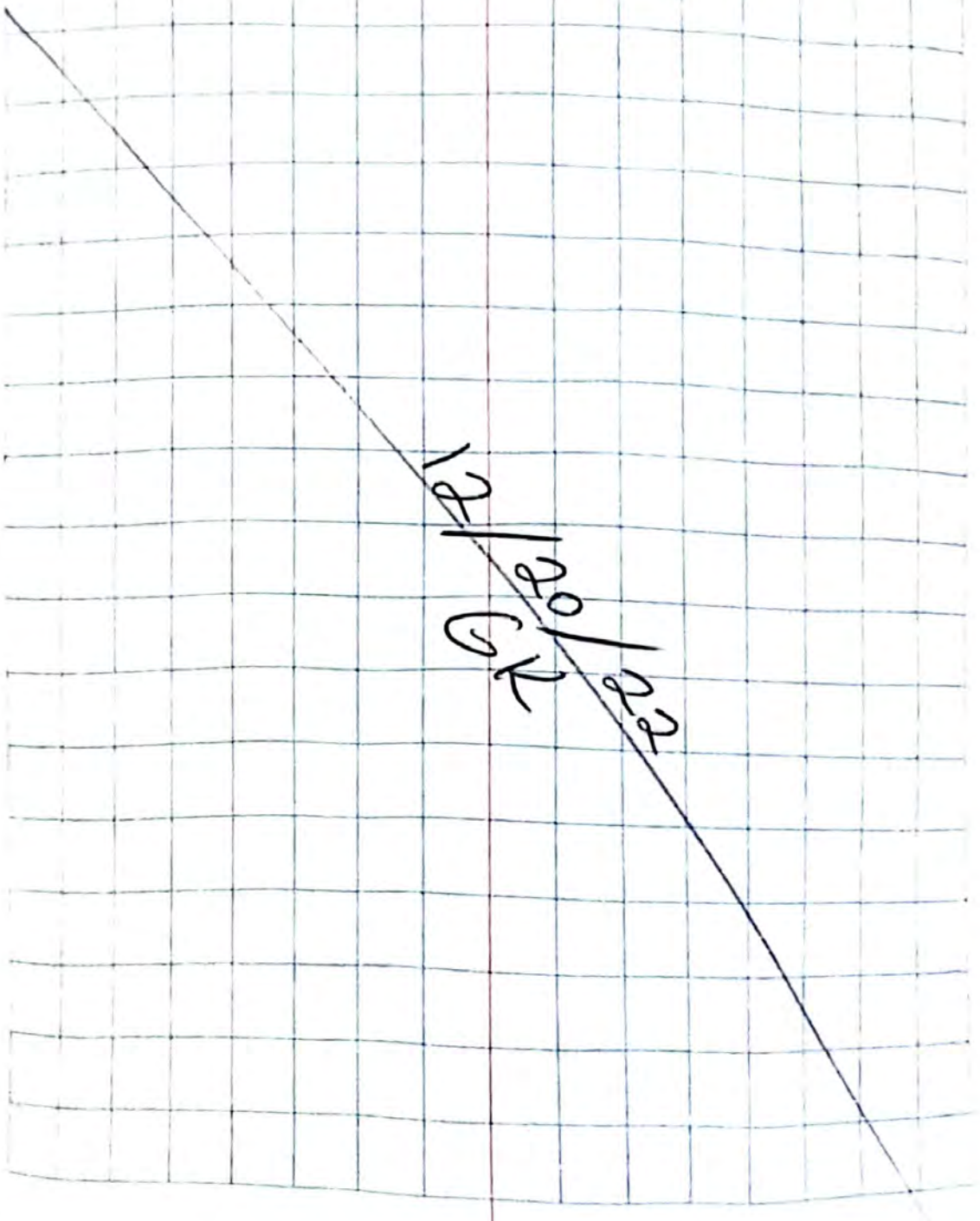
1415 No recharge at DPT0027-042.0.
Unable to collect A3RB-DPT0027-042.0.

1440 Collect A3RB-DPT0027-057.0-20221220.

1500 pack up equipment.

1515 EDS to unload IDW at CCF. GK drives to SGS to drop off samples.

1630 GK drops off samples at SGS.



12/22/22 PFAS SA+M p12 of 13 rs/umd

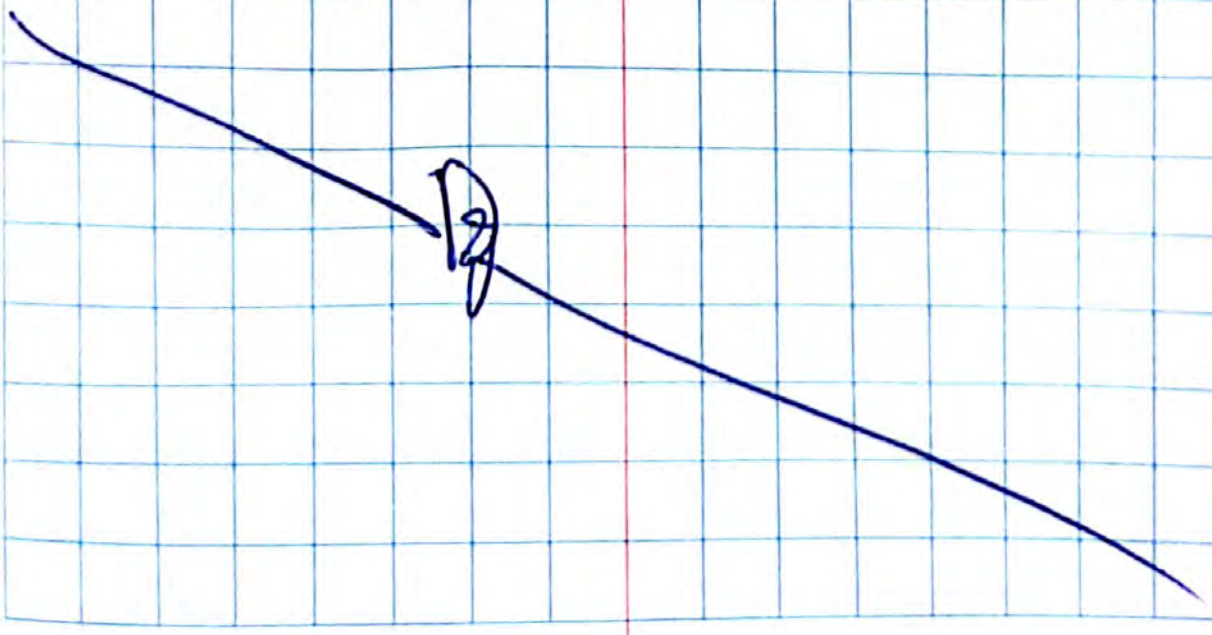
Soil Sampling at A3RB

0850- Dustin Slaton & Megan Dunkle onsite.
Weather: Overcast, 58°F.
H&S meeting
- Begin with locations on west side of road.

0900 - Collect A3RB-SB0049-000.5-20221222
0905 - Collect A3RB-SB0049-002.0-20221222
0920- Collect A3RB-SB0050-000.5-20221222
0925- Collect A3RB-SB0050-002.0-20221222
↳ Collect A3RB-FD01-20221222 from A3RB-SB0050-002.0 labeled @ 0800
0940- Collect A3RB-SB0051-000.5-20221222
0945- Collect A3RB-SB0051-002.0-20221222
1000- Collect A3RB-SB0052-000.5-20221222
1005- Collect A3RB-SB0052-002.0-20221222
1020- Collect A3RB-SB0053-000.5-20221222
1025- Collect A3RB-SB0053-002.0-20221222
1032- Collect A3RB-SB0054-000.5-20221222
1037- Collect A3RB-SB0054-002.0-20221222
1042- Collect A3RB-SB0055-000.5-20221222
1045- Collect A3RB-SB0055-002.0-20221222
1052- Collect A3RB-SB0056-000.5-20221222
1055- Collect A3RB-SB0056-002.0-20221222
1105- Collect A3RB-SB0057-000.5-20221222
1108- Collect A3RB-SB0057-002.0-20221222

Soil Sampling at A3RB

1115 - Collect A3RB-SB00058-000.5-20221222
1120 - Collect A3RB-SB00058-002.0-20221222
1127 - Collect A3RB-SB00059-000.5-20221222
1130 - Collect A3RB-SB00059-002.0-20221222
1145 - Collect A3RB-SB00060-000.5-20221222
  ↳ Collect A3RB-FD02-20221222 from A3RB-SB00060-000.5 labeled @ 0815
1150 - Collect A3RB-SB00060-002.0-20221222
  - Collect A3RB-SB00058-002.0-MS @ 1010
  - Collect A3RB-SB00058-002.0-MSD @ 1012
  - Collect A3RB-EB01-20221222 @ 1040
  - Collect A3RB-EB02-20221222 @ 1200
  - Collect A3RB-FB01-20221222 @ 1205
1210 - DS/MD offsite
  - Samples will be dropped off at SGS.



DPT Work at A3RB

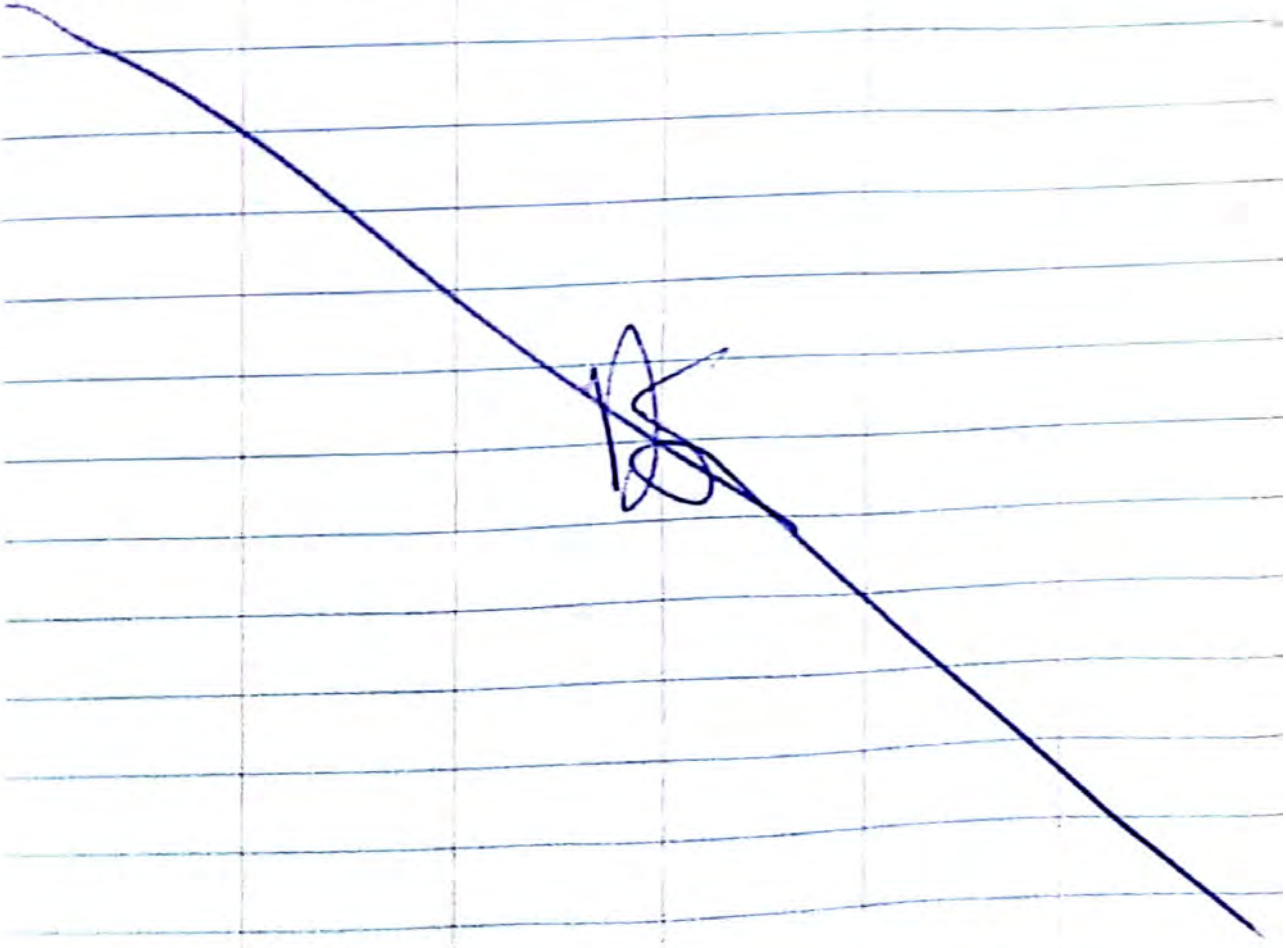
0730- Dustin Slafter (AECOM) Chris Phelps + Keith Olson (EDS) onsite -
Weather: Sunny, 71°F
H+S Meeting -
Discuss sampling locations
Move to A3RB DPT0030 location
0835 - Collect A3RB-DPT0030-004.0 sample
0900 - Collect A3RB-DPT0030-010.0 Sample
0925 - Collect A3RB-DPT0030-018.0 Sample
0950 - Collect A3RB-DPT0030-025.0 sample
1030 - Collect A3RB-DPT0030-042.0 Sample
1110 - Collect A3RB-DPT0030-057.0 Sample
1130 - Begin to grout A3RB-DPT0030 location
1150 - Move to A3RB-DPT0031 location
1200 - Break for lunch
1240 - Back from lunch.
1305 - Collect A3RB-DPT0031-004.0 Sample
1325 - Collect A3RB-DPT0031-010.0 Sample
1345 - Collect A3RB-DPT0031-018.0 Sample
1420 - Collect A3RB-DPT0031-025.0 Sample
1445 - Collect A3RB-DPT0031-042.0 Sample
↳ collect A3RB-FD01-20230306 from this depth also @ 0815
1530 - Collect A3RB-DPT0031-057.0 sample

OS

3/4/23 PFAS SAM p. 2 of 8 OS/EDS

DPT work at A3RB

1545 - Begin grouting A3RB-DPT0031 location
1600 - Move Rig to A3RB-DPT0032 location
1610 - Head to CCF to set up drum & dump water from today.
1620 - Collect A3RB-EB01-20230306
1630 - Collect A3RB-FB01-20230306
1635 - All water dumped into drum ID= 222847, clamshell ID= 222850.
1640 - All offsite.



HAS SAHM
DPT Work at ABRB

0710- Dustin Slaton & EDS onsite.
Weather: Sunny, 69°F
0715- H&S meeting
0730- Begin ABRB-DPT0032 location
0800- Collect ABRB-DPT0032-004.0 Sample
0820- Collect ABRB-DPT0032-014.0 Sample
0850- Collect ABRB-DPT0032-018.0 Sample.
0910- Collect ABRB-DPT0032-025.0 Sample
0945- Collect ABRB-DPT0032-042.0 sample
1015- Collect ABRB-DPT0032-057.0 Sample
1045- Begin grouting ABRB-DPT0032 location
1100- Load up drill rig to move to location on Kennedy Parkway.
1130- Break for lunch
1200- Back from lunch
- Attempt to hand auger in multiple locations. Very compacted road base material in every spot. Can't get down past 2' bls.
- Contact Megan to inform her & see what she wants to do.

1345- Move back to ABRB-DPT0017 location.
↳ Deda will meet us out here at it.
1415- Setup on ABRB-DPT0017 location
1450- Collect ABRB-DPT0017-042.0 sample

DPT work at A3RB

1520 - Collect A3RB-DPT0017-057.0 Sample
1530 - Begin grouting A3RB-DPT0017 location
1530 - Collect A3RB-FB02-20230307
1540 - Collect A3RB-EB02-20230307
1545 - EDS offsite.
Dustin heads to badging office to meet SGS with samples-
1550 - Delivered samples to SGS -
1600 - Dustin offsite -

0730 Brittany Folch on-site
0755 EDS on site after dumping IDW Purge water at the CCF
- Weather 81°F Sunny
- H+S meeting
- Deda Johannson on-site
0810 Mobilize to A3RB-SB0061
0830 Begin A3RB-SB0061
0858- Collect A3RB-SB0061-010.0 Sample
1015- Collect A3RB-SB0061-035.0 Sample
1130- Collect A3RB-SB0061-059.0 Sample
0800- Collect A3RB-FB03-20230308
1150- Collect A3RB-EB03-20230308
1215- Austin Slator onsite to Replace Brittany.
1315- Move Rig back to A3RB-DPT0033 location
1425 - Collect A3RB-DPT0033-004.0 Sample
↳ collect MS/MSD also
1450 - Collect A3RB-DPT0033-010.0 Sample
1510 - Collect A3RB-DPT0033-018.0 Sample
1535 - Offsite.
Head to CCF to dump water & soil.
1600- Water placed in drum ID 222849 & soil placed in drum ID 222848
-In clamshell 222850 along with drum 222847.
1620- Offsite.

DPT Work at A3RB

0715 - Dustin Slaten onsite
- EDS & Anne Chrest already onsite.
Weather: Sunny, cool 65°F

0730 - H&S meeting
- Continue at A3RB-DPT0033 location

0825 - Collect A3RB-DPT0033-025.0 sample

0900 - Collect A3RB-DPT0033-042.0 sample
↳ collect A3RB-FD02-20230309 [redacted] from this interval

0930 - Collect A3RB-DPT0033-057.0 sample

0935 - Begin grouting A3RB-DPT0033 location.

1000 - Move to A3RB-DPT0019 location

1050 - Collect A3RB-DPT0019-042.0 sample
* Barely enough water to fill the sample bottles

1135 - Collect A3RB-DPT0019-057.0 sample

1140 - Begin grouting A3RB-DPT0019 location

1200 - Break for lunch

1230 - Back from lunch.
- Dustin & Chris head to check path being cleared to access wells to the west & north of A3RB-DPT0033 location.

1310 - Move to A3RB-DPT0034 location
↳ point north of DPT0027

AS

3/9/23 PFAS SA+M p.7 of 13 DS/EDS

DPT work at ABRB

~~- Collect ABRB DPT0034-0010 Sample~~ (DS)

1320 - Megan informs us we're on a no dig.

1345 - Chris & Keith head to CCF to dump out water.

- Talk to Deda about getting ditch cut out some to access points to the west.

1450 - Chris & Keith back onsite.

- Still on a no dig status.

1540 - Offsite.

- Dustin heads to meet SGS to drop off samples.

1550 - Give SGS samples.

1600 - Dustin offsite.

OPT Work at ASRB

0715 Justin Starks + EDS onsite.
Weather: Sunny, 60°F.
H+S meeting
0730 - Chris Addison onsite.
- Still a no dig status for Category B grounds.
0800 - Chris offsite to his office to call about ditch work.
0810 - Justin Inmas to meet Jeff at location out on Kennedy Parkway
0900 - Justin back onsite.
0910 - Ward Services onsite to cut out ditch so we can get to the other side.
0935 - Ditch work complete -
Keith goes to get drill rig + materials.
1000 - Move to ASRB-DPT0034 location
1040 - Collect ASRB-DPT0034-004.0 Sample
*Barely any water at this interval
1100 - Collect ASRB-DPT0034-010.0 Sample
1140 - Collect ASRB-DPT0034-018.0 Sample
We could not collect this sample, no water was coming out. Screen was silted solid when pulled out.

DPT Work at A3RB

1210 - Collect A3RB-DPT0034-025.0 Sample
* Barely enough water to fill bottles
1245 - Collect A3RB-DPT0034-042.0 sample
1310 - Collect A3RB-DPT0034-057.0 Sample
1315 - Begin grouting A3RB-DPT0034
- Move to A3RB-DPT0035 location
1415 - Begin A3RB-DPT0035
1430 - Collect A3RB-DPT0035-004.0 Sample
↳ Barely any water at this interval
1450 - Collect A3RB-DPT0035-010.0 Sample
↳ A3RB-FD03-20230310 @ 1000 also
1515 - Collect A3RB-DPT0035-018.0 Sample
1520 - Collect A3RB-FD04-20230310
1530 - Collect A3RB-EB04-20230310
- Offsite -
1630 - Dustin arrives at SGS to drop off Samples.
1700 - Arrive at depot in Orlando to pick up surface water sampling stuff.
1720 - Work complete.

DS

3/13/23

PFAS SAMP

OPT work at A3RB

0715 - Rhythm Slaver + CDS onsite.
Weather: Overcast, Rain likely, 71°F
- HASP meeting.
- Call Megan about rig dig status
0810 - Make way back to A3RB-OPT0035
0850 - Collect A3RB-OPT0035-025.0 sample
0915 - Collect A3RB-OPT0035-042.0 Sample
0945 - Collect A3RB-OPT0035-057.0 Sample
0950 - Begin grouting A3RB-OPT0035 location
1010 - Move rig to A3RB-OPT0036 location
1020 - Head out to driller's truck to get fresh Decon water.
1105 - Begin A3RB-OPT0036
1130 - Collect A3RB-OPT0036-004.0 sample
↳ Barely enough water to fill sample bottles
1155 - Collect A3RB-OPT0036-010.0-Sample
1225 - Collect A3RB-OPT0036-018.0 sample
1230 - Begins to rain heavily + Phase II lightning warning issued.
1440 - Phase II cancelled. Begin working again.
1505 - Collect A3RB-OPT0036-025.0 sample
↳ Barely enough water to fill bottles

15

DPT Work at A3RB

1530 - Collect A3RB-DPT0036-0412.0 sample
↳ Also Collect A3RB-FD04-20230313 @ 0800

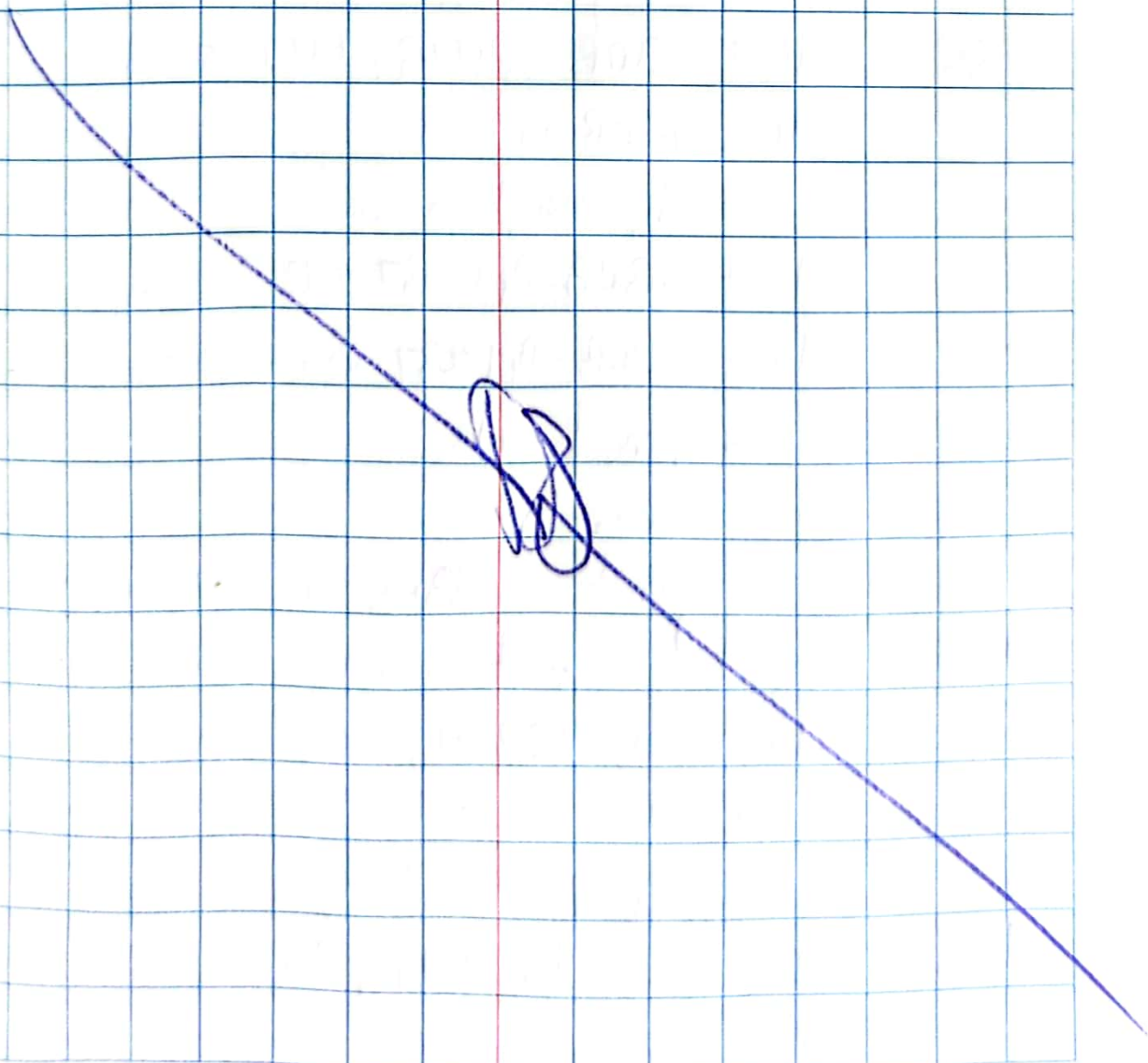
1605 - Collect A3RB-DPT0036-0517.0 sample
↳ Also collected MS/MSD sample
from this interval - Not a lot of water coming out

1610 - Begin grouting A3RB-DPT0036 location

1615 - Collect A3RB-FB05-20230313

1620 - Collect A3RB-EB05-20230313

1640 - offsite



3/15/13 PFAS Saem p. 12 of BOS/EDS

DPT Work at ABRB

0830 - Austin Slater onsite - EDS already onsite.

Weather: Cloudy, 56°F.

H+S meeting

Move drill rig to ABRB-DPT0037 location

0900 - Deda onsite

0935 - Collect ABRB-DPT0037-004.0 sample

↳ Collect ABRB-FOOS-20230315@0800 from this interval

1005 - Collect ABRB-DPT0037-010.0 sample

- Barely enough water to fill bottles

1055 - Collect ABRB-DPT0037-018.0 sample

1125 - Collect ABRB-DPT0037-025.0 sample

- Barely enough water to fill bottles.

1150 - Collect ABRB-DPT0037-042.0 sample

1215 - Collect ABRB-DPT0037-057.0 sample

1230 - Break for lunch

1300 - Back from lunch.

1305 - Begin grouting ABRB-DPT0037 location.

1345 - Head to CCF to dump water out

Drum ID 222847 80% full

Drum ID 222849 80% full

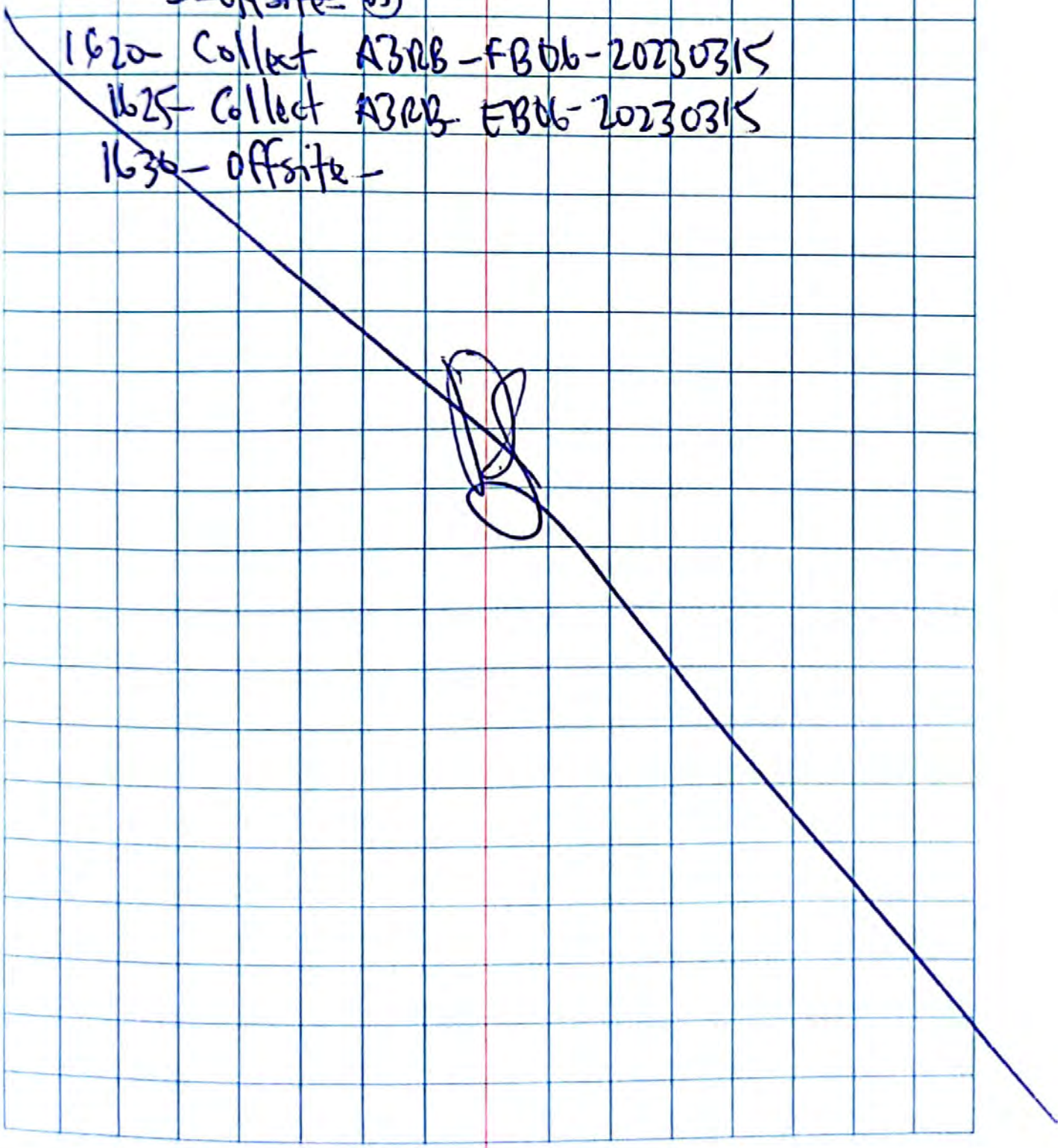
Drum ID 222848 (soil) 15% full

1415 - Austin heads to MLPV to assist Devin with sampling.

3/15/13 PFAS SA+M p. 13 of 13 DS

DPT Work at ABRB

1530 - Dustin back onsite.
1545 - Collect ABRB-SW0009-001.0 sample
1600 - Collect ABRB-SW0010-001.0 sample
1615 - Sampling complete -
~~- Offsite~~ DS)
1620 - Collect ABRB-FB06-20230315
1625 - Collect ABRB-EB06-20230315
1630 - Offsite -



3/27/23 PFAS SA+M Pg 1 of 16 BF/GPI

0720 Brittany Follett departs Orlando for KSC Badging Office

0830 BF arrives at KSC to meet with Groundwater Protection (GPI) drillers

0900 GPI - called to say that they were running ~40mn late

1050 GPI on-site
- H+S meeting
- Weather: 89°F Sunny
- SOW Begin MW Install Activities

1110 Set up equipment on first well pair at FS2 north of the Turning Basin

1135 Break for lunch and get water

1220 Back from lunch with full water tank

1235 Begin FS2-MW0009
↳ Post hole first 5 Feet

1320 Complete installation of FS2-MW0009 at 25 Feet (15-25)
↳ See Digital well construction log for details

3/27/23 PFAS SA+M Pg 2 of 16 BF/GPI

1325 Move to FS2-MW0010
↳ Post hole first 5 feet

1350 Complete FS2-MW0010 at 15 feet (5-15)
↳ See Digital Well Construction Log for details

1355 Pack up equipment to mobilize to next FS2 location

1435 Arrive at second FS2 location area South of Former Fire Station #2

1440 Set up on FS2-MW0011

1455 Begin FS2-MW0011 (Right)
↳ Post hole first 5 Feet

1520 Complete installation of FS2-MW0011 (15-25)
- See Digital Well Construction Log for Details

1530 Move to FS2-MW0012 (Left)
↳ Post hole first 5 Feet

1610 Complete installation of FS2-MW0012 (5-15)
↳ See Digital Well Construction Log for details

1615 Pack up equipment for the night and to get ready to move to VABN location

1630 GPI Off-site. BF to check on clearance at POL located in the Industrial Area

1650 BF off-site

1810 BF Arrives in Orlando. End of day

3/28/23 PFAS SA+M PS 3 OF 16 BF/GPI

0620 BF departs Orlando for KSC
0730 BF arrives at KSC to meet with GPI
- H+S meeting
- Weather 90°F Sunny
- SOW Continue MW Installations
0750 Mobilize to VABN location west of Kennedy Parkway N.
0800 Arrive at VABN location.
0820 Begin installation of VABN-MW0001
↳ Post hole first 5 feet
0855 Complete VABN-MW0001 (15-25)
↳ See Digital Well Construction Log for details
0900 Move to VABN-MW0002
↳ Post hole first 5 feet
0920 Complete installation of VABN-MW0002 (5-15)
↳ See Digital Well construction Log for details
0945 Decon Augers from last 6 wells
1025 Complete decon pack up equipment and mobilize to SRB
1045 Drop drums off at POL
1110 Arrive at MW-1004 Former Press Area

3/28/23 PFAS SA+M PS 4 OF 16

1115 Drop off equipment and set up on A3RB-MW0011
1135 Break for lunch / Pick up more water
1225 Back from lunch
1240 Begin A3RB-MW0011
↳ Post hole first 5 feet
1400 Complete installation of A3RB-MW0011 (54-59)
↳ See Digital Well Construction Log for details
1405 Move to A3RB-MW0012
↳ Post hole first ~~5~~ 5 feet
1510 Complete installation of A3RB-MW0012 (35-45)
↳ See Digital Well Construction Log for details
~~1520 Decon Augers from last 12 wells~~ BF
1535 Move to A3RB-MW0013
↳ Post hole first 5 feet
1615 Complete installation of A3RB-MW0013 (20-30)
↳ See Digital Well Construction Log for details
1620 Move to A3RB-MW0014 - Post hole first 5 feet
1645 Complete installation of A3RB-MW0014 (2-12)
↳ See Digital Well Construction Log for details
1650 Pack up all equipment for the night
1710 All off-site

BF

3/29/23 PFAS SA+M PS 5 of 16 BF/GPI

0620 BF departs Orlando for KSC
0730 BF arrives at KSC at A3RB-MW0011 - MW0014. GPI on-site
- H+S meeting
- Weather: 79°F Partly Cloudy
- SOW: Begin development and well pad construction.
- No D.J due to Launch today
0740 Begin development of A3RB-MW0011
- Begin construction of other well pads during development
0855 Complete development of A3RB-MW0011
0900 Begin development of A3RB-MW0012
0925 Complete development of A3RB-MW0012
0930 Begin development of A3RB-MW0013
0950 Complete development of A3RB-MW0013
0955 Begin development of A3RB-MW0014
1010 Complete development of A3RB-MW0014
1020 Mobilize to VABN-MW0001 + MW0002
1055 Arrive at VABN-MW0001 + MW0002
1100 Begin development of VABN-MW0001
↳ Begin well pad construction of VABN-MW0002
1135 Complete development of VABN-MW0001
1140 Begin development of VABN-MW0002

PFAS SA+M PS 6 of 16 BF/GPI 3/29/23

1205 Complete development of VABN-MW0002
1215 Break for Lunch and mobilize to FS2-MW0009 + MW0010
1245 Back from lunch
1250 Begin developing FS2-MW0009
1310 Complete development of FS2-MW0009
1315 Begin development of FS2-MW0010
1340 Complete development of FS2-MW0010
1345 Mobilize to FS2-MW0011 + MW0012
1355 Arrive at FS2-MW0011 + MW0012
1405 Begin development of FS2-MW0011
1425 Complete development of FS2-MW0011
1430 Begin development of FS2-MW0012
1455 Complete development of FS2-MW0012
1455/1500 Pack up equipment and mobilize back to building N4-1009 to set up for tomorrow
1520 All off-site
1630 ~~All off-site~~ BF arrives in Orlando
End of day

3/30/23

PFAS SA+M

Pg 7 of 16

BF/GPI

0620 BF departs Orlando for KSC

0730 BF arrives ~~in Orlando~~ at KSC

GPI already on-site

- H+S meeting
- Weather 82°F Sunny
- SOW Continue MW Install activities

0950 Set up on A3RB-MW0015

↳ Post hole first 5 feet

0835 Complete installation of A3RB-MW0015 (20-30)

↳ See Digital Well Construction Log for details

0840 Begin development of A3RB-MW0015

0900 Complete development of A3RB-MW0015

0905 Grout A3RB-MW0015

0915 Move to A3RB-MW0016

↳ Post hole first 5 feet

0950 BF Begin development of A3RB-MW0016

- Construct well pads
- Decon drill rods

1010 Complete development of A3RB-MW0016

Complete well pad construction and decon

1130 Break for lunch after mobilizing to Tel 4 Road

1230 Back from lunch, Set up decon Station. Move Rig to Cluster of 4 wells South of SRB

3/30/23

PFAS SA+M

Pg 8 of 16

BF/GPI

1310 Begin A3RB-MW0017

↳ Post hole first 5 feet (54-59)

1415 Complete installation of A3RB-MW0017

↳ See Digital Well Construction Log for details

1420 Move to A3RB-MW0019

↳ Post hole first 5 feet (30-40)

1455 Complete installation of A3RB-MW0019

↳ See Digital Well Construction Log for Details

1500 Begin A3RB-MW0018

↳ Post hole first 5 feet

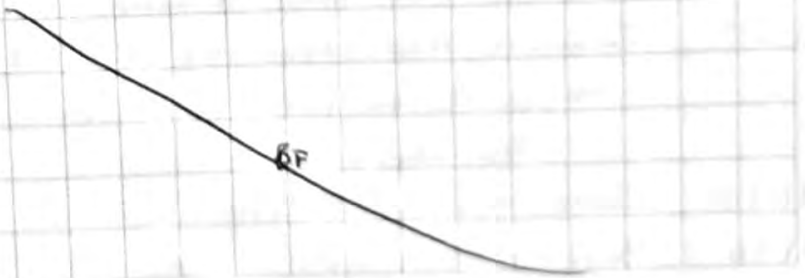
1515 Stop boring at 20 feet. Drillers ran out of water

- Lead Driller needs to be off-site by 4. Not enough time to grab more water from CCF

1520 Pack up equipment for the night

1535 All off-site

1650 BF arrives in Orlando. End of day



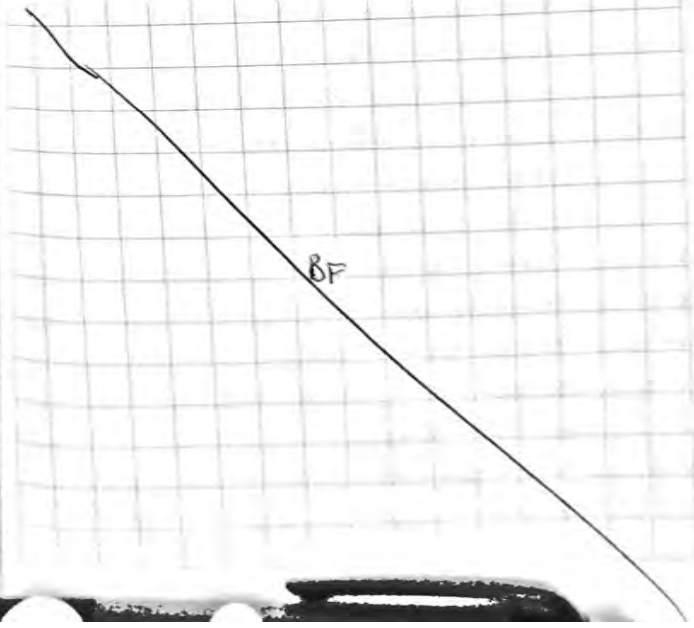
3/31/23 PFAS SA+M PS 9 of 16 BF/GPI

0620 BF departs Orlando for KSC
0730 BF arrives in ~~Orlando~~ KSC. GPI on-site
- H+S meeting
- Weather: 86°F Sunny
- SOW: Continue MW Installation activities
0745 Continue A3RB-MW0018
0825 Complete installation of A3RB-MW0018 (35-45)
↳ See Digital Well Construction Log for details
0830 Move to A3RB-MW0020
↳ Post hole first 5 feet
0855 Complete installation of A3RB-MW0020 (2-12)
↳ See Digital Well Construction Log for Details
0910 Decon drill rods
0930 Dede Johannson on-site
1000 Mobilize to A3RB-MW0021
1020 Begin A3RB-MW0021
↳ Post hole first 5 feet
1105 Complete A3RB-MW0021 (20-30')
↳ See Digital Well construction Log for details
1120 Dede Johannson off-site
1130 Break for lunch

PFAS SA+M PS 10 of 16 BF/GPI

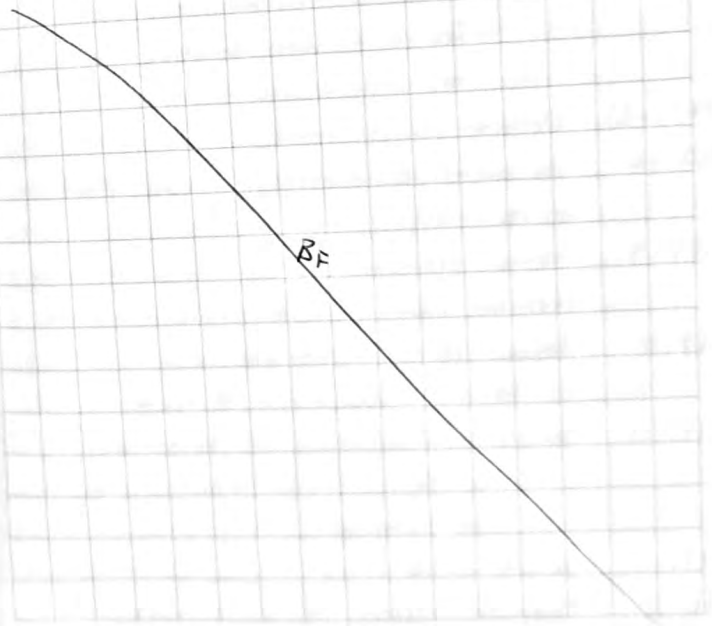
4/1/23

1230 Back from lunch
1235 Decon drill rods
1300 Begin A3RB-MW0022
↳ Post hole first 5 feet (54-59)
1405 Complete ~~install~~ installation of A3RB-MW0022
↳ See Digital Well Construction Log for details
1480 Pack up site for the weekend
1420 Decon drill rods
1500 All off-site for the weekend
1610 BF arrives in Orlando. End of day



0720 BF departs Orlando for KSC SRB
0830 BF arrives at SRB to meet with GPI.
- HTS Meeting
- Weather: 92°F Cloudy with Chance of Storms in the afternoon
- SOW: Continue MW Install
0845 GPI off-site to fill water tank and to pick up new badges
0930 GPI back on-site with full water tank and badges updated
0945 Move equipment to A3RB-MW0023
1010 Begin A3RB-MW0023
↳ Post hole first 5 Feet
1110 Complete installation of A3RB-MW0023 (54-59)
↳ See Digital Well Construction Log for details
1125 Decon drill rods
1140 Complete decon
1145 Break for lunch
1300 Back From lunch and filling water tank
1320 Move equipment to A3RB-MW0024 Western most location next to A3RB-MW0009

1410 Begin A3RB-MW0024
↳ Post hole first 5 feet
- Phase I Lightning watch in place. BF monitoring weather (35-45)
1455 Complete installation of A3RB-MW0024
↳ See Digital Well Construction Log for details
1500 Decon drill rods
1510 Stop work - Lightning in area
1615 All off-site.
1730 BF arrives in Orlando. End of day



04/04/23 PFAS SA + M
P8 13 of 16
BF/GPI

0620 BF departs Orlando for KSC SRB
0730 BF arrives at KSC SRB
0740 GPI on-site after filling water tank
- H+S meeting
- Weather 91°F Sunny
- SOW: Continue MW Install
0755 Move equipment to A3RB-MW0025 located next to A3RB-MW0008
0825 Begin A3RB-MW0025
↳ Post hole first 5 feet
0910 Complete installation of A3RB-MW0025 (35-45)
↳ See Digital Well Construction Log for details
0915 Decon drill rods
0930 Complete decon of drill rods. Fuel up drill rig
0935 Move equipment to A3RB-MW0026 located ~~next to~~ BF next to A3RB-MW0010
1010 Begin A3RB-MW0026
↳ Post hole first 5 feet
1050 Complete installation of A3RB-MW0026 (35-45)
↳ See Digital Well Construction Log for details
1105 Decon drill rods
1110 Complete decon of drill rods

04/04/23 PFAS SA + M
P8 14 of 16
BF/GPI

1115 Break for lunch
1150 Back from lunch
1200 Begin A3RB-MW0027
↳ Post hole first 5 Feet (54-59)
1320 Complete installation of A3RB-MW0027
↳ See Digital Well Construction Log for details
1330 Decon drill rods
1345 Complete decon. Pack up materials for well pad ~~development~~ Construction and development of wells
1415 Begin development of A3RB-MW0017
↳ Construct well pads during development
1435 Complete development of A3RB-MW0017
1440 Begin development of A3RB-MW0018
1505 Complete development of A3RB-MW0018
1510 Begin development of A3RB-MW0020
1530 Complete development of A3RB-MW0020
1535 Begin development of A3RB-MW0019
1600 Complete development of A3RB-MW0019
1610 Pack up equipment for the night
1640 All off-site
1800 BF arrives in Orlando. End of day

BF

04/05/23

PFAS SA+M

PG 15 of 16

BF/GPI

0620 BF departs Orlando for KSC SRB

0730 BF arrives at KSC SRB. GPI on-site

- H+S meeting
- Weather: 91°F Sunny
- SOW Complete MW Install Activities

0740 Mobilize to A3RB-MW0021

0745 Begin development of A3RB-MW0021

0820 Complete development of A3RB-MW0021

0840 Begin development of A3RB-MW0022

0900 Complete development of A3RB-MW0022

0905 Begin devevelopment of A3RB-MW0023

0930 Complete development of A3RB-MW0023

0945 Begin development of A3RB-MW0024

1010 Complete development of A3RB-MW0024

1020 Begin development of A3RB-MW0025

1040 Complete development of A3RB-MW0025

1050 Begin development of A3RB-MW0026

1120 Complete development of A3RB-MW0026

1130 Begin development of A3RB-MW0027

1215 Complete development of A3RB-MW0027

1155 Break for lunch

1300 Back from lunch

1305 Pack up equipment and Cleanup Work site

04/05/23

PFAS SA+M

PG 16 of 16

BP/GPI

1345 Mobilize to POL to drop IDW Drums

1410 ~~1440~~ Arrive at POL to drop IDW drums

	% Full
Clamshell #229677	
- 229362	80%
- 229363	80%
- 229364	80%
- 229365	80%
Clamshell #229359	% Full
- 229360	20%
- 229361	80%
Clamshell #229366	
- 229678 }	Decon Plastic and Water
- 229679 }	
- 229359	

Haul to grab Clamshell tops from CCF

1600 All off-site

1710 BF arrives in Orlando. End of day

BF

SITE:	**PFAS Assessment & Mitigation/ 60667657**
PLANNED ACTIVITIES:	Surveying of monitoring wells
DATE:	4/12/2023
NOTES BY:	Caroline Bekins (CB)
ADDITIONAL ON SITE:	Survtech: Anthony Zev and Robert Brown

TIME	FIELD NOTES
	Weather: 70 F, Overcast with scattered showers
0730	CB departs Orlando for KSC Badge Station to meet SurvTech
0845	Arrive at KSC Badge Station. Anthony Zev (SurvTech) on site and badged
0915	Robert Brown (SurvTech) on site and badged. Depart for SRB
0935	Arrive at SRB. CB opens wells and Survtech set-up for x-y and TOC coordinates
1025	Note that wells A3RB-MW0025 and 26 are switched on map. Email Megan Garcia (AECOM)
1215	Completed with wells around and across from SRB. Move to well A3RB-
1300	Complete A3RB-MW0021. Move south to A3RB-MW0017 - 20
1400	Complete A3RB-MW0017 - 20. Move to A3RB-MW0011 - 14 off Kennedy Pkwy N
1530	Complete with SRB wells. Pack up equipmet and mobilize off site

SITE:	**PFAS Assessment & Mitigation/ 60667657**
PLANNED ACTIVITIES:	Surveying of monitoring wells
DATE:	4/13/2023
NOTES BY:	Caroline Bekins (CB)
ADDITIONAL ON SITE:	Survtech: Anthony Zev and Robert Brown

TIME	FIELD NOTES
	Weather: 74 F, Partly Cloudy
0730	CB departs Orlando for KSC Badge Station to meet SurvTech
0845	Arrive at KSC Badge Station to meet SurvTech and move on center
0900	Arrive at Former Fire Station 2 (FS2) site to set up near wells FS2-MW0011 and 12
0950	Completed with wells aFS2-MW0011 and 12. Move to Press Site lagoon for FS2-MW0009 and 10.
0955	Wells are labeled 34-35. Call Megan Garcia (AECOM) and receive updated figure. Move to north side of lagoon
1005	Arrive at FS2-MW0009 and 10.
1040	Complete FS2-MW0009 and 10. Move to VABN area for wells VABN-MW0001 and 2
1050	Arrive at VABN and start with VABN-MW0001 and 2
1140	Complete at VABN. Head back to SRB for additional readings
1150	Arrive at SRB. Set up equipment for additional readings
1220	Move to SRB North (Kennedy Pkwy N) for additional readings
1315	Completed with all 24 wells. Head back to SRB to pack up equipment and depart KSC

05/23/23 PFAS SA+M MW Sampling pg 1 of BF/GK

0700 Arrive at depot & pack trucks

Trucks: Ford F-150 # 932 + POS

Equipment; 2 YSI meters, Geopumps DTW meters,

0830 Arrive at SRB.

- H+S meeting
- Weather 85°F with strong Chance of storms
- SOW: open MWs and begin sampling

Begin Opening wells and gauging

WELL ID	TIME	DTW	WELL ID	TIME	DTW
ASRB-MW0001	0928	2.07	-MW0013	1006	5.17
-MW0002	0938	1.71	-MW0014	1005	5.09
-MW0003	0932	0.99	-MW0015	1010	1.15
-MW0004	0936	0.25	-MW0016	1010	0.97
-MW0005	0925	0.97	-MW0017	0953	1.28
-MW0006	0925	1.56	-MW0018	0953	1.25
-MW0007	0921	2.58	-MH0019	0952	1.04
-MW0008	0917	4.65	-MW0020	0958	0.89
-MW0009	0909	6.09	-MW0021	0958	3.15
-MW0010	0913	7.47	-MW0022	0932	2.28
-MW0011	1007	5.06	-MW0023	0935	1.48
-MW0012	1006	4.98	-MW0024	0910	2.81

05/23/23 PFAS SA+M MW Sampling pg 2 of BF/GK

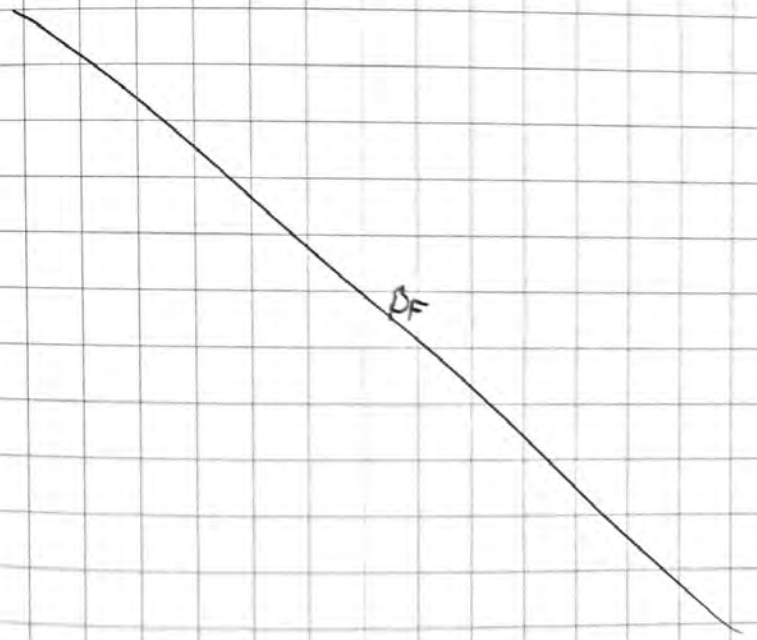
WELL ID	TIME	DTW
-MW0025	0913	4.25
-MW0026	0917	4.24
-MW0027	0921	2.51

1020 Begin MW Sampling activities

Complete MW Sampling activities

- MW Sampled today: ASRB-MW0017 - MW0021, MW0003, MW0004, MW0023, and MW0024

1500 Off-site for the day



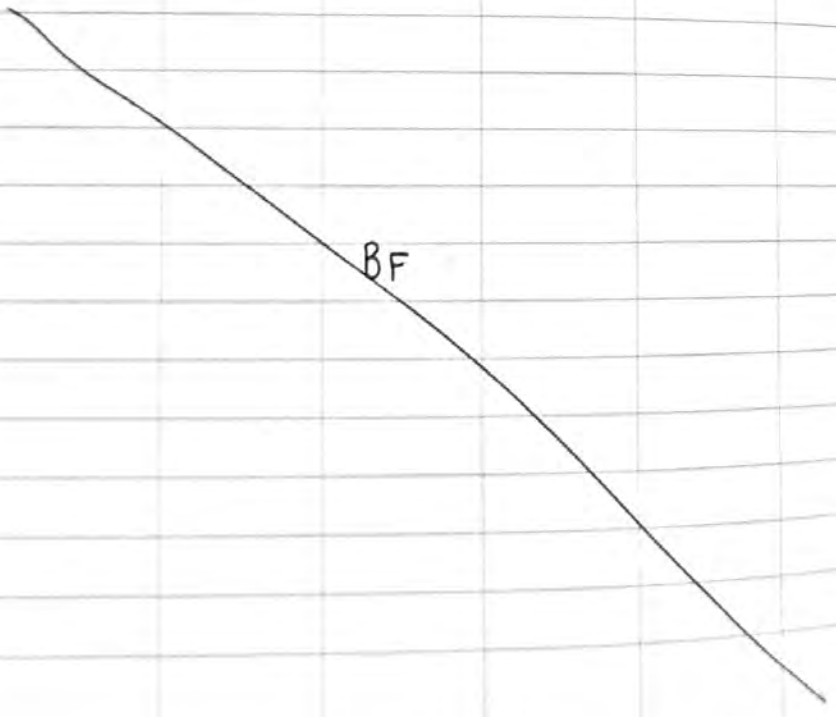
05/24/23 PFAS SA+R1 MW Sampling Pg 3 of 4 BF/Gk

0800 BF + Gk arrive on-site
- H+S meeting
- Weather: 85°F Chance of Storms
- SOW: Continue MW Sampling

0830 Calibrate and begin Sampling activities

1430 Complete Sampling activities
- MW ~~Sampling Activities~~: Sampled today:
A3RB-MW0011-MW0014, MW0009, MW0010, MW0022, MW0025, MW0027

1440 ~~Comp~~ End of day



05/25/23 PFAS SA+M MW Sampling PS 4 of 4 BF/Gk

0800 BF + Gk arrive at SRB
- H+S meeting
- Weather: 87°F Chance of Storms
- SOW: Complete Sampling activities

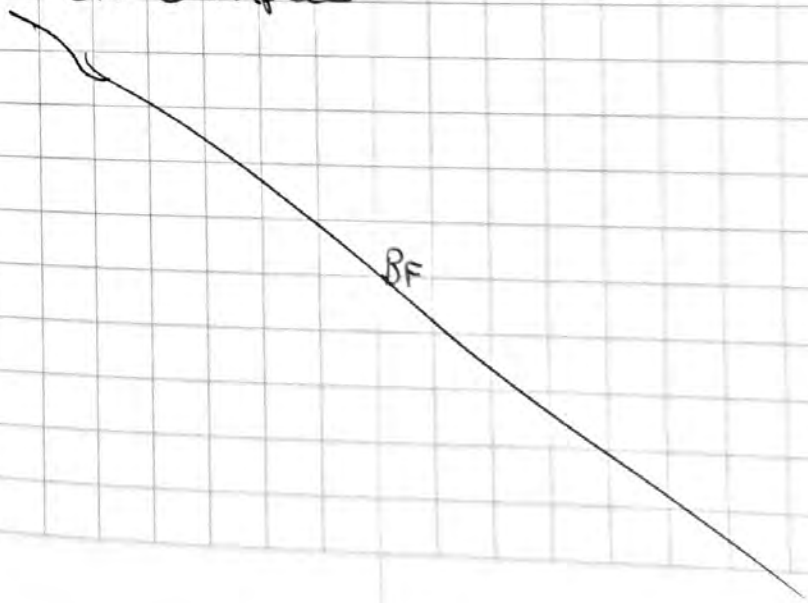
0815 Begin Sampling activities

1230 Complete MW sampling activities
- Wells Sampled: A3RB-MW0001, MW0005-MW0008, and MW0026

1235 Mobilize to POL to begin IDW Sampling

1400 Complete IDW Sampling
- See IDW Log for details

1415 Off-site to SGS Lab to drop off Samples

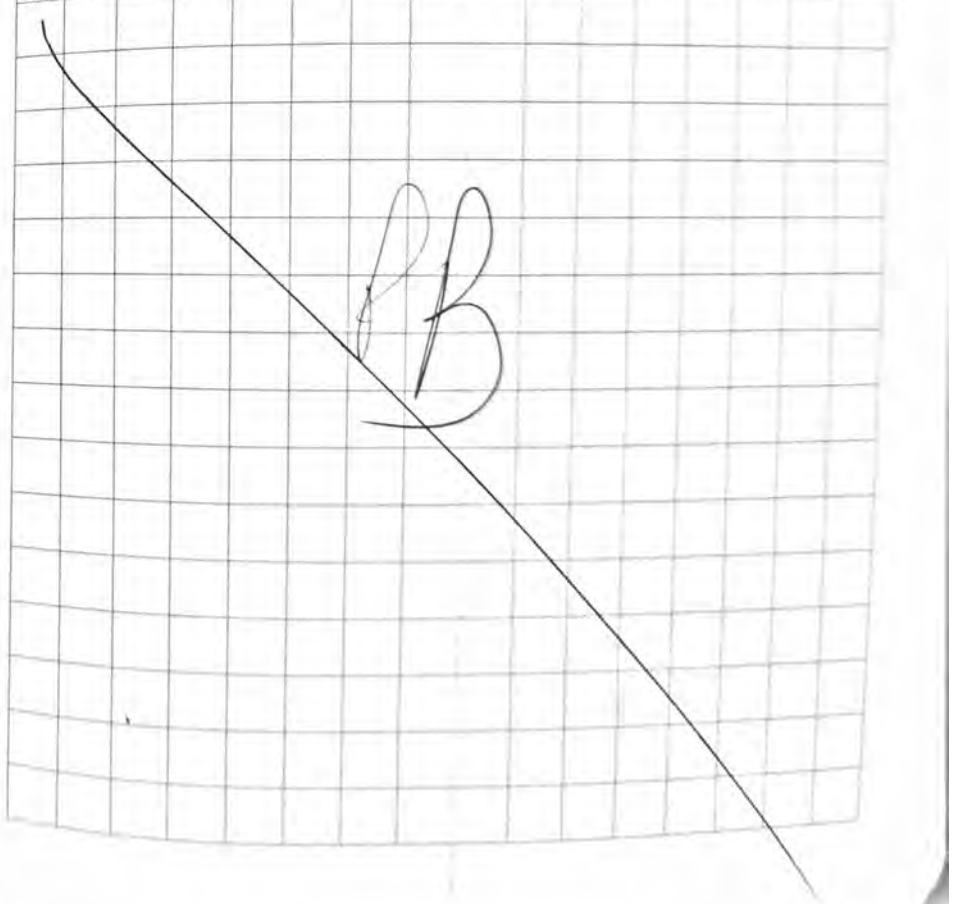


05/02/23 PFAS SA+M PB+EDS
P. 1 of 4

0630 PB departs sanford for KSC
0730 PB arrives at SRB, KSC w EDS
——— - H+S meeting
——— - weather: Clear sky 88°f
——— - SOW: resume DPT sampling
0745 Mob. to A3RB-DPT0038
0745 PB offsite to get batteries for YSI
0810 PB onsite cal YSI (aquatroll)
~~0840 Begin development of PB~~
0900 Collect A3RB-DPT0038-004.0
0930 Collect A3RB-DPT0038-010.0
N/A Collect A3RB-DPT0038-018.0 Holetry
1200 Collect A3RB-DPT0038-025.0 +DUP05 (FD)
1025 aquatroll stopped working, Paused sampling
1150 new aqua troll onsite + calibrated
1155 resume sampling DPT0038-025.0
1227 Collect A3RB-DPT0038-042.0 (PB)
——— slow to make water
1300 Collect A3RB-DPT0038-057.0
1310 grout hole and mobe to next
——— location
1340 Collect A3RB-DPT0039-004.0
1400 collect A3RB-DPT0039-010.0+MS/MSD
1430 collect A3RB-DPT0039-018.0+FD06
1448 collect A3RB-DPT0039-025.0, slow to
make water

5/2/23 PFAS SA+M PB+EDS
P. 2 of 4

1520 collected A3RB-DPT0039-042.0,
——— slow to make water
1555 collected A3RB-DPT0039-057.0
1605 PB+EDS Grout hole and mobe back
——— to main trail
1620 Truck Stuck in sand
1640 EDS off site
1725 Dustin Sadler onsite to
——— assist truck retrival
1800 PB+DS off site



06:15 PB Departs sanford headed
—— to logistics for ICE
07:30 PB on site w/ EDS at SRB
—— - H+S Meeting
—— - Weather: Partly cloudy 87°F
—— - SOW: Continue DPT Sampling
07:45 Walk back to next trail to
—— see if it was cleared further
—— back, wild life encountered at
—— trail head (growling Possibly bigcat)
07:55 load up to start DPT locations
—— along road.
08:25 Setup and Hand auger A3RB-
—— DPT0040
0905 Collected A3RB-DPT0040-004.0
0950 Collected A3RB-DPT0040-010.0, very
—— slow to make water, barely enough
—— water for sample
0920 Collected FB08
0925 Collected EB08
1020 Collected A3RB-DPT0040-018.0
1040 Collected A3RB-DPT0040-025.0
1100 Collected A3RB-DPT0040-042.0+FD07
1130 Collected A3RB-DPT0040-057.0
1145 Grout hole and move to next
location

1200 Break for lunch
1245 Back from lunch
1250 head to CCF then PLO to
—— drop off IDW before continuing
—— - Drum ID: 229663
—— - Pallet ID: 229366
1350 head back to next sampling
—— location
1425 Collected A3RB-DPT0041-004.0
1440 collected A3RB-DPT0041-010.0+MS/MSD
1505 Collected A3RB-DPT0041-018.0
1530 Collected A3RB-DPT0041-025.0
1540 Collected A3RB-EB09, Trouble
—— making water
1600 Collected A3RB-DPT0041-042.0,
—— Trouble making water
1635 collected A3RB-DPT0041-057.0,
—— Trouble making water
1640 Grout hole and pack up
1700 Drum IDW at PLO, EDS offsite,
—— PB headed to logistics for ICE
1745 PB off site headed Home

PB PB

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0017-042.0-20230307	Sample Date:	3/7/2023 2:50:00 PM
DPT ID:	A3RB-DPT0017	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:49 PM	7.7	2905	0.02	1000	29.7	-218.4		1.37	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0017-057.0-20230307	Sample Date:	3/7/2023 3:20:00 PM
DPT ID:	A3RB-DPT0017	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:19 PM	7.64	4110	0.05	754	26.9	-151.7		2.09	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0019-057.0-20230309	Sample Date:	3/9/2023 11:35:00 AM
DPT ID:	A3RB-DPT0019	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:34 AM	7.89	4005	0.12	1000	24.5	-125.1		2.14	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0030-010.0-20230306	Sample Date:	3/6/2023 9:00:00 AM
DPT ID:	A3RB-DPT0030	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:59 AM	7.37	647	0.72	33.1	25.6	-94.7		0.31	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0030-018.0-20230306	Sample Date:	3/6/2023 9:25:00 AM
DPT ID:	A3RB-DPT0030	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:24 AM	7.49	679	0.06	234	26.6	-138.6		0.32	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0030-042.0-20230306	Sample Date:	3/6/2023 10:30:00 AM
DPT ID:	A3RB-DPT0030	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:29 AM	7.43	323.5	0.04	652	26	-143.9		1.66	Tan	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0030-057.0-20230306	Sample Date:	3/6/2023 11:10:00 AM
DPT ID:	A3RB-DPT0030	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:09 AM	7.58	4344	0.06	1000	27	-130.7		2.22	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-004.0-20230306	Sample Date:	3/6/2023 1:05:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:04 PM	7.03	526	0.16	1000	25.9	-20.5		0.25	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-010.0-20230306	Sample Date:	3/6/2023 1:25:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:24 PM	7.61	781	0.72	178	28.1	-125.7		0.36	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-018.0-20230306	Sample Date:	3/6/2023 1:45:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:44 PM	7.37	688	0.21	899	27.6	-92.6		0.32	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-025.0-20230306	Sample Date:	3/6/2023 2:20:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:19 PM	7.67	700	0.07	1000	28.2	-145.1		0.32	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-042.0-20230306	Sample Date:	3/6/2023 2:45:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	A3RB-FD01-20230306 @ 0815		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:43 PM	7.03	1330	0.04	1000	32.2	-219.4		0.59	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0031-057.0-20230306	Sample Date:	3/6/2023 3:30:00 PM
DPT ID:	A3RB-DPT0031	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:21 PM	7.78	4134	0.45	1000	28.2	-205.9		2.06	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-004.0-20230307	Sample Date:	3/7/2023 8:00:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
7:59 AM	6.52	212.7	0.07	1000	22.5	-81.9		0.11	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-010.0-20230307	Sample Date:	3/7/2023 8:20:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:19 AM	6.89	443	0.08	797	22.7	-33.8		0.22	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-018.0-20230307	Sample Date:	3/7/2023 8:50:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:49 AM	7.71	596	0.1	1000	25.3	-157.3		0.29	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-025.0-20230307	Sample Date:	3/7/2023 9:10:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:09 AM	7.52	544	0.08	1000	25.2	-104.3		0.26	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-042.0-20230307	Sample Date:	3/7/2023 9:45:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:44 AM	7.67	1310	0.08	1000	27.8	-185.2		0.62	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0032-057.0-20230307	Sample Date:	3/7/2023 10:15:00 AM
DPT ID:	A3RB-DPT0032	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:14 AM										

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-004.0-20230308	Sample Date:	3/8/2023 2:25:00 PM
DPT ID:	A3RB-DPT0033	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	MS/MSD Also		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:24 PM	7.41	1175	0.76	1000	24.4	-48.9		0.59	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-010.0-20230308	Sample Date:	3/8/2023 2:50:00 PM
DPT ID:	A3RB-DPT0033	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:48 PM	7.32	775	0.06	1000	23.7	-66		0.39	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-018.0-20230308	Sample Date:	3/8/2023 3:10:00 PM
DPT ID:	A3RB-DPT0033	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:07 PM	7.89	427	0.09	156	28.6	-1.1		0.58	Yellow	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-025.0-20230309	Sample Date:	3/9/2023 8:25:00 AM
DPT ID:	A3RB-DPT0033	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:09 AM	7.94	1123	0.32	276	18.5	-41.7		0.64	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-042.0-20230309	Sample Date:	3/9/2023 9:00:00 AM
DPT ID:	A3RB-DPT0033	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	PFAS-FD02-20230309 @ 0800		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:57 AM	8.04	3105	0.05	1000	21	-214.7		1.77	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0033-057.0-20230309	Sample Date:	3/9/2023 9:30:00 AM
DPT ID:	A3RB-DPT0033	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:29 AM	7.96	3576	0.09	1000	23.6	-143.9		1.96	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0034-010.0-20230310	Sample Date:	3/10/2023 11:00:00 AM
DPT ID:	A3RB-DPT0034	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:59 AM	7.83	812	0.25	125	24.9	-172		0.4	Gray	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0034-042.0-20230310	Sample Date:	3/10/2023 12:45:00 PM
DPT ID:	A3RB-DPT0034	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
12:44 PM	7.7	4452	0.14	1000	25.2	-124.2		2.36	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0034-057.0-20230310	Sample Date:	3/10/2023 1:10:00 PM
DPT ID:	A3RB-DPT0034	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:09 PM	7.93	4432	0.14	1000	25.7	-147.7		2.34	Gray	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event:	Kennedy Space Center PFAS SA&M
Site Name:	Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #:	60667657

Sample ID:	A3RB-DPT0035-010.0-20230310	Sample Date:	3/10/2023 2:50:00 PM
DPT ID:	A3RB-DPT0035	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	A3RB-FD03-20230310 @ 1000		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:49 PM	7.14	6548	0.74	61.9	23.2	-77.7		3.73	None	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0035-018.0-20230310	Sample Date:	3/10/2023 3:15:00 PM
DPT ID:	A3RB-DPT0035	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:13 PM	7.42	2338	0.29	1000	25.3	-83.2		1.19	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0035-025.0-20230313	Sample Date:	3/13/2023 8:50:00 AM
DPT ID:	A3RB-DPT0035	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:48 AM	7.57	4060	0.11	843	23	-130.3		2.27	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0035-042.0-20230313	Sample Date:	3/13/2023 9:15:00 AM
DPT ID:	A3RB-DPT0035	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:13 AM	7.69	4133	0.06	1000	22.9	-148.2		2.3	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0035-057.0-20230313	Sample Date:	3/13/2023 9:45:00 AM
DPT ID:	A3RB-DPT0035	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:44 AM	7.79	3852	0.1	1000	23.3	-95.8		2.07	Brown	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0036-010.0-20230313	Sample Date:	3/13/2023 11:55:00 AM
DPT ID:	A3RB-DPT0036	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:54 AM	7.57	990	0.22	766	25.3	-147.5		0.5	Tan	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0036-018.0-20230313	Sample Date:	3/13/2023 12:25:00 PM
DPT ID:	A3RB-DPT0036	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
12:24 PM	7.28	1877	0.14	807	24.5	-110.2		0.96	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0036-042.0-20230313	Sample Date:	3/13/2023 3:30:00 PM
DPT ID:	A3RB-DPT0036	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments: A3RB-FD04-20230313 @ 0800 also

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:29 PM	7.56	3158	0.1	1000	22.9	-136.6		1.73	Gray	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0036-057.0-20230313	Sample Date:	3/13/2023 4:05:00 PM
DPT ID:	A3RB-DPT0036	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	MS/MSD also collected		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
4:03 PM	7.56	3158	0.1	1000	22.9	-136.6		1.73	Gray	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0037-004.0-20230315	Sample Date:	3/15/2023 9:35:00 AM
DPT ID:	A3RB-DPT0037	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Dustin Slater
Comments:	A3RB-FD05-20230315 @ 0800		

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:33 AM	7.04	1032	0.37	116	19.2	-93.5		0.58	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0037-018.0-20230315	Sample Date:	3/15/2023 10:55:00 AM
DPT ID:	A3RB-DPT0037	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:53 AM	7.28	3589	0.17	1000	20.7	-117.5		2.08	White	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0037-042.0-20230315	Sample Date:	3/15/2023 11:50:00 AM
DPT ID:	A3RB-DPT0037	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:48 AM	7.76	3582	0.38	1000	20	-174.9		2.12	Tan	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0037-057.0-20230315	Sample Date:	3/15/2023 12:15:00 PM
DPT ID:	A3RB-DPT0037	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Dustin Slater

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:33 AM	7.04	1032	0.37	116	19.2	-93.5		0.58	White	None
10:53 AM	7.28	3589	0.17	1000	20.7	-117.5		2.08	White	None
11:48 AM	7.76	3582	0.38	1000	20	-174.9		2.12	Tan	None
12:14 PM	7.77	3704	0.13	1000	20.1	-107.9		2.15	Tan	None

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0038-004.0-20230502	Sample Date:	5/2/2023 9:00:00 AM
DPT ID:	A3RB-DPT0038	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
8:52 AM	7.58523	777.335	8.14781	962.03	23.0078	-195.593		0.384		
8:53 AM	7.57546	715.025	8.08109	422.482	22.9742	-199.976		0.353		
8:54 AM	7.54638	712.45	8.12097	269.835	22.9671	-205.75		0.351		
8:55 AM	7.56706	712.305	8.14678	229.416	22.9715	-203.609		0.351		
8:56 AM	7.55083	710.962	8.17213	192.77	22.974	-206.117		0.35		
8:57 AM	7.56515	709.607	8.2254	174.158	22.959	-204.265		0.35		
8:58 AM	7.5563	707.559	8.22266	183.916	22.9599	-204.238		0.349		
8:59 AM	7.55989	707.675	8.22472	192.506	22.9527	-209.381		0.349		
9:00 AM	7.55798	704.175	8.22542	209.099	22.953	-207.4		0.347		
12:59 PM	7.52136	4593.52	0.238816	5240.29	28.1975	-266.075		2.486		
1:00 PM	7.51229	4599.71	0.191448	5344.49	28.1685	-270.536		2.489		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0038-010.0-20230502	Sample Date:	5/2/2023 9:30:00 AM
DPT ID:	A3RB-DPT0038	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:24 AM	7.36486	654.918	0.799841	4948.4	23.6595	-206.685		0.322		
9:25 AM	7.38563	649.585	1.44739	4674.94	23.6167	-199.198		0.319		
9:26 AM	7.44452	652.79	4.28901	6863.77	23.5852	-186.677		0.321		
9:27 AM	7.51364	654.788	6.31516	4944.04	23.5675	-182.08		0.322		
9:28 AM	7.60462	655.294	8.09078	1609.91	23.6188	-176.165		0.322		
9:29 AM	7.58059	655.194	7.95437	0	23.6125	-182.48		0.322		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0038-025.0-20230502	Sample Date:	5/2/2023 12:00:00 PM
DPT ID:	A3RB-DPT0038	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:58 AM	7.12994	1015.44	0.219591	297.649	23.5894	-197.866		0.508		
11:59 AM	7.11624	980.203	0.169776	154.602	23.5407	-194.545		0.489		
12:00 PM	7.11604	979.024	0.166288	144.867	23.5414	-194.817		0.489		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0038-042.0-20230502	Sample Date:	5/2/2023 12:27:00 PM
DPT ID:	A3RB-DPT0038	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
12:23 PM	7.56336	2855.83	1.01477	1308.4	28.1721	-254.524		1.501		
12:24 PM	7.55507	4025.5	0.233241	991.856	27.8945	-267.596		2.16		
12:25 PM	7.52649	4190.8	0.127245	1489.2	28.2447	-269.563		2.254		
12:26 PM	7.53891	4183.07	0.126803	1499.02	28.2978	-268.002		2.25		
12:27 PM	7.51968	4186.58	0.119754	1500.87	28.3074	-246.441		2.252		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0038-057.0-20230502	Sample Date:	5/2/2023 1:00:00 PM
DPT ID:	A3RB-DPT0038	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
12:56 PM	7.51866	4820.28	0.48662	5789.23	28.4042	-258.57		2.616		
12:57 PM	7.53293	4637.04	0.27659	4532.6	28.3377	-264.337		2.511		
12:58 PM	7.52929	4582.49	0.2378	4802.93	28.1823	-266.95		2.479		
12:59 PM	7.52136	4593.52	0.238816	5240.29	28.1975	-266.075		2.486		
1:00 PM	7.51229	4599.71	0.191448	5344.49	28.1685	-270.536		2.489		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0039-004.0-20230502	Sample Date:	5/2/2023 1:40:00 PM
DPT ID:	A3RB-DPT0039	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:31 PM	8.2088	4.49819	7.28933	2.98152	31.3864	-19.918		0.001		
1:33 PM	7.11425	1415.23	4.35236	2202.83	26.5326	-97.334		0.718		
1:34 PM	7.13696	24.924	6.14848	814.827	26.258	-124.24		0.01		
1:35 PM	7.14949	283.888	6.57581	358.405	25.9962	-127.823		0.136		
1:36 PM	7.15901	1284.51	6.90827	185.992	25.9508	-131.674		0.648		
1:37 PM	7.17801	1049.19	7.21855	79.2146	25.5789	-136.259		0.525		
1:38 PM	7.18523	198.001	7.33036	76.4606	25.4986	-139.618		0.094		
1:39 PM	7.18546	70.6669	7.35114	66.4223	25.4628	-139.704		0.033		
1:40 PM	7.18731	291.029	7.38957	62.3949	25.2717	-140.598		0.14		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0039-010.0-20230502	Sample Date:	5/2/2023 2:00:00 PM
DPT ID:	A3RB-DPT0039	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
1:55 PM	7.32165	829.212	3.80134	706.553	27.1873	-189.769		0.411		
1:56 PM	7.29423	821.099	2.41556	668.584	26.8863	-202.32		0.407		
1:57 PM	7.25506	792.955	2.18891	841.257	26.1083	-204.074		0.392		
1:58 PM	7.25012	769.077	3.2257	588.78	25.9908	-198.157		0.38		
1:59 PM	7.2431	781.159	4.2894	337.904	26.1418	-193.696		0.386		
2:00 PM	7.23145	775.276	4.85304	78.8276	25.9755	-191.174		0.383		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-DPT0039-018.0-20230502
Sample Date: 5/2/2023 2:30:00 PM
DPT ID: A3RB-DPT0039
Depth (ft): 16 - 20
Location Type: Direct Push Technology
Sampler: Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:25 PM	7.09302	816.794	0.173674	2334.7	24.1613	-196.61		0.405		
2:26 PM	7.08831	814.889	0.168922	2192.48	24.1254	-196.829		0.404		
2:27 PM	7.08441	814.739	0.166201	2014.44	24.0717	-196.998		0.404		
2:28 PM	7.00319	812.263	0.148663	1460.6	23.8812	-195.746		0.402		
2:29 PM	6.99583	810.962	0.147323	1616.88	23.8532	-195.577		0.402		
2:30 PM	6.96011	807.911	0.141056	1370.44	23.7617	-195.026		0.4		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0039-025.0-20230502	Sample Date:	5/2/2023 2:48:00 PM
DPT ID:	A3RB-DPT0039	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:48 PM	7.50648	942.25	3.91947	2369.03	29.8426	-58.992		0.469		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0039-042.0-20230502	Sample Date:	5/2/2023 3:20:00 PM
DPT ID:	A3RB-DPT0039	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:16 PM	7.59703	3185.71	0.33743	579.276	31.8209	-285.523		1.684		
3:17 PM	7.56415	3323.24	0.19554	624.699	31.0653	-293.524		1.761		
3:18 PM	7.54319	3576.9	0.185231	1584.24	29.8454	-291.078		1.905		
3:19 PM	7.5317	3676.47	0.165539	2928.87	29.411	-291.414		1.961		
3:20 PM	7.51462	3716.64	0.149606	4553.41	29.37	-298.736	2.416	1.984		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0039-057.0-20230502	Sample Date:	5/2/2023 3:55:00 PM
DPT ID:	A3RB-DPT0039	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:47 PM	7.58101	4674.96	1.54709	5969.37	31.3377	-205.479		2.531		
3:48 PM	7.56764	4810.53	0.522421	6041	29.7397	-246.666		2.61		
3:49 PM	7.49651	4857.41	0.258182	4480.78	28.7939	-263.989		2.638		
3:50 PM	7.45566	4891.4	0.205133	6055.96	28.3792	-262.325		2.657		
3:51 PM	7.41606	4908.84	0.19837	3630.53	27.8629	-255.153		2.668		
3:52 PM	7.39423	4917.45	0.25805	2239.36	27.6979	-250.349		2.673		
3:53 PM	7.38785	4912.78	0.294894	1623.37	27.4699	-248.53		2.67		
3:54 PM	7.38117	4916.94	0.328122	1263.45	27.2251	-246.506		2.673		
3:55 PM	7.37949	4919.05	0.292899	1260.05	27.142	-245.979		2.674		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-004.0-20230503	Sample Date:	5/3/2023 9:05:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:02 AM	7.3019	517.47	4.9878	200.967	24.072	64.868		0.252		
9:03 AM	7.29314	512.619	5.03569	172.873	24.001	59.746		0.25		
9:04 AM	7.27414	500.791	5.28155	80.8515	23.9697	42.955		0.244		
9:05 AM	7.26568	494.691	5.19117	61.8596	23.9774	29.508		0.241		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-010.0-20230503	Sample Date:	5/3/2023 9:50:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	8 - 12
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
9:38 AM	7.50864	1052.94	6.28429	2628.63	23.6003	-42.156		0.527		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-018.0-20230503	Sample Date:	5/3/2023 10:20:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	16 - 20
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:12 AM	7.29881	1541.4	1.78716	2030.14	24.7444	-127.689		0.785		
10:13 AM	7.27994	1543.31	0.356611	1425.46	24.522	-150.61		0.786		
10:14 AM	7.26947	1544.57	0.240347	1757.5	24.4357	-160.54		0.787		
10:15 AM	7.26343	1544.91	0.22575	1641.05	24.4231	-160.347		0.787		
10:16 AM	7.26228	1544.33	0.289665	1775.06	24.3744	-162.755		0.786		
10:17 AM	7.25671	1542.67	0.270573	1669.83	24.236	-163.196		0.786		
10:18 AM	7.25479	1542.18	0.24754	1544.69	24.0532	-163.564		0.785		
10:19 AM	7.25178	1542.45	0.234312	1782.73	23.9337	-164.627		0.785		
10:20 AM	7.25276	1542.29	0.223053	1764.68	23.9242	-164.598		0.785		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-025.0-20230503	Sample Date:	5/3/2023 10:40:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:33 AM	7.24201	1684.91	0.528561	1900.58	25.2393	-207.609		0.862		
10:34 AM	7.24475	1685.32	0.40617	2061.27	25.1679	-212.983		0.862		
10:35 AM	7.23252	1681.9	0.309482	1840.77	25.0136	-219.861		0.86		
10:36 AM	7.2469	1684.72	0.270371	2281.65	24.8842	-228.311		0.862		
10:37 AM	7.24921	1683.93	0.259024	2590.74	24.876	-231.93		0.861		
10:38 AM	7.2473	1682.53	0.228467	2536.1	24.8507	-232.066		0.86		
10:39 AM	7.23738	1681.19	0.202836	2419.73	24.7459	-232.712		0.86		
10:40 AM	7.23174	1681.99	0.229082	2143.23	24.7433	-235.158		0.86		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-042.0-20230503	Sample Date:	5/3/2023 11:00:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	40 - 44
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
10:56 AM	7.43197	3082.67	3.56436	6166.19	25.9971	-210.453		1.628		
10:57 AM	7.40828	3101.1	1.36849	6048.68	25.854	-217.477		1.638		
10:58 AM	7.40206	3099.48	0.353614	5823.13	25.6111	-220.944		1.638		
10:59 AM	7.39495	3083.74	0.345872	5806.95	25.3879	-222.653		1.629		
11:00 AM	7.39828	3075.17	0.246596	6127.14	25.2461	-224.992		1.624		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0040-057.0-20230503	Sample Date:	5/3/2023 11:30:00 AM
DPT ID:	A3RB-DPT0040	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
11:23 AM	7.68462	3349.51	7.57016	5054.17	27.3533	-136.427		1.778		
11:24 AM	7.63789	4324.06	3.18935	3128.43	27.5622	-233.654		2.331		
11:25 AM	7.64438	4371.51	0.759466	3070.09	27.7322	-265.798		2.358		
11:26 AM	7.6413	4360.9	0.419576	2609.5	27.8143	-273.732		2.352		
11:27 AM	7.63723	4349.98	0.290288	2830.2	27.7329	-276.772		2.346		
11:28 AM	7.63661	4347.89	0.289037	2564.77	27.7066	-278.853		2.345		
11:29 AM	7.64293	4333.96	0.218922	2245.56	27.657	-281.757		2.337		
11:30 AM	7.64569	4320.06	0.227689	2242.85	27.6226	-282.902		2.329		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0041-004.0-20230503	Sample Date:	5/3/2023 2:25:00 PM
DPT ID:	A3RB-DPT0041	Depth (ft):	2 - 6
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:20 PM	7.45763	1202.26	6.94099	5345.46	28.5753	-123.09		0.605		
2:21 PM	7.12231	1135.15	6.70727	1221.82	27.7937	-158.116		0.57		
2:22 PM	7.06711	1099.65	4.8726	2051.07	24.4986	-149.18		0.551		
2:23 PM	7.09365	1099.34	4.20288	1880.77	24.2213	-147.258		0.551		
2:24 PM	7.08692	1121.68	3.82681	1903.14	24.0621	-153.386		0.563		
2:25 PM	7.12219	1127.15	3.68933	1852.25	24.2065	-161.382		0.566		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-DPT0041-010.0-20230503
Sample Date: 5/3/2023 2:40:00 PM
DPT ID: A3RB-DPT0041
Depth (ft): 8 - 12
Location Type: Direct Push Technology
Sampler: Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:37 PM	7.01629	1173.1	0.305522	4287.17	26.0013	-163.177		0.59		
2:38 PM	7.00357	1170.98	0.252878	3530.07	25.6307	-164.703		0.589		
2:39 PM	6.98351	1170.88	0.223015	2923.9	25.3277	-163.878		0.589		
2:40 PM	6.9504	1168.67	0.207251	3055.16	25.1811	-162.493		0.588		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-DPT0041-018.0-20230503
Sample Date: 5/3/2023 3:05:00 PM
DPT ID: A3RB-DPT0041
Depth (ft): 16 - 20
Location Type: Direct Push Technology
Sampler: Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
2:57 PM	7.17353	3646.9	5.51494	2106.31	28.6622	-142.144		1.945		
2:58 PM	7.194	3718.95	1.68671	1035.59	27.4881	-175.239		1.986		
2:59 PM	7.30139	3807.18	1.95457	2732.49	26.2368	-183.965		2.036		
3:00 PM	7.37289	3828.32	4.91507	1705.82	27.0052	-172.116		2.048		
3:01 PM	7.47808	3830.89	6.2985	610.456	27.5501	-173.918		2.05		
3:02 PM	7.49019	3838.72	6.75883	382.368	27.65	-176.309		2.054		
3:03 PM	7.48614	3854.35	6.9261	264.004	27.6395	-177.122		2.063		
3:04 PM	7.48338	3851.63	7.00934	240.996	27.4768	-181.254		2.061		
3:05 PM	7.48747	3863.19	6.96738	240.99	27.6314	-178.849		2.068		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0041-025.0-20230503	Sample Date:	5/3/2023 3:30:00 PM
DPT ID:	A3RB-DPT0041	Depth (ft):	23 - 27
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:25 PM	7.46533	1735.22	0.660031	4022.57	31.4069	-244.221		0.887		
3:26 PM	7.40808	1719.67	0.596099	3481.98	29.9943	-259.141		0.879		
3:27 PM	7.39947	1730.07	0.431854	4301.26	29.5963	-256.502		0.885		
3:28 PM	7.38648	1730.5	0.359217	4130.41	29.3067	-253.714		0.885		
3:29 PM	7.37179	1728.57	0.344808	3570.32	29.0432	-248.767		0.884		
3:30 PM	7.38156	1728.39	0.352117	3711.97	29.1803	-251.385		0.884		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-DPT0041-042.0-20230503
Sample Date: 5/3/2023 4:00:00 PM
DPT ID: A3RB-DPT0041
Depth (ft): 40 - 44
Location Type: Direct Push Technology
Sampler: Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
3:57 PM	7.83273	8.53325	6.20352	3274.41	38.7896	13.062		0.003		
3:58 PM	7.39713	2545.3	1.32593	4214.31	35.0751	-173.985		1.326		
3:59 PM	7.42957	2901.19	0.200198	4661.75	33.536	-256.127		1.524		
4:00 PM	7.46977	3409.32	0.11023	4587.27	30.388	-281.228		1.81		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID:	A3RB-DPT0041-057.0-20230503	Sample Date:	5/3/2023 4:35:00 PM
DPT ID:	A3RB-DPT0041	Depth (ft):	55 - 59
Location Type:	Direct Push Technology	Sampler:	Devin Kehoe

Comments:

Purge Information

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	TDS (G/L)	Salinity (NA)	Color (NA)	Odor (NA)
4:29 PM	7.61686	4963.98	1.1803	6369.08	28.2864	-232.841		2.699		
4:30 PM	7.64014	4971.02	0.484905	7429.83	27.6052	-251.221		2.704		
4:31 PM	7.64715	4937.74	0.273483	7378.24	27.07	-253.54		2.685		
4:32 PM	7.61591	5058.23	0.164616	6065.21	26.644	-255.259		2.754		
4:33 PM	7.63276	4997.07	0.168285	6131.09	26.9618	-256.232		2.719		
4:34 PM	7.6376	4962.8	0.197226	6963.13	26.9505	-255.076		2.699		
4:35 PM	7.65377	4938.09	0.436451	6912.58	27.1889	-250.138		2.685		

SURFACE WATER SAMPLING LOG

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-SW0009-001.0-20230315
Location ID: A3RB-SW0009
Location Type: SW
Comments:

Sample Date: 3/15/2023 3:45:00 PM
Sampler: Dustin Slater

Field Measurements

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	TDS (G/L)	Salinity (PSU)	Color (NA)	Odor (NA)
3:44 PM	8.14	386	5.36	11.8	22.4	90.3	0.26	0.2	Yellow	None

SURFACE WATER SAMPLING LOG

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-SW0010-001.0-20230315
Location ID: A3RB-SW0010
Location Type: SW
Comments:

Sample Date: 3/15/2023 4:00:00 PM
Sampler: Dustin Slater

Field Measurements

Time	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	TDS (G/L)	Salinity (PSU)	Color (NA)	Odor (NA)
3:59 PM	8.05	364	4.5	8.99	23.1	87.5	0.25	0.18	Yellow	None

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0001-025.0-20230525
Sample Date: 5/25/2023 9:21:00 AM
Well ID: A3RB-MW0001
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.79
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	29.15	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:04 AM	0.1		0	1.79								Clear	None
9:14 AM		1	1	1.81	7.14	589	0.13	10.6	23.6	-84.3	0.29	Clear	None
9:16 AM		0.2	1.2	1.81	7.13	588	0.12	6.86	23.5	-84.9	0.29	Clear	None
9:18 AM	0.1	0.2	1.4	1.81	7.13	589	0.11	5.21	23.5	-86.3	0.29	Clear	None
9:20 AM	0.1	0.2	1.6	1.81	7.14	589	0.11	4.13	23.6	-88	0.29	Clear	None

Start Purge:	5/25/2023 9:04:00 AM	End Purge:	5/25/2023 9:20:00 AM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0002-007.0-20230523
Sample Date: 5/23/2023 2:02:00 PM
Well ID: A3RB-MW0002
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	2	Static Water Level (ft-BTOC):	1.71
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	12.05	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
1:38 PM	0.1		0									Clear	None
1:55 PM	0.1	1.7	1.7	2.08	6.19	192.9	0.34	10.6	27.1	-13.1	0.09	dark yellow	None
1:57 PM	0.1	0.2	1.9	2.08	6.2	192.2	0.36	10.5	27	-16.3	0.09	dark yellow	None
1:59 PM	0.1	0.2	2.1	2.08	6.2	193.3	0.38	10.2	27.1	-19.3	0.09	dark yellow	None
2:01 PM	0.1	0.2	2.3	2.08	6.2	192.2	0.4	10.2	26.9	-21.3	0.09	dark yellow	None

Start Purge:	5/23/2023 1:38:00 PM	End Purge:	5/23/2023 2:01:00 PM	Total Volume (gal):	2.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0003-007.0-20230523
Sample Date: 5/23/2023 1:10:00 PM
Well ID: A3RB-MW0003
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	0.99
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	11.87	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:53 PM	0.1		0									Clear	None
1:03 PM	0.1	0.2	0.2	1.11	4.23	367	0.17	5.72	27.9	122.9	0.17	brown	None
1:05 PM	0.1	0.2	0.4	1.11	4.25	370.5	0.16	6.6	28	124.2	0.17	brown	organic
1:07 PM	0.1	0.2	0.6	1.11	4.28	379.4	0.17	6.78	27.9	121.3	0.17	brown	organic
1:09 PM	0.1	0.2	0.8	1.11	4.27	377.2	0.17	7.41	27.9	121.2	0.17	brown	organic

Start Purge:	5/23/2023 12:53:00 PM	End Purge:	5/23/2023 1:09:00 PM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0004-007.0-20230523
Sample Date: 5/23/2023 11:52:00 AM
Well ID: A3RB-MW0004
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	0.25
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	11.86	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:35 AM	0.1		0	0.25								Clear	None
11:45 AM	0.1	1	1	0.43	4.68	318.2	0.14	6.81	26	8.7	0.14	brown	organic
11:47 AM	0.1	0.2	1.2	0.43	4.67	321.7	0.12	5.83	26.1	7.2	0.15	brown	organic
11:49 AM	0.1	0.2	1.4	0.43	4.67	328.5	0.1	5.81	26.2	6	0.16	brown	organic
11:51 AM	0.1	0.2	1.6	0.43	4.67	333.2	0.1	5.67	26.2	5.7	0.16	brown	organic

Start Purge:	5/23/2023 11:35:00 AM	End Purge:	5/23/2023 11:51:00 AM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0005-007.0-20230525
Sample Date: 5/25/2023 10:44:00 AM
Well ID: A3RB-MW0005
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	0.67
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
10:37 AM	0.05	0.5	0.5	0.82	6.23	417.1	0.25	5.31	27.4	-25.5	0.19	Clear	None
10:39 AM	0.05	0.1	0.6	0.82	6.22	415.5	0.23	1.66	27.2	-29.7	0.19	Clear	None
10:41 AM	0.05	0.1	0.7	0.82	6.22	419.9	0.22	1.64	27.2	-32.8	0.19	Clear	None
10:43 AM	0.05	0.1	0.8	0.82	6.22	414.6	0.21	1.69	27.2	-34.7	0.19	Clear	None

Start Purge:	5/25/2023 10:27:00 AM	End Purge:	5/25/2023 10:43:00 AM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0006-025.0-20230525
Sample Date: 5/25/2023 10:14:00 AM
Well ID: A3RB-MW0006
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.55
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
10:05 AM	0.05	0.05	0.05	1.68	7.07	609	0.42	29.8	24	-38.2	0.3	Clear	None
10:07 AM	0.05	0.1	0.15	1.68	7.07	612	0.45	24.5	24.1	-39.6	0.3	Clear	None
10:09 AM	0.05	0.1	0.25	1.68	7.07	614	0.39	19.5	24.2	-39.5	0.3	Clear	None
10:11 AM	0.05	0.1	0.35	1.68	7.07	616	0.39	16	24.2	-39.8	0.3	Clear	None
10:13 AM	0.05	0.1	0.45	1.68	7.07	619	0.35	13.6	24.2	-40.2	0.3	Clear	None

Start Purge:	5/25/2023 9:49:00 AM	End Purge:	5/25/2023 10:13:00 AM	Total Volume (gal):	0.45

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0007-025.0-20230525
Sample Date: 5/25/2023 9:27:00 AM
Well ID: A3RB-MW0007
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.84
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:20 AM	0.04	0.5	0.5	2.3	7.01	614	0.42	2.79	24.1	-88.6	0.3	Clear	None
9:22 AM	0.04	0.08	0.58	2.3	7.01	614	0.39	3.08	24.1	-89.3	0.3	Clear	None
9:24 AM	0.04	0.08	0.66	2.3	7.01	614	0.4	2.43	24.1	-88.2	0.3	Clear	None
9:26 AM	0.04	0.08	0.74	2.3	7.01	614	0.37	1.97	24.1	-91.5	0.3	Clear	None

Start Purge:	5/25/2023 9:08:00 AM	End Purge:	5/25/2023 9:26:00 AM	Total Volume (gal):	0.74

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0008-025.0-20230525
Sample Date: 5/25/2023 10:52:00 AM
Well ID: A3RB-MW0008
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	4.37
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	29.82	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
10:25 AM	0.1		0	4.37								Clear	None
10:35 AM		1	1					115				Clear	None
10:45 AM		1	2	4.39	7.11	603	0.09	19.7	24.2	-140.9	0.3	Clear	None
10:47 AM	0.1	0.2	2.2	4.39	7.11	602	0.1	17.4	24.2	-152.4	0.3	Clear	None
10:49 AM	0.1	0.2	2.4	4.39	7.1	601	0.08	19.8	24.2	-157.4	0.3	Clear	None
10:51 AM	0.1	0.2	2.6	4.39	7.11	602	0.07	15.7	24.3	-160.2	0.3	Clear	None

Start Purge:	5/25/2023 10:25:00 AM	End Purge:	5/25/2023 10:51:00 AM	Total Volume (gal):	2.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-FD-20230524-02
Well ID: A3RB-MW0009
Location Type: Monitoring Well
Comments:

Sample Date: 5/24/2023 11:58:00 AM
Sampler: Greg Kusel

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	6.02
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	
Measured Well Depth (ft-BTOC):	32.83	Sample Analysis:	

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:08 AM	0.1		0	6.02								Clear	None
11:18 AM	0.1	1	1					527				Clear	None
11:28 AM	0.1	1	2					124				Clear	None
11:38 AM		1	3					25.6				Clear	None
11:48 AM	0.1	1	4	6.12	7.05	610	0.13	27	24	-143.3	0.3	Clear	None
11:50 AM	0.1	0.2	4.2	6.12	7.05	610	0.12	24.2	24	-143	0.3	Clear	None
11:52 AM	0.1	0.2	4.4	6.12	7.05	610	0.12	22	24	-142.9	0.3	Clear	None

Start Purge:	5/24/2023 11:08:00 AM	End Purge:	5/24/2023 11:52:00 AM	Total Volume (gal):	4.4

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0009-025.0-20230524
Sample Date: 5/24/2023 11:53:00 AM
Well ID: A3RB-MW0009
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	6.02
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	32.83	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:08 AM	0.1		0	6.02								Clear	None
11:18 AM	0.1	1	1					527				Clear	None
11:28 AM	0.1	1	2					124				Clear	None
11:38 AM		1	3					25.6				Clear	None
11:48 AM	0.1	1	4	6.12	7.05	610	0.13	27	24	-143.3	0.3	Clear	None
11:50 AM	0.1	0.2	4.2	6.12	7.05	610	0.12	24.2	24	-143	0.3	Clear	None
11:52 AM	0.1	0.2	4.4	6.12	7.05	610	0.12	22	24	-142.9	0.3	Clear	None

Start Purge:	5/24/2023 11:08:00 AM	End Purge:	5/24/2023 11:52:00 AM	Total Volume (gal):	4.4

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0010-004.5-20230524
Well ID: A3RB-MW0010
Location Type: Monitoring Well
Comments:

Sample Date: 5/24/2023 1:32:00 PM
Sampler: Greg Kusel

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	7.38
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	14.98	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
1:15 PM	0.1		0	7.38								Clear	None
1:25 PM	0.1	1	1	7.4	6.72	411.2	0.48	4.3	24.6	-62.8	0.2	Clear	None
1:27 PM	0.1	0.2	1.2	7.4	6.73	407.1	0.47	4	24.6	-67.8	0.2	Clear	None
1:29 PM	0.1	0.2	1.4	7.4	6.73	415.8	0.46	3.67	24.6	-75.2	0.2	Clear	None
1:31 PM	0.1	0.2	1.6	7.4	6.73	419	0.46	3.45	24.6	-77.3	0.2	Clear	None

Start Purge:	5/24/2023 1:15:00 PM	End Purge:	5/24/2023 1:31:00 PM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0011-056.5-20230524
Sample Date: 5/24/2023 1:05:00 PM
Well ID: A3RB-MW0011
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	4.95
Top of Screen (ft-BTOC):	54.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	59.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:58 PM	0.05	0.75	0.75	7.91	7.31	4588	0.22	11.8	27.2	-84.3	2.34	Clear	None
1:00 PM	0.05	0.1	0.85	7.91	7.3	4626	0.21	10.6	27.1	-84.3	2.37	Clear	None
1:02 PM	0.05	0.1	0.95	7.91	7.3	4643	0.2	10.3	27	-83.9	2.38	Clear	None
1:04 PM	0.05	0.1	1.05	7.91	7.3	4681	0.28	10.6	26.9	-83.7	2.4	Clear	None

Start Purge:	5/24/2023 12:42:00 PM	End Purge:	5/24/2023 1:04:00 PM	Total Volume (gal):	1.05

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0012-040.0-20230524
Well ID: A3RB-MW0012
Location Type: Monitoring Well
Comments:

Sample Date: 5/24/2023 12:25:00 PM
Sampler: Brittany Follett

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	4.87
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:18 PM	0.05	0.5	0.5	4.89	7.38	3022	0.21	3.09	27.9	-92.4	1.49	Clear	None
12:20 PM	0.05	0.1	0.6	4.89	7.38	3093	0.18	3.28	27.7	-92	1.53	Clear	None
12:22 PM	0.05	0.1	0.7	4.89	7.37	3119	0.18	1.9	27.7	-92	1.53	Clear	None
12:24 PM	0.05	0.1	0.8	4.89	7.37	3142	0.17	1.48	27.7	-91.8	1.55	Clear	None

Start Purge:	5/24/2023 12:08:00 PM	End Purge:	5/24/2023 12:24:00 PM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0013-025.0-20230524
Sample Date: 5/24/2023 11:53:00 AM
Well ID: A3RB-MW0013
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	5.04
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:46 AM	0.05	0.5	0.5	5.05	6.92	948	0.36	2.14	26.6	-16.7	0.45	Clear	None
11:48 AM	0.05	0.1	0.6	5.05	6.92	961	0.35	2.16	26.7	-16.2	0.46	Clear	None
11:50 AM	0.05	0.1	0.7	5.05	6.92	967	0.35	1.92	26.7	-15.5	0.46	Clear	None
11:52 AM	0.05	0.1	0.8	5.05	6.92	972	0.34	0.99	26.7	-15.4	0.46	Clear	None

Start Purge:	5/24/2023 11:36:00 AM	End Purge:	5/24/2023 11:52:00 AM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0014-007.0-20230524
Sample Date: 5/24/2023 11:22:00 AM
Well ID: A3RB-MW0014
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	5.00
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:15 AM	0.05	0.5	0.5	5.02	6.76	860	0.71	5.86	26.6	17.9	0.41	Clear	None
11:17 AM	0.05	0.1	0.6	5.02	6.76	864	0.63	4.04	26.6	25.7	0.41	Clear	None
11:19 AM	0.05	0.1	0.7	5.02	6.75	866	0.58	2.74	26.5	32.3	0.41	Clear	None
11:21 AM	0.05	0.1	0.8	5.02	6.75	866	0.53	2.33	26.4	37.5	0.41	Clear	None

Start Purge:	5/24/2023 11:05:00 AM	End Purge:	5/24/2023 11:21:00 AM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0014-007.0-20230524
Sample Date: 5/24/2023 11:22:00 AM
Well ID: A3RB-MW0014
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	5.00
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:15 AM	0.05	0.5	0.5	5.02	6.76	860	0.71	5.86	26.6	17.9	0.41	Clear	None
11:17 AM	0.05	0.1	0.6	5.02	6.76	864	0.63	4.04	26.6	25.7	0.41	Clear	None
11:19 AM	0.05	0.1	0.7	5.02	6.75	866	0.58	2.74	26.5	32.3	0.41	Clear	None
11:21 AM	0.05	0.1	0.8	5.02	6.75	866	0.53	2.33	26.4	37.5	0.41	Clear	None

Start Purge:	5/24/2023 11:05:00 AM	End Purge:	5/24/2023 11:21:00 AM	Total Volume (gal):	0.8

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0015-025.0-20230524
Sample Date: 5/24/2023 9:50:00 AM
Well ID: A3RB-MW0015
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):		Static Water Level (ft-BTOC):	1.02
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:43 AM	0.04		0	1.05	7.13	1734	0.27	6.27	23.7	-50.4	0.89	Clear	None
9:45 AM	0.04	0.08	0.08	1.05	7.13	1709	0.25	3.76	23.6	-50	0.89	Clear	None
9:47 AM	0.04	0.08	0.16	1.05	7.13	1701	0.23	2.08	23.5	-49.9	0.88	Clear	None
9:49 AM	0.04	0.08	0.24	1.05	7.12	1696	0.23	1.57	23.5	-50.1	0.88	Clear	None

Start Purge:	5/24/2023 9:32:00 AM	End Purge:	5/24/2023 9:49:00 AM	Total Volume (gal):	0.24

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0016-007.0-20230524
Sample Date: 5/24/2023 9:19:00 AM
Well ID: A3RB-MW0016
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	0.87
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:12 AM	0.04	1	1	0.91	6.82	828	0.24	2.49	24.2	-20.3	0.41	Clear	None
9:14 AM	0.04	0.08	1.08	0.91	6.82	830	0.25	2.05	24.2	-14.3	0.42	Clear	None
9:16 AM	0.04	0.08	1.16	0.91	6.83	835	0.24	1.74	24.1	-13	0.42	Clear	None
9:18 AM	0.04	0.08	1.24	0.91	6.83	840	0.25	1.68	24.2	-19.7	0.42	Clear	None

Start Purge:	5/24/2023 8:49:00 AM	End Purge:	5/24/2023 9:18:00 AM	Total Volume (gal):	1.24

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0017-056.5-20230523
Sample Date: 5/23/2023 1:28:00 PM
Well ID: A3RB-MW0017
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.28
Top of Screen (ft-BTOC):	54.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	59.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
1:21 PM	0.05	1	1	1.32	7.23	2680	0.25	7.67	26	-96.6	1.35	Clear	None
1:23 PM	0.05	0.1	1.1	1.32	7.23	2675	0.23	5.91	25.8	-94.4	1.36	Clear	None
1:25 PM	0.05	0.1	1.2	1.32	7.23	2678	0.23	5.34	25.6	-92.2	1.37	Clear	None
1:27 PM	0.05	0.1	1.3	1.32	7.23	2692	0.22	4.54	25.7	-90.6	1.37	Clear	None

Start Purge:	5/23/2023 1:01:00 PM	End Purge:	5/23/2023 1:27:00 PM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0018-040.0-20230523
Sample Date: 5/23/2023 12:45:00 PM
Well ID: A3RB-MW0018
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.25
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:38 PM	0.05	1	1	1.25	7.02	915	0.14	2.2	25.8	-86.7	0.45	Clear	None
12:40 PM	0.05	0.1	1.1	1.25	7.03	929	0.14	1.84	25.9	-87.6	0.45	Clear	None
12:42 PM	0.05	0.1	1.2	1.25	7.03	939	0.13	2.01	25.7	-88.2	0.46	Clear	None
12:44 PM	0.05	0.1	1.3	1.25	7.03	940	0.12	1.88	25.7	-88.5	0.46	Clear	None

Start Purge:	5/23/2023 12:18:00 PM	End Purge:	5/23/2023 12:44:00 PM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-FD-20230523-01
Well ID: A3RB-MW0019
Location Type: Monitoring Well
Comments:

Sample Date: 5/23/2023 11:30:00 AM
Sampler: Brittany Follett

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.04
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:54 AM	0.05	1	1	1.09	6.91	682	0.17	2.8	26.3	-65.6	0.32	Clear	None
11:56 AM	0.05	0.1	1.1	1.09	6.91	680	0.17	1.6	26.1	-65.3	0.32	Clear	None
11:58 AM	0.05	0.1	1.2	1.09	6.91	678	0.17	1.53	26.1	-65.3	0.32	Clear	None
12:00 PM	0.05	0.1	1.3	1.09	6.91	679	0.16	1.53	26.1	-64.8	0.32	Clear	None

Start Purge:	5/23/2023 11:32:00 AM	End Purge:	5/23/2023 12:00:00 PM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0019-035.0-20230523
Sample Date: 5/23/2023 12:01:00 PM
Well ID: A3RB-MW0019
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.04
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:54 AM	0.05	1	1	1.09	6.91	682	0.17	2.8	26.3	-65.6	0.32	Clear	None
11:56 AM	0.05	0.1	1.1	1.09	6.91	680	0.17	1.6	26.1	-65.3	0.32	Clear	None
11:58 AM	0.05	0.1	1.2	1.09	6.91	678	0.17	1.53	26.1	-65.3	0.32	Clear	None
12:00 PM	0.05	0.1	1.3	1.09	6.91	679	0.16	1.53	26.1	-64.8	0.32	Clear	None

Start Purge:	5/23/2023 11:32:00 AM	End Purge:	5/23/2023 12:00:00 PM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0020-007.0-20230523
Sample Date: 5/23/2023 11:11:00 AM
Well ID: A3RB-MW0020
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	0.89
Top of Screen (ft-BTOC):	2.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	12.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:04 AM	0.05	1	1	0.92	5.62	239.5	0.23	4.96	26.9	-72.6	1.91	yellow	None
11:06 AM	0.05	0.1	1.1	0.92	5.61	237.5	0.23	4.96	26.9	-70.8	1.91	yellow	None
11:08 AM	0.05	0.1	1.2	0.92	5.61	236.4	0.24	4	27	-70.3	1.91	yellow	None
11:10 AM	0.05	0.1	1.3	0.92	5.6	236.1	0.21	3.51	27	-71	1.91	yellow	None

Start Purge:	5/23/2023 10:44:00 AM	End Purge:	5/23/2023 11:10:00 AM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0021-025.0-20230523
Well ID: A3RB-MW0021
Location Type: Monitoring Well
Comments:

Sample Date: 5/23/2023 2:10:00 PM
Sampler: Brittany Follett

Well Information			
Well Diameter (in):		Static Water Level (ft-BTOC):	3.15
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
2:03 PM	0.05	1	1	3.21	7.01	603	0.2	1.79	25.8	-61.5	0.29	Clear	None
2:05 PM	0.05	0.1	1.1	3.21	7	601	0.19	1.36	25.7	-62.1	0.29	Clear	None
2:07 PM	0.05	0.1	1.2	3.21	7	600	0.18	1.28	25.6	-63.9	0.29	Clear	None
2:09 PM	0.05	0.1	1.3	3.21	7	599	0.17	1.17	25.6	-65.6	0.29	Clear	None

Start Purge:	5/23/2023 1:43:00 PM	End Purge:	5/23/2023 2:09:00 PM	Total Volume (gal):	1.3

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0022-056.5-20230523
Sample Date: 5/23/2023 12:45:00 PM
Well ID: A3RB-MW0022
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	2.28
Top of Screen (ft-BTOC):	20.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	30.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	59.09	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:28 PM	0.1		0	2.28								Clear	None
12:38 PM	0.1	1	1	2.43	7.66	4364	0.13	2.04	25.7	-153.1	2.26	Clear	None
12:40 PM	0.1	0.2	1.2	2.43	7.66	4345	0.13	2.2	25.6	-154	2.26	Clear	None
12:42 PM	0.1	0.2	1.4	2.43	7.66	4306	0.13	1.73	25.5	-155.1	2.24	Clear	None
12:44 PM	0.1	0.2	1.6	2.43	7.66	4297	0.12	1.78	25.7	-156.3	2.24	Clear	None

Start Purge:	5/23/2023 12:28:00 PM	End Purge:	5/23/2023 12:44:00 PM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0022-056.5-20230523
Sample Date: 5/23/2023 12:45:00 PM
Well ID: A3RB-MW0022
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	2.28
Top of Screen (ft-BTOC):	54.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	59.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	59.09	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:28 PM	0.1		0	2.28								Clear	None
12:38 PM	0.1	1	1	2.43	7.66	4364	0.13	2.04	25.7	-153.1	2.26	Clear	None
12:40 PM	0.1	0.2	1.2	2.43	7.66	4345	0.13	2.2	25.6	-154	2.26	Clear	None
12:42 PM	0.1	0.2	1.4	2.43	7.66	4306	0.13	1.73	25.5	-155.1	2.24	Clear	None
12:44 PM	0.1	0.2	1.6	2.43	7.66	4297	0.12	1.78	25.7	-156.3	2.24	Clear	None

Start Purge:	5/23/2023 12:28:00 PM	End Purge:	5/23/2023 12:44:00 PM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0023-056.5-20230523
Sample Date: 5/23/2023 11:27:00 AM
Well ID: A3RB-MW0023
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.48
Top of Screen (ft-BTOC):	54.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	59.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	59.00	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
11:10 AM	0.1		0	1.48								Clear	None
11:20 AM	0.1	1	1	1.77	7.6	3985	0.27	12.7	23.7	-126.3	2.17	Clear	None
11:22 AM	0.1	0.2	1.2	1.77	7.6	3978	0.26	11.5	23.7	-128.3	2.16	Clear	None
11:24 AM	0.1	0.2	1.4	1.77	7.6	3983	0.27	11.7	23.8	-129.4	2.16	Clear	None
11:26 AM	0.1	0.2	1.6	1.77	7.6	3978	0.26	9.78	23.9	-131	2.16	Clear	None

Start Purge:	5/23/2023 11:10:00 AM	End Purge:	5/23/2023 11:26:00 AM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0024-040.0-20230524
Sample Date: 5/24/2023 9:17:00 AM
Well ID: A3RB-MW0024
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	2.81
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	44.59	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:00 AM	0.1		0	2.81								Clear	None
9:10 AM	0.1	1	1	2.83	7.24	1549	0.18	4.16	24.4	-200.4	0.79	Clear	None
9:12 AM	0.1	0.2	1.2	2.83	7.24	1555	0.18	3.33	24.4	-201.9	0.79	Clear	None
9:14 AM	0.1	0.2	1.4	2.83	7.24	1558	0.15	3.32	24.4	-202.8	0.79	Clear	None
9:16 AM	0.1	0.2	1.6	2.83	7.24	1560	0.15	2.76	24.4	-203.7	0.8	Clear	None

Start Purge:	5/24/2023 9:00:00 AM	End Purge:	5/24/2023 9:16:00 AM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0025-040.0-20230524
Sample Date: 5/24/2023 12:55:00 PM
Well ID: A3RB-MW0025
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	4.19
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	44.70	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:38 PM	0.1		0	4.19								Clear	None
12:48 PM	0.1	1	1	4.2	7.22	1215	0.12	11.1	24.7	-190.8	0.61	Clear	None
12:50 PM	0.1	0.2	1.2	4.2	7.22	1220	0.12	9.28	24.7	-191.3	0.61	Clear	None
12:52 PM	0.1	0.2	1.4	4.2	7.21	1218	0.12	8.33	24.5	-191.8	0.61	Clear	None
12:54 PM	0.1	0.2	1.6	4.2	7.21	1215	0.11	8.21	24.5	-192.9	0.61	Clear	None

Start Purge:	5/24/2023 12:38:00 PM	End Purge:	5/24/2023 12:54:00 PM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-FD-20230523-03
Well ID: A3RB-MW0025
Location Type: Monitoring Well
Comments:

Sample Date: 5/24/2023 1:00:00 PM
Sampler: Greg Kusel

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	4.19
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	
Measured Well Depth (ft-BTOC):	44.70	Sample Analysis:	

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
12:38 PM	0.1		0	4.19								Clear	None
12:48 PM	0.1	1	1	4.2	7.22	1215	0.12	11.1	24.7	-190.8	0.61	Clear	None
12:50 PM	0.1	0.2	1.2	4.2	7.22	1220	0.12	9.28	24.7	-191.3	0.61	Clear	None
12:52 PM	0.1	0.2	1.4	4.2	7.21	1218	0.12	8.33	24.5	-191.8	0.61	Clear	None
12:54 PM	0.1	0.2	1.6	4.2	7.21	1215	0.11	8.21	24.5	-192.9	0.61	Clear	None

Start Purge:	5/24/2023 12:38:00 PM	End Purge:	5/24/2023 12:54:00 PM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0026-040.0-20230525
Sample Date: 5/25/2023 10:07:00 AM
Well ID: A3RB-MW0026
Sampler: Greg Kusel
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	3.89
Top of Screen (ft-BTOC):	35.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	45.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	44.49	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
9:50 AM	0.1		0	3.89								Clear	None
10:00 AM	0.1	1	1	3.92	7.2	1059	0.11	16.4	24.1	-148.2	0.53	Clear	None
10:02 AM	0.1	0.2	1.2	3.92	7.2	1058	0.1	11	24.1	-150.8	0.53	Clear	None
10:04 AM	0.1	0.2	1.4	3.92	7.2	1058	0.09	8.78	24.2	-155.1	0.53	Clear	None
10:06 AM	0.1	0.2	1.6	3.92	7.2	1063	0.09	6.53	24.2	-156.6	0.54	Clear	None

Start Purge:	5/25/2023 9:50:00 AM	End Purge:	5/25/2023 10:06:00 AM	Total Volume (gal):	1.6

GROUNDWATER SAMPLING LOG

AECOM

Event: Kennedy Space Center PFAS SA&M
Site Name: Site Assessment and Mitigation/South Repeater Building (SWMU 121)
Project #: 60667657

Sample ID: A3RB-MW0027-056.5-20230524
Sample Date: 5/24/2023 1:59:00 PM
Well ID: A3RB-MW0027
Sampler: Brittany Follett
Location Type: Monitoring Well
Comments:

Well Information			
Well Diameter (in):	1	Static Water Level (ft-BTOC):	1.56
Top of Screen (ft-BTOC):	54.00	H/S PID Monitor Reading: (ppm)	0
Bottom of Screen (ft-BTOC):	59.00	Purge/Sample Method:	Low Flow
Measured Well Depth (ft-BTOC):	NM	Sample Analysis:	PFAS

Purge Information

Time	Purge Rate (gal/min)	Vol Purged (gal)	Cumul. Vol Purged (gal)	Depth to Water (FT)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (C)	ORP (MV)	Salinity (PSU)	Color (NA)	Odor (NA)
1:52 PM	0.05	0.75	0.75	2.85	7.36	3837	0.22	7.95	25.6	-91.8	2.02	Clear	None
1:54 PM	0.05	0.1	0.85	2.85	7.38	3899	0.19	4.4	25.6	-91.9	2.03	Clear	None
1:56 PM	0.05	0.1	0.95	2.85	7.39	3906	0.18	3.35	25.6	-92.6	2.04	Clear	None
1:58 PM	0.05	0.1	1.05	2.85	7.39	3931	0.17	2.57	25.6	-94.1	2.06	Clear	None

Start Purge:	5/24/2023 1:37:00 PM	End Purge:	5/24/2023 1:58:00 PM	Total Volume (gal):	1.05

GENERAL PFAS SAMPLING GUIDANCE

This document contains an introduction to PFAS, biosecurity recommendations, and general recommendations to decrease the possibility of cross-contamination.

Michigan Department of Environmental Quality

Revised 10/16/2018

GENERAL PFAS SAMPLING

Guidance

CONTENTS

Acronyms

Acronyms used throughout the **General PFAS Sampling Guidance** document and/or each sampling guidance are as follows:

AFFF – Aqueous film forming foam
CAS Number – Chemical abstracts service number
COC – Chain of Custody
DEPA – Danish Environmental Protection Agency (Denmark)
EINECS – European List of Notified Chemical Substances (European Union)
ENCS – Existing and New Chemical Substances Inventory (Japan)
ETFE – Ethylene-tetrafluoroethylene
FCMP – Fish Contaminant monitoring program
FCSV – Fish consumption screening values
FDA – Food and Drug Administration (United States of America)
FEP – Fluorinated ethylene propylene
HASP – Health and Safety Plan
HDPE – High-density polyethylene
IECSC – Inventory of Existing Chemical Substances Produced or Imported in China
ITRC – Interstate Technology & Regulatory Council
KECI – Korea Existing Chemicals Inventory (South Korea)
KEMI – Swedish Chemical Agency (Sweden)
LDPE – Low-density polyethylene
LHA – Lifetime Health Advisory (United States Environmental Protection Agency)
MDEQ – Michigan Department of Environmental Quality
MDHHS – Michigan Department of Health and Human Services
MPART – Michigan PFAS Action Response Team
MSDS – Material Safety Data Sheet (former reference)
ng/L – Nanograms per liter
NZIoC – New Zealand Inventory of Chemicals (New Zealand)
PCPs – Personal care products
PID – Photoionization detector
PFAA – Perfluoroalkyl acids
PFAS – Per- and Polyfluoroalkyl Substances
PFC – Polyfluorocarbons
PFCA – Perfluoroalkyl carboxylic acids
PFOA – Perfluorooctanoic acid
PFOS – Perfluorooctanesulfonic acid
PFPE – Perfluoropolyethers
PFSA – Perfluoroalkyl sulfonic acids
PICCS – Philippine Inventory of Chemicals and Chemical Substances (Philippines)
ppb – Parts per billion
PPE – Personal protection equipment
ppt – Parts per trillion
PTFE – Polytetrafluoroethylene
PVC – Polyvinyl chloride
PVDF – Polyvinylidene fluoride
PVF – Polyvinyl fluoride
QA/QC – Quality assurance/quality control
QAPP – Quality Assurance Project Plan
OECD – Organization for Economic Cooperation and Development
SDS – Safety Data Sheet
SWAS – Surface Water Assessment Section (MDEQ)
TSCA – Toxic Substances Control Act (United States of America)
USEPA – United States Environmental Protection Agency
UV – Ultraviolet
VOC – Volatile organic compounds
WRD – Water resources division (MDEQ)

Disclaimer

The Michigan Department of Environmental Quality (MDEQ) intends to update the information contained within this PFAS Sampling Guidance document as new information becomes available. The user of this PFAS Sampling Guidance is encouraged to visit the Michigan PFAS Action Response Team webpage (www.michigan.gov/PFASresponse) to access the current version of this document.

1. Introduction

Per- and polyfluoroalkyl Substances (PFAS) are a class of **emerging contaminants** composed of more than 3,000 human-made, fluorinated, organic chemicals (Buck et al., 2011, Wang et al., 2017). The actual number of compounds is continuously changing, as some PFAS are no longer produced due to regulatory and voluntary actions, while new ones are created as alternatives. The carbon-fluorine bond that exists in PFAS is one of the strongest bonds in nature, they are tough to break and are resistant to thermal, chemical, and biological degradation.

NOTE: Emerging Contaminants are chemicals and materials in the environment and present real or potential human health or environmental risks, and either…

- Do not have peer-reviewed human health standards
  or:
- Standards/regulations are evolving due to new science, new laboratory analytical capabilities, and new knowledge about the chemicals.

Due to their unique chemical properties, various PFAS can lower surface tension (act as surfactants), are oil-repelling (oleophobic), and are water-repelling (hydrophobic), yet are also relatively water soluble. They have been used extensively in many industries worldwide for a wide variety of applications. PFAS were first invented in the late 1930's and commercially used from the 1940's as non-stick coatings. PFAS continued to be used in many industries and various products as more PFAS were developed with unique chemical properties. Some of the documented PFAS uses are in hydraulic fluids, biocides, construction products, fire-fighting foams, household products, wetting and mist suppressing agents, surfactants for oil and natural gas recovery enhancement, polymerization agents, low-friction bearings and seals, insulators, cables, wires, protective coatings for a wide variety of materials, nonstick coatings, surgical patches, cardiovascular grafts, implants, oil and water repellent coatings for a wide range of materials such as paper and cardboard packaging products, carpets, leather products, and textiles (OECD, 2013). The presence of PFAS in these materials is a potential source of environmental concern and cross-contamination.

The probability of false positives is relatively high during PFAS sample collection due to the potential for many sources of cross-contamination, combined with low laboratory detection limits (nanograms per liter (ng/L) or parts per trillion (ppt)). There are many products that could be found in the sampling environment, that have not been documented to either contain or not contain PFAS, and may come into contact with the samples, introducing causing cross-contamination.

The United States Environmental Protection Agency (USEPA) has established a Lifetime Health Advisory (LHA) for Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS), separately or combined, of 70 ppt. The MDEQ cleanup criteria protective of groundwater used for drinking water purposes is also 70 ppt for PFOS and PFOA, individually or combined. The MDEQ has also promulgated a standard under Rule 57 for PFOS of 11 ppt for surface water that is used as a drinking water source and 12 ppt for surface water that is not used as a drinking water source.

●- Prohibited ■- Allowable ▲- Needs Screening

2. Purpose and Objectives

The purpose of this document is to provide guidance and information to staff who will:

- Collect or handle PFAS environmental samples.
- Perform subsurface activities such as soil borings and/or well installation or well abandonment at PFAS sites.

This document is intended to supplement the MDEQ media-specific PFAS sampling guidance documents and is a resource for PFAS sampling.

The objectives of this document are as follows:

- Provide guidance on avoiding PFAS cross-contamination during sampling.
- Improve sampling consistency and data quality.
- Provide guidance to MDEQ staff and contractors.

Because PFAS are emerging contaminants and information about their use in various materials is still not available; the MDEQ will update this document as new information becomes available.

NOTE: This guidance does not include specific information for sampling environmental media and should not be used to replace specific sampling guidance documents required for use by MDEQ staff.

3. Farm Biosecurity

In the event PFAS sampling occurs on or near a farm, staff need to follow the requirements in this document when conducting sample collection, to reduce the likelihood of transporting animal diseases.

3.1 Scheduling

To avoid cross-contamination from previous sampling locations, it is preferable that staff visit only one farm in a day.

3.2 Before Sampling

Staff should review **Section 4.2.4. Field Clothing and Personal Protective Equipment (PPE)** before going into the field.

Staff must have a clean vehicle, clean clothing, and clean boots to visit the sampling location. Before arriving at the farm, staff should call the owner of the farm to indicate they will be arriving shortly and ask if there are any additional biosecurity requirements for their farm. Once at the farm, staff should park away from any animals and barns; preferably in a designated visitor area or on concrete.

Immediately before exiting the vehicle, place disposable PFAS-free boot covers over boots. (*NOTE: Disposable boot covers can be slippery, especially in icy/snowy conditions.*)

3.3 While Sampling

Staff should not approach animal areas unless necessary for testing. If access to an animal area is needed, staff should always be accompanied by farm personnel.

3.4 After Sampling

Dispose of used disposable boot covers at the facility if possible; otherwise, place in a plastic bag, seal and place in the vehicle trunk to dispose of properly later.

4. General PFAS Sampling

The following sections discuss technical issues such as the need to use PFAS-free water; information about PFAS-free clothing and PPE; and laboratory issues that should be considered when sampling for PFAS.

4.1 Sampling Objectives

Before conducting any PFAS sampling, it is recommended that a project-specific Quality Assurance Project Plan (QAPP) should be developed. The QAPP must meet MDEQ policy and should include the analyte list, method of analysis, environmental matrices, and reporting limits, which are based on the project objectives. All of these considerations will be discussed in more detail in this guidance document.

4.2 PFAS Cross-Contamination Potential Sources

Potential sources of PFAS cross-contamination in the typical sampling environment include water used during drilling or decontamination, materials used within the sampling environment, sampling equipment, field clothing and personal protective equipment (PPE), sun and biological protection products, personal hygiene and personal care products (PCPs), food packaging, and the environment itself.

The materials associated with sampling that have the potential for PFAS cross-contamination have been divided into three major groups:

- Prohibited (●) identifies items and materials that should not be used when sampling. It is well documented that they contain PFAS or that PFAS are used in their manufacture.

- Allowable (■) identifies items and materials that have been proven not to be sources of PFAS cross contamination and are considered allowable for sampling.

- Needs Screening (▲) identifies items and materials that have the potential for PFAS cross-contamination due to a lack of scientific data or statements from manufacturers to prove otherwise. These items and materials are further sub-divided into two categories:

    - **Category 1:** Items and materials that <u>will come in direct contact</u> with the sample. These should not be used when sampling unless they are known to be PFAS-free, by collecting an equipment blank sample prior to use.

    - **Category 2:** Items and materials that <u>will not come in direct contact</u> with the sample. These should be avoided, if possible, unless they are known to be PFAS-free by collecting an equipment blank sample prior to use.

All of the materials or items discussed in each of the MDEQ's PFAS Sampling Guidance Documents will be divided into ● Prohibited ■ Allowable, or ▲ Needs Screening. Several examples of prohibited and allowable materials and materials that need screening are listed in the **MDEQ PFAS Sampling Quick Reference Field Guide** at the end of this document. Also, materials and items that are specific to a particular environmental media or sampling method will be thoroughly explained in that media's sampling guidance document (such as peristaltic pumps for groundwater sampling).

NOTE: If recommended PPE will be used during sampling, **Category 2** materials are not expected to be a source of cross-contamination as long as they do not come into contact with the samples.

●- Prohibited ■- Allowable ▲- Needs Screening

Please note that at this time no published research is available that documents the use of various materials and their effect on sample results. Therefore, a conservative approach is recommended in this guidance based on the evaluation of multiple environmental samples at various PFAS sites. Field sampling occurring during extreme weather (e.g., rainfall, snowfall, or extreme heat) should be conducted while wearing the appropriate clothing that will not pose a risk for cross-contamination but will also ensure the safety of the field personnel.

4.2.1 PFAS-Free Water

The term PFAS-free water is defined here as water that does not contain significant concentrations of any compound in a specific PFAS analyte list that is being analyzed at a project-defined level. The significant concentrations depend on project data quality objectives and could, for instance, be less than the laboratory reporting limit, <1/2 the limit of quantitation, or other defined criteria for the specific PFAS compound of interest (ITRC, 2017).

NOTE: The confirmation of PFAS-free water should always be performed prior to the commencement of work. Site or public water supplies have been identified in many instances to contain detectable levels of PFAS.

One important consideration for each project is to identify a PFAS-free water source to use for decontamination of sampling and drilling equipment when applicable. The decontamination of sampling tools or small equipment parts can be performed using laboratory-supplied verified PFAS-free water. Other water can only be used for decontamination purposes if it has been analyzed and shown to be PFAS-free as defined for the project.

4.2.2 Materials Screening

Materials screening should be performed during the Health and Safety Plan (HASP) and QAPP development or the planning phase of sampling programs. The screening should be performed on all of the items and materials that are expected to come into contact with the samples and defined as **Category 1**.

Material screening should include a review of Safety Data Sheets (SDSs; formerly Material SDS [MSDSs]). Make sure the review uses current SDSs, because the actual composition of a particular item or material may have changed over time without changing the actual item or material name. All products from the United States or abroad should be screened. Text fragments such as “perfluoro,” “fluoro,” or “fluorosurfactant” may identify the use of PFAS in specific items or materials.

NOTE: Manufacturers can change the chemical composition of any product. As a result, equipment blank samples should be collected for all materials that will come into direct contact with the sample media, regardless of what category they might be in, to confirm they are “PFAS-free”, i.e. will not contaminate samples at detectable levels. **There is no guarantee that materials in the ‘Allowable category will always be PFAS-free.**

Some countries have official national lists of industrial chemicals defined by regulations, such as:

- Toxic Substances Control Act (TSCA) in the United States.
- European List of Notified Chemical Substances (EINECS), as well as substances pre-registered under the Registration, Evaluation, Authorization, and restriction of Chemicals (REACH) in the European Union.
- Swedish Chemical Agency (KEMI) in Sweden.

● - Prohibited ■ - Allowable ▲ - Needs Screening

- Domestic Substances List (DSL) in Canada.
- Inventory of Existing New Chemical Substances Produced or Imported in China (IECSC)
- Existing and New Chemical Substances Inventory (ENCS) in Japan.
- Korea Existing Chemicals Inventory (KECI) in South Korea.
- New Zealand Inventory of Chemicals (NZIoC) in New Zealand.
- Philippine Inventory of Chemicals and Chemical Substances (PICCS) in the Philippines.

The information available on these lists includes the chemical names and various identity numbers, which is usually the Chemical Abstracts Service number (CAS Number) (KEMI, 2015). The lists may not contain a substantial amount of information because of laws in regards to proprietary information, which gives the suppliers the right to not name newly developed chemicals. The information is not always sufficient to identify if the items or materials contain PFAS, as many of the PFAS do not have an assigned CAS Number at this time (KEMI, 2015). The most recent summary conducted by the Organization for Economic Co-operation and Development (OECD) identified 4,730 PFAS-related CAS numbers (OECD, 2018).

Sometimes manufacturers provide information about their products online or upon request, which may indicate if PFAS were used in the manufacturing of a particular item or material.

4.2.3 Sampling Equipment

The actual list of PFAS-containing materials potentially encountered onsite will change based on the specific sampled media and site-specific sampling conditions. Do not use any equipment that contains any known fluoropolymers. Consider all of the following:

- Do not use polytetrafluoroethylene (PTFE) that includes the trademark Teflon® and Hostaflon®, which can be found in many items, including but not limited to the lining of some hoses and tubing, some wiring, certain kinds of gears, and some objects that require the sliding action of parts.
- Do not use Polyvinylidene fluoride (PVDF) that includes the trademark Kynar®, which can be found in many items, including but not limited to tubing, films/coatings on aluminum, galvanized or aluminized steel, wire insulators, and lithium-ion batteries.
- Do not use Polychlorotrifluoroethylene (PCTFE) that includes the trademark Neoflon®, which can be found in many items, including but not limited to valves, seals, gaskets, and food packaging.
- Do not use Ethylene-tetrafluoroethylene (ETFE) that includes the trademark Tefzel®, which can be found in many items, including but not limited to the wire and cable insulation and covers, films for roofing and siding, liners in pipes, and some cable tie wraps.
- Do not use Fluorinated ethylene propylene (FEP) that includes the trademarks Teflon® FEP and Hostaflon® FEP, and may also include Neoflon®, which can be found in many items, including but not limited to the wire and cable insulation and covers, pipe linings, and some labware.
- Do not use low-density polyethylene (LDPE) for any items that will come into direct contact with the sample media. LDPE can be found in many items, including but not limited to containers and bottles, plastic bags, and tubing.
    - **However**, LDPE may be used if an equipment blank has confirmed it to be PFAS-free. LDPE does not contain PFAS in the raw material but may contain PFAS cross-contamination from the manufacturing process.

● - Prohibited ■ - Allowable ▲ - Needs Screening

- ■ LDPE bags (e.g., Ziploc®) that do not come into direct contact with the sample media and do not introduce cross-contamination with samples may be used.
- ■ Use materials that are either made of high-density polyethylene (HDPE), polypropylene, silicone, or acetate.
- ■ Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.
- ■ Powderless nitrile gloves (which can be found at some hardware and major retail outlets).
- ▲ Latex gloves should be screened before use.
- ▲ Some sampling guidance documents allow the use of aluminum foil provided the shiny side is placed away from the sample (e.g., fish tissue sampling guidance). As a precaution, MDEQ recommends that aluminum foil not is used unless equipment blank samples confirm it is PFAS-free.

4.2.4 Field Clothing and Personal Protective Equipment (PPE)

Any field planning and mobilization effort should address the physical, chemical, and biological hazards associated with each PFAS site. The mitigation of potential risks may be documented in a site-specific HASP or a QAPP. Due to the extensive use of PFAS in many industries and products, PPE may contain PFAS. During PFAS investigation, PPE containing PFAS should be avoided to prevent cross-contamination. The development of the HASP or QAPP should consider these factors before mobilization in the field. All HASPs or QAPPs need to address the concern of potential exposure of staff to PFAS through PPE.

Personal safety is paramount. The safety of staff should not be compromised by fear of PFAS containing materials without any scientific basis. Any deviation from this guidance, including those necessary to ensure the health and safety of sampling personnel, must be recorded in field notes and discussed in the final report.

Globally, protective coatings for textiles are estimated to be about 50 percent of the total use of PFAS (DEPA, 2015). Due to its unique properties of water and oil repellency, PFAS has been used to coat various clothing (i.e., pants, jackets, and t-shirts) and leather products (i.e., boots, shoes, and jackets). Many of these types of clothing and PPE have the potential to be used in the sampling environment.

NOTE: The Danish Ministry of the Environment identified alternative polymer technology as being PFAS-free. Products treated with this technology are water- resistant, but not oil and dirt repellent to the same extent as products treated with PFAS- based agents (DEPA, 2015).

While preparing for sampling, particular focus should be made on clothing that has been advertised as having waterproof, water-repellant, or dirt and/or stain resistant characteristics. These types of clothing are most likely to have had PFAS used in their manufacturing.

Field Clothing and PPE that should be avoided (●) in the immediate sampling environment include the following:

- ● Do not use clothing that has been washed with fabric softener which may contain PFAS.
- ● Do not use clothing that has been made with or washed with water, dirt, and/or stain resistant chemicals.
- ● Do not use clothing chemically treated for insect resistance and ultraviolet protection (See **Section 4.2.5** on biological hazards).
- ● Do not use clothing or PPE items that have any of the brand or product names that have been found to contain PFAS by the Danish Ministry of the Environment and presented in **Table 1** below (DEPA, 2015).

Field Clothing and PPE that are allowable (■) to wear within the immediate sampling environment include the following:

- ■ Powderless nitrile gloves.
- ■ Polyvinyl chloride (PVC) or wax-coated fabrics.
- ■ Neoprene.
- ■ Any boots made of polyurethane and/or PVC. If the HASP requires a specific type of boot such as (steel-toed), and PFAS-free cannot be purchased, PFAS- free over-boots may be worn. The overboots must be put on, and hands washed after putting the overboots on before the beginning of sampling activities. Overboots may only be removed in the staging area and after the sampling activities have been completed.
- ■ Synthetic and natural fibers (preferably cotton) that are well laundered (more than six times with no fabric softener) clothes and cotton overalls.

NOTE: There could be many PPE materials used during various sampling events, including hard hats and safety glasses. All clothing and PPE should be evaluated prior to sampling.

Field Clothing and PPE that must be evaluated (▲) before wearing within the immediate sampling environment include the following:

- ▲ Latex gloves.
- ▲ Water resistant or stain-treated clothing and PPE.
- ▲ Tyvek suits and clothing that contain Tyvek® (USEPA PFAS sampling guidance from USEPA Region 2 prohibits the use of Tyvek; available product information suggests Tyvek® may be used if required. Coated Tyvek® requires further evaluation; therefore, MDEQ recommends the collection of an Equipment Blank before Tyvek® use).

Table 1 below provides a list of prohibited field clothing (DEPA, 2015). However, the manufacturer and/or vendor for the field clothing and/or PPE should be contacted to confirm that these brand or product names still contain PFAS. There have been instances where manufacturers have kept the same brand and/or product name but have changed the chemicals used during the manufacturing of a particular item.

Table 1. Prohibited Field Clothing and PPE Brand and Product Names

● Prohibited Materials[1] (DEPA, 2015)	
Advanced Dual Action Teflon® fabric protector.	Release Teflon®
Repel Teflon® fabric protector	High-Performance Release Teflon®
High performance Repel Teflon® fabric protector	Ultra Release Teflon®
NK Guard S series	GreenShield®
Tri-Effects Teflon® fabric protector	Lurotex Protector RL ECO®
Oleophobol CP®	Repellan KFC®
Rucostar® EEE6	UnidyneTM
Bionic Finish®	RUCO-GUARD®
RUCOSTAR®	RUCO-COAT®
RUCO-PROTECT®	RUCOTEC®
RUCO®	Resist Spills™
Resists Spills and Releases Stains™	Scotchgard™ Fabric Protector

[1]This list is not considered to be a complete listing of prohibited materials. All materials should be evaluated before use during sampling.

4.2.5 Sun and Biological Protection

Because biological hazards (sunburn, mosquitos, ticks, etc.) may be encountered during sampling, the elimination of specific clothing materials or PPE (sunscreens and insect repellants) could pose a health and safety hazard to staff.

The safety of staff should not be compromised by fear of PFAS containing materials without any scientific basis. Personal safety is paramount. Any deviation from this guidance, including those necessary to ensure the health and safety of MDEQ staff, should be recorded in field notes and discussed in the final report.

Prolonged sun exposure will require sunscreens, which may have included PFAS in their manufacture. Protection against insects may require the use of insect repellant. **Table 2** contains a detailed list of sunscreens and insect repellants that have been analyzed and found to be PFAS-free as of the date of this document. Note that this is not a comprehensive list of allowable insect repellants or sunscreens; other products may meet the requirements for use. Listing or omission of any product does not imply endorsement or disapproval. Also, there is no guarantee that these products will always remain PFAS free.

NOTE: Sunscreens and insect repellants must be evaluated on a case-by-case basis. Refer to **Section 4.6 Quality Control Samples** for details on collecting equipment blanks.

The MDEQ recommends that additional sunscreens and insect repellents be treated as (▲) Needs Screening and should be evaluated before use.

- Sunscreens and insect repellants should not be applied near the sample collection area.
- Hands should be well washed after application or handling of these products, and afterwards, powderless nitrile gloves should be worn.

●- Prohibited ■- Allowable ▲- Needs Screening

Table 2. Sunscreen and Insect Repellents[1]

■ Allowable Insect Repellants	
Photos	**Insect Repellent Spray**
	• OFF Deep Woods • Sawyer Permethrin

■ Allowable Sunscreens	
Photos	**Sunscreens**
	• Banana Boat Sport Performance Sunscreen Lotion Broad Spectrum SPF 30. • Meijer Sunscreen Lotion Broad Spectrum SPF 30. • Neutrogena Ultra-Sheer Dry-Touch Sunscreen Broad Spectrum SPF 30.

■ Allowable Sunscreens
• Banana Boat for Men Triple Defense Continuous Spray Sunscreen SPF 30
• Banana Boat Sport Performance Coolzone Broad Spectrum SPF 30
• Banana Boat Sport Performance Sunscreen Lotion Broad Spectrum SPF 30
• Banana Boat Sport Performance Sunscreen Stick SPF 50
• Coppertone Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50
• Coppertone Sport High-Performance AccuSpray Sunscreen SPF 30
• Coppertone Sunscreen Stick Kids SPF 55
• L'Oréal Silky Sheer Face Lotion 50+
• Meijer Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50
• Meijer Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70
• Neutrogena Beach Defense Water + Sun Barrier Lotion SPF 70
• Neutrogena Beach Defense Water + Sun Barrier Spray Broad Spectrum SPF 30
• Neutrogena Pure & Free Baby Sunscreen Broad Spectrum SPF 60+
▲ Materials That Require Screening
Sunscreens: Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss My Face, and baby sunscreens that are "free" or "natural."
Insect Repellents: Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, Baby Ganics.
Sunscreen and Insect Repellent: Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion.

[1]This table is not considered to be a complete listing of allowable materials and materials that require screening. All materials should be evaluated before use during sampling. Some of the sunscreen and insect repellent testing has been performed using a PFAS screening Method known as Particle Induce Gamma-Ray Emission (PIGE). The use of approved gloves should always be used, and the sample should never come into contact with any of the sunscreen or insect repellent products. An Equipment Blank sample could also be collected to verify the product as PFAS-free.

●- Prohibited ■- Allowable ▲- Needs Screening

If an insect repellant has not been approved and staff needs protection against biting insects:

NOTE: The words "Natural" and/or "Organic" in the product name or to describe it does not mean that it is PFAS-free.

- Tuck pant legs into socks and/or boots to seal the gap between the boots and the pants to reduce the risk of being bitten by ticks.
- Wear well-washed, light-colored clothing to easily see ticks during field activities.
- Light-colored clothing, long sleeves, and large-brimmed hats also prevent sunburn.
- Equipment Blank samples should be collected to verify that the preferred insect repellant or sunscreen is PFAS-free by using the testing procedures identified in **Section 4.6 Quality Control Samples**.

4.2.6 Personnel Hygiene and Personal Care Products (PCPs)

A number of sampling guidance documents recommend that personal hygiene and personal care products (PCPs) (e.g., cosmetics, shampoo, sunscreens, dental floss, etc.) not be used prior to and on the day(s) of sampling because the presence of PFAS in these products has been documented (OECD, 2002, Fujii, 2013, Borg and Ivarsson, 2017). However, if the MDEQ's sampling SOPs are followed, these items should not come into contact with the sampling equipment or the sample being collected. As of the date of this sampling guidance, cross-contamination of samples due to the use of PCPs has not been documented during the collection of thousands of samples. However, field personnel should be aware of the potential of cross-contamination if the sampling equipment or actual samples would come into contact with these products. The following precautions should be taken when dealing with personal hygiene or PCPs before sampling:

- ● Do not handle or apply PCPs in the sampling area.
- ● Do not handle or apply PCPs while wearing PPE that will be present during sampling.
- ■ Move to the staging area and remove PPE if applying personal care products becomes necessary.
- ■ Wash hands thoroughly after the handling or application of PCPs and, when finished, put on a fresh pair of powderless nitrile gloves.

4.2.7 Food Packaging

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). In January 2016, the Food and Drug Administration (FDA) banned the use of PFAS which has eight carbon atoms (such as PFOA and PFOS) or more, in food packaging materials. However, PFOA and PFOS or other eight or more carbon chain PFAS may still be detected in food packaging because of the use of recycled paper which may contain PFAS. Various studies have found up to 57percent detection frequency in food contact materials such as paper (Trier et al., 2011; Rosenmai et al., 2013; Schaider et al., 2017).

NOTE: Short-chain PFAS have not been banned for use in the manufacturing of contact food materials in the United States.

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). Pre-wrapped food or snacks (such as candy bars, microwave popcorn, etc.) must not be in the sampling and staging areas during sampling due to PFAS contamination of the packaging. When staff

requires a break to eat or drink, they should remove their gloves, coveralls, and any other PPE, if worn, in the staging area and move to the designated area for food and beverage consumption. When finished, staff should wash their hands and put on a fresh pair of powderless nitrile gloves at the staging area, before returning to the sampling area.

- ● Do not handle, consume, or otherwise interact with pre-wrapped food or snacks, carry-out food, fast food, or other food items while on-site during sampling.
- ■ Move to the staging area and remove PPE prior to leaving the sampling and staging areas if consuming food on site becomes necessary.

4.3 PFAS Sampling Procedures

4.3.1 Sample Containers, Handling, and Collection

All bottles used for PFAS sampling should come from the laboratory that will also be performing the PFAS analysis. Commercial laboratories that have demonstrated awareness and elimination of possible PFAS cross-contamination from sample containers and laboratory supplies should be used. Recommended sampling containers will be discussed for each environmental media. Any sampling containers provided by the laboratory should be verified as PFAS-free.

Before sampling, staff may come into contact with textiles and fabrics treated with PFAS, such as carpets and car interiors. Staff should be aware that these materials, and any other surfaces that repel water and are stain resistant, have the potential of being treated with PFAS. However, these are considered **Category 2** materials and the field personnel should be aware of the possible PFAS use. Sample containers and equipment that will be used for sampling should not be stored on or come into contact with materials suspected to contain PFAS.

For all environmental media, hands should be well washed before sampling. Clean powderless nitrile gloves must be put on before sample collection, handling of sample containers, and handling sampling equipment. The sample container must be kept sealed at all times and only open during the sample collection. The sampling container cap or lid should never be placed on any surface unless it is PFAS-free. The sampling container cap or lid must never be placed directly on the ground. A list of various materials used in sampling and handling can be found in the **MDEQ Quick Reference Field Guide** located at the end of this document.

In the absence of formal USEPA guidance for PFAS sample storage, the documentation in EPA Method 537 Rev. 1.1 should be used as a guide for thermal preservation (holding temperature), and holding times for other environmental media samples (with the exception of biota – in order to limit microbial growth, biota samples such as fish and vegetation are recommended to be kept frozen until the sample is prepared).

If published analytical reference methods, other than EPA Method 537 Rev. 1.1 are used, follow the guidelines or requirements in those methods for sample storage, preservation, and hold times. Otherwise EPA Method 537 Rev. 1.1 requries that samples must be chilled during storage and shipment, and must not exceed 50°F (10°C) during the first 48 hours after collection.

4.3.2 Sample Shipment

In general, for all environmental media sampled for PFAS, samples must be kept on ice from the time of sample collection to the arrival at the laboratory. The following procedures should be used for sample shipment:

● - Prohibited ■ - Allowable ▲ - Needs Screening

- Regular ice should be used to cool and maintain the sample at or below the proper temperature.
  - ▲ Chemical or blue ice may be used if it is known to be PFAS-free and it is absolutely certain that the sample is cooled and maintained at or below the proper temperature during collection and through transit to the laboratory.
- Refresh with regular ice, if needed, double bagged in LDPE resealable storage bags if needed.
- Fish and other wildlife samples should be placed on dry ice and frozen before the shipment to the lab. If fish is frozen, shipping the samples overnight on ice should be acceptable.
- The samples, ice, and chain of custody (COC) should always be bagged in polyethylene (i.e., Ziploc®) bags.
- Chain of Custody and other forms should be single bagged in LDPE resealable storage bags and taped to the inside of the cooler lid.
- The cooler should be taped closed with a custody seal and shipped by overnight courier.
- Samples should be shipped as soon as possible (e.g. overnight) to ensure the samples arrive within the analytical holding time specified by the lab.

4.3.3 Preferential Sampling Sequence

A preferred sampling sequence should be established before any sampling event to reduce the risk of cross-contamination. In general, the sampling sequence should be such that sampling starts in areas where it is expected or known to be least contaminated, to areas anticipated or identified to be most contaminated. If analytical results from past sampling events are available, the sampling sequence can be readily determined.

For many PFAS investigation sites, no PFAS sampling has been conducted. In these cases, all site information on possible PFAS uses and potential PFAS migration patterns (e.g., upgradient, downgradient) from PFAS sources at the site should be reviewed before the sampling event to help establish the sampling sequence.

If multiple samples (i.e., monitoring wells) will be collected for an area where a particular or potential PFAS release in the environment might have been documented, samples that are known to be upgradient from the impacted area should be sampled first, followed by those that are furthest downgradient from the suspected source. The remaining wells should be progressively sampled from the most distant downgradient to those closer to the known PFAS source.

If no information is available about the site, samples are to be collected in the following order:

1) drinking water (e.g., residential wells).
2) surface water.
3) groundwater.

4.4 Decontamination Procedures

It is customary with sampling that equipment is decontaminated at the conclusion of the sampling event. If the previous user of the equipment is not known, and it is unclear how the equipment was handled, especially rental equipment, the equipment should be decontaminated.

Disposable **Category 1** sampling equipment should be used, especially for sample bottles and other materials that are used where the sample may be in contact with the sampling equipment for an extended time period.

● - Prohibited ■ - Allowable ▲ - Needs Screening

Non-disposable sampling equipment used at multiple sites or sampling locations can become highly contaminated with PFAS. Decontamination procedures must be implemented to prevent cross-contamination, especially between individual sample locations. It is customary to decontaminate sampling equipment at the end of the sampling event, whether the event is a single sampling location or several sites that conclude at the end of the workday.

Throughout the sampling guidance documents, information will be provided about any media-specific decontamination procedures. For non-dedicated **Category 1** sampling equipment, there are many decontamination methods, two of which are listed below.

Decontamination Method 1:

- ● Do not use Decon 90®.
- ● Do not put equipment away without decontaminating it.
- ■ Laboratory supplied PFAS-free deionized water is preferred for decontamination.
- ■ Alconox®, Liquinox®, and Citranox® can be used for equipment decontamination.
- ■ Sampling equipment can be scrubbed using polyethylene or polyvinylchloride (PVC) brush to remove particulates.
- ■ Decontamination procedures should include triple rinsing with PFAS-free water.
- ■ Do decontaminate sampling equipment after sampling at each location, or at the end of the workday.
- ■ Commercially available deionized water in an HDPE container may be used for decontamination if the water is verified to be PFAS-free as defined in **Section 4.2.1** of this document.
- ▲ Municipal drinking water may be used for decontamination purposes if it is known to be PFAS-free.

Decontamination Method 2:

1. In a PFAS-free bucket, wash the equipment with a mixture of PFAS-free water and PFAS-free soap (bucket #1)
2. In a second PFAS-free bucket (bucket #2), rinse the equipment with PFAS-free water
3. A second rinse should be done with PFAS-free water using either a third bucket (bucket #3) or, if washed and rinsed, the second bucket (bucket #2).
4. For decontamination of additional equipment, change the decontamination water between cleanings.

4.5 Laboratory Considerations

The PFAS analytical list is available on the MPART website (www.michigan.gov/PFASresponse) under Testing and Treatment. This list includes the 14 analytes required to be analyzed for drinking water samples when using USEPA Method 537 Rev. 1.1, and the 24 analytes the MDEQ recommends be analyzed for all other environmental media. The MPART website should be visited to download the most recent document. Laboratories should be able to analyze and report PFAS results that will meet the project-specific data quality objectives identified in the QAPP.

Drinking Water Samples

USEPA Method 537 Revision 1.1 must be used for testing finished drinking water samples. Other methods are available for non-drinking water samples. Many laboratories refer to the isotope dilution method as 'modified Method 537,' however, the USEPA does not recognize isotope dilution as an acceptable modification of USEPA Method 537 Rev. 1.1 for drinking water analysis. USEPA drinking water methods are generally prescriptive, and only limited modifications are allowed because the finished treated drinking water is assumed to be free of significant interferences.

NOTE: USEPA Method 537 Rev. 1.1 was developed to be used only for finished drinking water samples, and contains specific requirements for sample preservation, shipping storage, and holding times.

USEPA Method 537 Rev. 1.1 was designed for finished drinking water and chemical preservation using Trizma® to buffer the sample and remove free chlorine. Non-chlorinated finished drinking water may also be analyzed using USEPA Method 537 Rev. 1.1.

Other Environmental Media Samples

There are currently no published USEPA methods using isotope dilution for determining PFAS in non-drinking water matrices or other sample media. There are USEPA methods for analyzing PFAS in additional matrices going through the development and validation process and may be available as early as fall of 2018. Some commercial laboratories have developed isotope dilution methods based on existing published methods, however, there may be significant differences between SOPs from different commercial laboratories regarding the details of the preparation and analysis of PFAS samples. A review of the laboratory's procedure and certifications should be done to ensure that the laboratory is capable of providing data that meet the data quality objectives of the project. MDEQ is implementing a laboratory SOP review process. Staff should refer to the MDEQ internal shared drive to see whether SOPs have been reviewed for the lab they are considering.

The following non-USEPA analytical methods have been published for use in determining PFAS in various media:

- ISO (International Organization for Standardization) Method 25101 (ISO, 2009) - Water quality Determination of PFOA and PFOS - Method for unfiltered samples of drinking water, groundwater, and surface water, using solid phase extraction and liquid chromatography/mass spectrometry (HPLC/MS/MS.)

- ASTM D7979 (ASTM, 2017) - Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography-Tandem Mass Spectrometry (LC/MS/MS). This method has been investigated for use with surface water, sludge, and wastewater for selected PFAS. This method has not been evaluated on drinking water matrices. Some commercial laboratories have modified this method and are using isotope dilution.

- ASTM D7968 (ASTM, 2017) - Standard Test Method for Determination of Polyfluorinated Compounds in Soil by Liquid Chromatography-Tandem Mass Spectrometry (LC/MS/MS). This procedure utilizes a quick extraction and is not intended to generate an exhaustive accounting of the content of PFAS in difficult soil matrices.

4.6 Quality Control Samples

4.6.1 Laboratory Quality Control Samples

The QAPP should describe what batch quality control (QC) samples – such as method blank (MB), laboratory control sample (LCS), laboratory control sample duplicate (LCSD), field duplicate (FD), matrix spike (MS), and matrix spike duplicate (MSD) – are prepared for each media type. In some cases, depending on the project, additional QC samples may be required. For samples with high concentrations of PFAS, an FD may be warranted. The QAPP should also reference the laboratory SOP.

4.6.2 Field Quality Control Samples

Field QC samples can be used to evaluate the field equipment and supplies as well as assess the possibility of cross-contamination during sampling, transport, and storage of samples. For samples such as equipment rinse blanks (EB), field blanks (FB), and trip blanks (TB) the following is required:

- EB should be collected by passing laboratory verified PFAS-free water over or through decontaminated field sampling equipment before the collection of samples to assess the adequacy of the decontamination process and/or to evaluate potential contamination from the equipment used during sampling. The recommended frequency should be in the QAPP.

- FB are prepared in the laboratory by placing an aliquot of PFAS-free water reagent water in a sample container and treating it as a sample in all respects, including shipment to the sampling site, exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the FB is to determine if method analytes or other interferences are present in the field environment. The recommended frequency should be in the QAPP.

- TB are a bottle of PFAS-free water that should be prepared in the laboratory, should then travel from the laboratory to the site, and then get transported back to the laboratory without having been exposed to any sampling procedures. Typically, a TB is used for volatile compounds, but it may be recommended for PFAS sampling to assess cross-contamination introduced from the laboratory and during shipping procedures. The recommended frequency should be in the QAPP

5. References

Agency for Toxic Substances and Disease Registry (ATSDR). “Draft Toxicological Profile for Perfluoroalkyls.” *United States Department of Health and Human Services. (*2015). *ATSDR.* Web. 19 June 2018. https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf

ASTM International. “ASTM D7979 - Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS).” ASTM International. Web. 19 June 2018. https://www.astm.org/Standards/D7979.htm

ASTM International. “ASTM D7968 - Standard Test Method for Determination of Polyfluorinated Compounds in Soil by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS).” ASTM International. Web. 19 June 2018. https://www.astm.org/Standards/D7968.htm

Borg, Daniel and Ivarsson, Jenny. “Analysis of PFASs and TOF in Products.” *Nordic Co-Operation* 543 (2017): 1-47. *Nordic Council of Ministers*. Web. 19 June 2018. https://norden.diva-portal.org/smash/get/diva2:1118439/FULLTEXT01.pdf

Buck, Robert C et al. “Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins.” *Integrated Environmental Assessment and Management* 7(4) (2011): 513–541. *PMC*. Web. 11 June 2018. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214619/

Danish Environmental Protection Agency (DEPA). “Polyfluoroalkyl substances (PFASs) in textiles for children.” DEPA 137 (2015). *ResearchGate*. Web. 19 June 2018. https://www.researchgate.net/publication/299228813_Alternatives_to_perfluoroalkyl_and_polyfluoroalkyl_substances_PFAS_in_textiles_LOUS_Survey_of_chemical_substances_in_consumer_products

Fujii, Y. et al. “Occurrence of perfluorinated carboxylic acids (PFCAs) in personal care products and compounding agents.” *Chemosphere* 93(3) (2013):538-544. *NCBI.* Web. 19 June 2018. https://www.ncbi.nlm.nih.gov/pubmed/23932147

Interstate Regulatory Technology Council (ITRC). “Regulations, Guidance, and Advisories for Per- and Polyfluoroalkyl Substances (PFAS).” (2017). *ITRC Web.* Web. 19 June 2018. https://pfas-1.itrcweb.org/wp-content/uploads/2018/01/pfas_fact_sheet_regulations__1_4_18.pdf

International Organization of Standardization (ISO). “ISO 25101:2009 Water quality -- Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) -- Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry.” (2009). *Iso*. Web. 19 June 2018. https://www.iso.org/standard/42742.html

KEMI. “Occurrence and use of highly fluorinated substances and alternatives” *Swedish Chemicals Agency.* (2015). *KEMI*. Web. 19 June 2018. https://www.kemi.se/en/global/rapporter/2015/report-7-15-occurrence-and-use-of-highly-fluorinated-substances-and-alternatives.pdf

Organization for Economic Cooperation and Development (OECD)/UNEP Global PFC Group, “Technical Guidance Document on the Use of Socio-Economic Analysis in Chemical Risk Management Decision Making.” *Risk Management Series* (14) (2002). OECD. Web. 19 June 2018. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/JM/MONO(2002)10&docLanguage=En

Organization for Economic Cooperation and Development (OECD) (2013), OECD/UNEP Global PFC Group, Synthesis paper on per- and polyfluorinated chemicals (PFCs), Environment, Health and Safety, Environment Directorate, OECD. Web. 19 June 2018. https://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf

Rosenmai, A.K. et al. “Fluorochemicals used in food packaging inhibit male sex hormone synthesis.” *Toxicology and Applied Pharmacology* 266(1) (2013): 132-142. *Elsevier*. Web. 19 June 2018. https://www.sciencedirect.com/science/article/pii/S0041008X12004644

Schaider, Laurel A. et al. “Fluorinated Compounds in U.S. Fast Food Packaging.” *Environmental Science and Technology Letters* 4(3) (2017): 105-111. *ACS*. Web. 19 June 2018. https://pubs.acs.org/doi/abs/10.1021/acs.estlett.6b00435

Trier, Xenia et al. “Polyfluorinated surfactants (PFS) in paper and board coatings for food packaging.” *Environmental Science and Pollution Research.* 18(7) (2011): 1108-1120. *SpringerLink*. Web. 19 June 2018. https://link.springer.com/article/10.1007/s11356-010-0439-3

United States Environmental Protection Agency (USEPA). SHOEMAKER, J. A., P. GRIMMETT, AND B. BOUTIN. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). (USEPA Method 537 Revision 1.1) USEPA, Washington, DC, 2008. https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=525468

Wang, Zhanyun et al. “A Never-Ending Story of Per- and Polyfluoroalkyl Substances (PFASs)?” *Environmental Science & Technology* 51(5) (2017): 2508-2518. *ACES Publications*. Web. 11 June 2018. https://pubs.acs.org/doi/pdf/10.1021/acs.est.6b04806

6. Trademarks

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Bionic Finish® is a registered trademark of the Rudolf Group.
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Decon 90® is a trademark of Decon Laboratories Limited.
Gatorade® is a registered trademark of Stokely-Van Camp, Inc.
Gore-Tex® is a registered trademark of W. L. Gore & Associates, Inc.
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Unidyne™ is a registered trademark of Daikin Industries, Ltd.
Ziploc® is a registered trademark of S. C. Johnson & Son.

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Michigan Department of Environmental Quality

MDEQ PFAS Sampling Quick Reference Field Guide[1]

All Items Used During Sampling Event

● Prohibited
• Items or materials that contain fluoropolymers such as o Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® o Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® o Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ® o Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® o Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP • Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲Needs Screening[2]
• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE) • Low-density polyethylene (LDPE) tubing • Polypropylene • Silicone • Stainless-steel • Any items used to secure sampling bottles made from: o Natural rubber o Nylon (cable ties) o Uncoated metal springs o Polyethylene	• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free o Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: o HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: o Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: o Fabric softeners o Fabric protectors, including UV protection o Insect resistant chemicals o Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: o Polyurethane o Polyvinyl chloride (PVC) o Wax coated fabrics o Rubber / Neoprene o Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: o Bottled water o Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8˚F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

●- Prohibited ■- Allowable ▲- Needs Screening

BORING NUMBER A3RB-SB0061

AECOM

TOTAL DEPTH 60 FT BGS

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER KSC
SITE NAME
DATE STARTED 03/08/2023 **COMPLETED** 03/08/2023
SURVEYING BY
DRILLING CONTRACTOR EDS
ON **Ground Elevation** N/A
DRILLING EQUIPMENT Geoprobe 7822DT
EASTING N/A **NORTHING** N/A
DRILLING METHOD Direct push
HOLE DIAMETER in
LOGGED BY Brittany Follett **CHECKED BY** N/A
CASING TYPE N/A

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0			SP	0.00	Poorly graded sand (SP), medium, subangular [NATIVE] - 2.5Y 7/1 (light gray), dry - no odor, no staining - non-cohesive, very loose
5			SP	0.50	Poorly graded sand (SP), fine to medium, 5-15% roots, Organic throughout [NATIVE] - 2.5Y 2.5/1 (black), moist - no odor, trace black staining - non-cohesive, very loose
10			SP	7.50	Poorly graded sand (SP), fine to medium, subangular, <10% subangular, medium to coarse gravel, 5% shell fragments [NATIVE] - 10YR 4/6 (dark yellowish brown), wet - no odor, no staining - non-cohesive, very loose
15			GP	10.00	Poorly graded gravel with sand (GP), fine to medium, subangular, 25-35% fine sand, 30% shell hash [NATIVE] - 2.5Y 7/1 (light gray), wet - no odor, no staining - non-cohesive, very loose
20			SM	20.00	Silty sand (SM), fine, poorly graded, 25-35% silt [NATIVE] - 10YR 5/1 (gray), wet - no odor, no staining - non-cohesive, loose
25			SC	28.00	Clayey sand (SC), fine, poorly graded, subangular, 25-35% clay, <5% shell fragments [NATIVE] - 10YR 5/1 (gray), wet - no odor, no staining - cohesive, medium stiff
30	DP	100	GP	30.00	Poorly graded gravel with sand (GP), medium to coarse, subangular, 35-45% subangular, fine sand, 40% shell hash [NATIVE] - 10YR 7/1 (light gray), wet - no odor, no staining - non-cohesive, very loose
35					
40			SP	38.00	Poorly graded sand (SP), fine, subangular, <10% subangular, medium to coarse gravel, <5% shell fragments [NATIVE] - 10YR 7/1 (light gray), moist - no odor, no staining - cohesive, soft
45					
50			SM	49.00	Silty sand (SM), very fine, poorly graded, subangular, 15-25% silt, <10% subangular, medium to coarse gravel, <5% shell fragments [NATIVE] - 10YR 6/1 (gray), wet - no odor, no staining - non-cohesive, loose
55			SM	50.00	
60			CL	55.00	Silty sand with gravel (SM), fine, poorly graded, subangular, 15-25% subangular, medium to coarse gravel, 10-20% silt [NATIVE] - 10YR 6/1 (gray), wet - no odor, no staining - non-cohesive, very loose
					Sandy lean clay (CL), 25-35% subangular, fine sand, 5-15% medium to coarse gravel, 10% shell hash [NATIVE] - 10GY 7/1 (light greenish gray), wet - no odor, no staining

(Continued Next Page)

BORING NUMBER A3RB-SB0061

AECOM

TOTAL DEPTH 60 FT BGS

CLIENT NASA **PROJECT NAME** Kennedy Space Center

PROJECT NUMBER KSC **SITE NAME**

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
					- cohesive, medium stiff
					Bottom of borehole at 60 feet.

APPENDIX C
PHOTOGRAPHIC LOG

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AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 1	
Date: 01/19/22	
Location: South Repeater Building	
Description: A3RB-DPT0008	

Photo No. 2	
Date: 01/20/22	
Location: South Repeater Building	
Description: A3RB-DPT0009 and A3RB-DPT0010	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 3

Date: 01/24/22

Location: South Repeater Building

Description: A3RB-DPT0011

Photo No. 4

Date: 01/20/22

Location: South Repeater Building

Description: A3RB-DPT0012

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 5

Date:	03/29/22
Location: South Repeater Building	
Description: A3RB-DPT0013	

Photo No. 6

Date:	03/29/22
Location: South Repeater Building	
Description: A3RB-DPT0014	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 7	
Date: 03/29/22	
Location: South Repeater Building	
Description: A3RB-DPT0015	

Photo No. 8	
Date: 03/30/22	
Location: South Repeater Building	
Description: A3RB-DPT0016	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 9

Date:	06/13/22

Location: South Repeater Building

Description: A3RB-DPT0017

Photo No. 10

Date:	06/10/22

Location: South Repeater Building

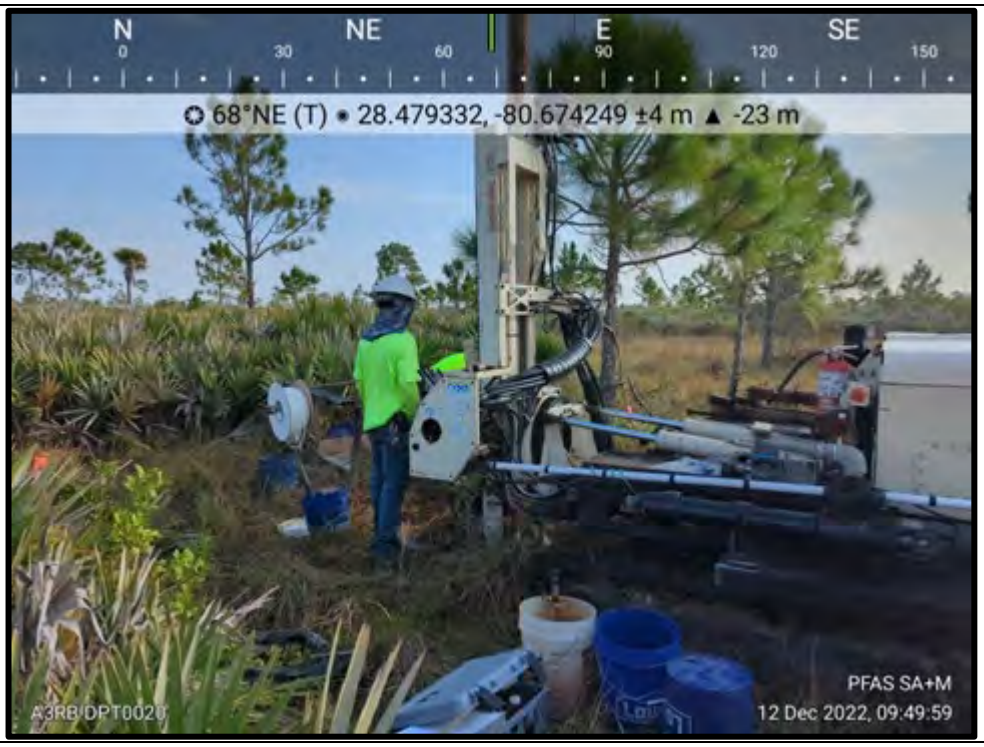
Description: A3RB-DPT0018

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 11	
Date: 06/10/22	
Location: South Repeater Building	
Description: A3RB-DPT0019	

Photo No. 12	
Date: 12/12/22	
Location: South Repeater Bulding	
Description: A3RB-DPT0020	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 13

Date: 12/12/22

Location: South Repeater Building

Description: A3RB-DPT0021

Photo No. 14

Date: 12/12/22

Location: South Repeater Building

Description: A3RB-DPT0022

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 15	
Date: 12/13/22	
Location: South Repeater Building	
Description: A3RB-DPT0023	

Photo No. 16	
Date: 12/14/22	
Location: South Repeater Building	
Description: A3RB-DPT0024	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 17

Date: 12/14/22

Location: South Repeater Building

Description: A3RB-DPT0025

Photo No. 18

Date: 12/15/22

Location: South Repeater Building

Description: A3RB-DPT0026

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 19

Date: 12/15/22

Location: South Repeater Building

Description: A3RB-DPT0027

Photo No. 20

Date: 12/20/22

Location: South Repeater Building

Description: A3RB-DPT0029

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 21

Date: 05/24/22

Location: South Repeater Building

Description: A3RB-MW0003

Photo No. 22

Date: 05/24/22

Location: South Repeater Building

Description: A3RB-MW0004

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 23	
Date: 05/24/22	
Location: South Repeater Building	
Description: A3RB-MW0005 and A3RB-MW0006	

Photo No. 24	
Date: 05/23/22	
Location: South Repeater Building	
Description: A3RB-MW0007	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 25

Date: 05/23/22

Location: South Repeater Building

Description: A3RB-MW0008

Photo No. 26

Date: 05/23/22

Location: South Repeater Building

Description: A3RB-MW0009

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 27	
Date: 05/23/22	
Location: South Repeater Building	
Description: A3RB-MW0010	

Photo No. 28	
Date: 03/29/23	
Location: South Repeater Building	
Description: A3RB-MW0011 through A3RB-MW0014	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 29	
Date: 03/30/23	
Location: South Repeater Building	
Description: A3RB-MW0015 and A3RB-MW0016	

Photo No. 30	
Date: 04/04/23	
Location: South Repeater Building	
Description: A3RB-MW0017 through A3RB-MW0020	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 31

Date: 03/31/23

Location: South Repeater Building

Description: A3RB-MW0021

Photo No. 32

Date: 04/05/23

Location: South Repeater Building

Description: A3RB-MW0022

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 33

Date:	04/05/23

Location: South Repeater Building

Description: A3RB-MW0023

Photo No. 34

Date:	04/05/23

Location: South Repeater Building

Description: A3RB-MW0024

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 35

Date: 04/05/23

Location: South Repeater Building

Description: A3RB-MW0025

Photo No. 36

Date: 04/05/23

Location: South Repeater Building

Description: A3RB-MW0026

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 37

Date: 04/05/23

Location: South Repeater Building

Description: A3RB-MW0027

Photo No. 38

Date: 01/14/22

Location: South Repeater Building

Description: A3RB-SB0047

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 39	
Date: 06/13/22	
Location: South Repeater Building	
Description: A3RB-SB0048	

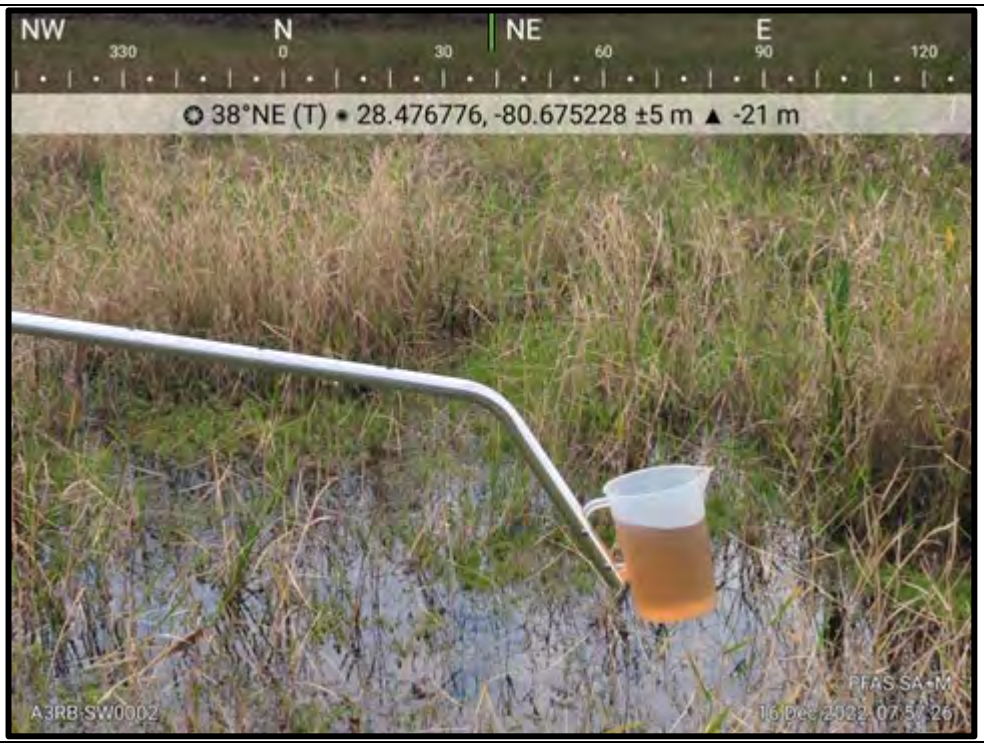
Photo No. 40	
Date: 03/08/23	
Location: South Repeater Building	
Description: A3RB-SB0061	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 41	
Date: 12/16/22	
Location: South Repeater Building	
Description: A3RB-SW0001	

Photo No. 42	
Date: 12/16/22	
Location: South Repeater Building	
Description: A3RB-SW0002	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 43

Date: 12/16/22

Location: South Repeater Building

Description: A3RB-SW0003

Photo No. 44

Date: 12/16/22

Location: South Repeater Building

Description: A3RB-SW0004

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 45

Date:	12/16/22
Location: South Repeater Building	
Description: A3RB-SW0005	

Photo No. 46

Date:	12/16/22
Location: South Repeater Building	
Description: A3RB-SW0006	

AECOM

FIELD PHOTO LOG

Project Name: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: South Repeater Building	**Site Location:** Kennedy Space Center, FL

Photo No. 47	
Date: 12/16/22	
Location: South Repeater Building	
Description: A3RB-SW0007	

Photo No. 48	
Date: 12/16/22	
Location: South Repeater Building	
Description: A3RB-SW0008	

APPENDIX D
LABORATORY ANALYTICAL REPORTS

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The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FA92376R

Sampling Date: 01/14/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: 41

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

March 2, 2022

Ms. Teresa Amentt Jennings
AECOM
5438 Wade Park Blvd
Raleigh, NC 27607

RE: SGS North America Inc. - Orlando job FA92376R Reissue

Dear Ms. Amentt Jennings,

The final report for job number FA92376R has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The sample ID on -3 has been revised per your request.

Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA92376R

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA92376-1R	01/14/22	12:06	CM	01/14/22	SO	Soil	A3RB-SB0047-021.0-20220114
FA92376-2R	01/14/22	12:12	CM	01/14/22	AQ	Field Blank Soil	A3RB-FB-20220114-01
FA92376-3R	01/14/22	14:40	CM	01/14/22	SO	Soil	A3RB-SB0047-058.0-20220114

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA92376R

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 1/31/2022 5:12:32 PM

On 01/14/2022, 2 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 0.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92376R was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: SO **Batch ID:** OP89421

Sample(s) FA92343-1RMS, FA92343-1RMSD were used as the QC samples indicated.

OP89421-BS for d3-MeFOSA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92376R
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/14/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FA92376-1R **A3RB-SB0047-021.0-20220114**

No hits reported in this sample.

FA92376-2R **A3RB-FB-20220114-01**

No hits reported in this sample.

FA92376-3R **A3RB-SB0047-058.0-20220114**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-SB0047-021.0-20220114		
Lab Sample ID:	FA92376-1R	**Date Sampled:**	01/14/22
Matrix:	SO - Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	70.4
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53306.D	1	01/29/22 20:27	MV	01/26/22 08:45	OP89421	S3Q740
Run #2							

	Initial Weight	Final Volume
Run #1	1.99 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00071 U	0.0014	0.00071	0.00054	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
375-95-1	Perfluorononanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00071 U	0.0014	0.00071	0.00038	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
31506-32-8	MeFOSA	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
2991-50-6	EtFOSAA	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00071 U	0.0014	0.00071	0.00036	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0047-021.0-20220114		
Lab Sample ID:	FA92376-1R	**Date Sampled:**	01/14/22
Matrix:	SO - Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	70.4
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
919005-14-4	ADONA	0.00071 U	0.0014	0.00071	0.00036	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00071 U	0.0014	0.00071	0.00041	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00071 U	0.0014	0.00071	0.00037	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	95%		50-150%
	13C5-PFPeA	95%		50-150%
	13C5-PFHxA	98%		50-150%
	13C4-PFHpA	102%		50-150%
	13C8-PFOA	106%		50-150%
	13C9-PFNA	108%		50-150%
	13C6-PFDA	111%		50-150%
	13C7-PFUnDA	108%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	109%		50-150%
	13C3-PFBS	98%		50-150%
	13C3-PFHxS	105%		50-150%
	13C8-PFOS	104%		50-150%
	13C8-FOSA	89%		50-150%
	d3-MeFOSA	53%		50-150%
	d3-MeFOSAA	126%		50-150%
	d5-EtFOSAA	125%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	99%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	105%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220114-01		
Lab Sample ID:	FA92376-2R	**Date Sampled:**	01/14/22
Matrix:	AQ - Field Blank Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53259.D	1	01/29/22 07:20	MV	01/26/22 08:00	OP89416	S3Q740
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220114-01		
Lab Sample ID:	FA92376-2R	**Date Sampled:**	01/14/22
Matrix:	AQ - Field Blank Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	125%		50-150%
	13C5-PFPeA	122%		50-150%
	13C5-PFHxA	124%		50-150%
	13C4-PFHpA	124%		50-150%
	13C8-PFOA	125%		50-150%
	13C9-PFNA	120%		50-150%
	13C6-PFDA	118%		50-150%
	13C7-PFUnDA	117%		50-150%
	13C2-PFDoDA	117%		50-150%
	13C2-PFTeDA	116%		50-150%
	13C3-PFBS	122%		50-150%
	13C3-PFHxS	120%		50-150%
	13C8-PFOS	113%		50-150%
	13C8-FOSA	116%		50-150%
	d3-MeFOSA	105%		50-150%
	d3-MeFOSAA	127%		50-150%
	d5-EtFOSAA	128%		50-150%
	13C2-4:2FTS	115%		50-150%
	13C2-6:2FTS	115%		50-150%
	13C2-8:2FTS	109%		50-150%
	13C3-HFPO-DA	122%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0047-058.0-20220114		
Lab Sample ID:	FA92376-3R	**Date Sampled:**	01/14/22
Matrix:	SO - Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	79.3
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53307.D	1	01/29/22 20:44	MV	01/26/22 08:45	OP89421	S3Q740
Run #2							

	Initial Weight	Final Volume
Run #1	2.07 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00061 U	0.0012	0.00061	0.00046	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
375-95-1	Perfluorononanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00061 U	0.0012	0.00061	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
31506-32-8	MeFOSA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2991-50-6	EtFOSAA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0047-058.0-20220114		
Lab Sample ID:	FA92376-3R	**Date Sampled:**	01/14/22
Matrix:	SO - Soil	**Date Received:**	01/14/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	79.3
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
919005-14-4	ADONA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00061 U	0.0012	0.00061	0.00035	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00061 U	0.0012	0.00061	0.00032	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%		50-150%
	13C5-PFPeA	98%		50-150%
	13C5-PFHxA	97%		50-150%
	13C4-PFHpA	98%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	100%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	100%		50-150%
	13C2-PFTeDA	102%		50-150%
	13C3-PFBS	98%		50-150%
	13C3-PFHxS	98%		50-150%
	13C8-PFOS	99%		50-150%
	13C8-FOSA	63%		50-150%
	d3-MeFOSA	52%		50-150%
	d3-MeFOSAA	119%		50-150%
	d5-EtFOSAA	119%		50-150%
	13C2-4:2FTS	91%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	101%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	SO	SGS is not certified for this parameter.

~~FA92376~~ FA92376

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 1 of 1	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. TBD	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Joyal**		Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # ~~Brittany Foley/ 419.302.0236~~ CHRIS MARSHALL 407 456 0082			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day		Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2 & FOC

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	4 DEG FOC	Comments
	A3RB-SC0003-000.1-202112	**A3RB-SC0003**	**202112**		**SO**	**N**	**G**	**2**	**1**	**1**	
1	A3RB-SB0047-0021-20220114	A3RB-SB0047	20220114	12:06	SO	N	G	2	1	1	
2	A3RB-FB-20220114-01	A3RB-FB	20220114	12:12	WQ	N	G	2	2		
3	A3RB-SB0048-0058-20220114	A3RB-SB0048	20220114	14:40	SO	N	G	2	1	1	

INITIAL ASSESSMENT SM

LABEL VERIFICATION CM

0.6 CLR

***Field* Comments:**
Report only per QAPP WS #15-2 & Fractional Organic Carbon (FOC)

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		1/14/22	1630		1/14/22	16:30
2		1/14/22	17:32		1/14/22	17:32
3						

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mL's, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mL's, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FA92376R: Chain of Custody
Page 1 of 4

SGS Sample Receipt Summary

Job Number: FA92376 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 1/14/2022 5:32:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.6);

Cooler Temps (Corrected) °C: Cooler 1: (0.8);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 1/14/2022 5:32:00 PM Reviewer: _____ Date: _____

Job Change Order: FA92376

Requested Date:	3/2/2022	**Received Date:**	1/14/2022
Account Name:	AECOM, Inc	**Due Date:**	1/28/2022
Project Description:	NASA KSC, PFAS SA & Mitigation	**Deliverable:**	COMMBN
CSR:	AC	**TAT (Days):**	1

==========

Sample #: FA92376-3

Dept:

TAT: 1

A3RB-SB0047-058.0-20220114

Change:
Please change the sample ID to A3RB-SB0047-0058.0-20220114

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FA92376R: Chain of Custody
Page 3 of 4

Above Changes Per: Teresa Amentt Jennings **Date/Time:** 3/2/2022 2:58:48 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

Job Change Order: FA92376

Requested Date:	3/2/2022	**Received Date:**	1/14/2022
Account Name:	AECOM, Inc	**Due Date:**	1/28/2022
Project Description:	NASA KSC, PFAS SA & Mitigation	**Deliverable:**	COMMBN
CSR:	AC	**TAT (Days):**	1

==========

Sample #: FA92376-3

Dept:

TAT: 1

A3RB-SB0047-058.0-20220114

Change:
Please change the sample ID to A3RB-SB0047-058.0-20220114

==========

FA92376R: Chain of Custody
Page 4 of 4

Above Changes Per: Teresa Amnett Jennings **Date/Time:** 3/2/2022 3:33:07 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92376R
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/14/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89416	EPA 537M QSM5.3 B-15						
OP89416-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP89416-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	87	%	72-129
OP89416-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	86	%	72-129
OP89416-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	87	%	72-130
OP89416-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP89416-BS	375-95-1	Perfluorononanoic acid	BSP	REC	88	%	69-130
OP89416-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	86	%	71-129
OP89416-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	86	%	69-133
OP89416-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	87	%	72-134
OP89416-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	88	%	65-144
OP89416-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP89416-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	87	%	73-130
OP89416-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP89416-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	85	%	68-131
OP89416-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	89	%	69-134
OP89416-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	88	%	65-140
OP89416-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	88	%	69-127
OP89416-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	86	%	53-142
OP89416-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP89416-BS	31506-32-8	MeFOSA	BSP	REC	97	%	68-141
OP89416-BS	2355-31-9	MeFOSAA	BSP	REC	87	%	65-136
OP89416-BS	2991-50-6	EtFOSAA	BSP	REC	89	%	61-135
OP89416-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	91	%	63-143
OP89416-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	90	%	64-140
OP89416-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	93	%	67-138
OP89421	EPA 537M QSM5.3 B-15						
OP89421-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	71-135
OP89421-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	99	%	69-132
OP89421-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	99	%	70-132
OP89421-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	98	%	71-131
OP89421-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	101	%	69-133
OP89421-BS	375-95-1	Perfluorononanoic acid	BSP	REC	102	%	72-129
OP89421-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	97	%	69-133
OP89421-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	64-136
OP89421-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	100	%	69-135
OP89421-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	98	%	66-139
OP89421-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	98	%	69-133
OP89421-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	100	%	72-128
OP89421-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	101	%	73-123
OP89421-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	100	%	67-130

* Sample used for QC is not from job FA92376R

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92376R
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/14/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89421-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	100	%	70-132
OP89421-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	98	%	67-136
OP89421-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-125
OP89421-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	100	%	59-134
OP89421-BS	754-91-6	PFOSA	BSP	REC	99	%	67-137
OP89421-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	63-144
OP89421-BS	2991-50-6	EtFOSAA	BSP	REC	101	%	61-139
OP89421-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	104	%	62-145
OP89421-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP89421-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	105	%	65-137
OP89421-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	98	%	71-135
OP89421-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	98	%	69-132
OP89421-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	98	%	70-132
OP89421-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	96	%	71-131
OP89421-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	97	%	69-133
OP89421-MS*	375-95-1	Perfluorononanoic acid	MS	REC	100	%	72-129
OP89421-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	98	%	69-133
OP89421-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	95	%	64-136
OP89421-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	99	%	69-135
OP89421-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	96	%	66-139
OP89421-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	97	%	69-133
OP89421-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	98	%	72-128
OP89421-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	99	%	73-123
OP89421-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	67-130
OP89421-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	101	%	70-132
OP89421-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	97	%	67-136
OP89421-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	103	%	69-125
OP89421-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	95	%	59-134
OP89421-MS*	754-91-6	PFOSA	MS	REC	100	%	67-137
OP89421-MS*	2355-31-9	MeFOSAA	MS	REC	98	%	63-144
OP89421-MS*	2991-50-6	EtFOSAA	MS	REC	99	%	61-139
OP89421-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	102	%	62-145
OP89421-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	103	%	64-140
OP89421-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	103	%	65-137
OP89421-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	103	%	71-135
OP89421-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	6	%	30
OP89421-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	102	%	69-132
OP89421-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	101	%	70-132
OP89421-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	101	%	71-131
OP89421-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	6	%	30
OP89421-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	103	%	69-133
OP89421-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	7	%	30
OP89421-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	105	%	72-129

* Sample used for QC is not from job FA92376R

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92376R
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/14/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89421-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	101	%	69-133
OP89421-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	101	%	64-136
OP89421-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	6	%	30
OP89421-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	103	%	69-135
OP89421-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	99	%	66-139
OP89421-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP89421-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	101	%	69-133
OP89421-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	5	%	30
OP89421-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	104	%	72-128
OP89421-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	7	%	30
OP89421-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	104	%	73-123
OP89421-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	6	%	30
OP89421-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	105	%	67-130
OP89421-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP89421-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	105	%	70-132
OP89421-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	5	%	30
OP89421-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	103	%	67-136
OP89421-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	7	%	30
OP89421-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	107	%	69-125
OP89421-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	4	%	30
OP89421-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	102	%	59-134
OP89421-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	9	%	30
OP89421-MSD*	754-91-6	PFOSA	MSD	REC	102	%	67-137
OP89421-MSD*	754-91-6	PFOSA	MSD	RPD	3	%	30
OP89421-MSD*	31506-32-8	MeFOSA	MSD	RPD	6	%	30
OP89421-MSD*	2355-31-9	MeFOSAA	MSD	REC	103	%	63-144
OP89421-MSD*	2355-31-9	MeFOSAA	MSD	RPD	6	%	30
OP89421-MSD*	2991-50-6	EtFOSAA	MSD	REC	102	%	61-139
OP89421-MSD*	2991-50-6	EtFOSAA	MSD	RPD	5	%	30
OP89421-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	107	%	62-145
OP89421-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP89421-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	105	%	64-140
OP89421-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP89421-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	108	%	65-137
OP89421-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30

* Sample used for QC is not from job FA92376R

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53206.D	1	01/28/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53206.D	1	01/28/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	112%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	113%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53206.D	1	01/28/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53206.D	1	01/28/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	112%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	113%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53263.D	1	01/29/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	105%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53263.D	1	01/29/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	110%	50-150%
	d3-MeFOSAA	120%	50-150%
	d5-EtFOSAA	120%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	110%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53263.D	1	01/29/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	105%	50-150%

Instrument Blank

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q740-IBLK	3Q53263.D	1	01/29/22	MV	n/a	n/a	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	110%	50-150%
	d3-MeFOSAA	120%	50-150%
	d5-EtFOSAA	120%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	110%	50-150%

Method Blank Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89416-MB	3Q53244.D	1	01/29/22	MV	01/26/22	OP89416	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	129%	50-150%
	13C5-PFPeA	127%	50-150%
	13C5-PFHxA	127%	50-150%

Method Blank Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89416-MB	3Q53244.D	1	01/29/22	MV	01/26/22	OP89416	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	129%	50-150%
	13C8-PFOA	131%	50-150%
	13C9-PFNA	130%	50-150%
	13C6-PFDA	132%	50-150%
	13C7-PFUnDA	127%	50-150%
	13C2-PFDoDA	121%	50-150%
	13C2-PFTeDA	121%	50-150%
	13C3-PFBS	126%	50-150%
	13C3-PFHxS	127%	50-150%
	13C8-PFOS	129%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSA	87%	50-150%
	d3-MeFOSAA	146%	50-150%
	d5-EtFOSAA	139%	50-150%
	13C2-4:2FTS	119%	50-150%
	13C2-6:2FTS	123%	50-150%
	13C2-8:2FTS	122%	50-150%
	13C3-HFPO-DA	125%	50-150%

Method Blank Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-MB	3Q53302.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.99	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	0.99	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	0.99	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	0.99	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	0.99	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	0.99	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	0.99	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	0.99	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	0.99	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	0.99	0.26	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	0.99	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	0.99	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.99	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	0.99	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.99	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.99	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	0.99	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	0.99	0.25	ug/kg	
754-91-6	PFOSA	ND	0.99	0.25	ug/kg	
31506-32-8	MeFOSA	ND	0.99	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	0.99	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	0.99	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.99	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.99	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.99	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	0.99	0.25	ug/kg	
919005-14-4	ADONA	ND	0.99	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.99	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.99	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	110%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	109%	50-150%

Method Blank Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-MB	3Q53302.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	110%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	111%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	108%	50-150%
	13C8-FOSA	69%	50-150%
	d3-MeFOSA	61%	50-150%
	d3-MeFOSAA	121%	50-150%
	d5-EtFOSAA	121%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	112%	50-150%

Blank Spike Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89416-BS	3Q53243.D	1	01/29/22	MV	01/26/22	OP89416	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.138	86	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.139	87	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.138	86	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.139	87	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.138	86	71-133
375-95-1	Perfluorononanoic acid	0.16	0.140	88	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.137	86	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.137	86	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.139	87	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.141	88	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.141	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.139	87	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.141	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.136	85	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.143	89	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.140	88	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.141	88	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.137	86	53-142
754-91-6	PFOSA	0.16	0.141	88	67-137
31506-32-8	MeFOSA	0.16	0.155	97	68-141
2355-31-9	MeFOSAA	0.16	0.139	87	65-136
2991-50-6	EtFOSAA	0.16	0.142	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.146	91	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.144	90	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.149	93	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.145	91	60-140
919005-14-4	ADONA	0.16	0.134	84	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.132	83	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.137	86	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	116%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	114%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89416-BS	3Q53243.D	1	01/29/22	MV	01/26/22	OP89416	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-2R

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	115%	50-150%
	13C8-PFOA	115%	50-150%
	13C9-PFNA	114%	50-150%
	13C6-PFDA	113%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	117%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSA	86%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	112%	50-150%
	13C2-6:2FTS	114%	50-150%
	13C2-8:2FTS	109%	50-150%
	13C3-HFPO-DA	112%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-BS	3Q53301.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	9.9	9.9	100	71-135
2706-90-3	Perfluoropentanoic acid	9.9	9.8	99	69-132
307-24-4	Perfluorohexanoic acid	9.9	9.8	99	70-132
375-85-9	Perfluoroheptanoic acid	9.9	9.7	98	71-131
335-67-1	Perfluorooctanoic acid	9.9	10	101	69-133
375-95-1	Perfluorononanoic acid	9.9	10.1	102	72-129
335-76-2	Perfluorodecanoic acid	9.9	9.6	97	69-133
2058-94-8	Perfluoroundecanoic acid	9.9	9.6	97	64-136
307-55-1	Perfluorododecanoic acid	9.9	9.9	100	69-135
72629-94-8	Perfluorotridecanoic acid	9.9	9.7	98	66-139
376-06-7	Perfluorotetradecanoic acid	9.9	9.7	98	69-133
375-73-5	Perfluorobutanesulfonic acid	9.9	9.9	100	72-128
2706-91-4	Perfluoropentanesulfonic acid	9.9	10	101	73-123
355-46-4	Perfluorohexanesulfonic acid	9.9	9.9	100	67-130
375-92-8	Perfluoroheptanesulfonic acid	9.9	9.9	100	70-132
1763-23-1	Perfluorooctanesulfonic acid	9.9	9.7	98	67-136
68259-12-1	Perfluorononanesulfonic acid	9.9	10.1	102	69-125
335-77-3	Perfluorodecanesulfonic acid	9.9	9.9	100	59-134
754-91-6	PFOSA	9.9	9.8	99	67-137
31506-32-8	MeFOSA	9.9	10.2	103	60-140
2355-31-9	MeFOSAA	9.9	9.8	99	63-144
2991-50-6	EtFOSAA	9.9	10.0	101	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	9.9	10.3	104	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	9.9	10.2	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	9.9	10.4	105	65-137
13252-13-6	HFPO-DA (GenX)	9.9	9.8	99	60-140
919005-14-4	ADONA	9.9	9.8	99	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	9.9	8.8	89	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	9.9	9.8	99	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	97%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-BS	3Q53301.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	52%	50-150%
	d3-MeFOSA	41%* [a]	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	99%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-MS	3Q53304.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740
OP89421-MSD	3Q53305.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740
FA92343-1R	3Q53303.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	Compound	FA92343-1R ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.3 U		12.7	12.4	98	12.8	13.2	103	6	71-135/30
2706-90-3	Perfluoropentanoic acid	1.3 U		12.7	12.4	98	12.8	13.1	102	5	69-132/30
307-24-4	Perfluorohexanoic acid	1.3 U		12.7	12.4	98	12.8	13.0	101	5	70-132/30
375-85-9	Perfluoroheptanoic acid	1.3 U		12.7	12.2	96	12.8	12.9	101	6	71-131/30
335-67-1	Perfluorooctanoic acid	1.3 U		12.7	12.3	97	12.8	13.2	103	7	69-133/30
375-95-1	Perfluorononanoic acid	1.3 U		12.7	12.7	100	12.8	13.4	105	5	72-129/30
335-76-2	Perfluorodecanoic acid	1.3 U		12.7	12.4	98	12.8	13.0	101	5	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.3 U		12.7	12.1	95	12.8	12.9	101	6	64-136/30
307-55-1	Perfluorododecanoic acid	1.3 U		12.7	12.5	99	12.8	13.2	103	5	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.3 U		12.7	12.2	96	12.8	12.7	99	4	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.3 U		12.7	12.3	97	12.8	12.9	101	5	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.3 U		12.7	12.4	98	12.8	13.3	104	7	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.3 U		12.7	12.5	99	12.8	13.3	104	6	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.3 U		12.7	12.2	96	12.8	13.5	105	10	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.3 U		12.7	12.8	101	12.8	13.5	105	5	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.3 U		12.7	12.3	97	12.8	13.2	103	7	67-136/30
68259-12-1	Perfluorononanesulfonic acid	1.3 U		12.7	13.1	103	12.8	13.7	107	4	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.3 U		12.7	12.0	95	12.8	13.1	102	9	59-134/30
754-91-6	PFOSA	1.3 U		12.7	12.7	100	12.8	13.1	102	3	67-137/30
31506-32-8	MeFOSA	1.3 U		12.7	12.8	101	12.8	13.6	106	6	60-140/30
2355-31-9	MeFOSAA	1.3 U		12.7	12.4	98	12.8	13.2	103	6	63-144/30
2991-50-6	EtFOSAA	1.3 U		12.7	12.5	99	12.8	13.1	102	5	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.3 U		12.7	12.9	102	12.8	13.7	107	6	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.3 U		12.7	13.1	103	12.8	13.4	105	2	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.3 U		12.7	13.1	103	12.8	13.8	108	5	65-137/30
13252-13-6	HFPO-DA (GenX)	1.3 U		12.7	12.2	96	12.8	13.0	101	6	60-140/30
919005-14-4	ADONA	1.3 U		12.7	12.1	95	12.8	12.9	101	6	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.3 U		12.7	11.3	89	12.8	11.8	92	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.3 U		12.7	12.3	97	12.8	12.8	100	4	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA92343-1R Limits
	13C4-PFBA	100%	77%	82% 50-150%
	13C5-PFPeA	99%	76%	81% 50-150%
	13C5-PFHxA	98%	77%	81% 50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92376R
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89421-MS	3Q53304.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740
OP89421-MSD	3Q53305.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740
FA92343-1R	3Q53303.D	1	01/29/22	MV	01/26/22	OP89421	S3Q740

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92376-1R, FA92376-3R

CAS No.	ID Standard Recoveries	MS	MSD	FA92343-1R	Limits
	13C4-PFHpA	99%	77%	82%	50-150%
	13C8-PFOA	100%	77%	82%	50-150%
	13C9-PFNA	97%	76%	81%	50-150%
	13C6-PFDA	99%	78%	83%	50-150%
	13C7-PFUnDA	101%	78%	82%	50-150%
	13C2-PFDoDA	100%	75%	80%	50-150%
	13C2-PFTeDA	100%	78%	82%	50-150%
	13C3-PFBS	100%	76%	80%	50-150%
	13C3-PFHxS	100%	77%	81%	50-150%
	13C8-PFOS	98%	75%	80%	50-150%
	13C8-FOSA	46%* [b]	34%* [b]	41%* [a]	50-150%
	d3-MeFOSA	35%* [b]	25%* [b]	34%* [a]	50-150%
	d3-MeFOSAA	117%	88%	97%	50-150%
	d5-EtFOSAA	117%	88%	95%	50-150%
	13C2-4:2FTS	97%	75%	75%	50-150%
	13C2-6:2FTS	98%	77%	77%	50-150%
	13C2-8:2FTS	98%	76%	78%	50-150%
	13C3-HFPO-DA	103%	79%	83%	50-150%

(a) Outside control limits due to matrix interference. Confirmed by MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA92477

Sampling Dates: 01/18/22 - 01/19/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: **69**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

March 2, 2022

Ms. Teresa Amentt Jennings
AECOM
5438 Wade Park Blvd
Raleigh, NC 27607

RE: SGS North America Inc. - Orlando job FA92477 Reissue

Dear Ms. Amentt Jennings,

The final report for job number FA92477 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The sample IDs on -8, -9, -15 have been revised per your request.

Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Table of Contents

SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FA92477

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA92477-1	01/19/22	08:50	BF	01/19/22	AQ	Ground Water	A3RB-DPT0008-010.0-20220119
FA92477-2	01/19/22	09:25	BF	01/19/22	AQ	Ground Water	A3RB-DPT0008-025.0-20220119
FA92477-3	01/19/22	10:15	BF	01/19/22	AQ	Ground Water	A3RB-DPT0008-042.0-20220119
FA92477-4	01/19/22	11:20	BF	01/19/22	AQ	Ground Water	A3RB-DPT0008-057.0-20220119
FA92477-5	01/19/22	12:10	BF	01/19/22	AQ	Ground Water	A3RB-DPT0009-004.0-20220119
FA92477-6	01/19/22	12:50	BF	01/19/22	AQ	Ground Water	A3RB-DPT0009-010.0-20220119
FA92477-6D	01/19/22	12:50	BF	01/19/22	AQ	Water Dup/MSD	A3RB-DPT0009-010.0-20220119
FA92477-6S	01/19/22	12:50	BF	01/19/22	AQ	Water Matrix Spike	A3RB-DPT0009-010.0-20220119
FA92477-7	01/19/22	13:25	BF	01/19/22	AQ	Ground Water	A3RB-DPT0009-025.0-20220119
FA92477-8	01/19/22	14:10	BF	01/19/22	AQ	Ground Water	A3RB-DPT0009-042.0-20220119
FA92477-9	01/19/22	14:50	BF	01/19/22	AQ	Ground Water	A3RB-DPT0009-057.0-20220119
FA92477-10	01/19/22	15:30	BF	01/19/22	AQ	Field Blank Water	FB-20220119
FA92477-11	01/18/22	08:30	BF	01/19/22	AQ	Ground Water	FS2-DPT0006-034.0-20220118

Sample Summary
(continued)

AECOM, Inc

Job No: FA92477

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA92477-12	01/18/22	09:10	BF	01/19/22	AQ	Ground Water	FS2-DPT0006-049.0-20220118
FA92477-13	01/18/22	09:11	BF	01/19/22	AQ	Ground Water	FS2-FD-20220118-01
FA92477-14	01/18/22	09:12	BF	01/19/22	AQ	Equipment Blank	FS2-EB-20220118-01
FA92477-15	01/18/22	10:10	BF	01/19/22	AQ	Ground Water	FS2-DPT0006-056.0-20220118
FA92477-16	01/18/22	11:20	BF	01/19/22	AQ	Ground Water	FS2-DPT0007-004.0-20220118
FA92477-17	01/19/22	08:25	BF	01/19/22	AQ	Ground Water	A3RB-DPT0008-004.0-20220119
FA92477-18	01/19/22	08:26	BF	01/19/22	AQ	Field Blank Water	A3RB-FD-20220119
FA92477-19	01/19/22	08:27	BF	01/19/22	AQ	Equipment Blank	A3RB-EB-20220119

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA92477

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 2/1/2022 5:51:55 PM

On 01/19/2022, 17 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92477 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP89347

Sample(s) FA92477-6MS, FA92477-6MSD were used as the QC samples indicated.

Sample(s) FA92477-1, FA92477-13, FA92477-16, FA92477-17, FA92477-18, FA92477-4, FA92477-5 have surrogates outside control limits.

Sample(s) FA92477-5 are outside limits due to dilution.

FA92477-1 for d3-MeFOSA: Outside control limits.

FA92477-1 for MeFOSA: Associated ID Standard outside control limits.

FA92477-4 for d3-MeFOSA: Outside control limits.

FA92477-4 for d5-EtFOSAA: Outside control limits.

FA92477-4: Dilution required due to matrix interference (ID recovery standard failure).

FA92477-5 for 13C2-PFTeDA: Outside control limits due to dilution.

FA92477-5 for 13C2-PFTeDA: Outside control limits.

FA92477-5 for d3-MeFOSA: Outside control limits.

FA92477-5 for MeFOSA: Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

FA92477-5: Dilution required due to matrix interference (ID recovery standard failure).

FA92477-13 for d3-MeFOSA: Outside control limits.

FA92477-13 for MeFOSA: Associated ID Standard outside control limits.

FA92477-16 for d3-MeFOSA: Outside control limits.

FA92477-16 for MeFOSA: Associated ID Standard outside control limits.

FA92477-17 for d3-MeFOSA: Outside control limits.

FA92477-17 for MeFOSA: Associated ID Standard outside control limits.

FA92477-18 for d3-MeFOSA: Outside control limits.

FA92477-18 for MeFOSA: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP89416

Sample(s) FA92477-18 have surrogates outside control limits.

FA92477-18: Confirmation run.

Matrix: AQ **Batch ID:** OP89446

Sample(s) FA92477-5 have surrogates outside control limits.

FA92477-5: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92477-1	**A3RB-DPT0008-010.0-20220119**					
Perfluorohexanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-2	**A3RB-DPT0008-025.0-20220119**					
No hits reported in this sample.						
FA92477-3	**A3RB-DPT0008-042.0-20220119**					
Perfluorooctanesulfonic acid		0.0035 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-4	**A3RB-DPT0008-057.0-20220119**					
Perfluorobutanoic acid		0.0059 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0023 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0047 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0540	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.107	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-5	**A3RB-DPT0009-004.0-20220119**					
Perfluorobutanoic acid		0.0255	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0541	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.186	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0270	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0279	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.208	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.291	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		3.77	0.10	0.050	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0327	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.227	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FA92477-6	**A3RB-DPT0009-010.0-20220119**					
Perfluorobutanesulfonic acid		0.0035 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0174	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-7	**A3RB-DPT0009-025.0-20220119**					
Perfluorohexanesulfonic acid		0.0109	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92477-8	**A3RB-DPT0009-042.0-20220119**					
Perfluorohexanesulfonic acid		0.0129	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0046 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-9	**A3RB-DPT0009-057.0-20220119**					
Perfluorohexanoic acid		0.0080 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.141	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0393	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-10	**FB-20220119**					
No hits reported in this sample.						
FA92477-11	**FS2-DPT0006-034.0-20220118**					
Perfluorobutanoic acid		0.0178	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0091	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0106	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0056 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0287	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0033 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0045 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0326	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0616	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
PFOSA		0.0043 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0045 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA92477-12	**FS2-DPT0006-049.0-20220118**					
Perfluorohexanesulfonic acid		0.0033 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0111	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-13	**FS2-FD-20220118-01**					
Perfluorohexanesulfonic acid		0.0034 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0114	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-14	**FS2-EB-20220118-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92477-15	**FS2-DPT0006-056.0-20220118**					
Perfluorooctanesulfonic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-16	**FS2-DPT0007-004.0-20220118**					
Perfluorobutanoic acid		0.0327	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0037 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0038 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0042 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0101	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0029 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0037 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0423	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-17	**A3RB-DPT0008-004.0-20220119**					
Perfluorobutanoic acid		0.0077 J	0.022	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0060 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0114	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0033 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0053 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0066 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0082 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.132	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0035 J	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.212	0.011	0.0055	ug/l	EPA 537M QSM5.3 B-15
FA92477-18	**A3RB-FD-20220119**					
Perfluorobutanoic acid		0.0075 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0061 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0110	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0052 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0064 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0078 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.126	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.201	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92477-19	**A3RB-EB-20220119**					

No hits reported in this sample.

(a) Dilution required due to matrix interference (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0008-010.0-20220119
Lab Sample ID: FA92477-1 **Date Sampled:** 01/19/22
Matrix: AQ - Ground Water **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52903.D	1	01/24/22 22:55	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [a]	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0008-010.0-20220119		
Lab Sample ID:	FA92477-1	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		50-150%
	13C5-PFPeA	82%		50-150%
	13C5-PFHxA	84%		50-150%
	13C4-PFHpA	93%		50-150%
	13C8-PFOA	97%		50-150%
	13C9-PFNA	97%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	87%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	96%		50-150%
	13C8-PFOS	93%		50-150%
	13C8-FOSA	75%		50-150%
	d3-MeFOSA	12% [b]		50-150%
	d3-MeFOSAA	108%		50-150%
	d5-EtFOSAA	105%		50-150%
	13C2-4:2FTS	85%		50-150%
	13C2-6:2FTS	102%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	82%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-025.0-20220119
Lab Sample ID: FA92477-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52904.D	1	01/24/22 23:12	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-025.0-20220119
Lab Sample ID: FA92477-2 **Date Sampled:** 01/19/22
Matrix: AQ - Ground Water **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	127%		50-150%
	13C5-PFPeA	119%		50-150%
	13C5-PFHxA	119%		50-150%
	13C4-PFHpA	128%		50-150%
	13C8-PFOA	132%		50-150%
	13C9-PFNA	128%		50-150%
	13C6-PFDA	118%		50-150%
	13C7-PFUnDA	114%		50-150%
	13C2-PFDoDA	113%		50-150%
	13C2-PFTeDA	120%		50-150%
	13C3-PFBS	118%		50-150%
	13C3-PFHxS	127%		50-150%
	13C8-PFOS	118%		50-150%
	13C8-FOSA	119%		50-150%
	d3-MeFOSA	66%		50-150%
	d3-MeFOSAA	136%		50-150%
	d5-EtFOSAA	136%		50-150%
	13C2-4:2FTS	121%		50-150%
	13C2-6:2FTS	132%		50-150%
	13C2-8:2FTS	116%		50-150%
	13C3-HFPO-DA	111%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-042.0-20220119
Lab Sample ID: FA92477-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52905.D	1	01/24/22 23:28	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0035	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-042.0-20220119
Lab Sample ID: FA92477-3 **Date Sampled:** 01/19/22
Matrix: AQ - Ground Water **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	94%		50-150%
	13C5-PFPeA	88%		50-150%
	13C5-PFHxA	88%		50-150%
	13C4-PFHpA	92%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	89%		50-150%
	13C3-PFBS	90%		50-150%
	13C3-PFHxS	95%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	92%		50-150%
	d3-MeFOSA	72%		50-150%
	d3-MeFOSAA	102%		50-150%
	d5-EtFOSAA	98%		50-150%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	93%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	82%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-057.0-20220119
Lab Sample ID: FA92477-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52906.D	1	01/24/22 23:45	MV	01/21/22 08:30	OP89347	S3Q732
Run #2 [a]	3Q52943.D	5	01/25/22 13:28	MV	01/21/22 08:30	OP89347	S3Q733

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0059	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0023	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0047	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0540	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.107	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.042 U [b]	0.083	0.042	0.021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0008-057.0-20220119		
Lab Sample ID:	FA92477-4	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	119%	129%	50-150%
	13C5-PFPeA	111%	123%	50-150%
	13C5-PFHxA	111%	122%	50-150%
	13C4-PFHpA	112%	124%	50-150%
	13C8-PFOA	109%	123%	50-150%
	13C9-PFNA	108%	122%	50-150%
	13C6-PFDA	104%	121%	50-150%
	13C7-PFUnDA	81%	108%	50-150%
	13C2-PFDoDA	66%	112%	50-150%
	13C2-PFTeDA	116%	120%	50-150%
	13C3-PFBS	116%	132%	50-150%
	13C3-PFHxS	118%	131%	50-150%
	13C8-PFOS	107%	125%	50-150%
	13C8-FOSA	63%	108%	50-150%
	d3-MeFOSA	40% [c]	89%	50-150%
	d3-MeFOSAA	123%	135%	50-150%
	d5-EtFOSAA	31% [c]	135%	50-150%
	13C2-4:2FTS	114%	119%	50-150%
	13C2-6:2FTS	125%	127%	50-150%
	13C2-8:2FTS	118%	121%	50-150%
	13C3-HFPO-DA	102%	109%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0009-004.0-20220119		
Lab Sample ID:	FA92477-5	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q88653.D	1	02/01/22 08:40	NG	01/27/22 07:30	OP89446	SQ1919
Run #2	3Q52907.D	1.2	01/25/22 00:01	MV	01/21/22 08:30	OP89347	S3Q732
Run #3 [b]	3Q52944.D	12	01/25/22 13:44	MV	01/21/22 08:30	OP89347	S3Q733

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	120 ml	1.0 ml
Run #3	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0255 [c]	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0541 [c]	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.186 [c]	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0270 [c]	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0279 [c]	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.050 U [e]	0.10	0.050	0.025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.208 [c]	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.291 [c]	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.77 [e]	0.10	0.050	0.025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0327 [c]	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.227 [c]	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U [c]	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA [d]	0.10 U [e]	0.20	0.10	0.050	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U [c]	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U [c]	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0009-004.0-20220119		
Lab Sample ID:	FA92477-5	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U [c]	0.020	0.010	0.0050	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U [c]	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U [c]	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U [c]	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U [c]	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U [c]	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U [c]	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	40% [f]	71%	115%	50-150%
	13C5-PFPeA	40% [f]	70%	108%	50-150%
	13C5-PFHxA	48% [f]	78%	106%	50-150%
	13C4-PFHpA	58%	94%	108%	50-150%
	13C8-PFOA	78%	109%	111%	50-150%
	13C9-PFNA	82%	114%	111%	50-150%
	13C6-PFDA	82%	110%	103%	50-150%
	13C7-PFUnDA	81%	107%	100%	50-150%
	13C2-PFDoDA	74%	95%	88%	50-150%
	13C2-PFTeDA	78%	42% [f]	37% [g]	50-150%
	13C3-PFBS	48% [f]	78%	117%	50-150%
	13C3-PFHxS	63%	99%	116%	50-150%
	13C8-PFOS	84%	105%	103%	50-150%
	13C8-FOSA	46% [f]	50%	55%	50-150%
	d3-MeFOSA	34% [f]	2% [f]	5% [g]	50-150%
	d3-MeFOSAA	81%	130%	120%	50-150%
	d5-EtFOSAA	88%	124%	114%	50-150%
	13C2-4:2FTS	51%	82%	109%	50-150%
	13C2-6:2FTS	84%	127%	114%	50-150%
	13C2-8:2FTS	89%	115%	104%	50-150%
	13C3-HFPO-DA	50%	71%	94%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits. Confirmed by re-extraction and reanalysis.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0009-004.0-20220119		
Lab Sample ID:	FA92477-5	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Result is from Run# 3
(f) Outside control limits.
(g) Outside control limits due to dilution.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-010.0-20220119
Lab Sample ID: FA92477-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52945.D	1	01/25/22 14:02	MV	01/21/22 08:30	OP89347	S3Q733
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0035	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0174	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-010.0-20220119
Lab Sample ID: FA92477-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	119%		50-150%
	13C5-PFPeA	113%		50-150%
	13C5-PFHxA	116%		50-150%
	13C4-PFHpA	126%		50-150%
	13C8-PFOA	134%		50-150%
	13C9-PFNA	130%		50-150%
	13C6-PFDA	126%		50-150%
	13C7-PFUnDA	119%		50-150%
	13C2-PFDoDA	121%		50-150%
	13C2-PFTeDA	124%		50-150%
	13C3-PFBS	114%		50-150%
	13C3-PFHxS	126%		50-150%
	13C8-PFOS	123%		50-150%
	13C8-FOSA	124%		50-150%
	d3-MeFOSA	77%		50-150%
	d3-MeFOSAA	147%		50-150%
	d5-EtFOSAA	142%		50-150%
	13C2-4:2FTS	116%		50-150%
	13C2-6:2FTS	135%		50-150%
	13C2-8:2FTS	120%		50-150%
	13C3-HFPO-DA	105%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-025.0-20220119
Lab Sample ID: FA92477-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52913.D	1	01/25/22 01:41	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0109	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-025.0-20220119
Lab Sample ID: FA92477-7 **Date Sampled:** 01/19/22
Matrix: AQ - Ground Water **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	117%		50-150%
	13C5-PFPeA	111%		50-150%
	13C5-PFHxA	113%		50-150%
	13C4-PFHpA	121%		50-150%
	13C8-PFOA	126%		50-150%
	13C9-PFNA	127%		50-150%
	13C6-PFDA	121%		50-150%
	13C7-PFUnDA	112%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	122%		50-150%
	13C3-PFBS	112%		50-150%
	13C3-PFHxS	118%		50-150%
	13C8-PFOS	118%		50-150%
	13C8-FOSA	121%		50-150%
	d3-MeFOSA	97%		50-150%
	d3-MeFOSAA	142%		50-150%
	d5-EtFOSAA	138%		50-150%
	13C2-4:2FTS	113%		50-150%
	13C2-6:2FTS	129%		50-150%
	13C2-8:2FTS	118%		50-150%
	13C3-HFPO-DA	102%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-042.0-20220119
Lab Sample ID: FA92477-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52914.D	1	01/25/22 01:57	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0129	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0046	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0009-042.0-20220119		
Lab Sample ID:	FA92477-8	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	85%		50-150%
	13C4-PFHpA	89%		50-150%
	13C8-PFOA	89%		50-150%
	13C9-PFNA	87%		50-150%
	13C6-PFDA	82%		50-150%
	13C7-PFUnDA	81%		50-150%
	13C2-PFDoDA	80%		50-150%
	13C2-PFTeDA	82%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	89%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	85%		50-150%
	d3-MeFOSA	60%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	93%		50-150%
	13C2-4:2FTS	83%		50-150%
	13C2-6:2FTS	88%		50-150%
	13C2-8:2FTS	79%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-057.0-20220119
Lab Sample ID: FA92477-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52915.D	1	01/25/22 02:14	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0080	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.141	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0393	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0009-057.0-20220119
Lab Sample ID: FA92477-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	117%		50-150%
	13C5-PFPeA	107%		50-150%
	13C5-PFHxA	113%		50-150%
	13C4-PFHpA	117%		50-150%
	13C8-PFOA	117%		50-150%
	13C9-PFNA	116%		50-150%
	13C6-PFDA	111%		50-150%
	13C7-PFUnDA	97%		50-150%
	13C2-PFDoDA	104%		50-150%
	13C2-PFTeDA	116%		50-150%
	13C3-PFBS	114%		50-150%
	13C3-PFHxS	118%		50-150%
	13C8-PFOS	110%		50-150%
	13C8-FOSA	105%		50-150%
	d3-MeFOSA	80%		50-150%
	d3-MeFOSAA	134%		50-150%
	d5-EtFOSAA	132%		50-150%
	13C2-4:2FTS	112%		50-150%
	13C2-6:2FTS	123%		50-150%
	13C2-8:2FTS	115%		50-150%
	13C3-HFPO-DA	100%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-20220119
Lab Sample ID: FA92477-10
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52916.D	1	01/25/22 02:30	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-20220119		
Lab Sample ID:	FA92477-10	**Date Sampled:**	01/19/22
Matrix:	AQ - Field Blank Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	137%		50-150%
	13C5-PFPeA	126%		50-150%
	13C5-PFHxA	128%		50-150%
	13C4-PFHpA	127%		50-150%
	13C8-PFOA	123%		50-150%
	13C9-PFNA	121%		50-150%
	13C6-PFDA	114%		50-150%
	13C7-PFUnDA	112%		50-150%
	13C2-PFDoDA	116%		50-150%
	13C2-PFTeDA	121%		50-150%
	13C3-PFBS	125%		50-150%
	13C3-PFHxS	120%		50-150%
	13C8-PFOS	112%		50-150%
	13C8-FOSA	118%		50-150%
	d3-MeFOSA	98%		50-150%
	d3-MeFOSAA	134%		50-150%
	d5-EtFOSAA	129%		50-150%
	13C2-4:2FTS	118%		50-150%
	13C2-6:2FTS	115%		50-150%
	13C2-8:2FTS	107%		50-150%
	13C3-HFPO-DA	117%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0006-034.0-20220118		
Lab Sample ID:	FA92477-11	**Date Sampled:**	01/18/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52917.D	1	01/25/22 02:47	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0178	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0091	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0106	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0056	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0287	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0033	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0045	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0326	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0616	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043	0.0083	0.0042	0.0021	ug/l	J
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0006-034.0-20220118		
Lab Sample ID:	FA92477-11	**Date Sampled:**	01/18/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045	0.017	0.0083	0.0042	ug/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%		50-150%
	13C5-PFPeA	102%		50-150%
	13C5-PFHxA	102%		50-150%
	13C4-PFHpA	108%		50-150%
	13C8-PFOA	112%		50-150%
	13C9-PFNA	113%		50-150%
	13C6-PFDA	110%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	81%		50-150%
	13C2-PFTeDA	100%		50-150%
	13C3-PFBS	102%		50-150%
	13C3-PFHxS	113%		50-150%
	13C8-PFOS	104%		50-150%
	13C8-FOSA	102%		50-150%
	d3-MeFOSA	66%		50-150%
	d3-MeFOSAA	135%		50-150%
	d5-EtFOSAA	123%		50-150%
	13C2-4:2FTS	102%		50-150%
	13C2-6:2FTS	121%		50-150%
	13C2-8:2FTS	113%		50-150%
	13C3-HFPO-DA	90%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0006-049.0-20220118
Lab Sample ID: FA92477-12
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52918.D	1	01/25/22 03:03	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0033	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0111	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0006-049.0-20220118		
Lab Sample ID:	FA92477-12	**Date Sampled:**	01/18/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	118%		50-150%
	13C5-PFPeA	112%		50-150%
	13C5-PFHxA	112%		50-150%
	13C4-PFHpA	121%		50-150%
	13C8-PFOA	124%		50-150%
	13C9-PFNA	123%		50-150%
	13C6-PFDA	117%		50-150%
	13C7-PFUnDA	109%		50-150%
	13C2-PFDoDA	108%		50-150%
	13C2-PFTeDA	86%		50-150%
	13C3-PFBS	111%		50-150%
	13C3-PFHxS	126%		50-150%
	13C8-PFOS	116%		50-150%
	13C8-FOSA	115%		50-150%
	d3-MeFOSA	54%		50-150%
	d3-MeFOSAA	129%		50-150%
	d5-EtFOSAA	125%		50-150%
	13C2-4:2FTS	113%		50-150%
	13C2-6:2FTS	128%		50-150%
	13C2-8:2FTS	112%		50-150%
	13C3-HFPO-DA	100%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-FD-20220118-01
Lab Sample ID: FA92477-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52919.D	1	01/25/22 03:20	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0034	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0114	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [a]	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-FD-20220118-01
Lab Sample ID: FA92477-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	106%		50-150%
	13C5-PFPeA	101%		50-150%
	13C5-PFHxA	102%		50-150%
	13C4-PFHpA	109%		50-150%
	13C8-PFOA	112%		50-150%
	13C9-PFNA	111%		50-150%
	13C6-PFDA	105%		50-150%
	13C7-PFUnDA	100%		50-150%
	13C2-PFDoDA	100%		50-150%
	13C2-PFTeDA	90%		50-150%
	13C3-PFBS	103%		50-150%
	13C3-PFHxS	117%		50-150%
	13C8-PFOS	102%		50-150%
	13C8-FOSA	99%		50-150%
	d3-MeFOSA	37% [b]		50-150%
	d3-MeFOSAA	118%		50-150%
	d5-EtFOSAA	111%		50-150%
	13C2-4:2FTS	103%		50-150%
	13C2-6:2FTS	114%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	91%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-EB-20220118-01
Lab Sample ID: FA92477-14
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52920.D	1	01/25/22 03:37	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-EB-20220118-01
Lab Sample ID: FA92477-14 **Date Sampled:** 01/18/22
Matrix: AQ - Equipment Blank **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	120%		50-150%
	13C5-PFPeA	116%		50-150%
	13C5-PFHxA	119%		50-150%
	13C4-PFHpA	117%		50-150%
	13C8-PFOA	114%		50-150%
	13C9-PFNA	112%		50-150%
	13C6-PFDA	107%		50-150%
	13C7-PFUnDA	107%		50-150%
	13C2-PFDoDA	110%		50-150%
	13C2-PFTeDA	105%		50-150%
	13C3-PFBS	118%		50-150%
	13C3-PFHxS	121%		50-150%
	13C8-PFOS	105%		50-150%
	13C8-FOSA	106%		50-150%
	d3-MeFOSA	92%		50-150%
	d3-MeFOSAA	115%		50-150%
	d5-EtFOSAA	118%		50-150%
	13C2-4:2FTS	109%		50-150%
	13C2-6:2FTS	107%		50-150%
	13C2-8:2FTS	103%		50-150%
	13C3-HFPO-DA	108%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0006-056.0-20220118
Lab Sample ID: FA92477-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52921.D	1	01/25/22 03:53	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0006-056.0-20220118		
Lab Sample ID:	FA92477-15	**Date Sampled:**	01/18/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	128%		50-150%
	13C5-PFPeA	120%		50-150%
	13C5-PFHxA	120%		50-150%
	13C4-PFHpA	122%		50-150%
	13C8-PFOA	123%		50-150%
	13C9-PFNA	122%		50-150%
	13C6-PFDA	116%		50-150%
	13C7-PFUnDA	110%		50-150%
	13C2-PFDoDA	109%		50-150%
	13C2-PFTeDA	116%		50-150%
	13C3-PFBS	119%		50-150%
	13C3-PFHxS	127%		50-150%
	13C8-PFOS	115%		50-150%
	13C8-FOSA	120%		50-150%
	d3-MeFOSA	88%		50-150%
	d3-MeFOSAA	134%		50-150%
	d5-EtFOSAA	129%		50-150%
	13C2-4:2FTS	117%		50-150%
	13C2-6:2FTS	125%		50-150%
	13C2-8:2FTS	112%		50-150%
	13C3-HFPO-DA	106%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0007-004.0-20220118
Lab Sample ID: FA92477-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/18/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52922.D	1	01/25/22 04:10	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0327	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0037	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0038	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0101	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0029	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0037	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0423	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [a]	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0007-004.0-20220118		
Lab Sample ID:	FA92477-16	**Date Sampled:**	01/18/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	122%		50-150%
	13C5-PFPeA	116%		50-150%
	13C5-PFHxA	115%		50-150%
	13C4-PFHpA	116%		50-150%
	13C8-PFOA	115%		50-150%
	13C9-PFNA	115%		50-150%
	13C6-PFDA	109%		50-150%
	13C7-PFUnDA	101%		50-150%
	13C2-PFDoDA	102%		50-150%
	13C2-PFTeDA	93%		50-150%
	13C3-PFBS	114%		50-150%
	13C3-PFHxS	120%		50-150%
	13C8-PFOS	106%		50-150%
	13C8-FOSA	106%		50-150%
	d3-MeFOSA	25% [b]		50-150%
	d3-MeFOSAA	124%		50-150%
	d5-EtFOSAA	122%		50-150%
	13C2-4:2FTS	109%		50-150%
	13C2-6:2FTS	114%		50-150%
	13C2-8:2FTS	104%		50-150%
	13C3-HFPO-DA	101%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0008-004.0-20220119
Lab Sample ID: FA92477-17
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52925.D	1.33	01/25/22 04:59	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0077	0.022	0.011	0.0055	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0060	0.011	0.0055	0.0028	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0114	0.011	0.0055	0.0028	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0033	0.011	0.0055	0.0028	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0053	0.011	0.0055	0.0028	ug/l	J
375-95-1	Perfluorononanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
335-76-2	Perfluorodecanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
307-55-1	Perfluorododecanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0066	0.011	0.0055	0.0028	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0082	0.011	0.0055	0.0028	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.132	0.011	0.0055	0.0028	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0035	0.011	0.0055	0.0028	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.212	0.011	0.0055	0.0028	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0055 U	0.011	0.0055	0.0028	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0055 U	0.011	0.0055	0.0028	ug/l	
31506-32-8	MeFOSA [a]	0.011 U	0.022	0.011	0.0055	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.011 U	0.022	0.011	0.0055	ug/l	
2991-50-6	EtFOSAA	0.011 U	0.022	0.011	0.0055	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0008-004.0-20220119		
Lab Sample ID:	FA92477-17	**Date Sampled:**	01/19/22
Matrix:	AQ - Ground Water	**Date Received:**	01/19/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.011 U	0.022	0.011	0.0055	ug/l	
919005-14-4	ADONA	0.011 U	0.022	0.011	0.0055	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.011 U	0.022	0.011	0.0055	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.011 U	0.022	0.011	0.0055	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	116%		50-150%
	13C5-PFPeA	109%		50-150%
	13C5-PFHxA	108%		50-150%
	13C4-PFHpA	114%		50-150%
	13C8-PFOA	119%		50-150%
	13C9-PFNA	116%		50-150%
	13C6-PFDA	112%		50-150%
	13C7-PFUnDA	106%		50-150%
	13C2-PFDoDA	107%		50-150%
	13C2-PFTeDA	92%		50-150%
	13C3-PFBS	114%		50-150%
	13C3-PFHxS	121%		50-150%
	13C8-PFOS	108%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSA	8% [b]		50-150%
	d3-MeFOSAA	130%		50-150%
	d5-EtFOSAA	124%		50-150%
	13C2-4:2FTS	113%		50-150%
	13C2-6:2FTS	126%		50-150%
	13C2-8:2FTS	114%		50-150%
	13C3-HFPO-DA	96%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220119
Lab Sample ID: FA92477-18
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52926.D	1	01/25/22 05:16	MV	01/21/22 08:30	OP89347	S3Q732
Run #2 [a]	3Q53245.D	1	01/29/22 03:29	MV	01/26/22 08:00	OP89416	S3Q740

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0075	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0061	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0110	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0031	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0052	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0064	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0078	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.126	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.201	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220119
Lab Sample ID: FA92477-18 **Date Sampled:** 01/19/22
Matrix: AQ - Field Blank Water **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%	97%	50-150%
	13C5-PFPeA	80%	90%	50-150%
	13C5-PFHxA	79%	91%	50-150%
	13C4-PFHpA	83%	103%	50-150%
	13C8-PFOA	85%	108%	50-150%
	13C9-PFNA	86%	107%	50-150%
	13C6-PFDA	84%	107%	50-150%
	13C7-PFUnDA	83%	97%	50-150%
	13C2-PFDoDA	79%	93%	50-150%
	13C2-PFTeDA	70%	67%	50-150%
	13C3-PFBS	82%	94%	50-150%
	13C3-PFHxS	91%	105%	50-150%
	13C8-PFOS	85%	104%	50-150%
	13C8-FOSA	70%	72%	50-150%
	d3-MeFOSA	15% [c]	11%	50-150%
	d3-MeFOSAA	98%	121%	50-150%
	d5-EtFOSAA	97%	113%	50-150%
	13C2-4:2FTS	84%	95%	50-150%
	13C2-6:2FTS	92%	115%	50-150%
	13C2-8:2FTS	88%	107%	50-150%
	13C3-HFPO-DA	69%	85%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220119
Lab Sample ID: FA92477-19
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/19/22
Date Received: 01/19/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q52927.D	1	01/25/22 05:32	MV	01/21/22 08:30	OP89347	S3Q732
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220119
Lab Sample ID: FA92477-19 **Date Sampled:** 01/19/22
Matrix: AQ - Equipment Blank **Date Received:** 01/19/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	131%		50-150%
	13C5-PFPeA	128%		50-150%
	13C5-PFHxA	127%		50-150%
	13C4-PFHpA	127%		50-150%
	13C8-PFOA	123%		50-150%
	13C9-PFNA	119%		50-150%
	13C6-PFDA	112%		50-150%
	13C7-PFUnDA	110%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	114%		50-150%
	13C3-PFBS	126%		50-150%
	13C3-PFHxS	129%		50-150%
	13C8-PFOS	113%		50-150%
	13C8-FOSA	113%		50-150%
	d3-MeFOSA	98%		50-150%
	d3-MeFOSAA	124%		50-150%
	d5-EtFOSAA	122%		50-150%
	13C2-4:2FTS	118%		50-150%
	13C2-6:2FTS	117%		50-150%
	13C2-8:2FTS	107%		50-150%
	13C3-HFPO-DA	114%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA92477

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: of	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. TBD	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Joyal**		Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day		Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	Total No. of Containers (3)	Select PFAS by 537 4 DEG	Comments
1	ASRB-DPT0008-010.0-20220119	ASRB-DPT0008	20220119	0850	WG	N	G	2	2	
2	ASRB-DPT0008-023.0-20220119	ASRB-DPT0008	20220119	0925	WG	N	G	2	2	
3	ASRB-DPT0008-042.0-20220119	"	"	1015	WG	N	G	2	2	
4	ASRB-DPT0008-057.0-20220119	"	"	1120	WG	N	G	2	2	
5	ASRB-DPT0009-004.0-20220119	ASRB-DPT0009	"	1210	WG	N	G	2	2	
6	ASRB-DPT0009-010.0-20220119	"	"	1250	WG	N	G	2	2	
7	ASRB-DPT0009-025.0-20220119	"	"	1325	WG	N	G	2	2	
68	ASRB-MS-20220119	"	"	1250	WG	N	G	2	2	
69	ASRB-MSD-20220119	"	"	1250	WG	N	G	2	2	
810	ASRB-DPT0007-042.0-20220119	"	"	1340	WG	N	G	2	2	
911	ASRB-DPT0007-057.0-20220119	"	"	1450	WG		G	2	2	
1012	FB-20220119-20220119	FB-01	"	1510			G	2	2	

INITIAL ASSESSMENT

LABEL VERIFICATION

3.2C IR1

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	01-19-2022	1600	1	1/19/22	1620
2	1/19/22	17:10	2		
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store In Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNa04S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C **If NO preservative** added leave blank

Rev 8/19

5.2 5

FA92477: Chain of Custody
Page 1 of 4

FA92477

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC		COC No.	Page: of
Site Location: Site Assessment and Mitigation (SA&M)		PO No. TBD	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Joyal**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

	Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
11	13	FS2-DPT0006-034.0-20220118	FS2-DPT0006	20220118	0830	WG	N	G	2	2	
12	14	FS2-DPT0006-~~049~~.0-20220118	FS2-DPT0006	20220118	0910	WG	N	G	2	2	
13	15	FS2-FD-20220118-01	FS2-DPT006	20220118	0911	WG	N	G	2	2	
14	16	FS2-EB-20220118-01	FS2-DPT006	20220118	0912	WG	N	G	2	2	
15	17	FS2-DPT0006-055.0-20220118	FS2-DPT0006	20220118	1010	WG	N	G	2	2	
16	18	FS2-DPT0007-004.0-20220118	FS2-DPT0007	20220118	1120	WG	N	G	2	2	
		~~FS2-DPT0007-019.0-20220118~~			~~1220~~	WG	N	G	2	2	
		~~FS2-DPT0007-034.0-20220118~~				WG	N	G	2	2	
		~~FS2-DPT0007-049.0-20220118~~				WG	N	G	2	2	
17	19	A3RB-DPT0008-004.0-20220119	A3RB-DPT0008	20220119	0825	WG	N	G	2	2	
18	20	A3RB-~~DUP~~FB-20220119	A3RB-DPT0008	20220119	0826	WG	N	G	2	2	
19	21	A3RB-EB-20220119	A3RB-DPT0008	20220119	0827	WG	N	G	2	2	

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	01-19-2022	1400	1	1/19/22	16:00
2	1/19/22	17:10	2		
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FA92477: Chain of Custody
Page 2 of 4

SGS Sample Receipt Summary

Job Number: FA92477 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 1/19/2022 5:10:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 1/19/2022 5:10:00 PM Reviewer: _____ Date: _____

Job Change Order: FA92477

Requested Date:	3/2/2022	**Received Date:**	1/19/2022
Account Name:	AECOM, Inc	**Due Date:**	2/2/2022
Project Description:	NASA KSC, PFAS SA & Mitigation	**Deliverable:**	COMMBN
CSR:	AC	**TAT (Days):**	1

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Sample #: FA92477-8
Dept:
TAT: 1

Change:
Please change the sample ID to A3RB-DPT0009-042.0-20220119

A3RB-DPT0009-042.0-20220119

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Sample #: FA92477-9
Dept:
TAT: 1

Change:
Please change the sample ID to A3RB-DPT0009-057.0-20220119

A3RB-DPT0009-057.0-20220119

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Sample #: FA92477-15
Dept:
TAT: 1

Change:
Please change the sample ID to FS2-DPT006-056.0-20220118

FS2-DPT0006-056.0-20220118

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Above Changes Per: Teresa Amnett Jenniings **Date/Time:** 3/2/2022 3:08:51 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89347	EPA 537M QSM5.3 B-15						
OP89347-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP89347-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	87	%	72-129
OP89347-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP89347-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	86	%	72-130
OP89347-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	88	%	71-133
OP89347-BS	375-95-1	Perfluorononanoic acid	BSP	REC	87	%	69-130
OP89347-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	89	%	71-129
OP89347-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	86	%	69-133
OP89347-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	86	%	72-134
OP89347-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	86	%	65-144
OP89347-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	86	%	71-132
OP89347-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	89	%	73-130
OP89347-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	86	%	71-127
OP89347-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	87	%	68-131
OP89347-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	91	%	69-134
OP89347-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	90	%	65-140
OP89347-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	91	%	69-127
OP89347-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	82	%	53-142
OP89347-BS	754-91-6	PFOSA	BSP	REC	84	%	67-137
OP89347-BS	31506-32-8	MeFOSA	BSP	REC	100	%	68-141
OP89347-BS	2355-31-9	MeFOSAA	BSP	REC	87	%	65-136
OP89347-BS	2991-50-6	EtFOSAA	BSP	REC	88	%	61-135
OP89347-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	93	%	63-143
OP89347-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	92	%	64-140
OP89347-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	93	%	67-138
OP89347-MS	375-22-4	Perfluorobutanoic acid	MS	REC	89	%	73-129
OP89347-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	91	%	72-129
OP89347-MS	307-24-4	Perfluorohexanoic acid	MS	REC	90	%	72-129
OP89347-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	87	%	72-130
OP89347-MS	335-67-1	Perfluorooctanoic acid	MS	REC	91	%	71-133
OP89347-MS	375-95-1	Perfluorononanoic acid	MS	REC	89	%	69-130
OP89347-MS	335-76-2	Perfluorodecanoic acid	MS	REC	92	%	71-129
OP89347-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	91	%	69-133
OP89347-MS	307-55-1	Perfluorododecanoic acid	MS	REC	89	%	72-134
OP89347-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	86	%	65-144
OP89347-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	90	%	71-132
OP89347-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	90	%	73-130
OP89347-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	96	%	71-127
OP89347-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	92	%	68-131
OP89347-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	95	%	69-134
OP89347-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	95	%	65-140
OP89347-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	89	%	69-127

* Sample used for QC is not from job FA92477

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89347-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	90	%	53-142
OP89347-MS	754-91-6	PFOSA	MS	REC	89	%	67-137
OP89347-MS	31506-32-8	MeFOSA	MS	REC	104	%	68-141
OP89347-MS	2355-31-9	MeFOSAA	MS	REC	89	%	65-136
OP89347-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP89347-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	95	%	63-143
OP89347-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	95	%	64-140
OP89347-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	97	%	67-138
OP89347-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	91	%	73-129
OP89347-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP89347-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	91	%	72-129
OP89347-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	0	%	30
OP89347-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	92	%	72-129
OP89347-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	3	%	30
OP89347-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	89	%	72-130
OP89347-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	3	%	30
OP89347-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	93	%	71-133
OP89347-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	3	%	30
OP89347-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	89	%	69-130
OP89347-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	0	%	30
OP89347-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	91	%	71-129
OP89347-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP89347-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	89	%	69-133
OP89347-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP89347-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	88	%	72-134
OP89347-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP89347-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	88	%	65-144
OP89347-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP89347-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	89	%	71-132
OP89347-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP89347-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	90	%	73-130
OP89347-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP89347-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	98	%	71-127
OP89347-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP89347-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	103	%	68-131
OP89347-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP89347-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	94	%	69-134
OP89347-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	1	%	30
OP89347-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	95	%	65-140
OP89347-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	0	%	30
OP89347-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	91	%	69-127
OP89347-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	3	%	30
OP89347-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	92	%	53-142
OP89347-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP89347-MSD	754-91-6	PFOSA	MSD	REC	88	%	67-137

* Sample used for QC is not from job FA92477

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92477
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/18/22 thru 01/19/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89347-MSD	754-91-6	PFOSA	MSD	RPD	1	%	30
OP89347-MSD	31506-32-8	MeFOSA	MSD	REC	101	%	68-141
OP89347-MSD	31506-32-8	MeFOSA	MSD	RPD	3	%	30
OP89347-MSD	2355-31-9	MeFOSAA	MSD	REC	89	%	65-136
OP89347-MSD	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP89347-MSD	2991-50-6	EtFOSAA	MSD	REC	95	%	61-135
OP89347-MSD	2991-50-6	EtFOSAA	MSD	RPD	1	%	30
OP89347-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	95	%	63-143
OP89347-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP89347-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	95	%	64-140
OP89347-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP89347-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	98	%	67-138
OP89347-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30

* Sample used for QC is not from job FA92477

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q732-IBLK	3Q52860.D	1	01/24/22	MV	n/a	n/a	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	122%	50-150%
	13C5-PFPeA	120%	50-150%
	13C5-PFHxA	119%	50-150%

Instrument Blank

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q732-IBLK	3Q52860.D	1	01/24/22	MV	n/a	n/a	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	118%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	115%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	120%	50-150%
	13C3-PFHxS	118%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	88%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	120%	50-150%
	13C2-4:2FTS	106%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	124%	50-150%

Instrument Blank

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q733-IBLK	3Q52933.D	1	01/25/22	MV	n/a	n/a	S3Q733

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-4, FA92477-5, FA92477-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	109%	50-150%
	13C5-PFHxA	109%	50-150%

Instrument Blank

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q733-IBLK	3Q52933.D	1	01/25/22	MV	n/a	n/a	S3Q733

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-4, FA92477-5, FA92477-6

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	111%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSA	100%	50-150%
	d3-MeFOSAA	116%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	104%	50-150%

Method Blank Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-MB	3Q52902.D	1	01/24/22	MV	01/21/22	OP89347	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	135%	50-150%
	13C5-PFPeA	134%	50-150%
	13C5-PFHxA	133%	50-150%

Method Blank Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-MB	3Q52902.D	1	01/24/22	MV	01/21/22	OP89347	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	131%	50-150%
	13C8-PFOA	128%	50-150%
	13C9-PFNA	129%	50-150%
	13C6-PFDA	124%	50-150%
	13C7-PFUnDA	125%	50-150%
	13C2-PFDoDA	124%	50-150%
	13C2-PFTeDA	121%	50-150%
	13C3-PFBS	131%	50-150%
	13C3-PFHxS	132%	50-150%
	13C8-PFOS	125%	50-150%
	13C8-FOSA	124%	50-150%
	d3-MeFOSAA	138%	50-150%
	d5-EtFOSAA	135%	50-150%
	13C2-4:2FTS	121%	50-150%
	13C2-6:2FTS	121%	50-150%
	13C2-8:2FTS	118%	50-150%
	13C3-HFPO-DA	129%	50-150%

Blank Spike Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-BS	3Q52901.D	1	01/24/22	MV	01/21/22	OP89347	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.140	88	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.139	87	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.140	88	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.138	86	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.141	88	71-133
375-95-1	Perfluorononanoic acid	0.16	0.139	87	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.142	89	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.137	86	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.138	86	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.137	86	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.138	86	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.142	89	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.138	86	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.139	87	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.145	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.144	90	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.146	91	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.131	82	53-142
754-91-6	PFOSA	0.16	0.135	84	67-137
31506-32-8	MeFOSA	0.16	0.160	100	68-141
2355-31-9	MeFOSAA	0.16	0.139	87	65-136
2991-50-6	EtFOSAA	0.16	0.141	88	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.149	93	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.147	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.148	93	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.137	86	60-140
919005-14-4	ADONA	0.16	0.136	85	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.138	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.140	88	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	131%	50-150%
	13C5-PFPeA	130%	50-150%
	13C5-PFHxA	127%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-BS	3Q52901.D	1	01/24/22	MV	01/21/22	OP89347	S3Q732

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	124%	50-150%
	13C8-PFOA	122%	50-150%
	13C9-PFNA	123%	50-150%
	13C6-PFDA	120%	50-150%
	13C7-PFUnDA	126%	50-150%
	13C2-PFDoDA	122%	50-150%
	13C2-PFTeDA	115%	50-150%
	13C3-PFBS	129%	50-150%
	13C3-PFHxS	133%	50-150%
	13C8-PFOS	118%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSAA	134%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	123%	50-150%
	13C2-6:2FTS	122%	50-150%
	13C2-8:2FTS	120%	50-150%
	13C3-HFPO-DA	124%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-MS	3Q52909.D	1	01/25/22	MV	01/21/22	OP89347	S3Q732
OP89347-MSD	3Q52910.D	1	01/25/22	MV	01/21/22	OP89347	S3Q732
FA92477-6	3Q52945.D	1	01/25/22	MV	01/21/22	OP89347	S3Q733

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	Compound	FA92477-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.017	U	0.167	0.149	89	0.167	0.151	91	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0083	U	0.167	0.151	91	0.167	0.151	91	0	72-129/30
307-24-4	Perfluorohexanoic acid	0.0083	U	0.167	0.150	90	0.167	0.154	92	3	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0083	U	0.167	0.145	87	0.167	0.149	89	3	72-130/30
335-67-1	Perfluorooctanoic acid	0.0083	U	0.167	0.151	91	0.167	0.155	93	3	71-133/30
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.148	89	0.167	0.148	89	0	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.153	92	0.167	0.152	91	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.152	91	0.167	0.149	89	2	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.149	89	0.167	0.147	88	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.144	86	0.167	0.146	88	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.150	90	0.167	0.149	89	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0035	J	0.167	0.153	90	0.167	0.154	90	1	73-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.167	0.160	96	0.167	0.163	98	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0174		0.167	0.171	92	0.167	0.189	103	10	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.167	0.159	95	0.167	0.157	94	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0083	U	0.167	0.159	95	0.167	0.159	95	0	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.167	0.148	89	0.167	0.152	91	3	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.167	0.150	90	0.167	0.154	92	3	53-142/30
754-91-6	PFOSA	0.0083	U	0.167	0.148	89	0.167	0.146	88	1	67-137/30
31506-32-8	MeFOSA	0.017	U	0.167	0.173	104	0.167	0.168	101	3	68-141/30
2355-31-9	MeFOSAA	0.017	U	0.167	0.148	89	0.167	0.149	89	1	65-136/30
2991-50-6	EtFOSAA	0.017	U	0.167	0.156	94	0.167	0.158	95	1	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.158	95	0.167	0.159	95	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.167	0.158	95	0.167	0.159	95	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.161	97	0.167	0.163	98	1	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.161	97	0.167	0.164	98	2	60-140/30
919005-14-4	ADONA	0.017	U	0.167	0.148	89	0.167	0.153	92	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.167	0.152	91	0.167	0.150	90	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.167	0.149	89	0.167	0.149	89	0	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA92477-6	Limits
	13C4-PFBA	109%	99%	119%	50-150%
	13C5-PFPeA	104%	95%	113%	50-150%
	13C5-PFHxA	109%	99%	116%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92477
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89347-MS	3Q52909.D	1	01/25/22	MV	01/21/22	OP89347	S3Q732
OP89347-MSD	3Q52910.D	1	01/25/22	MV	01/21/22	OP89347	S3Q732
FA92477-6	3Q52945.D	1	01/25/22	MV	01/21/22	OP89347	S3Q733

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92477-1, FA92477-2, FA92477-3, FA92477-4, FA92477-5, FA92477-6, FA92477-7, FA92477-8, FA92477-9, FA92477-10, FA92477-11, FA92477-12, FA92477-13, FA92477-14, FA92477-15, FA92477-16, FA92477-17, FA92477-18, FA92477-19

CAS No.	ID Standard Recoveries	MS	MSD	FA92477-6	Limits
	13C4-PFHpA	119%	109%	126%	50-150%
	13C8-PFOA	122%	111%	134%	50-150%
	13C9-PFNA	121%	113%	130%	50-150%
	13C6-PFDA	116%	107%	126%	50-150%
	13C7-PFUnDA	110%	104%	119%	50-150%
	13C2-PFDoDA	110%	104%	121%	50-150%
	13C2-PFTeDA	120%	111%	124%	50-150%
	13C3-PFBS	107%	98%	114%	50-150%
	13C3-PFHxS	121%	109%	126%	50-150%
	13C8-PFOS	111%	106%	123%	50-150%
	13C8-FOSA	116%	105%	124%	50-150%
	d3-MeFOSA			77%	50-150%
	d3-MeFOSAA	137%	126%	147%	50-150%
	d5-EtFOSAA	131%	122%	142%	50-150%
	13C2-4:2FTS	115%	105%	116%	50-150%
	13C2-6:2FTS	131%	120%	135%	50-150%
	13C2-8:2FTS	118%	108%	120%	50-150%
	13C3-HFPO-DA	98%	89%	105%	50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FA92586

Sampling Date: 01/24/22

Report to:

AECOM
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Orlando, FL 32801
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megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: 59

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA92586

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA92586-1	01/24/22	08:15	BF	01/24/22	AQ	Ground Water	A3RB-DPT0010-004.0-20220124
FA92586-2	01/24/22	08:50	BF	01/24/22	AQ	Ground Water	A3RB-DPT0010-010.0-20220124
FA92586-3	01/24/22	09:40	BF	01/24/22	AQ	Ground Water	A3RB-DPT0010-025.0-20220124
FA92586-4	01/24/22	10:20	BF	01/24/22	AQ	Ground Water	A3RB-DPT0010-042.0-20220124
FA92586-5	01/24/22	11:10	BF	01/24/22	AQ	Ground Water	A3RB-DPT0010-057.0-20220124
FA92586-6	01/24/22	08:51	BF	01/24/22	AQ	Ground Water	A3RB-FD-20220124-01
FA92586-7	01/24/22	08:52	BF	01/24/22	AQ	Equipment Blank	A3RB-EB-20220124-01
FA92586-8	01/24/22	11:55	BF	01/24/22	AQ	Ground Water	A3RB-DPT0011-004.0-20220124
FA92586-9	01/24/22	12:25	BF	01/24/22	AQ	Ground Water	A3RB-DPT0011-010.0-20220124
FA92586-10	01/24/22	13:05	BF	01/24/22	AQ	Ground Water	A3RB-DPT0011-025.0-20220124
FA92586-11	01/24/22	13:40	BF	01/24/22	AQ	Ground Water	A3RB-DPT0011-042.0-20220124
FA92586-12	01/24/22	14:30	BF	01/24/22	AQ	Ground Water	A3RB-DPT0011-057.0-20220124
FA92586-13	01/24/22	15:45	BF	01/24/22	AQ	Field Blank Water	A3RB-FB-20220124-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA92586

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 2/11/2022 12:08:31

On 01/24/2022, 12 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92586 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP89449

Sample(s) FA92616-1MS, FA92616-1MSD were used as the QC samples indicated.

Sample(s) FA92586-1, FA92586-10, FA92586-11, FA92586-4, FA92586-5, FA92586-8, FA92586-9 have surrogates outside control limits.

FA92586-1: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA92586-4 for d3-MeFOSA: Outside control limits.

FA92586-4 for MeFOSA: Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.

FA92586-4: Dilution required due to matrix interference (ID recovery standard failure).

FA92586-5 for 13C2-PFDoDA: Outside control limits.

FA92586-5 for d3-MeFOSA: Outside control limits.

FA92586-5 for d3-MeFOSAA: Outside control limits.

FA92586-5: Dilution required due to matrix interference (ID recovery standard failure).

FA92586-8 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA92586-8: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA92586-8: Dilution required due to matrix interference (ID recovery standard failure).

FA92586-9 for d3-MeFOSA: Outside control limits.

FA92586-9 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA92586-9: Dilution required due to matrix interference (ID recovery standard failure).

FA92586-10 for d3-MeFOSA: Outside control limits.

FA92586-10: Dilution required due to matrix interference (ID recovery standard failure).

FA92586-11 for d3-MeFOSA: Outside control limits.

FA92586-11: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92586-1	**A3RB-DPT0010-004.0-20220124**					
Perfluorobutanoic acid [a]		0.0600	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.147	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.626	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.113	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.316	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid [a]		0.0034 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.439	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.639	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		17.2	0.50	0.25	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.267	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		7.48	0.50	0.25	ug/l	EPA 537M QSM5.3 B-15
FA92586-2	**A3RB-DPT0010-010.0-20220124**					
Perfluorobutanesulfonic acid		0.0027 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0381	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0173	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-3	**A3RB-DPT0010-025.0-20220124**					
Perfluorohexanoic acid		0.0029 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0030 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0029 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0648	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0541	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-4	**A3RB-DPT0010-042.0-20220124**					
Perfluorohexanesulfonic acid		0.0090	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0052 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-5	**A3RB-DPT0010-057.0-20220124**					
Perfluoropentanoic acid		0.0036 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0131	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0023 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0090 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0252	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0182	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.417	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0069 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.333	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92586-6	**A3RB-FD-20220124-01**					
Perfluorohexanoic acid		0.0021 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0031 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0022 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0380	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0151	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-7	**A3RB-EB-20220124-01**					
No hits reported in this sample.						
FA92586-8	**A3RB-DPT0011-004.0-20220124**					
Perfluoropentanoic acid [a]		0.0078 J	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0280	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0355	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0328	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.145	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0048 J	0.0092	0.0046	ug/l	EPA 537M QSM5.3 B-15
FA92586-9	**A3RB-DPT0011-010.0-20220124**					
Perfluorohexanesulfonic acid		0.0040 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-10	**A3RB-DPT0011-025.0-20220124**					
Perfluorohexanesulfonic acid		0.0022 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0144	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-11	**A3RB-DPT0011-042.0-20220124**					
Perfluorohexanesulfonic acid		0.0030 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-12	**A3RB-DPT0011-057.0-20220124**					
Perfluorohexanesulfonic acid		0.0134	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0476	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92586-13	**A3RB-FB-20220124-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0010-004.0-20220124
Lab Sample ID: FA92586-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q84174.D	1.2	02/02/22 04:06	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2	2Q84219.D	60	02/02/22 21:23	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0600	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.147	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.626	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.113	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.316	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0034	0.010	0.0050	0.0025	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.439	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.639	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	17.2 [b]	0.50	0.25	0.13	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.267	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	7.48 [b]	0.50	0.25	0.13	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA	0.50 U [b]	1.0	0.50	0.25	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0010-004.0-20220124		
Lab Sample ID:	FA92586-1	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	93%	50-150%
	13C5-PFPeA	84%	94%	50-150%
	13C5-PFHxA	91%	96%	50-150%
	13C4-PFHpA	78%	95%	50-150%
	13C8-PFOA	105%	95%	50-150%
	13C9-PFNA	102%	95%	50-150%
	13C6-PFDA	123%	97%	50-150%
	13C7-PFUnDA	127%	96%	50-150%
	13C2-PFDoDA	127%	94%	50-150%
	13C2-PFTeDA	89%	94%	50-150%
	13C3-PFBS	90%	95%	50-150%
	13C3-PFHxS	81%	94%	50-150%
	13C8-PFOS	103%	95%	50-150%
	13C8-FOSA	68%	98%	50-150%
	d3-MeFOSA	17% [c]	95%	50-150%
	d3-MeFOSAA	136%	99%	50-150%
	d5-EtFOSAA	132%	96%	50-150%
	13C2-4:2FTS	91%	90%	50-150%
	13C2-6:2FTS	105%	91%	50-150%
	13C2-8:2FTS	122%	89%	50-150%
	13C3-HFPO-DA	67%	94%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0010-010.0-20220124
Lab Sample ID: FA92586-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84220.D	1	02/02/22 21:39	NG	01/27/22 08:00	OP89449	S2Q1190
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0027	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0024	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0381	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0173	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0010-010.0-20220124		
Lab Sample ID:	FA92586-2	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	87%		50-150%
	13C5-PFHxA	93%		50-150%
	13C4-PFHpA	96%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	101%		50-150%
	13C6-PFDA	101%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	93%		50-150%
	13C2-PFTeDA	94%		50-150%
	13C3-PFBS	92%		50-150%
	13C3-PFHxS	96%		50-150%
	13C8-PFOS	97%		50-150%
	13C8-FOSA	98%		50-150%
	d3-MeFOSA	54%		50-150%
	d3-MeFOSAA	100%		50-150%
	d5-EtFOSAA	99%		50-150%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	97%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	84%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0010-025.0-20220124
Lab Sample ID: FA92586-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q54052.D	1	02/09/22 19:36	MV	02/08/22 08:30	OP89630	S3Q748
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0029	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0029	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0648	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0541	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0010-025.0-20220124		
Lab Sample ID:	FA92586-3	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	85%		50-150%
	13C5-PFHxA	95%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	111%		50-150%
	13C9-PFNA	112%		50-150%
	13C6-PFDA	111%		50-150%
	13C7-PFUnDA	102%		50-150%
	13C2-PFDoDA	101%		50-150%
	13C2-PFTeDA	108%		50-150%
	13C3-PFBS	91%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	105%		50-150%
	13C8-FOSA	111%		50-150%
	d3-MeFOSA	88%		50-150%
	d3-MeFOSAA	116%		50-150%
	d5-EtFOSAA	111%		50-150%
	13C2-4:2FTS	96%		50-150%
	13C2-6:2FTS	111%		50-150%
	13C2-8:2FTS	107%		50-150%
	13C3-HFPO-DA	84%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0010-042.0-20220124
Lab Sample ID: FA92586-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84177.D	1	02/02/22 04:56	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [a]	2Q84222.D	5	02/02/22 22:13	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0090	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
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Report of Analysis

Client Sample ID:	A3RB-DPT0010-042.0-20220124		
Lab Sample ID:	FA92586-4	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	96%	114%	50-150%
	13C5-PFPeA	111%	115%	50-150%
	13C5-PFHxA	113%	116%	50-150%
	13C4-PFHpA	114%	116%	50-150%
	13C8-PFOA	119%	118%	50-150%
	13C9-PFNA	122%	118%	50-150%
	13C6-PFDA	123%	117%	50-150%
	13C7-PFUnDA	118%	114%	50-150%
	13C2-PFDoDA	117%	111%	50-150%
	13C2-PFTeDA	130%	108%	50-150%
	13C3-PFBS	108%	120%	50-150%
	13C3-PFHxS	106%	119%	50-150%
	13C8-PFOS	117%	113%	50-150%
	13C8-FOSA	103%	106%	50-150%
	d3-MeFOSA	22% [d]	45% [d]	50-150%
	d3-MeFOSAA	106%	122%	50-150%
	d5-EtFOSAA	117%	113%	50-150%
	13C2-4:2FTS	110%	112%	50-150%
	13C2-6:2FTS	109%	115%	50-150%
	13C2-8:2FTS	110%	112%	50-150%
	13C3-HFPO-DA	86%	110%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits due to matrix interference. Confirmed by reanalysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0010-057.0-20220124
Lab Sample ID: FA92586-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84178.D	1	02/02/22 05:13	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [a]	2Q84223.D	5	02/02/22 22:30	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0036	0.0091	0.0045	0.0023	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0131	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023	0.0091	0.0045	0.0023	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0090	0.0091	0.0045	0.0023	ug/l	J
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.023 U [b]	0.045	0.023	0.011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.023 U [b]	0.045	0.023	0.011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0252	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0182	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.417	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0069	0.0091	0.0045	0.0023	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.333	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA	0.045 U [b]	0.091	0.045	0.023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.045 U [b]	0.091	0.045	0.023	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0010-057.0-20220124		
Lab Sample ID:	FA92586-5	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.045 U [b]	0.091	0.045	0.023	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	98%	109%	50-150%
	13C5-PFPeA	112%	110%	50-150%
	13C5-PFHxA	116%	113%	50-150%
	13C4-PFHpA	113%	113%	50-150%
	13C8-PFOA	117%	115%	50-150%
	13C9-PFNA	121%	116%	50-150%
	13C6-PFDA	123%	117%	50-150%
	13C7-PFUnDA	84%	111%	50-150%
	13C2-PFDoDA	44% [c]	101%	50-150%
	13C2-PFTeDA	138%	107%	50-150%
	13C3-PFBS	111%	112%	50-150%
	13C3-PFHxS	107%	116%	50-150%
	13C8-PFOS	111%	114%	50-150%
	13C8-FOSA	89%	112%	50-150%
	d3-MeFOSA	15% [c]	85%	50-150%
	d3-MeFOSAA	46% [c]	118%	50-150%
	d5-EtFOSAA	111%	113%	50-150%
	13C2-4:2FTS	111%	108%	50-150%
	13C2-6:2FTS	111%	111%	50-150%
	13C2-8:2FTS	116%	110%	50-150%
	13C3-HFPO-DA	88%	108%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220124-01
Lab Sample ID: FA92586-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84179.D	1	02/02/22 05:30	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0031	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0022	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0380	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0151	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220124-01
Lab Sample ID: FA92586-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	97%		50-150%
	13C5-PFHxA	102%		50-150%
	13C4-PFHpA	106%		50-150%
	13C8-PFOA	112%		50-150%
	13C9-PFNA	113%		50-150%
	13C6-PFDA	118%		50-150%
	13C7-PFUnDA	110%		50-150%
	13C2-PFDoDA	108%		50-150%
	13C2-PFTeDA	132%		50-150%
	13C3-PFBS	97%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	108%		50-150%
	13C8-FOSA	105%		50-150%
	d3-MeFOSA	52%		50-150%
	d3-MeFOSAA	109%		50-150%
	d5-EtFOSAA	109%		50-150%
	13C2-4:2FTS	100%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	74%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220124-01		
Lab Sample ID:	FA92586-7	**Date Sampled:**	01/24/22
Matrix:	AQ - Equipment Blank	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84180.D	1	02/02/22 05:47	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220124-01
Lab Sample ID: FA92586-7
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	99%		50-150%
	13C5-PFPeA	108%		50-150%
	13C5-PFHxA	107%		50-150%
	13C4-PFHpA	106%		50-150%
	13C8-PFOA	110%		50-150%
	13C9-PFNA	108%		50-150%
	13C6-PFDA	106%		50-150%
	13C7-PFUnDA	107%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	138%		50-150%
	13C3-PFBS	105%		50-150%
	13C3-PFHxS	103%		50-150%
	13C8-PFOS	101%		50-150%
	13C8-FOSA	97%		50-150%
	d3-MeFOSA	80%		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	100%		50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	99%		50-150%
	13C2-8:2FTS	96%		50-150%
	13C3-HFPO-DA	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-004.0-20220124
Lab Sample ID: FA92586-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2Q84181.D	1.1	02/02/22 06:03	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [b]	2Q84224.D	5.45	02/02/22 22:46	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0092 U	0.018	0.0092	0.0046	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0078	0.0092	0.0046	0.0023	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0280	0.0092	0.0046	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0355	0.0092	0.0046	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0328	0.0092	0.0046	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.145	0.0092	0.0046	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0048	0.0092	0.0046	0.0023	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0046 U	0.0092	0.0046	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0046 U	0.0092	0.0046	0.0023	ug/l	
31506-32-8	MeFOSA [c]	0.045 U [d]	0.091	0.045	0.023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0092 U	0.018	0.0092	0.0046	ug/l	
2991-50-6	EtFOSAA	0.0092 U	0.018	0.0092	0.0046	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0092 U	0.018	0.0092	0.0046	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0011-004.0-20220124		
Lab Sample ID:	FA92586-8	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0092 U	0.018	0.0092	0.0046	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0092 U	0.018	0.0092	0.0046	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0092 U	0.018	0.0092	0.0046	ug/l	
919005-14-4	ADONA	0.0092 U	0.018	0.0092	0.0046	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0092 U	0.018	0.0092	0.0046	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0092 U	0.018	0.0092	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%	97%	50-150%
	13C5-PFPeA	94%	101%	50-150%
	13C5-PFHxA	103%	103%	50-150%
	13C4-PFHpA	106%	103%	50-150%
	13C8-PFOA	112%	102%	50-150%
	13C9-PFNA	114%	101%	50-150%
	13C6-PFDA	113%	98%	50-150%
	13C7-PFUnDA	109%	95%	50-150%
	13C2-PFDoDA	106%	95%	50-150%
	13C2-PFTeDA	102%	85%	50-150%
	13C3-PFBS	97%	106%	50-150%
	13C3-PFHxS	102%	102%	50-150%
	13C8-PFOS	105%	95%	50-150%
	13C8-FOSA	74%	76%	50-150%
	d3-MeFOSA	19% [e]	30% [e]	50-150%
	d3-MeFOSAA	107%	99%	50-150%
	d5-EtFOSAA	106%	96%	50-150%
	13C2-4:2FTS	99%	101%	50-150%
	13C2-6:2FTS	105%	103%	50-150%
	13C2-8:2FTS	106%	95%	50-150%
	13C3-HFPO-DA	70%	98%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-010.0-20220124
Lab Sample ID: FA92586-9 **Date Sampled:** 01/24/22
Matrix: AQ - Ground Water **Date Received:** 01/24/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84184.D	1	02/02/22 06:54	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [a]	2Q84225.D	5	02/02/22 23:03	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0011-010.0-20220124		
Lab Sample ID:	FA92586-9	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%	98%	50-150%
	13C5-PFPeA	100%	99%	50-150%
	13C5-PFHxA	106%	103%	50-150%
	13C4-PFHpA	110%	104%	50-150%
	13C8-PFOA	115%	104%	50-150%
	13C9-PFNA	117%	102%	50-150%
	13C6-PFDA	115%	101%	50-150%
	13C7-PFUnDA	113%	98%	50-150%
	13C2-PFDoDA	115%	95%	50-150%
	13C2-PFTeDA	122%	91%	50-150%
	13C3-PFBS	100%	102%	50-150%
	13C3-PFHxS	104%	101%	50-150%
	13C8-PFOS	106%	105%	50-150%
	13C8-FOSA	100%	96%	50-150%
	d3-MeFOSA	37% [d]	43% [d]	50-150%
	d3-MeFOSAA	111%	102%	50-150%
	d5-EtFOSAA	108%	97%	50-150%
	13C2-4:2FTS	103%	97%	50-150%
	13C2-6:2FTS	105%	99%	50-150%
	13C2-8:2FTS	101%	93%	50-150%
	13C3-HFPO-DA	76%	94%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-025.0-20220124
Lab Sample ID: FA92586-10
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84185.D	1	02/02/22 07:11	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [a]	2Q84226.D	5	02/02/22 23:20	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0144	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0011-025.0-20220124		
Lab Sample ID:	FA92586-10	**Date Sampled:**	01/24/22
Matrix:	AQ - Ground Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%	100%	50-150%
	13C5-PFPeA	103%	102%	50-150%
	13C5-PFHxA	108%	103%	50-150%
	13C4-PFHpA	109%	103%	50-150%
	13C8-PFOA	115%	104%	50-150%
	13C9-PFNA	115%	105%	50-150%
	13C6-PFDA	114%	102%	50-150%
	13C7-PFUnDA	111%	96%	50-150%
	13C2-PFDoDA	106%	96%	50-150%
	13C2-PFTeDA	135%	96%	50-150%
	13C3-PFBS	102%	103%	50-150%
	13C3-PFHxS	108%	103%	50-150%
	13C8-PFOS	111%	103%	50-150%
	13C8-FOSA	102%	100%	50-150%
	d3-MeFOSA	36% [c]	53%	50-150%
	d3-MeFOSAA	104%	99%	50-150%
	d5-EtFOSAA	107%	95%	50-150%
	13C2-4:2FTS	107%	99%	50-150%
	13C2-6:2FTS	109%	102%	50-150%
	13C2-8:2FTS	108%	96%	50-150%
	13C3-HFPO-DA	77%	98%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-042.0-20220124
Lab Sample ID: FA92586-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84186.D	1	02/02/22 07:27	NG	01/27/22 08:00	OP89449	S2Q1189
Run #2 [a]	2Q84227.D	5	02/02/22 23:37	NG	01/27/22 08:00	OP89449	S2Q1190

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
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Report of Analysis

Client Sample ID: A3RB-DPT0011-042.0-20220124
Lab Sample ID: FA92586-11 **Date Sampled:** 01/24/22
Matrix: AQ - Ground Water **Date Received:** 01/24/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	95%	104%	50-150%
	13C5-PFPeA	110%	105%	50-150%
	13C5-PFHxA	113%	104%	50-150%
	13C4-PFHpA	113%	105%	50-150%
	13C8-PFOA	119%	106%	50-150%
	13C9-PFNA	121%	106%	50-150%
	13C6-PFDA	118%	103%	50-150%
	13C7-PFUnDA	114%	102%	50-150%
	13C2-PFDoDA	105%	97%	50-150%
	13C2-PFTeDA	132%	98%	50-150%
	13C3-PFBS	106%	111%	50-150%
	13C3-PFHxS	108%	108%	50-150%
	13C8-PFOS	110%	102%	50-150%
	13C8-FOSA	103%	101%	50-150%
	d3-MeFOSA	35% [c]	63%	50-150%
	d3-MeFOSAA	106%	105%	50-150%
	d5-EtFOSAA	115%	103%	50-150%
	13C2-4:2FTS	109%	99%	50-150%
	13C2-6:2FTS	107%	101%	50-150%
	13C2-8:2FTS	108%	96%	50-150%
	13C3-HFPO-DA	82%	100%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-057.0-20220124
Lab Sample ID: FA92586-12
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84230.D	1	02/03/22 00:27	NG	01/27/22 08:00	OP89449	S2Q1190
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0134	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0476	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0011-057.0-20220124
Lab Sample ID: FA92586-12
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	97%		50-150%
	13C5-PFPeA	99%		50-150%
	13C5-PFHxA	101%		50-150%
	13C4-PFHpA	101%		50-150%
	13C8-PFOA	103%		50-150%
	13C9-PFNA	104%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	102%		50-150%
	13C3-PFBS	104%		50-150%
	13C3-PFHxS	102%		50-150%
	13C8-PFOS	105%		50-150%
	13C8-FOSA	95%		50-150%
	d3-MeFOSA	57%		50-150%
	d3-MeFOSAA	96%		50-150%
	d5-EtFOSAA	94%		50-150%
	13C2-4:2FTS	99%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220124-01
Lab Sample ID: FA92586-13
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/24/22
Date Received: 01/24/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84232.D	1	02/03/22 01:00	NG	01/27/22 08:00	OP89449	S2Q1190
Run #2							

	Initial Volume	Final Volume
Run #1	118 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0085 U	0.017	0.0085	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0085	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0085 U	0.017	0.0085	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0085 U	0.017	0.0085	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0085 U	0.017	0.0085	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220124-01		
Lab Sample ID:	FA92586-13	**Date Sampled:**	01/24/22
Matrix:	AQ - Field Blank Water	**Date Received:**	01/24/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0085 U	0.017	0.0085	0.0042	ug/l	
919005-14-4	ADONA	0.0085 U	0.017	0.0085	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0085 U	0.017	0.0085	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0085 U	0.017	0.0085	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%		50-150%
	13C5-PFPeA	109%		50-150%
	13C5-PFHxA	109%		50-150%
	13C4-PFHpA	107%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	102%		50-150%
	13C6-PFDA	105%		50-150%
	13C7-PFUnDA	105%		50-150%
	13C2-PFDoDA	109%		50-150%
	13C2-PFTeDA	107%		50-150%
	13C3-PFBS	107%		50-150%
	13C3-PFHxS	107%		50-150%
	13C8-PFOS	97%		50-150%
	13C8-FOSA	102%		50-150%
	d3-MeFOSA	97%		50-150%
	d3-MeFOSAA	106%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	102%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	105%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA92586

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: of
Site Location: Site Assessment and Mitigation (SA&M)		PO No. TBD	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: Jennifer Joyal	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Brittany Follet/ 419-302-0236	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	Total No. of Containers (3)	Select PFAS by 537 4 DEG	Comments
1	A3RB-DPT0010-004.0-20220124	A3RB-DPT0010	20220124	0815	WG SO	N	G	2	2	Turb.
2	A3RB-DPT0010-010.0-20220124	"	"	0850	WG SO	N	G	2	2	457
3	A3RB-DPT0010-025.0-20220124	"	"	0940	SO	N	G	2	2	55.8 >800
4	A3RB-DPT0010-042.0-20220124	"	"	1020	WG SO	N	G	2	2	>800
5	A3RB-DPT0010-057.0-20220124	"	"	1110	WG SO	N	G	2	2	7800 Very Turb.
6	A3RB-FD-20220124-01	"	"	0851	WG SO	N	G	2	2	55.8
7	A3RB-EB-20220124-01	"	"	0852	WG SO	N	G	2	2	55.8
8	A3RB-DPT0011-004.0-20220124	A3RB-DPT0011	"	1155	WG SO	N	G	2	2	189
9	A3RB-DPT0011-010.0-20220124	"	"	1225	WG SO	N	G	2	2	759
10	A3RB-DPT0011-025.0-20220124	"	"	1305	WG SO	N	G	2	2	7800
11	A3RB-DPT0011-042.0-20220124	"	"	1340	WG SO	N	G	2	2	>800
12	A3RB-DPT0011-057.0-20220124	"	"	1430	WG	N	G	2	2	>800 Very Turb.

INITIAL ASSESSMENT SM

LABEL VERIFICATION

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes V No 1.4 CIR
Shipping Company:
Tracking No:
Date Shipped:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	01/24/2022	16:00	1	1/24/22	16:00
2	1/24/22	17:00	2	1/25/22	0900
3			3		

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FA92586: Chain of Custody
Page 1 of 3

FA92586

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: of
Site Location: Site Assessment and Mitigation (SA&M)		PO No. TBD	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: Jennifer Joyal	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
	~~ASRB-DF0012-0064.0-20220124~~	~~ASRB-DF0012~~	20220124	SM	WG	N	G	2	2	
	~~ASRB-DF0012-0186-20220124~~				WG	N	G	2	2	
13	FB-20220124-01	FB-01	20220124	1545	WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG		G	2	2	
							G	2	2	

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	01/24/2022	16:00	1	1/24/22	16:00
2	1/24/22	17:10	2	1/25/22	0900
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA92586: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FA92586 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 1/24/2022 5:00:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 1/24/2022 5:00:00 PM Reviewer: _____ Date: _____

FA92586: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89449	EPA 537M QSM5.3 B-15						
OP89449-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	84	%	73-129
OP89449-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	81	%	72-129
OP89449-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	84	%	72-129
OP89449-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	84	%	72-130
OP89449-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	83	%	71-133
OP89449-BS	375-95-1	Perfluorononanoic acid	BSP	REC	81	%	69-130
OP89449-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	86	%	71-129
OP89449-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	85	%	69-133
OP89449-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	88	%	72-134
OP89449-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	89	%	65-144
OP89449-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	85	%	71-132
OP89449-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	90	%	73-130
OP89449-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	91	%	71-127
OP89449-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	90	%	68-131
OP89449-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	93	%	69-134
OP89449-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	83	%	65-140
OP89449-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	90	%	69-127
OP89449-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	81	%	53-142
OP89449-BS	754-91-6	PFOSA	BSP	REC	86	%	67-137
OP89449-BS	31506-32-8	MeFOSA	BSP	REC	100	%	68-141
OP89449-BS	2355-31-9	MeFOSAA	BSP	REC	91	%	65-136
OP89449-BS	2991-50-6	EtFOSAA	BSP	REC	89	%	61-135
OP89449-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	90	%	63-143
OP89449-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	91	%	64-140
OP89449-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	91	%	67-138
OP89449-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	83	%	73-129
OP89449-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	85	%	72-129
OP89449-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	85	%	72-129
OP89449-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	86	%	72-130
OP89449-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	87	%	71-133
OP89449-MS*	375-95-1	Perfluorononanoic acid	MS	REC	83	%	69-130
OP89449-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	86	%	71-129
OP89449-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	86	%	69-133
OP89449-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	87	%	72-134
OP89449-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	91	%	65-144
OP89449-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	85	%	71-132
OP89449-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	91	%	73-130
OP89449-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	89	%	71-127
OP89449-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	80	%	68-131
OP89449-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	94	%	69-134
OP89449-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	84	%	65-140
OP89449-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	92	%	69-127

* Sample used for QC is not from job FA92586

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89449-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	89	%	53-142
OP89449-MS*	754-91-6	PFOSA	MS	REC	91	%	67-137
OP89449-MS*	31506-32-8	MeFOSA	MS	REC	93	%	68-141
OP89449-MS*	2355-31-9	MeFOSAA	MS	REC	89	%	65-136
OP89449-MS*	2991-50-6	EtFOSAA	MS	REC	89	%	61-135
OP89449-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	93	%	63-143
OP89449-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	92	%	64-140
OP89449-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	90	%	67-138
OP89449-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	85	%	73-129
OP89449-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP89449-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	88	%	72-129
OP89449-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP89449-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	86	%	72-129
OP89449-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP89449-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	88	%	72-130
OP89449-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP89449-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	88	%	71-133
OP89449-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP89449-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	84	%	69-130
OP89449-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP89449-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	88	%	71-129
OP89449-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP89449-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	88	%	69-133
OP89449-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP89449-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	89	%	72-134
OP89449-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	3	%	30
OP89449-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	95	%	65-144
OP89449-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	5	%	30
OP89449-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	88	%	71-132
OP89449-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	3	%	30
OP89449-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	93	%	73-130
OP89449-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	2	%	30
OP89449-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	92	%	71-127
OP89449-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP89449-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	89	%	68-131
OP89449-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	5	%	30
OP89449-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	97	%	69-134
OP89449-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	3	%	30
OP89449-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	85	%	65-140
OP89449-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP89449-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	91	%	69-127
OP89449-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	1	%	30
OP89449-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	87	%	53-142
OP89449-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP89449-MSD*	754-91-6	PFOSA	MSD	REC	93	%	67-137

* Sample used for QC is not from job FA92586

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92586
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/24/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89449-MSD*	754-91-6	PFOSA	MSD	RPD	2	%	30
OP89449-MSD*	31506-32-8	MeFOSA	MSD	REC	97	%	68-141
OP89449-MSD*	31506-32-8	MeFOSA	MSD	RPD	4	%	30
OP89449-MSD*	2355-31-9	MeFOSAA	MSD	REC	94	%	65-136
OP89449-MSD*	2355-31-9	MeFOSAA	MSD	RPD	5	%	30
OP89449-MSD*	2991-50-6	EtFOSAA	MSD	REC	92	%	61-135
OP89449-MSD*	2991-50-6	EtFOSAA	MSD	RPD	3	%	30
OP89449-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	94	%	63-143
OP89449-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP89449-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	94	%	64-140
OP89449-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP89449-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	95	%	67-138
OP89449-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30
OP89630	EPA 537M QSM5.3 B-15						
OP89630-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP89630-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	93	%	72-129
OP89630-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	96	%	72-129
OP89630-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	96	%	72-130
OP89630-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	97	%	71-133
OP89630-BS	375-95-1	Perfluorononanoic acid	BSP	REC	100	%	69-130
OP89630-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	92	%	71-129
OP89630-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP89630-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	108	%	72-134
OP89630-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	98	%	65-144
OP89630-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	99	%	71-132
OP89630-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	99	%	73-130
OP89630-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	97	%	71-127
OP89630-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	68-131
OP89630-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP89630-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	90	%	65-140
OP89630-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP89630-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	91	%	53-142
OP89630-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP89630-BS	31506-32-8	MeFOSA	BSP	REC	113	%	68-141
OP89630-BS	2355-31-9	MeFOSAA	BSP	REC	101	%	65-136
OP89630-BS	2991-50-6	EtFOSAA	BSP	REC	98	%	61-135
OP89630-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP89630-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	99	%	64-140
OP89630-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138

* Sample used for QC is not from job FA92586

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1189-IBLK	2Q84128.D	1	02/01/22	NG	n/a	n/a	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	106%	50-150%
	13C5-PFHxA	106%	50-150%

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1189-IBLK	2Q84128.D	1	02/01/22	NG	n/a	n/a	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	112%	50-150%
	13C2-PFTeDA	126%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	103%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	97%	50-150%

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1190-IBLK	2Q84215.D	1	02/02/22	NG	n/a	n/a	S2Q1190

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	102%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	102%	50-150%

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1190-IBLK	2Q84215.D	1	02/02/22	NG	n/a	n/a	S2Q1190

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	95%	50-150%
	13C3-HFPO-DA	102%	50-150%

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q748-IBLK	3Q54046.D	1	02/09/22	MV	n/a	n/a	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	115%	50-150%
	13C5-PFHxA	117%	50-150%

Instrument Blank

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q748-IBLK	3Q54046.D	1	02/09/22	MV	n/a	n/a	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	118%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	118%	50-150%
	13C6-PFDA	120%	50-150%
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	117%	50-150%
	13C2-PFTeDA	120%	50-150%
	13C3-PFBS	115%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	115%	50-150%
	13C8-FOSA	126%	50-150%
	d3-MeFOSA	123%	50-150%
	d3-MeFOSAA	127%	50-150%
	d5-EtFOSAA	124%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	113%	50-150%
	13C2-8:2FTS	115%	50-150%
	13C3-HFPO-DA	111%	50-150%

Method Blank Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-MB	2Q84173.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	114%	50-150%
	13C5-PFPeA	123%	50-150%
	13C5-PFHxA	122%	50-150%

Method Blank Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-MB	2Q84173.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	121%	50-150%
	13C8-PFOA	128%	50-150%
	13C9-PFNA	127%	50-150%
	13C6-PFDA	128%	50-150%
	13C7-PFUnDA	130%	50-150%
	13C2-PFDoDA	128%	50-150%
	13C2-PFTeDA	142%	50-150%
	13C3-PFBS	122%	50-150%
	13C3-PFHxS	120%	50-150%
	13C8-PFOS	130%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSAA	115%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	120%	50-150%
	13C2-6:2FTS	115%	50-150%
	13C2-8:2FTS	117%	50-150%
	13C3-HFPO-DA	101%	50-150%

Method Blank Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89630-MB	3Q54051.D	1	02/09/22	MV	02/08/22	OP89630	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	101%	50-150%

Method Blank Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89630-MB	3Q54051.D	1	02/09/22	MV	02/08/22	OP89630	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	103%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	69%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	94%	50-150%

Blank Spike Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-BS	2Q84172.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.135	84	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.130	81	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.135	84	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.135	84	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.133	83	71-133
375-95-1	Perfluorononanoic acid	0.16	0.129	81	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.138	86	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.136	85	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.140	88	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.142	89	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.136	85	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.144	90	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.145	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.144	90	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.149	93	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.133	83	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.144	90	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.129	81	53-142
754-91-6	PFOSA	0.16	0.137	86	67-137
31506-32-8	MeFOSA	0.16	0.160	100	68-141
2355-31-9	MeFOSAA	0.16	0.146	91	65-136
2991-50-6	EtFOSAA	0.16	0.143	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.144	90	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.146	91	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.146	91	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.144	90	60-140
919005-14-4	ADONA	0.16	0.126	79	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.137	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.141	88	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	118%	50-150%
	13C5-PFPeA	130%	50-150%
	13C5-PFHxA	129%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-BS	2Q84172.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	127%	50-150%
	13C8-PFOA	131%	50-150%
	13C9-PFNA	132%	50-150%
	13C6-PFDA	131%	50-150%
	13C7-PFUnDA	130%	50-150%
	13C2-PFDoDA	130%	50-150%
	13C2-PFTeDA	144%	50-150%
	13C3-PFBS	124%	50-150%
	13C3-PFHxS	123%	50-150%
	13C8-PFOS	128%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSAA	116%	50-150%
	d5-EtFOSAA	118%	50-150%
	13C2-4:2FTS	129%	50-150%
	13C2-6:2FTS	122%	50-150%
	13C2-8:2FTS	122%	50-150%
	13C3-HFPO-DA	107%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89630-BS	3Q54050.D	1	02/09/22	MV	02/08/22	OP89630	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.148	93	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.149	93	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.154	96	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.153	96	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.155	97	71-133
375-95-1	Perfluorononanoic acid	0.16	0.160	100	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.147	92	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.154	96	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.173	108	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.157	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.159	99	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.158	99	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.155	97	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.167	104	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.157	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.144	90	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.153	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.145	91	53-142
754-91-6	PFOSA	0.16	0.149	93	67-137
31506-32-8	MeFOSA	0.16	0.181	113	68-141
2355-31-9	MeFOSAA	0.16	0.161	101	65-136
2991-50-6	EtFOSAA	0.16	0.156	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.157	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.158	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.152	95	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.164	103	60-140
919005-14-4	ADONA	0.16	0.168	105	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.141	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.164	103	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89630-BS	3Q54050.D	1	02/09/22	MV	02/08/22	OP89630	S3Q748

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	84%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSA	54%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-MS	2Q84191.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189
OP89449-MSD	2Q84192.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189
FA92616-1	2Q84234.D	1	02/03/22	NG	01/27/22	OP89449	S2Q1190

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	Compound	FA92616-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0170		0.167	0.156	83	0.167	0.158	85	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0142		0.167	0.156	85	0.167	0.161	88	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0170		0.167	0.158	85	0.167	0.160	86	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0026	J	0.167	0.146	86	0.167	0.149	88	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0068	J	0.167	0.151	87	0.167	0.153	88	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0083 U		0.167	0.139	83	0.167	0.140	84	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083 U		0.167	0.144	86	0.167	0.146	88	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083 U		0.167	0.143	86	0.167	0.146	88	2	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083 U		0.167	0.145	87	0.167	0.149	89	3	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083 U		0.167	0.151	91	0.167	0.158	95	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0083 U		0.167	0.142	85	0.167	0.146	88	3	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0196		0.167	0.171	91	0.167	0.174	93	2	73-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0145		0.167	0.163	89	0.167	0.168	92	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.214		0.167	0.347	80	0.167	0.363	89	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U		0.167	0.156	94	0.167	0.161	97	3	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0118		0.167	0.152	84	0.167	0.154	85	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083 U		0.167	0.153	92	0.167	0.152	91	1	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083 U		0.167	0.148	89	0.167	0.145	87	2	53-142/30
754-91-6	PFOSA	0.0083 U		0.167	0.152	91	0.167	0.155	93	2	67-137/30
31506-32-8	MeFOSA	0.017 U		0.167	0.155	93	0.167	0.161	97	4	68-141/30
2355-31-9	MeFOSAA	0.017 U		0.167	0.149	89	0.167	0.156	94	5	65-136/30
2991-50-6	EtFOSAA	0.017 U		0.167	0.149	89	0.167	0.153	92	3	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		0.167	0.155	93	0.167	0.156	94	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U		0.167	0.154	92	0.167	0.156	94	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U		0.167	0.150	90	0.167	0.158	95	5	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017 U		0.167	0.161	97	0.167	0.160	96	1	60-140/30
919005-14-4	ADONA	0.017 U		0.167	0.138	83	0.167	0.137	82	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017 U		0.167	0.139	83	0.167	0.139	83	0	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017 U		0.167	0.136	82	0.167	0.141	85	4	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA92616-1	Limits
	13C4-PFBA	101%	100%	100%	50-150%
	13C5-PFPeA	112%	108%	102%	50-150%
	13C5-PFHxA	112%	110%	103%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92586
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89449-MS	2Q84191.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189
OP89449-MSD	2Q84192.D	1	02/02/22	NG	01/27/22	OP89449	S2Q1189
FA92616-1	2Q84234.D	1	02/03/22	NG	01/27/22	OP89449	S2Q1190

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92586-1, FA92586-2, FA92586-4, FA92586-5, FA92586-6, FA92586-7, FA92586-8, FA92586-9, FA92586-10, FA92586-11, FA92586-12, FA92586-13

CAS No.	ID Standard Recoveries	MS	MSD	FA92616-1	Limits
	13C4-PFHpA	112%	108%	103%	50-150%
	13C8-PFOA	114%	112%	104%	50-150%
	13C9-PFNA	114%	109%	104%	50-150%
	13C6-PFDA	113%	111%	104%	50-150%
	13C7-PFUnDA	112%	111%	102%	50-150%
	13C2-PFDoDA	120%	115%	103%	50-150%
	13C2-PFTeDA	139%	138%	102%	50-150%
	13C3-PFBS	108%	103%	102%	50-150%
	13C3-PFHxS	106%	102%	101%	50-150%
	13C8-PFOS	109%	107%	100%	50-150%
	13C8-FOSA	102%	98%	99%	50-150%
	d3-MeFOSA	79%	82%		50-150%
	d3-MeFOSAA	108%	103%	101%	50-150%
	d5-EtFOSAA	109%	103%	100%	50-150%
	13C2-4:2FTS	114%	113%	97%	50-150%
	13C2-6:2FTS	108%	106%	100%	50-150%
	13C2-8:2FTS	107%	104%	97%	50-150%
	13C3-HFPO-DA	93%	95%		50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA92663

Sampling Date: 01/26/22

Report to:

AECOM
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Orlando, FL 32801
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ATTN: Jennifer Joyal

Total number of pages in report: **50**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA92663

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA92663-1	01/26/22	08:00	BF	01/27/22	AQ	Ground Water	A3RB-DPT0012-004.0-20220126
FA92663-2	01/26/22	08:30	BF	01/27/22	AQ	Ground Water	A3RB-DPT0012-010.0-20220126
FA92663-3	01/26/22	09:05	BF	01/27/22	AQ	Ground Water	A3RB-DPT0012-025.0-20220126
FA92663-4	01/26/22	10:00	BF	01/27/22	AQ	Ground Water	A3RB-DPT0012-034.0-20220126
FA92663-5	01/26/22	10:45	BF	01/27/22	AQ	Ground Water	A3RB-DPT0012-057.0-20220126
FA92663-6	01/26/22	12:40	BF	01/27/22	AQ	Ground Water	FS2-DPT0008-004.0-20220126
FA92663-7	01/26/22	13:15	BF	01/27/22	AQ	Ground Water	FS2-DPT0008-019.0-20220126
FA92663-8	01/26/22	13:55	BF	01/27/22	AQ	Ground Water	FS2-DPT0008-034.0-20220126
FA92663-9	01/26/22	14:40	BF	01/27/22	AQ	Ground Water	FS2-DPT0008-049.0-20220126
FA92663-10	01/26/22	15:20	BF	01/27/22	AQ	Ground Water	FS2-DPT0008-055.0-20220126
FA92663-11	01/26/22	15:25	BF	01/27/22	AQ	Field Blank Water	FB-20220126-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA92663

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 2/14/2022 11:27:55

On 01/27/2022, 10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92663 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP89504

Sample(s) FA92663-2MS, FA92663-6DUP, FA92663-2MS were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluorobutanesulfonic acid, Perfluorononanoic acid are outside control limits for sample OP89504-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FA92663-1, FA92663-10, FA92663-2, FA92663-3, FA92663-5, FA92663-7, FA92663-8, FA92663-9 have surrogates outside control limits.

FA92663-1 for d3-MeFOSA: Outside control limits.

FA92663-1: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-2 for d3-MeFOSA: Outside control limits due to matrix interference. Confirmed by batch QC.

FA92663-2 for d3-MeFOSA: Outside control limits due to matrix interference. Confirmed by batch QC.

FA92663-2: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-3 for d3-MeFOSA: Outside control limits.

FA92663-3 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA92663-3: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-5 for d3-MeFOSA: Outside control limits.

FA92663-5: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-7 for d3-MeFOSA: Outside control limits.

FA92663-7: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-8 for d3-MeFOSA: Outside control limits.

FA92663-8 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA92663-8: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-9 for d3-MeFOSA: Outside control limits.

FA92663-9: Dilution required due to matrix interference (ID recovery standard failure).

FA92663-10 for d3-MeFOSA: Outside control limits.

FA92663-10 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA92663-10: Dilution required due to matrix interference (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92663
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/26/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92663-1	**A3RB-DPT0012-004.0-20220126**					
Perfluorohexanesulfonic acid		0.0035 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92663-2	**A3RB-DPT0012-010.0-20220126**					
Perfluorobutanoic acid		0.0067 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0039 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0045 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0143	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0076 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92663-3	**A3RB-DPT0012-025.0-20220126**					
Perfluorooctanesulfonic acid		0.0028 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92663-4	**A3RB-DPT0012-034.0-20220126**					
No hits reported in this sample.						
FA92663-5	**A3RB-DPT0012-057.0-20220126**					
No hits reported in this sample.						
FA92663-6	**FS2-DPT0008-004.0-20220126**					
Perfluorobutanoic acid		0.0747	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.177	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.168	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.120	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0950	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0130	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0103	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0262	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.716	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0271	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.65	0.083	0.042	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0397	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
8:2 Fluorotelomer sulfonate		0.0447	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
FA92663-7	**FS2-DPT0008-019.0-20220126**					
Perfluorobutanoic acid		0.0228	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0192	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA92663
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/26/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanoic acid		0.0146	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0073 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0098	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0113	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0034 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0300	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0271	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92663-8	**FS2-DPT0008-034.0-20220126**					
Perfluoropentanoic acid		0.0060 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0076 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0052 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0268	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.010	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0141	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA92663-9	**FS2-DPT0008-049.0-20220126**					
Perfluorobutanoic acid		0.0121 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0083	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0095	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0065 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0289	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0066 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0090	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

FA92663-10 **FS2-DPT0008-055.0-20220126**

No hits reported in this sample.

FA92663-11 **FB-20220126-01**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0012-004.0-20220126
Lab Sample ID: FA92663-1 **Date Sampled:** 01/26/22
Matrix: AQ - Ground Water **Date Received:** 01/27/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84661.D	1	02/09/22 03:21	NG	01/31/22 09:00	OP89504	S2Q1195
Run #2 [a]	2Q84588.D	5	02/08/22 07:08	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0035	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-004.0-20220126		
Lab Sample ID:	FA92663-1	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	107%	110%	50-150%
	13C5-PFPeA	108%	108%	50-150%
	13C5-PFHxA	111%	110%	50-150%
	13C4-PFHpA	111%	110%	50-150%
	13C8-PFOA	116%	112%	50-150%
	13C9-PFNA	119%	114%	50-150%
	13C6-PFDA	121%	117%	50-150%
	13C7-PFUnDA	121%	113%	50-150%
	13C2-PFDoDA	111%	112%	50-150%
	13C2-PFTeDA	101%	120%	50-150%
	13C3-PFBS	115%	114%	50-150%
	13C3-PFHxS	110%	116%	50-150%
	13C8-PFOS	121%	116%	50-150%
	13C8-FOSA	103%	100%	50-150%
	d3-MeFOSA	23% [c]	51%	50-150%
	d3-MeFOSAA	130%	116%	50-150%
	d5-EtFOSAA	127%	115%	50-150%
	13C2-4:2FTS	109%	106%	50-150%
	13C2-6:2FTS	114%	110%	50-150%
	13C2-8:2FTS	118%	109%	50-150%
	13C3-HFPO-DA	85%	95%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0012-010.0-20220126
Lab Sample ID: FA92663-2 **Date Sampled:** 01/26/22
Matrix: AQ - Ground Water **Date Received:** 01/27/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53908.D	1	02/08/22 03:09	MV	01/31/22 09:00	OP89504	S3Q746
Run #2 [a]	2Q84589.D	5	02/08/22 07:24	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0067	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0039	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0045	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0143	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0076	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-010.0-20220126		
Lab Sample ID:	FA92663-2	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	94%	50-150%
	13C5-PFPeA	64%	92%	50-150%
	13C5-PFHxA	73%	95%	50-150%
	13C4-PFHpA	86%	97%	50-150%
	13C8-PFOA	92%	97%	50-150%
	13C9-PFNA	92%	102%	50-150%
	13C6-PFDA	91%	102%	50-150%
	13C7-PFUnDA	86%	99%	50-150%
	13C2-PFDoDA	83%	96%	50-150%
	13C2-PFTeDA	77%	97%	50-150%
	13C3-PFBS	70%	97%	50-150%
	13C3-PFHxS	81%	92%	50-150%
	13C8-PFOS	89%	107%	50-150%
	13C8-FOSA	79%	94%	50-150%
	d3-MeFOSA	18% [c]	37% [c]	50-150%
	d3-MeFOSAA	93%	106%	50-150%
	d5-EtFOSAA	91%	104%	50-150%
	13C2-4:2FTS	73%	93%	50-150%
	13C2-6:2FTS	96%	96%	50-150%
	13C2-8:2FTS	89%	96%	50-150%
	13C3-HFPO-DA	63%	79%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits due to matrix interference. Confirmed by batch QC.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-025.0-20220126		
Lab Sample ID:	FA92663-3	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53909.D	1	02/08/22 03:25	MV	01/31/22 09:00	OP89504	S3Q746
Run #2 [a]	2Q84590.D	5	02/08/22 07:41	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0028	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-025.0-20220126		
Lab Sample ID:	FA92663-3	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%	100%	50-150%
	13C5-PFPeA	83%	99%	50-150%
	13C5-PFHxA	90%	100%	50-150%
	13C4-PFHpA	97%	102%	50-150%
	13C8-PFOA	102%	101%	50-150%
	13C9-PFNA	98%	105%	50-150%
	13C6-PFDA	96%	105%	50-150%
	13C7-PFUnDA	87%	101%	50-150%
	13C2-PFDoDA	85%	98%	50-150%
	13C2-PFTeDA	74%	105%	50-150%
	13C3-PFBS	86%	104%	50-150%
	13C3-PFHxS	102%	100%	50-150%
	13C8-PFOS	94%	109%	50-150%
	13C8-FOSA	84%	98%	50-150%
	d3-MeFOSA	21% [d]	45% [d]	50-150%
	d3-MeFOSAA	94%	110%	50-150%
	d5-EtFOSAA	91%	100%	50-150%
	13C2-4:2FTS	89%	94%	50-150%
	13C2-6:2FTS	99%	98%	50-150%
	13C2-8:2FTS	92%	97%	50-150%
	13C3-HFPO-DA	80%	84%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-034.0-20220126		
Lab Sample ID:	FA92663-4	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84601.D	1	02/08/22 10:50	NG	01/31/22 09:00	OP89504	S2Q1194
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0012-034.0-20220126
Lab Sample ID: FA92663-4 **Date Sampled:** 01/26/22
Matrix: AQ - Ground Water **Date Received:** 01/27/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	98%		50-150%
	13C5-PFPeA	97%		50-150%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	100%		50-150%
	13C8-PFOA	103%		50-150%
	13C9-PFNA	106%		50-150%
	13C6-PFDA	107%		50-150%
	13C7-PFUnDA	105%		50-150%
	13C2-PFDoDA	103%		50-150%
	13C2-PFTeDA	101%		50-150%
	13C3-PFBS	104%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	105%		50-150%
	13C8-FOSA	112%		50-150%
	d3-MeFOSA	63%		50-150%
	d3-MeFOSAA	114%		50-150%
	d5-EtFOSAA	109%		50-150%
	13C2-4:2FTS	96%		50-150%
	13C2-6:2FTS	101%		50-150%
	13C2-8:2FTS	104%		50-150%
	13C3-HFPO-DA	88%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0012-057.0-20220126
Lab Sample ID: FA92663-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84663.D	1	02/09/22 03:55	NG	01/31/22 09:00	OP89504	S2Q1195
Run #2 [a]	2Q84591.D	5	02/08/22 07:58	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0012-057.0-20220126		
Lab Sample ID:	FA92663-5	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	104%	106%	50-150%
	13C5-PFPeA	104%	104%	50-150%
	13C5-PFHxA	106%	105%	50-150%
	13C4-PFHpA	105%	106%	50-150%
	13C8-PFOA	107%	108%	50-150%
	13C9-PFNA	109%	108%	50-150%
	13C6-PFDA	110%	108%	50-150%
	13C7-PFUnDA	103%	106%	50-150%
	13C2-PFDoDA	98%	102%	50-150%
	13C2-PFTeDA	101%	103%	50-150%
	13C3-PFBS	107%	108%	50-150%
	13C3-PFHxS	102%	110%	50-150%
	13C8-PFOS	111%	119%	50-150%
	13C8-FOSA	104%	110%	50-150%
	d3-MeFOSA	29% [c]	53%	50-150%
	d3-MeFOSAA	123%	115%	50-150%
	d5-EtFOSAA	119%	110%	50-150%
	13C2-4:2FTS	99%	100%	50-150%
	13C2-6:2FTS	104%	104%	50-150%
	13C2-8:2FTS	106%	103%	50-150%
	13C3-HFPO-DA	84%	92%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-004.0-20220126
Lab Sample ID: FA92663-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84664.D	1	02/09/22 04:12	NG	01/31/22 09:00	OP89504	S2Q1195
Run #2	2Q84592.D	10	02/08/22 08:15	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0747	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.177	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.168	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.120	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0950	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0130	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0103	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0262	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.716	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0271	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.65 [a]	0.083	0.042	0.021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0008-004.0-20220126		
Lab Sample ID:	FA92663-6	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0397	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0447	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	116%	115%	50-150%
	13C5-PFPeA	116%	111%	50-150%
	13C5-PFHxA	117%	115%	50-150%
	13C4-PFHpA	116%	116%	50-150%
	13C8-PFOA	121%	116%	50-150%
	13C9-PFNA	115%	120%	50-150%
	13C6-PFDA	126%	118%	50-150%
	13C7-PFUnDA	123%	113%	50-150%
	13C2-PFDoDA	117%	110%	50-150%
	13C2-PFTeDA	119%	112%	50-150%
	13C3-PFBS	120%	118%	50-150%
	13C3-PFHxS	113%	117%	50-150%
	13C8-PFOS	117%	124%	50-150%
	13C8-FOSA	134%	128%	50-150%
	d3-MeFOSA	88%	100%	50-150%
	d3-MeFOSAA	136%	119%	50-150%
	d5-EtFOSAA	133%	116%	50-150%
	13C2-4:2FTS	114%	109%	50-150%
	13C2-6:2FTS	119%	114%	50-150%
	13C2-8:2FTS	121%	116%	50-150%
	13C3-HFPO-DA	93%	106%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-019.0-20220126
Lab Sample ID: FA92663-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84698.D	1	02/09/22 13:43	NG	01/31/22 09:00	OP89504	S2Q1195
Run #2 [a]	2Q84597.D	5	02/08/22 09:43	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0228	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0192	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0146	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0073	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0098	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0113	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0034	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0300	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0271	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-019.0-20220126
Lab Sample ID: FA92663-7 **Date Sampled:** 01/26/22
Matrix: AQ - Ground Water **Date Received:** 01/27/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	104%	112%	50-150%
	13C5-PFPeA	101%	110%	50-150%
	13C5-PFHxA	104%	109%	50-150%
	13C4-PFHpA	102%	112%	50-150%
	13C8-PFOA	108%	112%	50-150%
	13C9-PFNA	111%	117%	50-150%
	13C6-PFDA	115%	116%	50-150%
	13C7-PFUnDA	115%	113%	50-150%
	13C2-PFDoDA	109%	113%	50-150%
	13C2-PFTeDA	93%	119%	50-150%
	13C3-PFBS	109%	117%	50-150%
	13C3-PFHxS	105%	106%	50-150%
	13C8-PFOS	112%	113%	50-150%
	13C8-FOSA	118%	125%	50-150%
	d3-MeFOSA	46% [c]	66%	50-150%
	d3-MeFOSAA	144%	123%	50-150%
	d5-EtFOSAA	130%	122%	50-150%
	13C2-4:2FTS	104%	107%	50-150%
	13C2-6:2FTS	113%	109%	50-150%
	13C2-8:2FTS	118%	110%	50-150%
	13C3-HFPO-DA	88%	97%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-034.0-20220126
Lab Sample ID: FA92663-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53910.D	1	02/08/22 03:42	MV	01/31/22 09:00	OP89504	S3Q746
Run #2 [a]	2Q84598.D	5	02/08/22 09:59	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0060	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0076	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0052	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0268	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.010	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0141	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0008-034.0-20220126		
Lab Sample ID:	FA92663-8	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%	114%	50-150%
	13C5-PFPeA	100%	113%	50-150%
	13C5-PFHxA	105%	113%	50-150%
	13C4-PFHpA	110%	114%	50-150%
	13C8-PFOA	111%	116%	50-150%
	13C9-PFNA	109%	117%	50-150%
	13C6-PFDA	105%	116%	50-150%
	13C7-PFUnDA	96%	114%	50-150%
	13C2-PFDoDA	90%	111%	50-150%
	13C2-PFTeDA	80%	116%	50-150%
	13C3-PFBS	103%	119%	50-150%
	13C3-PFHxS	109%	110%	50-150%
	13C8-PFOS	104%	116%	50-150%
	13C8-FOSA	89%	112%	50-150%
	d3-MeFOSA	17% [d]	42% [d]	50-150%
	d3-MeFOSAA	107%	125%	50-150%
	d5-EtFOSAA	102%	119%	50-150%
	13C2-4:2FTS	102%	108%	50-150%
	13C2-6:2FTS	114%	113%	50-150%
	13C2-8:2FTS	105%	113%	50-150%
	13C3-HFPO-DA	91%	98%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-049.0-20220126
Lab Sample ID: FA92663-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q53911.D	1	02/08/22 03:58	MV	01/31/22 09:00	OP89504	S3Q746
Run #2 [a]	2Q84599.D	5	02/08/22 10:16	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0121	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0083	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0095	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0065	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0289	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0066	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0090	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0008-049.0-20220126		
Lab Sample ID:	FA92663-9	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%	111%	50-150%
	13C5-PFPeA	91%	109%	50-150%
	13C5-PFHxA	98%	110%	50-150%
	13C4-PFHpA	104%	111%	50-150%
	13C8-PFOA	106%	113%	50-150%
	13C9-PFNA	104%	113%	50-150%
	13C6-PFDA	102%	114%	50-150%
	13C7-PFUnDA	93%	108%	50-150%
	13C2-PFDoDA	91%	107%	50-150%
	13C2-PFTeDA	94%	109%	50-150%
	13C3-PFBS	94%	114%	50-150%
	13C3-PFHxS	103%	109%	50-150%
	13C8-PFOS	99%	118%	50-150%
	13C8-FOSA	97%	121%	50-150%
	d3-MeFOSA	48% [c]	74%	50-150%
	d3-MeFOSAA	111%	116%	50-150%
	d5-EtFOSAA	105%	112%	50-150%
	13C2-4:2FTS	96%	104%	50-150%
	13C2-6:2FTS	109%	109%	50-150%
	13C2-8:2FTS	104%	111%	50-150%
	13C3-HFPO-DA	83%	101%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FS2-DPT0008-055.0-20220126
Lab Sample ID: FA92663-10
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 01/26/22
Date Received: 01/27/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84666.D	1	02/09/22 04:45	NG	01/31/22 09:00	OP89504	S2Q1195
Run #2 [a]	2Q84600.D	5	02/08/22 10:33	NG	01/31/22 09:00	OP89504	S2Q1194

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FS2-DPT0008-055.0-20220126		
Lab Sample ID:	FA92663-10	**Date Sampled:**	01/26/22
Matrix:	AQ - Ground Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	105%	110%	50-150%
	13C5-PFPeA	104%	109%	50-150%
	13C5-PFHxA	108%	108%	50-150%
	13C4-PFHpA	107%	110%	50-150%
	13C8-PFOA	111%	111%	50-150%
	13C9-PFNA	113%	113%	50-150%
	13C6-PFDA	115%	111%	50-150%
	13C7-PFUnDA	106%	104%	50-150%
	13C2-PFDoDA	96%	93%	50-150%
	13C2-PFTeDA	71%	79%	50-150%
	13C3-PFBS	110%	115%	50-150%
	13C3-PFHxS	105%	109%	50-150%
	13C8-PFOS	113%	115%	50-150%
	13C8-FOSA	92%	93%	50-150%
	d3-MeFOSA	13% [d]	34% [d]	50-150%
	d3-MeFOSAA	118%	109%	50-150%
	d5-EtFOSAA	111%	108%	50-150%
	13C2-4:2FTS	102%	104%	50-150%
	13C2-6:2FTS	108%	107%	50-150%
	13C2-8:2FTS	109%	104%	50-150%
	13C3-HFPO-DA	87%	95%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-20220126-01		
Lab Sample ID:	FA92663-11	**Date Sampled:**	01/26/22
Matrix:	AQ - Field Blank Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q84602.D	1	02/08/22 11:06	NG	01/31/22 09:00	OP89504	S2Q1194
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-20220126-01		
Lab Sample ID:	FA92663-11	**Date Sampled:**	01/26/22
Matrix:	AQ - Field Blank Water	**Date Received:**	01/27/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	117%		50-150%
	13C5-PFPeA	116%		50-150%
	13C5-PFHxA	117%		50-150%
	13C4-PFHpA	117%		50-150%
	13C8-PFOA	118%		50-150%
	13C9-PFNA	118%		50-150%
	13C6-PFDA	116%		50-150%
	13C7-PFUnDA	115%		50-150%
	13C2-PFDoDA	109%		50-150%
	13C2-PFTeDA	86%		50-150%
	13C3-PFBS	119%		50-150%
	13C3-PFHxS	116%		50-150%
	13C8-PFOS	118%		50-150%
	13C8-FOSA	120%		50-150%
	d3-MeFOSA	73%		50-150%
	d3-MeFOSAA	115%		50-150%
	d5-EtFOSAA	115%		50-150%
	13C2-4:2FTS	110%		50-150%
	13C2-6:2FTS	110%		50-150%
	13C2-8:2FTS	110%		50-150%
	13C3-HFPO-DA	109%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA92663

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name:	NASA KSC	COC No.		Page:	of
Site Location:	Site Assessment and Mitigation (SA&M)	PO No.	TBD	Project No.	60667657.4
TO No.:	80KSC021F0096	AECOM Project Manager:	**Jennifer Joyal**	Phase:	
Sampler/Phone #	Brittany Follet/ 419-302-0236	Send Invoice To:	Instructions in MSA # 19S-24548-GV03	EDD to:	Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name:	SGS Orlando	Deliver Sample Kits To:	AECOM Depot, 523 18th Street, Orlando	Report to:	Jennifer Chastain Cc: Teresa Amentt Jennings
		Turnaround Time(specify):	Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-DPT0012-004.0-20220126	A3RB-DPT002	20220126	0800	WG	N	G	2	2	Turbidity 98
2	A3RB-DPT0012-010.0-20220126	"	"	0830	WG	N	G	2	2	780
3	A3RB-DPT0012-025.0-20220126	"	"	0905	WG	N	G	2	2	>800
4	A3RB-DPT0012-034.0-20220126	"	"	1000	WG	N	G	2	2	>800
5	A3RB-DPT0012-057.0-20220126	"	"	1045	WG	N	G	2	2	780
6	FS2-DPT0008-004.0-20220126	FS2-DPT0008	"	1240	WG	N	G	2	2	17.1
7	FS2-DPT0008-019.0-20220126	"	"	1315	WG	N	G	2	2	>800
8	FS2-DPT0008-034.0-20220126	"	"	1355	WG	N	G	2	2	>800
9	FS2-DPT0008-049.0-20220126	"	"	1440	WG	N	G	2	2	>800
10	FS2-DPT0008-055.0-20220126	"	"	1520	WG	N	G	2	2	>800
11	FB-20220126-[redacted]	FB001	"	[redacted]	WQ	N	G	2	2	
				1525			G	2	2	

INITIAL ASSESSMENT DC

LABEL VERIFICATION CM

***Field* Comments:**

Report only per QAPP WS #15-2

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	01-26-2022	1545	1	1/26/22	15:45
2	1/26/22	17:00	2	1/26/22	1700
3			3		

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Amblent Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

1.2 DRH

5.2 5

FA92663: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA92663 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 1/27/2022 5:00:00 PM **Delivery Method:** FX **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.2);

Cooler Temps (Corrected) °C: Cooler 1: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 1/27/2022 5:00:00 PM Reviewer: _____ Date: _____

FA92663: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92663
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/26/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89504	EPA 537M QSM5.3 B-15						
OP89504-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	94	%	73-129
OP89504-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	94	%	72-129
OP89504-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP89504-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	94	%	72-130
OP89504-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	94	%	71-133
OP89504-BS	375-95-1	Perfluorononanoic acid	BSP	REC	92	%	69-130
OP89504-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP89504-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	94	%	69-133
OP89504-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	94	%	72-134
OP89504-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	93	%	65-144
OP89504-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	94	%	71-132
OP89504-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	97	%	73-130
OP89504-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	96	%	71-127
OP89504-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	95	%	68-131
OP89504-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	99	%	69-134
OP89504-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP89504-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	94	%	69-127
OP89504-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	95	%	53-142
OP89504-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP89504-BS	31506-32-8	MeFOSA	BSP	REC	106	%	68-141
OP89504-BS	2355-31-9	MeFOSAA	BSP	REC	94	%	65-136
OP89504-BS	2991-50-6	EtFOSAA	BSP	REC	97	%	61-135
OP89504-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP89504-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	99	%	64-140
OP89504-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138
OP89504-MS	375-22-4	Perfluorobutanoic acid	MS	REC	91	%	73-129
OP89504-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	101	%	72-129
OP89504-MS	307-24-4	Perfluorohexanoic acid	MS	REC	91	%	72-129
OP89504-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	103	%	72-130
OP89504-MS	335-67-1	Perfluorooctanoic acid	MS	REC	101	%	71-133
OP89504-MS	375-95-1	Perfluorononanoic acid	MS	REC	97	%	69-130
OP89504-MS	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	71-129
OP89504-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	96	%	69-133
OP89504-MS	307-55-1	Perfluorododecanoic acid	MS	REC	99	%	72-134
OP89504-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	91	%	65-144
OP89504-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	95	%	71-132
OP89504-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	101	%	73-130
OP89504-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	97	%	71-127
OP89504-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	103	%	68-131
OP89504-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	111	%	69-134
OP89504-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	91	%	65-140
OP89504-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	100	%	69-127

* Sample used for QC is not from job FA92663

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92663
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 01/26/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89504-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	97	%	53-142
OP89504-MS	754-91-6	PFOSA	MS	REC	100	%	67-137
OP89504-MS	31506-32-8	MeFOSA	MS	REC	113	%	68-141
OP89504-MS	2355-31-9	MeFOSAA	MS	REC	101	%	65-136
OP89504-MS	2991-50-6	EtFOSAA	MS	REC	103	%	61-135
OP89504-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	105	%	63-143
OP89504-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	104	%	64-140
OP89504-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	104	%	67-138
OP89504-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	8	%	30
OP89504-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	4	%	30
OP89504-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	4	%	30
OP89504-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	2	%	30
OP89504-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	8	%	30
OP89504-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	200	%	30
OP89504-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP89504-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP89504-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP89504-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP89504-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP89504-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	200	%	30
OP89504-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	7	%	30
OP89504-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	5	%	30
OP89504-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	13	%	30
OP89504-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP89504-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP89504-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP89504-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP89504-DUP	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP89504-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP89504-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP89504-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP89504-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	13	%	30
OP89504-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	1	%	30

* Sample used for QC is not from job FA92663

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1194-IBLK	2Q84535.D	1	02/07/22	NG	n/a	n/a	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	97%	50-150%

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1194-IBLK	2Q84535.D	1	02/07/22	NG	n/a	n/a	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	101%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	104%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	98%	50-150%

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q746-IBLK	3Q53876.D	1	02/07/22	MV	n/a	n/a	S3Q746

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-2, FA92663-3, FA92663-8, FA92663-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	107%	50-150%
	13C4-PFHpA	108%	50-150%

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q746-IBLK	3Q53876.D	1	02/07/22	MV	n/a	n/a	S3Q746

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-2, FA92663-3, FA92663-8, FA92663-9

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	110%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	107%	50-150%
	13C2-PFTeDA	107%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	111%	50-150%
	d3-MeFOSA	114%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	107%	50-150%

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1195-IBLK	2Q84632.D	1	02/08/22	NG	n/a	n/a	S2Q1195

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-5, FA92663-6, FA92663-7, FA92663-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	114%	50-150%

Instrument Blank

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1195-IBLK	2Q84632.D	1	02/08/22	NG	n/a	n/a	S2Q1195

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-5, FA92663-6, FA92663-7, FA92663-10

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	114%	50-150%
	13C8-PFOA	117%	50-150%
	13C9-PFNA	115%	50-150%
	13C6-PFDA	114%	50-150%
	13C7-PFUnDA	114%	50-150%
	13C2-PFDoDA	111%	50-150%
	13C2-PFTeDA	118%	50-150%
	13C3-PFBS	114%	50-150%
	13C3-PFHxS	111%	50-150%
	13C8-PFOS	119%	50-150%
	13C8-FOSA	130%	50-150%
	d3-MeFOSA	127%	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	119%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	101%	50-150%

Method Blank Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-MB	2Q84587.D	1	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	117%	50-150%
	13C5-PFPeA	116%	50-150%
	13C5-PFHxA	118%	50-150%

Method Blank Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-MB	2Q84587.D	1	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	117%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	120%	50-150%
	13C6-PFDA	121%	50-150%
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	116%	50-150%
	13C2-PFTeDA	113%	50-150%
	13C3-PFBS	119%	50-150%
	13C3-PFHxS	116%	50-150%
	13C8-PFOS	124%	50-150%
	13C8-FOSA	121%	50-150%
	d3-MeFOSAA	124%	50-150%
	d5-EtFOSAA	125%	50-150%
	13C2-4:2FTS	111%	50-150%
	13C2-6:2FTS	113%	50-150%
	13C2-8:2FTS	114%	50-150%
	13C3-HFPO-DA	104%	50-150%

Blank Spike Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-BS	2Q84586.D	1	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.150	94	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.150	94	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.149	93	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.150	94	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.151	94	71-133
375-95-1	Perfluorononanoic acid	0.16	0.147	92	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.150	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.151	94	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.151	94	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.149	93	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.150	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.155	97	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.153	96	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.152	95	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.159	99	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.143	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.151	94	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.152	95	53-142
754-91-6	PFOSA	0.16	0.153	96	67-137
31506-32-8	MeFOSA	0.16	0.169	106	68-141
2355-31-9	MeFOSAA	0.16	0.151	94	65-136
2991-50-6	EtFOSAA	0.16	0.155	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.157	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.158	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.161	101	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.161	101	60-140
919005-14-4	ADONA	0.16	0.143	89	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.150	94	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.153	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	116%	50-150%
	13C5-PFPeA	116%	50-150%
	13C5-PFHxA	117%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-BS	2Q84586.D	1	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	116%	50-150%
	13C8-PFOA	118%	50-150%
	13C9-PFNA	119%	50-150%
	13C6-PFDA	117%	50-150%
	13C7-PFUnDA	118%	50-150%
	13C2-PFDoDA	115%	50-150%
	13C2-PFTeDA	117%	50-150%
	13C3-PFBS	118%	50-150%
	13C3-PFHxS	119%	50-150%
	13C8-PFOS	122%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	113%	50-150%
	13C2-4:2FTS	117%	50-150%
	13C2-6:2FTS	118%	50-150%
	13C2-8:2FTS	117%	50-150%
	13C3-HFPO-DA	101%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-MS	2Q84662.D	1	02/09/22	NG	01/31/22	OP89504	S2Q1195
FA92663-2	3Q53908.D	1	02/08/22	MV	01/31/22	OP89504	S3Q746
FA92663-2 [a]	2Q84589.D	5	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	Compound	FA92663-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0067	J	0.167	0.158	91	73-129
2706-90-3	Perfluoropentanoic acid	0.0039	J	0.167	0.173	101	72-129
307-24-4	Perfluorohexanoic acid	0.0045	J	0.167	0.156	91	72-129
375-85-9	Perfluoroheptanoic acid	0.0083 U		0.167	0.171	103	72-130
335-67-1	Perfluorooctanoic acid	0.0024	J	0.167	0.170	101	71-133
375-95-1	Perfluorononanoic acid	0.0083 U		0.167	0.161	97	69-130
335-76-2	Perfluorodecanoic acid	0.0083 U		0.167	0.159	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083 U		0.167	0.160	96	69-133
307-55-1	Perfluorododecanoic acid	0.0083 U		0.167	0.165	99	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083 U		0.167	0.152	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083 U		0.167	0.158	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083 U		0.167	0.168	101	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U		0.167	0.161	97	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0143		0.167	0.186	103	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U		0.167	0.185	111	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0076	J	0.167	0.160	91	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083 U		0.167	0.167	100	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083 U		0.167	0.161	97	53-142
754-91-6	PFOSA	0.0083 U		0.167	0.166	100	67-137
31506-32-8	MeFOSA	0.083 U [b]		0.167	0.188	113	68-141
2355-31-9	MeFOSAA	0.017 U		0.167	0.169	101	65-136
2991-50-6	EtFOSAA	0.017 U		0.167	0.171	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		0.167	0.175	105	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U		0.167	0.174	104	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U		0.167	0.174	104	67-138
13252-13-6	HFPO-DA (GenX)	0.017 U		0.167	0.211	127	60-140
919005-14-4	ADONA	0.017 U		0.167	0.153	92	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017 U		0.167	0.152	91	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017 U		0.167	0.169	101	60-140

CAS No.	ID Standard Recoveries	MS	FA92663-2	FA92663-2	Limits
	13C4-PFBA	76%	52%	94%	50-150%
	13C5-PFPeA	79%	64%	92%	50-150%
	13C5-PFHxA	84%	73%	95%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-MS	2Q84662.D	1	02/09/22	NG	01/31/22	OP89504	S2Q1195
FA92663-2	3Q53908.D	1	02/08/22	MV	01/31/22	OP89504	S3Q746
FA92663-2 [a]	2Q84589.D	5	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	ID Standard Recoveries	MS	FA92663-2	FA92663-2	Limits
	13C4-PFHpA	87%	86%	97%	50-150%
	13C8-PFOA	92%	92%	97%	50-150%
	13C9-PFNA	98%	92%	102%	50-150%
	13C6-PFDA	105%	91%	102%	50-150%
	13C7-PFUnDA	105%	86%	99%	50-150%
	13C2-PFDoDA	97%	83%	96%	50-150%
	13C2-PFTeDA	82%	77%	97%	50-150%
	13C3-PFBS	87%	70%	97%	50-150%
	13C3-PFHxS	88%	81%	92%	50-150%
	13C8-PFOS	103%	89%	107%	50-150%
	13C8-FOSA	85%	79%	94%	50-150%
	d3-MeFOSA	16%* [d]	18%* [c]	37%* [c]	50-150%
	d3-MeFOSAA	117%	93%	106%	50-150%
	d5-EtFOSAA	112%	91%	104%	50-150%
	13C2-4:2FTS	86%	73%	93%	50-150%
	13C2-6:2FTS	100%	96%	96%	50-150%
	13C2-8:2FTS	108%	89%	96%	50-150%
	13C3-HFPO-DA	65%	63%	79%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits due to matrix interference. Confirmed by batch QC.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-DUP	2Q84593.D	10	02/08/22	NG	01/31/22	OP89504	S2Q1194
FA92663-6	2Q84664.D	1	02/09/22	NG	01/31/22	OP89504	S2Q1195
FA92663-6	2Q84592.D	10	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	Compound	FA92663-6 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0747		0.0812	J	8	30
2706-90-3	Perfluoropentanoic acid	0.177		0.184		4	30
307-24-4	Perfluorohexanoic acid	0.168		0.175		4	30
375-85-9	Perfluoroheptanoic acid	0.120		0.123		2	30
335-67-1	Perfluorooctanoic acid	0.0950		0.103		8	30
375-95-1	Perfluorononanoic acid	0.0130		ND		200*	30
335-76-2	Perfluorodecanoic acid	0.0083 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0103		ND		200*	30
2706-91-4	Perfluoropentanesulfonic acid	0.0262		0.0282	J	7	30
355-46-4	Perfluorohexanesulfonic acid	0.716		0.682		5	30
375-92-8	Perfluoroheptanesulfonic acid	0.0271		0.0239	J	13	30
1763-23-1	Perfluorooctanesulfonic acid	1.65 [a]		1.65		0	30
68259-12-1	Perfluorononanesulfonic acid	0.0083 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083 U		ND		nc	30
754-91-6	PFOSA	0.0083 U		ND		nc	30
31506-32-8	MeFOSA	0.017 U		ND		nc	30
2355-31-9	MeFOSAA	0.017 U		ND		nc	30
2991-50-6	EtFOSAA	0.017 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0397		0.0452	J	13	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0447		0.0450	J	1	30
13252-13-6	HFPO-DA (GenX)	0.017 U		ND		nc	30
919005-14-4	ADONA	0.017 U		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017 U		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA92663-6	FA92663-6	Limits
	13C4-PFBA	104%	116%	115%	50-150%
	13C5-PFPeA	103%	116%	111%	50-150%
	13C5-PFHxA	105%	117%	115%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA92663
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89504-DUP	2Q84593.D	10	02/08/22	NG	01/31/22	OP89504	S2Q1194
FA92663-6	2Q84664.D	1	02/09/22	NG	01/31/22	OP89504	S2Q1195
FA92663-6	2Q84592.D	10	02/08/22	NG	01/31/22	OP89504	S2Q1194

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA92663-1, FA92663-2, FA92663-3, FA92663-4, FA92663-5, FA92663-6, FA92663-7, FA92663-8, FA92663-9, FA92663-10, FA92663-11

CAS No.	ID Standard Recoveries	DUP	FA92663-6	FA92663-6	Limits
	13C4-PFHpA	106%	116%	116%	50-150%
	13C8-PFOA	106%	121%	116%	50-150%
	13C9-PFNA	104%	115%	120%	50-150%
	13C6-PFDA	108%	126%	118%	50-150%
	13C7-PFUnDA	101%	123%	113%	50-150%
	13C2-PFDoDA	98%	117%	110%	50-150%
	13C2-PFTeDA	104%	119%	112%	50-150%
	13C3-PFBS	110%	120%	118%	50-150%
	13C3-PFHxS	111%	113%	117%	50-150%
	13C8-PFOS	123%	117%	124%	50-150%
	13C8-FOSA	112%	134%	128%	50-150%
	d3-MeFOSA	56%	88%	100%	50-150%
	d3-MeFOSAA	111%	136%	119%	50-150%
	d5-EtFOSAA	102%	133%	116%	50-150%
	13C2-4:2FTS	101%	114%	109%	50-150%
	13C2-6:2FTS	102%	119%	114%	50-150%
	13C2-8:2FTS	105%	121%	116%	50-150%
	13C3-HFPO-DA	94%	93%	106%	50-150%

(a) Result is from Run #2.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FA94411

Sampling Dates: 03/29/22 - 03/30/22

Report to:

AECOM
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Orlando, FL 32801
gloria.richie@aecom.com; linnea.king@aecom.com;
megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: **101**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA94411

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA94411-1	03/29/22	08:39	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0013-004.0-20220329
FA94411-2	03/29/22	09:02	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0013-010.0-20220329
FA94411-3	03/29/22	09:30	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0013-025.0-20220329
FA94411-4	03/29/22	10:00	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0013-042.0-20220329
FA94411-5	03/29/22	10:32	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0013-057.0-20220329
FA94411-6	03/29/22	11:20	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0014-004.0-20220329
FA94411-7	03/29/22	11:39	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0014-010.0-20220329
FA94411-8	03/29/22	13:05	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0014-025.0-20220329
FA94411-9	03/29/22	13:31	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0014-042.0-20220329
FA94411-10	03/29/22	13:59	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0014-057.0-20220329
FA94411-11	03/29/22	14:53	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0015-004.0-20220329
FA94411-12	03/29/22	15:14	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0015-010.0-20220329
FA94411-13	03/30/22	08:28	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0015-025.0-20220330

Sample Summary
(continued)

AECOM, Inc

Job No: FA94411

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA94411-14	03/30/22	09:00	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0015-042.0-20220330
FA94411-15	03/30/22	09:40	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0015-057.0-20220330
FA94411-16	03/30/22	09:48	DSGK	03/30/22	AQ	Field Blank Water	A3RB-FB-20220330-01
FA94411-17	03/30/22	09:50	DSGK	03/30/22	AQ	Equipment Blank	A3RB-EB-20220330-01
FA94411-18	03/30/22	10:31	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0016-004.0-20220330
FA94411-19	03/30/22	10:35	DSGK	03/30/22	AQ	Ground Water	A3RB-FD-20220330-01
FA94411-20	03/30/22	11:05	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0016-010.0-20220330
FA94411-20D	03/30/22	11:05	DSGK	03/30/22	AQ	Water Dup/MSD	A3RB-DPT0016-010.0-20220330
FA94411-20S	03/30/22	11:05	DSGK	03/30/22	AQ	Water Matrix Spike	A3RB-DPT0016-010.0-20220330
FA94411-21	03/30/22	11:36	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0016-025.0-20220330
FA94411-22	03/30/22	11:45	DSGK	03/30/22	AQ	Equipment Blank	A3RB-EB-20220330-02
FA94411-23	03/30/22	12:12	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0016-042.0-20220330
FA94411-24	03/30/22	12:25	DSGK	03/30/22	AQ	Field Blank Water	A3RB-FB-20220330-02

Sample Summary
(continued)

AECOM, Inc

Job No: FA94411

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA94411-25	03/30/22	13:35	DSGK	03/30/22	AQ	Ground Water	A3RB-DPT0016-057.0-20220330

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA94411

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 4/26/2022 3:35:29 PM

On 03/30/2022, 23 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA94411 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP90597

Sample(s) FA94411-20MS, FA94411-20MSD were used as the QC samples indicated.

Sample(s) FA94411-1, FA94411-10, FA94411-11, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-2, FA94411-20, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-8, FA94411-9 have surrogates outside control limits.

OP90597-BS for d3-MeFOSA: Outside control limits.

OP90597-MB for 13C2-PFTeDA: Outside control limits.

OP90597-MB for d3-MeFOSA: Outside control limits.

FA94411-1 for MeFOSA: Associated ID Standard outside control limits.

FA94411-1: Confirmation run.

FA94411-1: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-2 for MeFOSA: Associated ID Standard outside control limits.

FA94411-2: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-3 for d3-MeFOSA: Outside control limits.

FA94411-3 for MeFOSA: Associated ID Standard outside control limits.

FA94411-3: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-4 for 13C2-PFTeDA: Outside control limits.

FA94411-4 for d3-MeFOSA: Outside control limits.

FA94411-4: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-5 for d3-MeFOSA: Outside control limits.

FA94411-5: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-6 for MeFOSA: Associated ID Standard outside control limits.

FA94411-6: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-8 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FA94411-8 for 13C2-PFDoDA: Outside control limits.

FA94411-8 for 13C7-PFUnDA: Outside control limits.

FA94411-8 for 13C8-FOSA: Outside control limits.

FA94411-8 for d3-MeFOSA: Outside control limits.

FA94411-8 for d3-MeFOSAA: Outside control limits.

FA94411-8 for d5-EtFOSAA: Outside control limits.

FA94411-8 for d5-EtFOSAA: Outside control limits.Outside control limits.

FA94411-8 for EtFOSAA: Associated ID Standard outside control limits.

FA94411-8 for Perfluorodecanesulfonic acid: Associated ID Standard outside control limits.

FA94411-8: Confirmation run.

FA94411-8: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-9 for d3-MeFOSA: Outside control limits.

FA94411-9: Dilution required due to matrix interference (ID recovery standard failure).

FA94411-10 for d3-MeFOSA: Outside control limits.

FA94411-10 for MeFOSA: Associated ID Standard outside control limits.

FA94411-11 for 13C2-PFTeDA: Outside control limits.

FA94411-11 for d3-MeFOSA: Outside control limits.

FA94411-11 for MeFOSA: Associated ID Standard outside control limits.

FA94411-11 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FA94411-11: Confirmation run.
FA94411-13 for 13C2-PFTeDA: Outside control limits.
FA94411-13 for d3-MeFOSA: Outside control limits.
FA94411-13 for MeFOSA: Associated ID Standard outside control limits.
FA94411-13 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FA94411-13: Confirmation run.
FA94411-13: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-14 for d3-MeFOSA: Outside control limits.
FA94411-14 for MeFOSA: Associated ID Standard outside control limits.
FA94411-14: Confirmation run.
FA94411-15 for d3-MeFOSA: Outside control limits.
FA94411-15 for MeFOSA: Associated ID Standard outside control limits.
FA94411-15: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-16 for d3-MeFOSA: Outside control limits.
FA94411-16 for MeFOSA: Associated ID Standard outside control limits.
FA94411-17 for d3-MeFOSA: Outside control limits.
FA94411-17: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-18 for d3-MeFOSA: Outside control limits.
FA94411-18 for MeFOSA: Associated ID Standard outside control limits.
FA94411-19 for d3-MeFOSA: Outside control limits.
FA94411-19 for MeFOSA: Associated ID Standard outside control limits.
FA94411-19: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-20 for 13C2-PFTeDA: Outside control limits.
FA94411-20 for d3-MeFOSA: Outside control limits.
FA94411-20 for MeFOSA: Associated ID Standard outside control limits.
FA94411-20: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP90598

Sample(s) FA94455-23MS, FA94455-24DUP were used as the QC samples indicated.
Sample(s) FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25 have surrogates outside control limits.
OP90598-BS for d3-MeFOSA: Outside control limits.
OP90598-MB for d3-MeFOSA: Outside control limits.
FA94411-21 for d3-MeFOSA: Outside control limits.
FA94411-21: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-22 for d3-MeFOSA: Outside control limits.
FA94411-22 for MeFOSA: Associated ID Standard outside control limits.
FA94411-23 for d3-MeFOSA: Outside control limits.
FA94411-23: Dilution required due to matrix interference (ID recovery standard failure).
FA94411-24 for d3-MeFOSA: Outside control limits.
FA94411-24 for MeFOSA: Associated ID Standard outside control limits.
FA94411-25 for d3-MeFOSA: Outside control limits.
FA94411-25: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP90809

FA94411-22: Confirmation run.
FA94411-22 for d3-MeFOSA: Recovery corrected for double spike.
FA94411-24 for d3-MeFOSA: Recovery corrected for double spike.

Matrix: AQ **Batch ID:** OP90854

Sample(s) FA94411-1, FA94411-6 have surrogates outside control limits.
FA94411-1: Confirmation run.
FA94411-6: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____
Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA94411-1	**A3RB-DPT0013-004.0-20220329**					
Perfluorobutanoic acid [a]		0.0626 J	0.088	0.044	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0135 J	0.044	0.022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0241 J	0.044	0.022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0210 J	0.044	0.022	ug/l	EPA 537M QSM5.3 B-15
FA94411-2	**A3RB-DPT0013-010.0-20220329**					
Perfluorobutanoic acid		0.0047 J	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0059 J	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0045 J	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0040 J	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0048 J	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.101	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0027 J	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.126	0.0087	0.0044	ug/l	EPA 537M QSM5.3 B-15
FA94411-3	**A3RB-DPT0013-025.0-20220329**					
Perfluoropentanoic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0359	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0270	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA94411-4	**A3RB-DPT0013-042.0-20220329**					
No hits reported in this sample.						
FA94411-5	**A3RB-DPT0013-057.0-20220329**					
No hits reported in this sample.						
FA94411-6	**A3RB-DPT0014-004.0-20220329**					
No hits reported in this sample.						
FA94411-7	**A3RB-DPT0014-010.0-20220329**					
Perfluorohexanesulfonic acid		0.0201	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0476	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0051 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA94411-8	**A3RB-DPT0014-025.0-20220329**					
No hits reported in this sample.						
FA94411-9	**A3RB-DPT0014-042.0-20220329**					
No hits reported in this sample.						
FA94411-10	**A3RB-DPT0014-057.0-20220329**					
Perfluorooctanesulfonic acid		0.0066 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
FA94411-11	**A3RB-DPT0015-004.0-20220329**					
No hits reported in this sample.						
FA94411-12	**A3RB-DPT0015-010.0-20220329**					
Perfluorohexanesulfonic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0122	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA94411-13	**A3RB-DPT0015-025.0-20220330**					
Perfluorohexanesulfonic acid		0.0263	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0479	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA94411-14	**A3RB-DPT0015-042.0-20220330**					
No hits reported in this sample.						
FA94411-15	**A3RB-DPT0015-057.0-20220330**					
No hits reported in this sample.						
FA94411-16	**A3RB-FB-20220330-01**					
No hits reported in this sample.						
FA94411-17	**A3RB-EB-20220330-01**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA94411-18	**A3RB-DPT0016-004.0-20220330**					
No hits reported in this sample.						
FA94411-19	**A3RB-FD-20220330-01**					
No hits reported in this sample.						
FA94411-20	**A3RB-DPT0016-010.0-20220330**					
Perfluorobutanoic acid		0.0060 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0122	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0057 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0126	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0174	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.293	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0049 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.205	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA94411-21	**A3RB-DPT0016-025.0-20220330**					
Perfluoropentanoic acid		0.0033 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0080 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0024 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0059 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0106	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0112	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.141	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0047 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0558	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA94411-22	**A3RB-EB-20220330-02**					
No hits reported in this sample.						
FA94411-23	**A3RB-DPT0016-042.0-20220330**					
Perfluorohexanesulfonic acid		0.0036 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0034 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA94411-24	**A3RB-FB-20220330-02**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA94411-25	**A3RB-DPT0016-057.0-20220330**					
Perfluorohexanesulfonic acid		0.0187	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0216	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15

(a) Dilution required due to matrix interference (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-DPT0013-004.0-20220329		
Lab Sample ID:	FA94411-1	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q27620.D	1	04/22/22 03:27	NG	04/21/22 06:00	OP90854	S4Q393
Run #2 [b]	3Q58417.D	5	04/20/22 06:22	MV	04/05/22 08:00	OP90597	S3Q798
Run #3 [a]	4Q27701.D	5	04/23/22 04:49	MV	04/05/22 08:00	OP90597	S4Q394

	Initial Volume	Final Volume
Run #1	10.0 ml	1.0 ml
Run #2	114 ml	1.0 ml
Run #3	114 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0626 [c]	0.088	0.044	0.022	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0135 [c]	0.044	0.022	0.011	ug/l	J
375-95-1	Perfluorononanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
335-76-2	Perfluorodecanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
307-55-1	Perfluorododecanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.022 U [c]	0.044	0.022	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0241 [c]	0.044	0.022	0.011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0210 [c]	0.044	0.022	0.011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.022 U [c]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.022 U [c]	0.044	0.022	0.011	ug/l	
31506-32-8	MeFOSA [d]	0.044 U [c]	0.088	0.044	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.044 U [c]	0.088	0.044	0.022	ug/l	
2991-50-6	EtFOSAA	0.044 U [c]	0.088	0.044	0.022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-004.0-20220329		
Lab Sample ID:	FA94411-1	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.044 U [c]	0.088	0.044	0.022	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.044 U [c]	0.088	0.044	0.022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.044 U [c]	0.088	0.044	0.022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.044 U [c]	0.088	0.044	0.022	ug/l	
919005-14-4	ADONA	0.044 U [c]	0.088	0.044	0.022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.044 U [c]	0.088	0.044	0.022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.044 U [c]	0.088	0.044	0.022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	85%	74%	100%	50-150%
	13C5-PFPeA	86%	80%	98%	50-150%
	13C5-PFHxA	89%	89%	102%	50-150%
	13C4-PFHpA	93%	97%	109%	50-150%
	13C8-PFOA	96%	110%	123%	50-150%
	13C9-PFNA	94%	102%	125%	50-150%
	13C6-PFDA	91%	96%	120%	50-150%
	13C7-PFUnDA	81%	87%	110%	50-150%
	13C2-PFDoDA	68%	77%	95%	50-150%
	13C2-PFTeDA	61%	35% [e]	48%	50-150%
	13C3-PFBS	83%	88%	104%	50-150%
	13C3-PFHxS	87%	101%	112%	50-150%
	13C8-PFOS	85%	106%	123%	50-150%
	13C8-FOSA	81%	72%	96%	50-150%
	d3-MeFOSA	48% [e]	15% [e]	26%	50-150%
	d3-MeFOSAA	83%	89%	118%	50-150%
	d5-EtFOSAA	84%	93%	123%	50-150%
	13C2-4:2FTS	86%	95%	102%	50-150%
	13C2-6:2FTS	93%	117%	119%	50-150%
	13C2-8:2FTS	87%	109%	125%	50-150%
	13C3-HFPO-DA	74%	73%	75%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-004.0-20220329		
Lab Sample ID:	FA94411-1	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0013-010.0-20220329
Lab Sample ID: FA94411-2 **Date Sampled:** 03/29/22
Matrix: AQ - Ground Water **Date Received:** 03/30/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q295.D	1.09	04/14/22 16:39	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	3Q58418.D	5.4	04/20/22 06:41	MV	04/05/22 08:00	OP90597	S3Q798

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0047	0.017	0.0087	0.0044	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0059	0.0087	0.0044	0.0022	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045	0.0087	0.0044	0.0022	ug/l	J
375-95-1	Perfluorononanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040	0.0087	0.0044	0.0022	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0048	0.0087	0.0044	0.0022	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.101	0.0087	0.0044	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0027	0.0087	0.0044	0.0022	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.126	0.0087	0.0044	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0044 U	0.0087	0.0044	0.0022	ug/l	
31506-32-8	MeFOSA [b]	0.043 U [c]	0.086	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0044	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0044	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-010.0-20220329		
Lab Sample ID:	FA94411-2	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0044	ug/l	
919005-14-4	ADONA	0.0087 U	0.017	0.0087	0.0044	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0087 U	0.017	0.0087	0.0044	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0087 U	0.017	0.0087	0.0044	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	108%	122%	50-150%
	13C5-PFPeA	78%	123%	50-150%
	13C5-PFHxA	81%	126%	50-150%
	13C4-PFHpA	91%	129%	50-150%
	13C8-PFOA	103%	135%	50-150%
	13C9-PFNA	100%	134%	50-150%
	13C6-PFDA	102%	125%	50-150%
	13C7-PFUnDA	95%	126%	50-150%
	13C2-PFDoDA	90%	126%	50-150%
	13C2-PFTeDA	59%	125%	50-150%
	13C3-PFBS	102%	128%	50-150%
	13C3-PFHxS	110%	136%	50-150%
	13C8-PFOS	114%	130%	50-150%
	13C8-FOSA	80%	121%	50-150%
	d3-MeFOSA	28%	47% [d]	50-150%
	d3-MeFOSAA	92%	134%	50-150%
	d5-EtFOSAA	107%	137%	50-150%
	13C2-4:2FTS	91%	135%	50-150%
	13C2-6:2FTS	118%	140%	50-150%
	13C2-8:2FTS	104%	138%	50-150%
	13C3-HFPO-DA	89%	115%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0013-025.0-20220329
Lab Sample ID: FA94411-3 **Date Sampled:** 03/29/22
Matrix: AQ - Ground Water **Date Received:** 03/30/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q296.D	1	04/14/22 16:51	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	3Q58419.D	5	04/20/22 06:59	MV	04/05/22 08:00	OP90597	S3Q798

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0359	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0270	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-025.0-20220329		
Lab Sample ID:	FA94411-3	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%	95%	50-150%
	13C5-PFPeA	64%	97%	50-150%
	13C5-PFHxA	69%	97%	50-150%
	13C4-PFHpA	77%	101%	50-150%
	13C8-PFOA	87%	108%	50-150%
	13C9-PFNA	85%	105%	50-150%
	13C6-PFDA	88%	100%	50-150%
	13C7-PFUnDA	78%	97%	50-150%
	13C2-PFDoDA	76%	95%	50-150%
	13C2-PFTeDA	53%	112%	50-150%
	13C3-PFBS	85%	99%	50-150%
	13C3-PFHxS	95%	107%	50-150%
	13C8-PFOS	96%	105%	50-150%
	13C8-FOSA	78%	104%	50-150%
	d3-MeFOSA	29% [d]	46% [d]	50-150%
	d3-MeFOSAA	79%	103%	50-150%
	d5-EtFOSAA	91%	109%	50-150%
	13C2-4:2FTS	77%	103%	50-150%
	13C2-6:2FTS	98%	113%	50-150%
	13C2-8:2FTS	90%	107%	50-150%
	13C3-HFPO-DA	76%	92%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-042.0-20220329		
Lab Sample ID:	FA94411-4	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q297.D	1	04/14/22 17:03	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	4Q27593.D	5	04/21/22 20:14	NG	04/05/22 08:00	OP90597	S4Q393

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-042.0-20220329		
Lab Sample ID:	FA94411-4	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%	112%	50-150%
	13C5-PFPeA	59%	112%	50-150%
	13C5-PFHxA	63%	113%	50-150%
	13C4-PFHpA	69%	115%	50-150%
	13C8-PFOA	77%	117%	50-150%
	13C9-PFNA	71%	118%	50-150%
	13C6-PFDA	71%	114%	50-150%
	13C7-PFUnDA	65%	112%	50-150%
	13C2-PFDoDA	61%	102%	50-150%
	13C2-PFTeDA	43% [c]	119%	50-150%
	13C3-PFBS	74%	114%	50-150%
	13C3-PFHxS	81%	118%	50-150%
	13C8-PFOS	82%	112%	50-150%
	13C8-FOSA	65%	125%	50-150%
	d3-MeFOSA	27% [c]	61%	50-150%
	d3-MeFOSAA	62%	114%	50-150%
	d5-EtFOSAA	72%	119%	50-150%
	13C2-4:2FTS	69%	108%	50-150%
	13C2-6:2FTS	82%	112%	50-150%
	13C2-8:2FTS	68%	114%	50-150%
	13C3-HFPO-DA	67%	97%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0013-057.0-20220329
Lab Sample ID: FA94411-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/29/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q298.D	1	04/14/22 17:18	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	4Q27594.D	5	04/21/22 20:30	NG	04/05/22 08:00	OP90597	S4Q393

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0013-057.0-20220329		
Lab Sample ID:	FA94411-5	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%	106%	50-150%
	13C5-PFPeA	73%	114%	50-150%
	13C5-PFHxA	78%	114%	50-150%
	13C4-PFHpA	79%	115%	50-150%
	13C8-PFOA	89%	118%	50-150%
	13C9-PFNA	83%	117%	50-150%
	13C6-PFDA	83%	111%	50-150%
	13C7-PFUnDA	75%	107%	50-150%
	13C2-PFDoDA	70%	95%	50-150%
	13C2-PFTeDA	60%	106%	50-150%
	13C3-PFBS	90%	118%	50-150%
	13C3-PFHxS	98%	116%	50-150%
	13C8-PFOS	91%	111%	50-150%
	13C8-FOSA	72%	123%	50-150%
	d3-MeFOSA	36% [c]	56%	50-150%
	d3-MeFOSAA	80%	112%	50-150%
	d5-EtFOSAA	92%	115%	50-150%
	13C2-4:2FTS	85%	109%	50-150%
	13C2-6:2FTS	102%	113%	50-150%
	13C2-8:2FTS	84%	113%	50-150%
	13C3-HFPO-DA	77%	105%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0014-004.0-20220329
Lab Sample ID: FA94411-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/29/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q27621.D	1	04/22/22 03:43	NG	04/21/22 06:00	OP90854	S4Q393
Run #2 [b]	3Q58422.D	5	04/20/22 07:55	MV	04/05/22 08:00	OP90597	S3Q798

	Initial Volume	Final Volume
Run #1	10.0 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.042 U [c]	0.083	0.042	0.021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
375-95-1	Perfluorononanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
335-76-2	Perfluorodecanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
307-55-1	Perfluorododecanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.021 U [c]	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.021 U [c]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.021 U [c]	0.042	0.021	0.010	ug/l	
31506-32-8	MeFOSA [d]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.042 U [c]	0.083	0.042	0.021	ug/l	
2991-50-6	EtFOSAA	0.042 U [c]	0.083	0.042	0.021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U [c]	0.083	0.042	0.021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-004.0-20220329		
Lab Sample ID:	FA94411-6	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.042 U [c]	0.083	0.042	0.021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.042 U [c]	0.083	0.042	0.021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.042 U [c]	0.083	0.042	0.021	ug/l	
919005-14-4	ADONA	0.042 U [c]	0.083	0.042	0.021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.042 U [c]	0.083	0.042	0.021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.042 U [c]	0.083	0.042	0.021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%	104%	50-150%
	13C5-PFPeA	92%	111%	50-150%
	13C5-PFHxA	91%	113%	50-150%
	13C4-PFHpA	90%	117%	50-150%
	13C8-PFOA	91%	123%	50-150%
	13C9-PFNA	89%	118%	50-150%
	13C6-PFDA	85%	111%	50-150%
	13C7-PFUnDA	76%	99%	50-150%
	13C2-PFDoDA	61%	80%	50-150%
	13C2-PFTeDA	52%	47% [e]	50-150%
	13C3-PFBS	91%	116%	50-150%
	13C3-PFHxS	86%	122%	50-150%
	13C8-PFOS	81%	119%	50-150%
	13C8-FOSA	76%	82%	50-150%
	d3-MeFOSA	41% [e]	38% [e]	50-150%
	d3-MeFOSAA	82%	103%	50-150%
	d5-EtFOSAA	82%	106%	50-150%
	13C2-4:2FTS	87%	123%	50-150%
	13C2-6:2FTS	87%	133%	50-150%
	13C2-8:2FTS	82%	119%	50-150%
	13C3-HFPO-DA	80%	102%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-010.0-20220329		
Lab Sample ID:	FA94411-7	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q300.D	1	04/14/22 17:41	MV	04/05/22 08:00	OP90597	S5Q6
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0201	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0476	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0014-010.0-20220329
Lab Sample ID: FA94411-7 **Date Sampled:** 03/29/22
Matrix: AQ - Ground Water **Date Received:** 03/30/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0051	0.018	0.0091	0.0045	ug/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	88%		50-150%
	13C5-PFPeA	64%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	76%		50-150%
	13C6-PFDA	70%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	67%		50-150%
	13C2-PFTeDA	63%		50-150%
	13C3-PFBS	83%		50-150%
	13C3-PFHxS	87%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSA	52%		50-150%
	d3-MeFOSAA	60%		50-150%
	d5-EtFOSAA	70%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	94%		50-150%
	13C2-8:2FTS	71%		50-150%
	13C3-HFPO-DA	75%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-025.0-20220329		
Lab Sample ID:	FA94411-8	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q301.D	1.09	04/14/22 17:52	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	3Q58423.D	5.4	04/20/22 08:13	MV	04/05/22 08:00	OP90597	S3Q798
Run #3 [b]	4Q27702.D	5.4	04/23/22 05:05	MV	04/05/22 08:00	OP90597	S4Q394

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087 U	0.017	0.0087	0.0044	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
307-55-1	Perfluorododecanoic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0044 U	0.0087	0.0044	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid [d]	0.0044 U	0.0087	0.0044	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.022 U [c]	0.043	0.022	0.011	ug/l	
31506-32-8	MeFOSA [d]	0.043 U [c]	0.086	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.043 U [c]	0.086	0.043	0.022	ug/l	
2991-50-6	EtFOSAA [d]	0.043 U [c]	0.086	0.043	0.022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-025.0-20220329		
Lab Sample ID:	FA94411-8	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0044	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0044	ug/l	
919005-14-4	ADONA	0.0087 U	0.017	0.0087	0.0044	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0087 U	0.017	0.0087	0.0044	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.0087 U	0.017	0.0087	0.0044	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	81%	113%	126%	50-150%
	13C5-PFPeA	62%	115%	126%	50-150%
	13C5-PFHxA	70%	117%	127%	50-150%
	13C4-PFHpA	75%	123%	130%	50-150%
	13C8-PFOA	78%	132%	140%	50-150%
	13C9-PFNA	76%	128%	144%	50-150%
	13C6-PFDA	66%	126%	147%	50-150%
	13C7-PFUnDA	48% [e]	135%	155%	50-150%
	13C2-PFDoDA	41% [e]	135%	145%	50-150%
	13C2-PFTeDA	52%	118%	128%	50-150%
	13C3-PFBS	79%	118%	127%	50-150%
	13C3-PFHxS	86%	119%	135%	50-150%
	13C8-PFOS	70%	130%	139%	50-150%
	13C8-FOSA	33% [e]	87%	117%	50-150%
	d3-MeFOSA	4% [e]	18% [e]	43%	50-150%
	d3-MeFOSAA	46% [e]	143%	176%	50-150%
	d5-EtFOSAA	45% [e]	154% [f]	186%	50-150%
	13C2-4:2FTS	76%	128%	123%	50-150%
	13C2-6:2FTS	85%	139%	133%	50-150%
	13C2-8:2FTS	65%	136%	144%	50-150%
	13C3-HFPO-DA	67%	118%	105%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Confirmation run.
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-025.0-20220329		
Lab Sample ID:	FA94411-8	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

(f) Outside control limits.Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-042.0-20220329		
Lab Sample ID:	FA94411-9	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q304.D	1	04/14/22 18:27	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	4Q27597.D	5	04/21/22 21:18	NG	04/05/22 08:00	OP90597	S4Q393

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-042.0-20220329		
Lab Sample ID:	FA94411-9	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%	117%	50-150%
	13C5-PFPeA	70%	119%	50-150%
	13C5-PFHxA	75%	120%	50-150%
	13C4-PFHpA	82%	121%	50-150%
	13C8-PFOA	88%	126%	50-150%
	13C9-PFNA	83%	130%	50-150%
	13C6-PFDA	84%	126%	50-150%
	13C7-PFUnDA	77%	122%	50-150%
	13C2-PFDoDA	76%	113%	50-150%
	13C2-PFTeDA	53%	135%	50-150%
	13C3-PFBS	84%	118%	50-150%
	13C3-PFHxS	91%	121%	50-150%
	13C8-PFOS	89%	124%	50-150%
	13C8-FOSA	74%	135%	50-150%
	d3-MeFOSA	33% [c]	74%	50-150%
	d3-MeFOSAA	75%	128%	50-150%
	d5-EtFOSAA	83%	138%	50-150%
	13C2-4:2FTS	80%	113%	50-150%
	13C2-6:2FTS	94%	119%	50-150%
	13C2-8:2FTS	86%	121%	50-150%
	13C3-HFPO-DA	78%	106%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0014-057.0-20220329		
Lab Sample ID:	FA94411-10	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q305.D	1	04/14/22 18:39	MV	04/05/22 08:00	OP90597	S5Q6
Run #2							

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0045	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0066	0.0091	0.0045	0.0023	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA [a]	0.0091 U	0.018	0.0091	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0014-057.0-20220329
Lab Sample ID: FA94411-10 **Date Sampled:** 03/29/22
Matrix: AQ - Ground Water **Date Received:** 03/30/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%		50-150%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	86%		50-150%
	13C4-PFHpA	91%		50-150%
	13C8-PFOA	95%		50-150%
	13C9-PFNA	96%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	86%		50-150%
	13C2-PFTeDA	66%		50-150%
	13C3-PFBS	98%		50-150%
	13C3-PFHxS	107%		50-150%
	13C8-PFOS	109%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSA	46% b		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	95%		50-150%
	13C2-6:2FTS	119%		50-150%
	13C2-8:2FTS	104%		50-150%
	13C3-HFPO-DA	86%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-004.0-20220329		
Lab Sample ID:	FA94411-11	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q306.D	1	04/14/22 18:50	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q392.D	5	04/15/22 21:40	MV	04/05/22 08:00	OP90597	S5Q7

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-004.0-20220329		
Lab Sample ID:	FA94411-11	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	99%	120%	50-150%
	13C5-PFPeA	89%	112%	50-150%
	13C5-PFHxA	91%	112%	50-150%
	13C4-PFHpA	90%	114%	50-150%
	13C8-PFOA	103%	132%	50-150%
	13C9-PFNA	91%	120%	50-150%
	13C6-PFDA	93%	120%	50-150%
	13C7-PFUnDA	80%	123%	50-150%
	13C2-PFDoDA	72%	118%	50-150%
	13C2-PFTeDA	29% [c]	102%	50-150%
	13C3-PFBS	100%	139%	50-150%
	13C3-PFHxS	100%	132%	50-150%
	13C8-PFOS	100%	138%	50-150%
	13C8-FOSA	74%	104%	50-150%
	d3-MeFOSA	26% [c]	47% [c]	50-150%
	d3-MeFOSAA	75%	89%	50-150%
	d5-EtFOSAA	77%	99%	50-150%
	13C2-4:2FTS	92%	113%	50-150%
	13C2-6:2FTS	102%	125%	50-150%
	13C2-8:2FTS	94%	116%	50-150%
	13C3-HFPO-DA	90%	108%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-010.0-20220329		
Lab Sample ID:	FA94411-12	**Date Sampled:**	03/29/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q307.D	1	04/14/22 19:02	MV	04/05/22 08:00	OP90597	S5Q6
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0122	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0015-010.0-20220329
Lab Sample ID: FA94411-12
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/29/22
Date Received: 03/30/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%		50-150%
	13C5-PFPeA	77%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	84%		50-150%
	13C8-PFOA	93%		50-150%
	13C9-PFNA	83%		50-150%
	13C6-PFDA	93%		50-150%
	13C7-PFUnDA	79%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	91%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSA	58%		50-150%
	d3-MeFOSAA	80%		50-150%
	d5-EtFOSAA	83%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	107%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-025.0-20220330		
Lab Sample ID:	FA94411-13	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q308.D	1	04/14/22 19:13	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	4Q27601.D	5	04/21/22 22:23	NG	04/05/22 08:00	OP90597	S4Q393
Run #3 [b]	3Q58428.D	5	04/20/22 09:46	MV	04/05/22 08:00	OP90597	S3Q798

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0263	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0479	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.040 U [d]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-025.0-20220330		
Lab Sample ID:	FA94411-13	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	103%	111%	100%	50-150%
	13C5-PFPeA	70%	109%	104%	50-150%
	13C5-PFHxA	79%	108%	105%	50-150%
	13C4-PFHpA	89%	112%	110%	50-150%
	13C8-PFOA	99%	117%	117%	50-150%
	13C9-PFNA	93%	119%	111%	50-150%
	13C6-PFDA	98%	117%	108%	50-150%
	13C7-PFUnDA	84%	120%	110%	50-150%
	13C2-PFDoDA	80%	126%	125%	50-150%
	13C2-PFTeDA	47% [e]	186% [e]	179% [e]	50-150%
	13C3-PFBS	89%	109%	103%	50-150%
	13C3-PFHxS	101%	108%	116%	50-150%
	13C8-PFOS	103%	121%	109%	50-150%
	13C8-FOSA	72%	116%	102%	50-150%
	d3-MeFOSA	18% [e]	47% [e]	36% [e]	50-150%
	d3-MeFOSAA	89%	133%	120%	50-150%
	d5-EtFOSAA	90%	132%	129%	50-150%
	13C2-4:2FTS	86%	104%	113%	50-150%
	13C2-6:2FTS	109%	108%	119%	50-150%
	13C2-8:2FTS	106%	116%	124%	50-150%
	13C3-HFPO-DA	80%	92%	110%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Confirmation run.
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-025.0-20220330		
Lab Sample ID:	FA94411-13	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-042.0-20220330		
Lab Sample ID:	FA94411-14	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q309.D	1	04/14/22 19:25	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q394.D	5	04/15/22 22:03	MV	04/05/22 08:00	OP90597	S5Q7
Run #3 [a]	4Q27602.D	5	04/21/22 22:39	NG	04/05/22 08:00	OP90597	S4Q393

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-042.0-20220330		
Lab Sample ID:	FA94411-14	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	98%	94%	112%	50-150%
	13C5-PFPeA	73%	85%	116%	50-150%
	13C5-PFHxA	81%	88%	116%	50-150%
	13C4-PFHpA	91%	88%	120%	50-150%
	13C8-PFOA	100%	98%	126%	50-150%
	13C9-PFNA	95%	98%	129%	50-150%
	13C6-PFDA	102%	103%	128%	50-150%
	13C7-PFUnDA	84%	98%	127%	50-150%
	13C2-PFDoDA	82%	92%	120%	50-150%
	13C2-PFTeDA	60%	114%	155% [c]	50-150%
	13C3-PFBS	91%	104%	120%	50-150%
	13C3-PFHxS	103%	102%	120%	50-150%
	13C8-PFOS	106%	109%	129%	50-150%
	13C8-FOSA	79%	85%	128%	50-150%
	d3-MeFOSA	21% [c]	34%	45% [c]	50-150%
	d3-MeFOSAA	94%	84%	143%	50-150%
	d5-EtFOSAA	95%	82%	144%	50-150%
	13C2-4:2FTS	88%	91%	112%	50-150%
	13C2-6:2FTS	112%	99%	119%	50-150%
	13C2-8:2FTS	127%	92%	128%	50-150%
	13C3-HFPO-DA	78%	83%	100%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-057.0-20220330		
Lab Sample ID:	FA94411-15	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q310.D	1.19	04/14/22 19:36	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q398.D	6	04/15/22 22:49	MV	04/05/22 08:00	OP90597	S5Q7

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0095 U	0.019	0.0095	0.0048	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
307-24-4	Perfluorohexanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-67-1	Perfluorooctanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
375-95-1	Perfluorononanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-76-2	Perfluorodecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
307-55-1	Perfluorododecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
31506-32-8	MeFOSA [b]	0.048 U [c]	0.096	0.048	0.024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
2991-50-6	EtFOSAA	0.0095 U	0.019	0.0095	0.0048	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0015-057.0-20220330		
Lab Sample ID:	FA94411-15	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0095 U	0.019	0.0095	0.0048	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0095 U	0.019	0.0095	0.0048	ug/l	
919005-14-4	ADONA	0.0095 U	0.019	0.0095	0.0048	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0095 U	0.019	0.0095	0.0048	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0095 U	0.019	0.0095	0.0048	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	99%	91%	50-150%
	13C5-PFPeA	85%	85%	50-150%
	13C5-PFHxA	93%	87%	50-150%
	13C4-PFHpA	94%	88%	50-150%
	13C8-PFOA	98%	91%	50-150%
	13C9-PFNA	91%	89%	50-150%
	13C6-PFDA	98%	92%	50-150%
	13C7-PFUnDA	84%	85%	50-150%
	13C2-PFDoDA	83%	77%	50-150%
	13C2-PFTeDA	75%	89%	50-150%
	13C3-PFBS	99%	102%	50-150%
	13C3-PFHxS	98%	98%	50-150%
	13C8-PFOS	93%	92%	50-150%
	13C8-FOSA	78%	81%	50-150%
	d3-MeFOSA	32% [d]	36% [d]	50-150%
	d3-MeFOSAA	84%	82%	50-150%
	d5-EtFOSAA	91%	70%	50-150%
	13C2-4:2FTS	95%	87%	50-150%
	13C2-6:2FTS	104%	92%	50-150%
	13C2-8:2FTS	124%	83%	50-150%
	13C3-HFPO-DA	86%	80%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220330-01		
Lab Sample ID:	FA94411-16	**Date Sampled:**	03/30/22
Matrix:	AQ - Field Blank Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q311.D	1	04/14/22 19:48	MV	04/05/22 08:00	OP90597	S5Q6
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [a]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220330-01		
Lab Sample ID:	FA94411-16	**Date Sampled:**	03/30/22
Matrix:	AQ - Field Blank Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	84%		50-150%
	13C5-PFHxA	88%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	91%		50-150%
	13C6-PFDA	88%		50-150%
	13C7-PFUnDA	87%		50-150%
	13C2-PFDoDA	88%		50-150%
	13C2-PFTeDA	80%		50-150%
	13C3-PFBS	95%		50-150%
	13C3-PFHxS	95%		50-150%
	13C8-PFOS	93%		50-150%
	13C8-FOSA	87%		50-150%
	d3-MeFOSA	40% b		50-150%
	d3-MeFOSAA	87%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	87%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	89%		50-150%
	13C3-HFPO-DA	80%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220330-01
Lab Sample ID: FA94411-17
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q312.D	1	04/14/22 20:00	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q399.D	5	04/15/22 23:01	MV	04/05/22 08:00	OP90597	S5Q7

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220330-01		
Lab Sample ID:	FA94411-17	**Date Sampled:**	03/30/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	114%	93%	50-150%
	13C5-PFPeA	105%	89%	50-150%
	13C5-PFHxA	105%	90%	50-150%
	13C4-PFHpA	111%	91%	50-150%
	13C8-PFOA	134%	103%	50-150%
	13C9-PFNA	114%	99%	50-150%
	13C6-PFDA	114%	93%	50-150%
	13C7-PFUnDA	108%	98%	50-150%
	13C2-PFDoDA	103%	86%	50-150%
	13C2-PFTeDA	90%	98%	50-150%
	13C3-PFBS	120%	111%	50-150%
	13C3-PFHxS	126%	107%	50-150%
	13C8-PFOS	120%	108%	50-150%
	13C8-FOSA	99%	90%	50-150%
	d3-MeFOSA	32% [c]	33% [c]	50-150%
	d3-MeFOSAA	103%	86%	50-150%
	d5-EtFOSAA	104%	78%	50-150%
	13C2-4:2FTS	108%	91%	50-150%
	13C2-6:2FTS	129%	100%	50-150%
	13C2-8:2FTS	107%	93%	50-150%
	13C3-HFPO-DA	104%	83%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-004.0-20220330		
Lab Sample ID:	FA94411-18	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q313.D	1	04/14/22 20:11	MV	04/05/22 08:00	OP90597	S5Q6
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [a]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-004.0-20220330		
Lab Sample ID:	FA94411-18	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	83%		50-150%
	13C5-PFHxA	88%		50-150%
	13C4-PFHpA	88%		50-150%
	13C8-PFOA	102%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	89%		50-150%
	13C7-PFUnDA	82%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	96%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	96%		50-150%
	13C8-FOSA	75%		50-150%
	d3-MeFOSA	45% [b]		50-150%
	d3-MeFOSAA	80%		50-150%
	d5-EtFOSAA	75%		50-150%
	13C2-4:2FTS	90%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	94%		50-150%
	13C3-HFPO-DA	77%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220330-01
Lab Sample ID: FA94411-19
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q316.D	1	04/14/22 20:46	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q400.D	5	04/15/22 23:12	MV	04/05/22 08:00	OP90597	S5Q7

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20220330-01		
Lab Sample ID:	FA94411-19	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	107%	84%	50-150%
	13C5-PFPeA	97%	81%	50-150%
	13C5-PFHxA	106%	81%	50-150%
	13C4-PFHpA	107%	82%	50-150%
	13C8-PFOA	124%	89%	50-150%
	13C9-PFNA	103%	88%	50-150%
	13C6-PFDA	109%	84%	50-150%
	13C7-PFUnDA	97%	90%	50-150%
	13C2-PFDoDA	96%	83%	50-150%
	13C2-PFTeDA	62%	102%	50-150%
	13C3-PFBS	110%	96%	50-150%
	13C3-PFHxS	110%	104%	50-150%
	13C8-PFOS	109%	98%	50-150%
	13C8-FOSA	90%	72%	50-150%
	d3-MeFOSA	28% [d]	30% [d]	50-150%
	d3-MeFOSAA	100%	82%	50-150%
	d5-EtFOSAA	97%	73%	50-150%
	13C2-4:2FTS	107%	84%	50-150%
	13C2-6:2FTS	119%	87%	50-150%
	13C2-8:2FTS	109%	82%	50-150%
	13C3-HFPO-DA	88%	77%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-010.0-20220330		
Lab Sample ID:	FA94411-20	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q317.D	1	04/14/22 20:57	MV	04/05/22 08:00	OP90597	S5Q6
Run #2 [a]	5Q401.D	5	04/15/22 23:24	MV	04/05/22 08:00	OP90597	S5Q7

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0060	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0038	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0122	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0057	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0126	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0174	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.293	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0049	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.205	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-010.0-20220330		
Lab Sample ID:	FA94411-20	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	116%	94%	50-150%
	13C5-PFPeA	90%	88%	50-150%
	13C5-PFHxA	101%	90%	50-150%
	13C4-PFHpA	103%	92%	50-150%
	13C8-PFOA	113%	104%	50-150%
	13C9-PFNA	103%	95%	50-150%
	13C6-PFDA	101%	103%	50-150%
	13C7-PFUnDA	79%	119%	50-150%
	13C2-PFDoDA	56%	119%	50-150%
	13C2-PFTeDA	39% [d]	122%	50-150%
	13C3-PFBS	103%	104%	50-150%
	13C3-PFHxS	111%	106%	50-150%
	13C8-PFOS	102%	113%	50-150%
	13C8-FOSA	65%	92%	50-150%
	d3-MeFOSA	13% [d]	29% [d]	50-150%
	d3-MeFOSAA	81%	102%	50-150%
	d5-EtFOSAA	69%	108%	50-150%
	13C2-4:2FTS	109%	91%	50-150%
	13C2-6:2FTS	123%	101%	50-150%
	13C2-8:2FTS	102%	96%	50-150%
	13C3-HFPO-DA	86%	85%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0016-025.0-20220330
Lab Sample ID: FA94411-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q89122.D	1	04/14/22 22:46	JB	04/05/22 08:00	OP90598	S2Q1251
Run #2 [a]	2Q89191.D	5	04/15/22 18:31	JB	04/05/22 08:00	OP90598	S2Q1252

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0033	0.0083	0.0042	0.0021	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0080	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0059	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0106	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0112	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.141	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0047	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0558	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-025.0-20220330		
Lab Sample ID:	FA94411-21	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%	102%	50-150%
	13C5-PFPeA	87%	100%	50-150%
	13C5-PFHxA	88%	100%	50-150%
	13C4-PFHpA	97%	106%	50-150%
	13C8-PFOA	107%	109%	50-150%
	13C9-PFNA	106%	107%	50-150%
	13C6-PFDA	102%	104%	50-150%
	13C7-PFUnDA	102%	100%	50-150%
	13C2-PFDoDA	95%	98%	50-150%
	13C2-PFTeDA	102%	105%	50-150%
	13C3-PFBS	89%	101%	50-150%
	13C3-PFHxS	94%	102%	50-150%
	13C8-PFOS	98%	105%	50-150%
	13C8-FOSA	99%	105%	50-150%
	d3-MeFOSA	46% [c]	52%	50-150%
	d3-MeFOSAA	112%	104%	50-150%
	d5-EtFOSAA	110%	107%	50-150%
	13C2-4:2FTS	84%	98%	50-150%
	13C2-6:2FTS	98%	101%	50-150%
	13C2-8:2FTS	99%	97%	50-150%
	13C3-HFPO-DA	78%	85%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220330-02		
Lab Sample ID:	FA94411-22	**Date Sampled:**	03/30/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q89123.D	1	04/14/22 23:03	JB	04/05/22 08:00	OP90598	S2Q1251
Run #2 [a]	2Q89446.D	1	04/19/22 14:21	NG	04/18/22 09:20	OP90809	S2Q1256

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220330-02		
Lab Sample ID:	FA94411-22	**Date Sampled:**	03/30/22
Matrix:	AQ - Equipment Blank	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	101%	81%	50-150%
	13C5-PFPeA	101%	80%	50-150%
	13C5-PFHxA	101%	81%	50-150%
	13C4-PFHpA	102%	83%	50-150%
	13C8-PFOA	101%	72%	50-150%
	13C9-PFNA	99%	76%	50-150%
	13C6-PFDA	95%	76%	50-150%
	13C7-PFUnDA	94%	75%	50-150%
	13C2-PFDoDA	91%	74%	50-150%
	13C2-PFTeDA	85%	71%	50-150%
	13C3-PFBS	99%	82%	50-150%
	13C3-PFHxS	95%	77%	50-150%
	13C8-PFOS	92%	74%	50-150%
	13C8-FOSA	94%	63%	50-150%
	d3-MeFOSA	36% [d]	64% [c]	50-150%
	d3-MeFOSAA	96%	74%	50-150%
	d5-EtFOSAA	101%	80%	50-150%
	13C2-4:2FTS	93%	76%	50-150%
	13C2-6:2FTS	87%	50%	50-150%
	13C2-8:2FTS	93%	70%	50-150%
	13C3-HFPO-DA	87%		50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Recovery corrected for double spike.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0016-042.0-20220330
Lab Sample ID: FA94411-23
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q89124.D	1	04/14/22 23:19	JB	04/05/22 08:00	OP90598	S2Q1251
Run #2 [a]	2Q89192.D	5	04/15/22 18:48	JB	04/05/22 08:00	OP90598	S2Q1252

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0036	0.0083	0.0042	0.0021	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0083	0.0042	0.0021	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.042 U [b]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-042.0-20220330		
Lab Sample ID:	FA94411-23	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%	103%	50-150%
	13C5-PFPeA	87%	102%	50-150%
	13C5-PFHxA	88%	102%	50-150%
	13C4-PFHpA	96%	108%	50-150%
	13C8-PFOA	104%	112%	50-150%
	13C9-PFNA	102%	110%	50-150%
	13C6-PFDA	97%	103%	50-150%
	13C7-PFUnDA	93%	97%	50-150%
	13C2-PFDoDA	89%	93%	50-150%
	13C2-PFTeDA	90%	102%	50-150%
	13C3-PFBS	88%	101%	50-150%
	13C3-PFHxS	95%	103%	50-150%
	13C8-PFOS	95%	100%	50-150%
	13C8-FOSA	95%	107%	50-150%
	d3-MeFOSA	48% [c]	58%	50-150%
	d3-MeFOSAA	132%	108%	50-150%
	d5-EtFOSAA	97%	106%	50-150%
	13C2-4:2FTS	84%	95%	50-150%
	13C2-6:2FTS	96%	103%	50-150%
	13C2-8:2FTS	95%	97%	50-150%
	13C3-HFPO-DA	76%	87%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220330-02
Lab Sample ID: FA94411-24
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q89125.D	1	04/14/22 23:36	JB	04/05/22 08:00	OP90598	S2Q1251
Run #2	2Q89447.D	1	04/19/22 14:38	NG	04/18/22 09:20	OP90809	S2Q1256

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U [a]	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220330-02		
Lab Sample ID:	FA94411-24	**Date Sampled:**	03/30/22
Matrix:	AQ - Field Blank Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	99%	79%	50-150%
	13C5-PFPeA	99%	78%	50-150%
	13C5-PFHxA	99%	78%	50-150%
	13C4-PFHpA	101%	80%	50-150%
	13C8-PFOA	96%	74%	50-150%
	13C9-PFNA	97%	75%	50-150%
	13C6-PFDA	91%	75%	50-150%
	13C7-PFUnDA	89%	73%	50-150%
	13C2-PFDoDA	90%	72%	50-150%
	13C2-PFTeDA	92%	67%	50-150%
	13C3-PFBS	98%	81%	50-150%
	13C3-PFHxS	94%	77%	50-150%
	13C8-PFOS	88%	72%	50-150%
	13C8-FOSA	77%	68%	50-150%
	d3-MeFOSA	30% [d]	59% [c]	50-150%
	d3-MeFOSAA	89%	72%	50-150%
	d5-EtFOSAA	97%	79%	50-150%
	13C2-4:2FTS	92%	74%	50-150%
	13C2-6:2FTS	80%	55%	50-150%
	13C2-8:2FTS	90%	69%	50-150%
	13C3-HFPO-DA	84%		50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Recovery corrected for double spike.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0016-057.0-20220330
Lab Sample ID: FA94411-25
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/30/22
Date Received: 03/30/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q89128.D	1	04/15/22 00:26	JB	04/05/22 08:00	OP90598	S2Q1251
Run #2 [a]	2Q89193.D	5	04/15/22 19:05	JB	04/05/22 08:00	OP90598	S2Q1252

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.010 U	0.020	0.010	0.0050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0187	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0216	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA	0.050 U [b]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0016-057.0-20220330		
Lab Sample ID:	FA94411-25	**Date Sampled:**	03/30/22
Matrix:	AQ - Ground Water	**Date Received:**	03/30/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	97%	101%	50-150%
	13C5-PFPeA	94%	102%	50-150%
	13C5-PFHxA	93%	102%	50-150%
	13C4-PFHpA	95%	107%	50-150%
	13C8-PFOA	99%	108%	50-150%
	13C9-PFNA	100%	107%	50-150%
	13C6-PFDA	92%	101%	50-150%
	13C7-PFUnDA	70%	96%	50-150%
	13C2-PFDoDA	89%	96%	50-150%
	13C2-PFTeDA	88%	105%	50-150%
	13C3-PFBS	94%	103%	50-150%
	13C3-PFHxS	93%	97%	50-150%
	13C8-PFOS	94%	99%	50-150%
	13C8-FOSA	90%	101%	50-150%
	d3-MeFOSA	41% [c]	54%	50-150%
	d3-MeFOSAA	112%	104%	50-150%
	d5-EtFOSAA	100%	108%	50-150%
	13C2-4:2FTS	88%	95%	50-150%
	13C2-6:2FTS	99%	101%	50-150%
	13C2-8:2FTS	95%	98%	50-150%
	13C3-HFPO-DA	82%	90%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA94411

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: 1 of 3	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Joyal**		Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747	Greg Kusel 772-631-7426	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-DPT0013-004.0-20220329	A3RB-DPT0013	20220329	0839	WG	N	G	2	2	
2	A3RB-DPT0013-010.0-20220329	A3RB-DPT0013	20220329	0902	WG	N	G	2	2	
3	A3RB-DPT0013-025.0-20220329	A3RB-DPT0013	20220329	0930	WG	N	G	2	2	
4	A3RB-DPT0013-042.0-20220329	A3RB-DPT0013	20220329	1000	WG	N	G	2	2	
5	A3RB-DPT0013-057.0-20220329	A3RB-DPT0013	20220329	1032	WG	N	G	2	2	
6	A3RB-DPT0014-004.0-20220329	A3RB-DPT0014	20220329	1120	WG	N	G	2	2	
7	A3RB-DPT0014-010.0-20220329	A3RB-DPT0014	20220329	1139	WG	N	G	2	2	
8	A3RB-DPT0014-025.0-20220329	A3RB-DPT0014	20220329	1305	WG	N	G	2	2	INITIAL ASSESSMENT
9	A3RB-DPT0014-042.0-20220329	A3RB-DPT0014	20220329	1331	WG	N	G	2	2	
10	A3RB-DPT0014-057.0-20220329	A3RB-DPT0014	20220329	1359	WG	N	G	2	2	LABEL VERIFICATION
11	A3RB-DPT0015-004.0-20220329	A3RB-DPT0015	20220329	1453	WG	N	G	2	2	3.2C IR1
12	A3RB-DPT0015-010.0-20220329	A3RB-DPT0015	20220329	1514	WG	N	G	2	2	1.8C IR1

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1 Greg Kusel	3/29/22	0700
2 Greg Kusel	3/30/22	1650	2 Sam McV	3/30/22	1650
3			3		

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA94411: Chain of Custody
Page 1 of 4

FA94411

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 2 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Joyal** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # | Dustin Slater/ 407-766-0747 Greg Kusel 772-631-7426 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	4 DEB PFAS MS/MSD	Comments
13	A3RB-DPT0015-025.0-20220330	A3RB-DPT0015	20220330	0928	WG	N	G	2	2		
14	A3RB-DPT0015-042.0-20220330	A3RB-DPT0015	20220330	0900	WG	N	G	2	2		
15	A3RB-DPT0015-057.0-20220330	A3RB-DPT0015	20220330	0940	WG	N	G	2	2		
16	A3RB-FB-20220330-01	FB01	20220330	0948	WG WG	GK N	FB	G	2	2	
17	A3RB-EB-20220330-01	EB01	20220330	0950	WG WG	GK N	EB	G	2	2	
18	A3RB-DPT0016-004.0-20220330	A3RB-DPT0016	20220330	1031	WG	N	G	2	2		
19	A3RB-Dup-20220330-01 (FD GK)	FD01 (GK)	20220330	1035	WG WG	GK FD	GK G	2	2		
20	A3RB-DPT0016-010.0-20220330	A3RB-DPT0016	20220330	1105	WG	N	G	4	2	2	MS/MSD
21	A3RB-DPT0016-025.0-20220330	A3RB-DPT0016	20220330	1136	WG	N	G	2	2		
22	A3RB-EB-20220330-02	A3RB-EB02	20220330	1145	GK WQ	EB N	G	2	2		
23	A3RB-DPT0016-042.0-20220330	A3RB-DPT0016	20220330	1212	WG	N	G	2	2		
24	A3RB-FB-20220330-02	FB02	20220330	1225	WQ	FB	G	2	2		

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1 Greg Kusel	3/29/22	0700
2 Greg Kusel	3/30/22	1650	2 Dan McCann	3/30/22	1650
3			3		

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA94411: Chain of Custody
Page 2 of 4

FA94411

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 3 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Joyal** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # Dustin Slater/ 407-766-0747 Greg Knecl 772-631-7426 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) 4 DEG: Total No. of Containers	Select PFAS by 537	Comments
25	A3RB-DP00016-057.0-20220330	A3RB-DP00016	20220330	1335	WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
					WG	N	G	2	2	
							G	2	2	
							G	2	2	

***Field* Comments:**
Report only per QAPP WS #15-2

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1				Greg Thrush	3/29/22	0700
2	Greg Thrush	3/30/22	1650	Frank McCi	3/30/22	1650
3						

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA94411: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FA94411 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/30/2022 4:50:00 PM **Delivery Method:** DROPOFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2); Cooler 2: (1.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 3/30/2022 4:50:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90597	EPA 537M QSM5.3 B-15						
OP90597-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP90597-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	98	%	72-129
OP90597-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	95	%	72-129
OP90597-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	96	%	72-130
OP90597-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	96	%	71-133
OP90597-BS	375-95-1	Perfluorononanoic acid	BSP	REC	93	%	69-130
OP90597-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	96	%	71-129
OP90597-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	95	%	69-133
OP90597-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	84	%	72-134
OP90597-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	77	%	65-144
OP90597-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	96	%	71-132
OP90597-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	94	%	72-130
OP90597-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	94	%	71-127
OP90597-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP90597-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	102	%	69-134
OP90597-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	65-140
OP90597-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	98	%	69-127
OP90597-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	109	%	53-142
OP90597-BS	754-91-6	PFOSA	BSP	REC	98	%	67-137
OP90597-BS	31506-32-8	MeFOSA	BSP	REC	92	%	68-141
OP90597-BS	2355-31-9	MeFOSAA	BSP	REC	84	%	65-136
OP90597-BS	2991-50-6	EtFOSAA	BSP	REC	66	%	61-135
OP90597-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP90597-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	99	%	64-140
OP90597-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	100	%	67-138
OP90597-MS	375-22-4	Perfluorobutanoic acid	MS	REC	99	%	73-129
OP90597-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	72-129
OP90597-MS	307-24-4	Perfluorohexanoic acid	MS	REC	97	%	72-129
OP90597-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	97	%	72-130
OP90597-MS	335-67-1	Perfluorooctanoic acid	MS	REC	100	%	71-133
OP90597-MS	375-95-1	Perfluorononanoic acid	MS	REC	96	%	69-130
OP90597-MS	335-76-2	Perfluorodecanoic acid	MS	REC	107	%	71-129
OP90597-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	99	%	69-133
OP90597-MS	307-55-1	Perfluorododecanoic acid	MS	REC	84	%	72-134
OP90597-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	91	%	65-144
OP90597-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	98	%	71-132
OP90597-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	95	%	72-130
OP90597-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	92	%	71-127
OP90597-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	93	%	68-131
OP90597-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	101	%	69-134
OP90597-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	108	%	65-140
OP90597-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	95	%	69-127

* Sample used for QC is not from job FA94411

QC Evaluation: DOD QSM5.x Limits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90597-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	109	%	53-142
OP90597-MS	754-91-6	PFOSA	MS	REC	104	%	67-137
OP90597-MS	31506-32-8	MeFOSA	MS	REC	91	%	68-141
OP90597-MS	2355-31-9	MeFOSAA	MS	REC	96	%	65-136
OP90597-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP90597-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	89	%	63-143
OP90597-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	96	%	64-140
OP90597-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	103	%	67-138
OP90597-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	73-129
OP90597-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	2	%	30
OP90597-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	101	%	72-129
OP90597-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP90597-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	97	%	72-129
OP90597-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	0	%	30
OP90597-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	97	%	72-130
OP90597-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	0	%	30
OP90597-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	98	%	71-133
OP90597-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	2	%	30
OP90597-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	94	%	69-130
OP90597-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP90597-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	102	%	71-129
OP90597-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	5	%	30
OP90597-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	96	%	69-133
OP90597-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	3	%	30
OP90597-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	84	%	72-134
OP90597-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	0	%	30
OP90597-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	82	%	65-144
OP90597-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	11	%	30
OP90597-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	97	%	71-132
OP90597-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP90597-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	88	%	72-130
OP90597-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	7	%	30
OP90597-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	87	%	71-127
OP90597-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	6	%	30
OP90597-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	81	%	68-131
OP90597-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP90597-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	98	%	69-134
OP90597-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	2	%	30
OP90597-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	110	%	65-140
OP90597-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP90597-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	111	%	69-127
OP90597-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	16	%	30
OP90597-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	96	%	53-142
OP90597-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	13	%	30
OP90597-MSD	754-91-6	PFOSA	MSD	REC	99	%	67-137

* Sample used for QC is not from job FA94411

QC Evaluation: DOD QSM5.x Limits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90597-MSD	754-91-6	PFOSA	MSD	RPD	5	%	30
OP90597-MSD	31506-32-8	MeFOSA	MSD	REC	84	%	68-141
OP90597-MSD	31506-32-8	MeFOSA	MSD	RPD	8	%	30
OP90597-MSD	2355-31-9	MeFOSAA	MSD	REC	94	%	65-136
OP90597-MSD	2355-31-9	MeFOSAA	MSD	RPD	3	%	30
OP90597-MSD	2991-50-6	EtFOSAA	MSD	REC	91	%	61-135
OP90597-MSD	2991-50-6	EtFOSAA	MSD	RPD	4	%	30
OP90597-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	96	%	63-143
OP90597-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	7	%	30
OP90597-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	99	%	64-140
OP90597-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP90597-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	106	%	67-138
OP90597-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP90598	EPA 537M QSM5.3 B-15						
OP90598-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	89	%	73-129
OP90598-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	85	%	72-129
OP90598-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP90598-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	85	%	72-130
OP90598-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	88	%	71-133
OP90598-BS	375-95-1	Perfluorononanoic acid	BSP	REC	86	%	69-130
OP90598-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	91	%	71-129
OP90598-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	86	%	69-133
OP90598-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	85	%	72-134
OP90598-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	87	%	65-144
OP90598-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	84	%	71-132
OP90598-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	88	%	72-130
OP90598-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP90598-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	91	%	68-131
OP90598-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	89	%	69-134
OP90598-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	85	%	65-140
OP90598-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	91	%	69-127
OP90598-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	88	%	53-142
OP90598-BS	754-91-6	PFOSA	BSP	REC	89	%	67-137
OP90598-BS	31506-32-8	MeFOSA	BSP	REC	95	%	68-141
OP90598-BS	2355-31-9	MeFOSAA	BSP	REC	89	%	65-136
OP90598-BS	2991-50-6	EtFOSAA	BSP	REC	85	%	61-135
OP90598-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	107	%	63-143
OP90598-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	106	%	64-140
OP90598-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	103	%	67-138
OP90598-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	92	%	73-129
OP90598-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	87	%	72-129
OP90598-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	91	%	72-129
OP90598-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	88	%	72-130

* Sample used for QC is not from job FA94411

QC Evaluation: DOD QSM5.x Limits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90598-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	88	%	71-133
OP90598-MS*	375-95-1	Perfluorononanoic acid	MS	REC	88	%	69-130
OP90598-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	93	%	71-129
OP90598-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	89	%	69-133
OP90598-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	88	%	72-134
OP90598-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	86	%	65-144
OP90598-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	87	%	71-132
OP90598-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	89	%	72-130
OP90598-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	89	%	71-127
OP90598-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	93	%	68-131
OP90598-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	91	%	69-134
OP90598-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	88	%	65-140
OP90598-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	92	%	69-127
OP90598-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	88	%	53-142
OP90598-MS*	754-91-6	PFOSA	MS	REC	93	%	67-137
OP90598-MS*	31506-32-8	MeFOSA	MS	REC	94	%	68-141
OP90598-MS*	2355-31-9	MeFOSAA	MS	REC	93	%	65-136
OP90598-MS*	2991-50-6	EtFOSAA	MS	REC	89	%	61-135
OP90598-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	109	%	63-143
OP90598-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	108	%	64-140
OP90598-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	106	%	67-138
OP90598-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	9	%	30
OP90598-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP90598-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP90598-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP90598-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP90598-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP90598-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP90598-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP90598-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA94411

QC Evaluation: DOD QSM5.x Limits

Job Number: FA94411
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/29/22 thru 03/30/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90598-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA94411

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1251-IBLK	2Q89089.D	1	04/14/22	JB	n/a	n/a	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	111%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	112%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1251-IBLK	2Q89089.D	1	04/14/22	JB	n/a	n/a	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	114%	50-150%
	13C8-PFOA	114%	50-150%
	13C9-PFNA	112%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	105%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	111%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	115%	50-150%
	d3-MeFOSA	107%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	106%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	107%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q6-IBLK	5Q288.D	1	04/14/22	MV	n/a	n/a	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	76%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q6-IBLK	5Q288.D	1	04/14/22	MV	n/a	n/a	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	79%	50-150%
	13C9-PFNA	79%	50-150%
	13C6-PFDA	79%	50-150%
	13C7-PFUnDA	75%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSAA	70%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	74%	50-150%
	13C3-HFPO-DA	83%	50-150%

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Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q7-IBLK	5Q344.D	1	04/15/22	MV	n/a	n/a	S5Q7

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-15, FA94411-17, FA94411-19, FA94411-20

CAS No.	Compound	Result	RL	MDL	Units	Q
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSA	92%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	91%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1252-IBLK	2Q89188.D	1	04/15/22	JB	n/a	n/a	S2Q1252

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-23, FA94411-25

CAS No.	Compound	Result	RL	MDL	Units	Q
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	115%	50-150%
	13C5-PFPeA	117%	50-150%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	119%	50-150%
	13C8-PFOA	122%	50-150%
	13C9-PFNA	118%	50-150%
	13C6-PFDA	115%	50-150%
	13C7-PFUnDA	114%	50-150%
	13C2-PFDoDA	114%	50-150%
	13C2-PFTeDA	116%	50-150%
	13C3-PFBS	114%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSA	112%	50-150%
	d3-MeFOSAA	117%	50-150%
	d5-EtFOSAA	123%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	111%	50-150%
	13C2-8:2FTS	111%	50-150%
	13C3-HFPO-DA	106%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q798-IBLK	3Q58373.D	1	04/19/22	MV	n/a	n/a	S3Q798

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-6, FA94411-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	109%	50-150%
	13C5-PFPeA	110%	50-150%
	13C5-PFHxA	110%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q798-IBLK	3Q58373.D	1	04/19/22	MV	n/a	n/a	S3Q798

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-6, FA94411-8

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	110%	50-150%
	13C8-PFOA	112%	50-150%
	13C9-PFNA	110%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	111%	50-150%
	13C2-PFTeDA	109%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	110%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	117%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	108%	50-150%
	13C2-6:2FTS	112%	50-150%
	13C2-8:2FTS	111%	50-150%
	13C3-HFPO-DA	108%	50-150%

Instrument Blank

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q393-IBLK	4Q27572.D	1	04/21/22	NG	n/a	n/a	S4Q393

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-4, FA94411-5, FA94411-9, FA94411-13

CAS No.	Compound	Result	RL	MDL	Units	Q
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	120%	50-150%
	13C5-PFPeA	120%	50-150%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	121%	50-150%
	13C8-PFOA	120%	50-150%
	13C9-PFNA	122%	50-150%
	13C6-PFDA	120%	50-150%
	13C7-PFUnDA	122%	50-150%
	13C2-PFDoDA	119%	50-150%
	13C2-PFTeDA	118%	50-150%
	13C3-PFBS	120%	50-150%
	13C3-PFHxS	121%	50-150%
	13C8-PFOS	122%	50-150%
	13C8-FOSA	129%	50-150%
	d3-MeFOSA	118%	50-150%
	d3-MeFOSAA	123%	50-150%
	d5-EtFOSAA	128%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	113%	50-150%
	13C2-8:2FTS	115%	50-150%
	13C3-HFPO-DA	118%	50-150%

Method Blank Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-MB	5Q293.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	67%	50-150%
	13C5-PFPeA	60%	50-150%
	13C5-PFHxA	60%	50-150%

Method Blank Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-MB	5Q293.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	61%	50-150%
	13C8-PFOA	64%	50-150%
	13C9-PFNA	65%	50-150%
	13C6-PFDA	65%	50-150%
	13C7-PFUnDA	63%	50-150%
	13C2-PFDoDA	59%	50-150%
	13C2-PFTeDA	49%* [a]	50-150%
	13C3-PFBS	74%	50-150%
	13C3-PFHxS	75%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	54%	50-150%
	d3-MeFOSA	32%* [a]	50-150%
	d3-MeFOSAA	51%	50-150%
	d5-EtFOSAA	59%	50-150%
	13C2-4:2FTS	62%	50-150%
	13C2-6:2FTS	67%	50-150%
	13C2-8:2FTS	63%	50-150%
	13C3-HFPO-DA	61%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-MB	2Q89117.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	103%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	105%	50-150%

Method Blank Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-MB	2Q89117.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSA	47%* [a]	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	99%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	89%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-BS	5Q292.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.141	88	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.157	98	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.152	95	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.153	96	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.153	96	71-133
375-95-1	Perfluorononanoic acid	0.16	0.148	93	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.154	96	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.152	95	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.135	84	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.123	77	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.154	96	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.150	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.150	94	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.148	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.163	102	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.159	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.157	98	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.175	109	53-142
754-91-6	PFOSA	0.16	0.157	98	67-137
31506-32-8	MeFOSA	0.16	0.147	92	68-141
2355-31-9	MeFOSAA	0.16	0.134	84	65-136
2991-50-6	EtFOSAA	0.16	0.106	66	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.153	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.159	99	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.160	100	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.152	95	60-140
919005-14-4	ADONA	0.16	0.118	74	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.176	110	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.168	105	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	72%	50-150%
	13C5-PFHxA	71%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-BS	5Q292.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	70%	50-150%
	13C8-PFOA	73%	50-150%
	13C9-PFNA	74%	50-150%
	13C6-PFDA	76%	50-150%
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	72%	50-150%
	13C2-PFTeDA	54%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	86%	50-150%
	13C8-FOSA	67%	50-150%
	d3-MeFOSA	27%* [a]	50-150%
	d3-MeFOSAA	65%	50-150%
	d5-EtFOSAA	75%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	79%	50-150%
	13C3-HFPO-DA	74%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-BS	2Q89116.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.143	89	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.136	85	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.141	88	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.136	85	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.140	88	71-133
375-95-1	Perfluorononanoic acid	0.16	0.137	86	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.146	91	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.138	86	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.136	85	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.139	87	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.135	84	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.140	88	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.140	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.146	91	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.142	89	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.136	85	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.146	91	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.141	88	53-142
754-91-6	PFOSA	0.16	0.143	89	67-137
31506-32-8	MeFOSA	0.16	0.152	95	68-141
2355-31-9	MeFOSAA	0.16	0.142	89	65-136
2991-50-6	EtFOSAA	0.16	0.136	85	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.171	107	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.169	106	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.165	103	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.146	91	60-140
919005-14-4	ADONA	0.16	0.135	84	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.137	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.139	87	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	108%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-BS	2Q89116.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	110%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	110%	50-150%
	13C3-PFBS	105%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	85%	50-150%
	d3-MeFOSA	48%* [a]	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	90%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-MS	2Q89119.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251
FA94455-23	2Q89118.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	Compound	FA94455-23 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.147	92	73-129
2706-90-3	Perfluoropentanoic acid	0.0080	U	0.16	0.139	87	72-129
307-24-4	Perfluorohexanoic acid	0.0080	U	0.16	0.146	91	72-129
375-85-9	Perfluoroheptanoic acid	0.0080	U	0.16	0.140	88	72-130
335-67-1	Perfluorooctanoic acid	0.0020	J	0.16	0.142	88	71-133
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.140	88	69-130
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.149	93	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.143	89	69-133
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.140	88	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.138	86	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.139	87	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.142	89	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.143	89	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080	U	0.16	0.148	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.145	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080	U	0.16	0.140	88	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.147	92	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.140	88	53-142
754-91-6	PFOSA	0.0080	U	0.16	0.148	93	67-137
31506-32-8	MeFOSA	0.016	U	0.16	0.151	94	68-141
2355-31-9	MeFOSAA	0.016	U	0.16	0.148	93	65-136
2991-50-6	EtFOSAA	0.016	U	0.16	0.142	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.174	109	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.172	108	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.170	106	67-138
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.152	95	60-140
919005-14-4	ADONA	0.016	U	0.16	0.137	86	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.141	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.142	89	60-140

CAS No.	ID Standard Recoveries	MS	FA94455-23	Limits
	13C4-PFBA	102%	99%	50-150%
	13C5-PFPeA	102%	101%	50-150%
	13C5-PFHxA	103%	100%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-MS	2Q89119.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251
FA94455-23	2Q89118.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	ID Standard Recoveries	MS	FA94455-23	Limits
	13C4-PFHpA	105%	102%	50-150%
	13C8-PFOA	103%	102%	50-150%
	13C9-PFNA	101%	99%	50-150%
	13C6-PFDA	96%	92%	50-150%
	13C7-PFUnDA	98%	91%	50-150%
	13C2-PFDoDA	98%	92%	50-150%
	13C2-PFTeDA	96%	92%	50-150%
	13C3-PFBS	102%	98%	50-150%
	13C3-PFHxS	97%	93%	50-150%
	13C8-PFOS	94%	92%	50-150%
	13C8-FOSA	88%	93%	50-150%
	d3-MeFOSAA	98%	94%	50-150%
	d5-EtFOSAA	99%	97%	50-150%
	13C2-4:2FTS	101%		50-150%
	13C2-6:2FTS	94%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	85%		50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-MS	5Q402.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7
OP90597-MSD	5Q403.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7
FA94411-20	5Q317.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6
FA94411-20 [a]	5Q401.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	Compound	FA94411-20 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0060	J	0.16	0.165	99	0.16	0.168	101	2	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0038	J	0.16	0.164	100	0.16	0.165	101	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0122		0.16	0.168	97	0.16	0.168	97	0	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0025	J	0.16	0.157	97	0.16	0.157	97	0	72-130/30
335-67-1	Perfluorooctanoic acid	0.0057	J	0.16	0.166	100	0.16	0.163	98	2	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.154	96	0.16	0.151	94	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.171	107	0.16	0.163	102	5	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.159	99	0.16	0.154	96	3	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.135	84	0.16	0.135	84	0	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.146	91	0.16	0.131	82	11	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.040	U [b]	0.16	0.156	98	0.16	0.155	97	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0126		0.16	0.164	95	0.16	0.153	88	7	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0174		0.16	0.165	92	0.16	0.156	87	6	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.293		0.16	0.442	93	0.16	0.423	81	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0049	J	0.16	0.166	101	0.16	0.162	98	2	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.205		0.16	0.378	108	0.16	0.381	110	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.152	95	0.16	0.178	111	16	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.175	109	0.16	0.154	96	13	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.167	104	0.16	0.159	99	5	67-137/30
31506-32-8	MeFOSA	0.080	U [b]	0.16	0.145	91	0.16	0.134	84	8	68-141/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.154	96	0.16	0.150	94	3	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.151	94	0.16	0.145	91	4	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.143	89	0.16	0.154	96	7	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.153	96	0.16	0.158	99	3	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.164	103	0.16	0.170	106	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.163	102	0.16	0.178	111	9	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.131	82	0.16	0.122	76	7	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.160	100	0.16	0.164	103	2	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.175	109	0.16	0.181	113	3	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA94411-20	FA94411-20	Limits
	13C4-PFBA	91%	95%	116%	94%	50-150%
	13C5-PFPeA	86%	89%	90%	88%	50-150%
	13C5-PFHxA	89%	92%	101%	90%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90597-MS	5Q402.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7
OP90597-MSD	5Q403.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7
FA94411-20	5Q317.D	1	04/14/22	MV	04/05/22	OP90597	S5Q6
FA94411-20 [a]	5Q401.D	5	04/15/22	MV	04/05/22	OP90597	S5Q7

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-1, FA94411-2, FA94411-3, FA94411-4, FA94411-5, FA94411-6, FA94411-7, FA94411-8, FA94411-9, FA94411-10, FA94411-11, FA94411-12, FA94411-13, FA94411-14, FA94411-15, FA94411-16, FA94411-17, FA94411-18, FA94411-19, FA94411-20

CAS No.	ID Standard Recoveries	MS	MSD	FA94411-20	FA94411-20	Limits
	13C4-PFHpA	91%	94%	103%	92%	50-150%
	13C8-PFOA	97%	102%	113%	104%	50-150%
	13C9-PFNA	93%	99%	103%	95%	50-150%
	13C6-PFDA	87%	105%	101%	103%	50-150%
	13C7-PFUnDA	94%	114%	79%	119%	50-150%
	13C2-PFDoDA	87%	97%	56%	119%	50-150%
	13C2-PFTeDA	67%	72%	39%* [c]	122%	50-150%
	13C3-PFBS	100%	110%	103%	104%	50-150%
	13C3-PFHxS	99%	109%	111%	106%	50-150%
	13C8-PFOS	98%	111%	102%	113%	50-150%
	13C8-FOSA	78%	42%* [c]	65%	92%	50-150%
	d3-MeFOSA	33%* [c]	15%*	13%* [c]	29%* [c]	50-150%
	d3-MeFOSAA	81%	112%	81%	102%	50-150%
	d5-EtFOSAA	78%	104%	69%	108%	50-150%
	13C2-4:2FTS	94%	96%	109%	91%	50-150%
	13C2-6:2FTS	103%	108%	123%	101%	50-150%
	13C2-8:2FTS	93%	105%	102%	96%	50-150%
	13C3-HFPO-DA	84%	84%	86%	85%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-DUP	2Q89121.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251
FA94455-24	2Q89120.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	Compound	FA94455-24 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0275		0.0300		9	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
31506-32-8	MeFOSA	0.016 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016 U		ND		nc	30
919005-14-4	ADONA	0.016 U		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA94455-24	Limits
	13C4-PFBA	108%	104%	50-150%
	13C5-PFPeA	109%	105%	50-150%
	13C5-PFHxA	110%	104%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA94411
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90598-DUP	2Q89121.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251
FA94455-24	2Q89120.D	1	04/14/22	JB	04/05/22	OP90598	S2Q1251

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA94411-21, FA94411-22, FA94411-23, FA94411-24, FA94411-25

CAS No.	ID Standard Recoveries	DUP	FA94455-24	Limits
	13C4-PFHpA	110%	106%	50-150%
	13C8-PFOA	111%	106%	50-150%
	13C9-PFNA	109%	103%	50-150%
	13C6-PFDA	102%	98%	50-150%
	13C7-PFUnDA	104%	101%	50-150%
	13C2-PFDoDA	105%	102%	50-150%
	13C2-PFTeDA	104%	104%	50-150%
	13C3-PFBS	107%	103%	50-150%
	13C3-PFHxS	105%	98%	50-150%
	13C8-PFOS	102%	97%	50-150%
	13C8-FOSA	98%	100%	50-150%
	d3-MeFOSAA	104%	101%	50-150%
	d5-EtFOSAA	110%	108%	50-150%
	13C2-4:2FTS	100%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	91%		50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FA96080

Sampling Date: 05/31/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: 64

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

July 6, 2022

Ms. Teresa Amentt Jennings
AECOM
150 N Orange Avenue
Orlando, FL 32801

RE: SGS North America Inc. - Orlando job FA96080 Reissue

Dear Ms. Amentt Jennings,

The final report for job number FA96080 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The sample ID on -10 has been revised per your request.

Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA96080

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96080-1	05/31/22	14:00	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0001-025.0-20220531
FA96080-2	05/31/22	13:06	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0002-007.0-20220531
FA96080-3	05/31/22	13:42	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0003-007.0-20220531
FA96080-3D	05/31/22	13:42	BFDS	06/01/22	AQ	Water Dup/MSD	A3RB-MW0003-007.0-20220531
FA96080-3S	05/31/22	13:42	BFDS	06/01/22	AQ	Water Matrix Spike	A3RB-MW0003-007.0-20220531
FA96080-4	05/31/22	14:19	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0004-007.0-20220531
FA96080-5	05/31/22	10:58	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0005-007.0-20220531
FA96080-6	05/31/22	11:57	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0006-025.0-20220531
FA96080-7	05/31/22	13:14	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0007-025.0-20220531
FA96080-8	05/31/22	12:40	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0008-025.0-20220531
FA96080-9	05/31/22	11:50	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0009-025.0-20220531
FA96080-10	05/31/22	11:07	BFDS	06/01/22	AQ	Ground Water	A3RB-MW0010-007.0-20220531
FA96080-11	05/31/22	11:55	BFDS	06/01/22	AQ	Ground Water	A3RB-FD-20220531-01

Sample Summary
(continued)

AECOM, Inc

Job No: FA96080

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96080-12	05/31/22	09:20	BFDS	06/01/22	AQ	Field Blank Water	A3RB-FB-20220531-01
FA96080-13	05/31/22	14:28	BFDS	06/01/22	AQ	Equipment Blank	A3RB-EB-20220531-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA96080

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 6/22/2022 1:24:40 PM

On 06/01/2022, 12 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96080 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91635

Sample(s) FA96080-3MS, FA96080-3MSD were used as the QC samples indicated.

Matrix Spike/Matrix Spike Duplicate Recovery(s) for Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Sample(s) FA96080-1, FA96080-10, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-9 have surrogates outside control limits.

OP91635-MSD for d3-MeFOSA: Outside control limits.

FA96080-1 for d3-MeFOSA: Outside control limits.

FA96080-1 for d3-MeFOSA: Outside control limits.

FA96080-1 for MeFOSA: Associated ID Standard outside control limits.

FA96080-3 for d3-MeFOSA: Outside control limits.

FA96080-4 for d3-MeFOSA: Outside control limits.

FA96080-4 for d3-MeFOSA: Outside control limits.

FA96080-4 for MeFOSA: Associated ID Standard outside control limits.

FA96080-5 for d3-MeFOSA: Outside control limits.

FA96080-5 for d3-MeFOSA: Outside control limits.

FA96080-5 for MeFOSA: Associated ID Standard outside control limits.

FA96080-6 for d3-MeFOSA: Outside control limits.

FA96080-6 for d3-MeFOSA: Outside control limits.

FA96080-6 for MeFOSA: Associated ID Standard outside control limits.

FA96080-7 for d3-MeFOSA: Outside control limits.

FA96080-7 for d3-MeFOSA: Outside control limits.

FA96080-7 for MeFOSA: Associated ID Standard outside control limits.

FA96080-8 for 13C2-PFTeDA: Outside control limits.

FA96080-8 for d3-MeFOSA: Outside control limits.

FA96080-8 for d3-MeFOSA: Outside control limits.

FA96080-8 for MeFOSA: Associated ID Standard outside control limits.

FA96080-9: Confirmation run.

FA96080-10 for d3-MeFOSA: Outside control limits.

FA96080-10 for d3-MeFOSA: Outside control limits.

FA96080-10 for MeFOSA: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP91719

Sample(s) FA96080-1, FA96080-10, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-9 have surrogates outside control limits.

OP91719-BS for d3-MeFOSA: Outside control limits.

OP91719-BS: Insufficient sample for MS/MSD.

OP91719-MB for d3-MeFOSA: Outside control limits.

FA96080-1: Confirmation run.

FA96080-4: Confirmation run.

FA96080-5: Confirmation run.

FA96080-6: Confirmation run.

FA96080-7: Confirmation run.

FA96080-8: Confirmation run.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91719

FA96080-9 for 13C8-FOSA: Outside control limits.

FA96080-9 for 13C8-FOSA: Outside control limits.

FA96080-9 for d3-MeFOSA: Outside control limits.

FA96080-9 for d3-MeFOSA: Outside control limits.

FA96080-9 for PFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96080-9 for MeFOSA: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96080-10: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96080-1	**A3RB-MW0001-025.0-20220531**					
No hits reported in this sample.						
FA96080-2	**A3RB-MW0002-007.0-20220531**					
Perfluorobutanoic acid		0.0126 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0154	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0502	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0081	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0206	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0045 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0022 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0309	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0621	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		1.55	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0269	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		3.33	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0206	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-3	**A3RB-MW0003-007.0-20220531**					
Perfluorobutanoic acid		0.0146 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0329	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0240	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0768	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.116	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.195	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		3.72	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0782	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		6.29	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
FA96080-4	**A3RB-MW0004-007.0-20220531**					
Perfluorobutanoic acid		0.0127 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0108	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0106	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0055 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0640	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0682	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.726	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0092	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0793	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96080-5	**A3RB-MW0005-007.0-20220531**					
Perfluorohexanesulfonic acid		0.0031 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-6	**A3RB-MW0006-025.0-20220531**					
Perfluorooctanesulfonic acid		0.0027 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-7	**A3RB-MW0007-025.0-20220531**					
Perfluoropentanoic acid		0.0049 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0127	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0020 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0039 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0105	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0160	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.229	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0033 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.260	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanesulfonic acid		0.0028 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-8	**A3RB-MW0008-025.0-20220531**					
Perfluoropentanoic acid		0.0033 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0069 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0023 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0070 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0099	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.141	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.186	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-9	**A3RB-MW0009-025.0-20220531**					
Perfluorobutanoic acid		0.0111 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0168	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0422	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0066 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0155	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0491	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0656	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		1.07	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0171	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.50	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96080-10	**A3RB-MW0010-007.0-20220531**					
Perfluorobutanoic acid		0.0058 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0053 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0153	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0065 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0148	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0229	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.429	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.331	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96080-11	**A3RB-FD-20220531-01**					
Perfluorobutanoic acid		0.0091 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0129	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0342	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0058 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0116	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0390	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0511	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.856	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0146	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		1.11	0.080	0.040	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

FA96080-12 **A3RB-FB-20220531-01**

No hits reported in this sample.

FA96080-13 **A3RB-EB-20220531-01**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-MW0001-025.0-20220531		
Lab Sample ID:	FA96080-1	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93277.D	1	06/17/22 15:06	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2 [a]	6Q1401.D	1	06/21/22 19:28	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93345.D	5	06/18/22 13:46	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0001-025.0-20220531		
Lab Sample ID:	FA96080-1	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	88%	69%	106%	50-150%
	13C5-PFPeA	85%	80%	103%	50-150%
	13C5-PFHxA	88%	85%	104%	50-150%
	13C4-PFHpA	93%	89%	105%	50-150%
	13C8-PFOA	102%	91%	110%	50-150%
	13C9-PFNA	103%	95%	109%	50-150%
	13C6-PFDA	97%	84%	102%	50-150%
	13C7-PFUnDA	97%	71%	104%	50-150%
	13C2-PFDoDA	95%	71%	104%	50-150%
	13C2-PFTeDA	68%	59%	78%	50-150%
	13C3-PFBS	86%	85%	107%	50-150%
	13C3-PFHxS	98%	91%	109%	50-150%
	13C8-PFOS	98%	87%	116%	50-150%
	13C8-FOSA	94%	53%	103%	50-150%
	d3-MeFOSA	18% [d]	5% [d]	23% [d]	50-150%
	d3-MeFOSAA	100%	81%	114%	50-150%
	d5-EtFOSAA	102%	68%	115%	50-150%
	13C2-4:2FTS	84%	90%	102%	50-150%
	13C2-6:2FTS	98%	92%	104%	50-150%
	13C2-8:2FTS	97%	86%	99%	50-150%
	13C3-HFPO-DA	86%	74%	100%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0002-007.0-20220531
Lab Sample ID: FA96080-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/31/22
Date Received: 06/01/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93278.D	1	06/17/22 15:23	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2	2Q93346.D	10	06/18/22 14:03	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0126	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0154	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0502	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0081	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0206	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0045	0.0080	0.0040	0.0020	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0022	0.0080	0.0040	0.0020	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0309	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0621	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.55 [a]	0.080	0.040	0.020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0269	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.33 [a]	0.080	0.040	0.020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0206	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0002-007.0-20220531
Lab Sample ID: FA96080-2 **Date Sampled:** 05/31/22
Matrix: AQ - Ground Water **Date Received:** 06/01/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%	104%	50-150%
	13C5-PFPeA	76%	106%	50-150%
	13C5-PFHxA	82%	107%	50-150%
	13C4-PFHpA	85%	108%	50-150%
	13C8-PFOA	98%	113%	50-150%
	13C9-PFNA	94%	108%	50-150%
	13C6-PFDA	98%	106%	50-150%
	13C7-PFUnDA	100%	111%	50-150%
	13C2-PFDoDA	100%	106%	50-150%
	13C2-PFTeDA	77%	83%	50-150%
	13C3-PFBS	81%	110%	50-150%
	13C3-PFHxS	91%	117%	50-150%
	13C8-PFOS	93%	114%	50-150%
	13C8-FOSA	91%	112%	50-150%
	d3-MeFOSA	59%	83%	50-150%
	d3-MeFOSAA	103%	122%	50-150%
	d5-EtFOSAA	105%	121%	50-150%
	13C2-4:2FTS	81%	108%	50-150%
	13C2-6:2FTS	96%	107%	50-150%
	13C2-8:2FTS	100%	109%	50-150%
	13C3-HFPO-DA	79%	107%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0003-007.0-20220531
Lab Sample ID: FA96080-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/31/22
Date Received: 06/01/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93347.D	1	06/18/22 14:19	JB	06/15/22 09:00	OP91635	S2Q1307
Run #2	2Q93348.D	10	06/18/22 14:36	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0146	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0329	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.127	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0240	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0768	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.116	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.195	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	3.72 [a]	0.080	0.040	0.020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0782	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	6.29 [a]	0.080	0.040	0.020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.080 U [a]	0.16	0.080	0.040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0003-007.0-20220531
Lab Sample ID: FA96080-3 **Date Sampled:** 05/31/22
Matrix: AQ - Ground Water **Date Received:** 06/01/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%	100%	50-150%
	13C5-PFPeA	75%	99%	50-150%
	13C5-PFHxA	83%	100%	50-150%
	13C4-PFHpA	84%	102%	50-150%
	13C8-PFOA	105%	108%	50-150%
	13C9-PFNA	98%	106%	50-150%
	13C6-PFDA	103%	99%	50-150%
	13C7-PFUnDA	106%	104%	50-150%
	13C2-PFDoDA	103%	100%	50-150%
	13C2-PFTeDA	78%	81%	50-150%
	13C3-PFBS	81%	105%	50-150%
	13C3-PFHxS	86%	107%	50-150%
	13C8-PFOS	97%	103%	50-150%
	13C8-FOSA	93%	100%	50-150%
	d3-MeFOSA	47% [b]	57%	50-150%
	d3-MeFOSAA	114%	117%	50-150%
	d5-EtFOSAA	117%	121%	50-150%
	13C2-4:2FTS	81%	100%	50-150%
	13C2-6:2FTS	103%	106%	50-150%
	13C2-8:2FTS	105%	102%	50-150%
	13C3-HFPO-DA	77%	99%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0004-007.0-20220531		
Lab Sample ID:	FA96080-4	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93351.D	1	06/18/22 15:26	JB	06/15/22 09:00	OP91635	S2Q1307
Run #2 [a]	6Q1402.D	1	06/21/22 19:43	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93352.D	5	06/18/22 15:42	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0127	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0108	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0106	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0055	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0640	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0682	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.726	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0092	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0793	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0004-007.0-20220531		
Lab Sample ID:	FA96080-4	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	63%	45% d	87%	50-150%
	13C5-PFPeA	62%	61%	85%	50-150%
	13C5-PFHxA	67%	75%	87%	50-150%
	13C4-PFHpA	74%	78%	90%	50-150%
	13C8-PFOA	82%	84%	95%	50-150%
	13C9-PFNA	83%	83%	92%	50-150%
	13C6-PFDA	81%	77%	91%	50-150%
	13C7-PFUnDA	88%	74%	97%	50-150%
	13C2-PFDoDA	89%	66%	96%	50-150%
	13C2-PFTeDA	57%	37% d	60%	50-150%
	13C3-PFBS	71%	77%	94%	50-150%
	13C3-PFHxS	86%	83%	103%	50-150%
	13C8-PFOS	95%	83%	113%	50-150%
	13C8-FOSA	71%	51%	83%	50-150%
	d3-MeFOSA	29% d	21% d	37% d	50-150%
	d3-MeFOSAA	90%	67%	98%	50-150%
	d5-EtFOSAA	95%	57%	99%	50-150%
	13C2-4:2FTS	67%	83%	87%	50-150%
	13C2-6:2FTS	87%	91%	98%	50-150%
	13C2-8:2FTS	93%	82%	99%	50-150%
	13C3-HFPO-DA	57%	63%	73%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0005-007.0-20220531		
Lab Sample ID:	FA96080-5	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93285.D	1	06/17/22 17:19	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2 [a]	6Q1403.D	1	06/21/22 19:59	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93353.D	5	06/18/22 15:59	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0031	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0005-007.0-20220531		
Lab Sample ID:	FA96080-5	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	92%	58%	110%	50-150%
	13C5-PFPeA	88%	66%	105%	50-150%
	13C5-PFHxA	88%	70%	105%	50-150%
	13C4-PFHpA	91%	70%	106%	50-150%
	13C8-PFOA	99%	72%	110%	50-150%
	13C9-PFNA	100%	73%	110%	50-150%
	13C6-PFDA	97%	66%	104%	50-150%
	13C7-PFUnDA	99%	54%	105%	50-150%
	13C2-PFDoDA	96%	50%	104%	50-150%
	13C2-PFTeDA	81%	40% d	87%	50-150%
	13C3-PFBS	88%	69%	107%	50-150%
	13C3-PFHxS	93%	70%	111%	50-150%
	13C8-PFOS	97%	70%	116%	50-150%
	13C8-FOSA	80%	51%	98%	50-150%
	d3-MeFOSA	19% d	17% d	31% d	50-150%
	d3-MeFOSAA	99%	62%	118%	50-150%
	d5-EtFOSAA	101%	55%	115%	50-150%
	13C2-4:2FTS	86%	73%	104%	50-150%
	13C2-6:2FTS	95%	76%	106%	50-150%
	13C2-8:2FTS	96%	66%	100%	50-150%
	13C3-HFPO-DA	83%	59%	92%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0006-025.0-20220531		
Lab Sample ID:	FA96080-6	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93286.D	1	06/17/22 17:35	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2 [a]	6Q1404.D	1	06/21/22 20:14	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93354.D	5	06/18/22 16:15	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0027	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0006-025.0-20220531		
Lab Sample ID:	FA96080-6	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	86%	63%	103%	50-150%
	13C5-PFPeA	83%	74%	100%	50-150%
	13C5-PFHxA	86%	81%	100%	50-150%
	13C4-PFHpA	91%	81%	102%	50-150%
	13C8-PFOA	100%	85%	105%	50-150%
	13C9-PFNA	98%	85%	104%	50-150%
	13C6-PFDA	94%	78%	96%	50-150%
	13C7-PFUnDA	96%	73%	101%	50-150%
	13C2-PFDoDA	95%	69%	101%	50-150%
	13C2-PFTeDA	85%	64%	87%	50-150%
	13C3-PFBS	85%	79%	101%	50-150%
	13C3-PFHxS	94%	85%	105%	50-150%
	13C8-PFOS	94%	81%	107%	50-150%
	13C8-FOSA	90%	53%	98%	50-150%
	d3-MeFOSA	18% [d]	6% [d]	26% [d]	50-150%
	d3-MeFOSAA	94%	76%	108%	50-150%
	d5-EtFOSAA	95%	68%	112%	50-150%
	13C2-4:2FTS	83%	86%	98%	50-150%
	13C2-6:2FTS	95%	85%	98%	50-150%
	13C2-8:2FTS	90%	82%	91%	50-150%
	13C3-HFPO-DA	82%	68%	93%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0007-025.0-20220531		
Lab Sample ID:	FA96080-7	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93287.D	1	06/17/22 17:52	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2 [a]	6Q1405.D	1	06/21/22 20:29	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93357.D	5	06/18/22 17:05	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0049	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0127	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0039	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0105	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0160	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.229	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0033	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.260	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0028	0.0080	0.0040	0.0020	ug/l	J
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0007-025.0-20220531		
Lab Sample ID:	FA96080-7	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	91%	55%	117%	50-150%
	13C5-PFPeA	88%	67%	113%	50-150%
	13C5-PFHxA	92%	73%	115%	50-150%
	13C4-PFHpA	99%	75%	117%	50-150%
	13C8-PFOA	109%	78%	122%	50-150%
	13C9-PFNA	110%	79%	120%	50-150%
	13C6-PFDA	105%	75%	113%	50-150%
	13C7-PFUnDA	105%	60%	115%	50-150%
	13C2-PFDoDA	102%	54%	114%	50-150%
	13C2-PFTeDA	70%	42% d	78%	50-150%
	13C3-PFBS	91%	74%	118%	50-150%
	13C3-PFHxS	103%	77%	121%	50-150%
	13C8-PFOS	105%	73%	124%	50-150%
	13C8-FOSA	95%	62%	110%	50-150%
	d3-MeFOSA	14% d	16% d	23% d	50-150%
	d3-MeFOSAA	105%	65%	125%	50-150%
	d5-EtFOSAA	106%	58%	134%	50-150%
	13C2-4:2FTS	90%	79%	112%	50-150%
	13C2-6:2FTS	104%	81%	117%	50-150%
	13C2-8:2FTS	102%	71%	113%	50-150%
	13C3-HFPO-DA	90%	65%	101%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0008-025.0-20220531		
Lab Sample ID:	FA96080-8	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93288.D	1	06/17/22 18:08	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2 [a]	6Q1406.D	1	06/21/22 20:45	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93358.D	5	06/18/22 17:22	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0033	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0069	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0070	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0099	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.141	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.186	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0008-025.0-20220531		
Lab Sample ID:	FA96080-8	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	87%	56%	107%	50-150%
	13C5-PFPeA	84%	67%	104%	50-150%
	13C5-PFHxA	88%	74%	106%	50-150%
	13C4-PFHpA	94%	77%	106%	50-150%
	13C8-PFOA	104%	77%	112%	50-150%
	13C9-PFNA	104%	79%	111%	50-150%
	13C6-PFDA	99%	67%	102%	50-150%
	13C7-PFUnDA	98%	52%	103%	50-150%
	13C2-PFDoDA	89%	47% [d]	98%	50-150%
	13C2-PFTeDA	44% [d]	48% [d]	58%	50-150%
	13C3-PFBS	88%	73%	107%	50-150%
	13C3-PFHxS	98%	74%	111%	50-150%
	13C8-PFOS	101%	63%	113%	50-150%
	13C8-FOSA	91%	58%	103%	50-150%
	d3-MeFOSA	17% [d]	12% [d]	27% [d]	50-150%
	d3-MeFOSAA	96%	64%	112%	50-150%
	d5-EtFOSAA	98%	54%	117%	50-150%
	13C2-4:2FTS	86%	76%	102%	50-150%
	13C2-6:2FTS	98%	82%	108%	50-150%
	13C2-8:2FTS	97%	70%	100%	50-150%
	13C3-HFPO-DA	84%	65%	100%	50-150%

(a) Confirmation run.
(b) Result is from Run# 3
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0009-025.0-20220531		
Lab Sample ID:	FA96080-9	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6Q1407.D	1	06/21/22 21:00	NG	06/20/22 11:15	OP91719	S6Q25
Run #2 [a]	2Q93289.D	1	06/17/22 18:25	JB	06/15/22 09:00	OP91635	S2Q1306
Run #3	6Q1408.D	10	06/21/22 21:15	NG	06/20/22 11:15	OP91719	S6Q25

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0111	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0168	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0422	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0066	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0155	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0491	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0656	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.07 [b]	0.080	0.040	0.020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0171	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.50 [b]	0.080	0.040	0.020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.040 U [b]	0.080	0.040	0.020	ug/l	
31506-32-8	MeFOSA [d]	0.080 U [b]	0.16	0.080	0.040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0009-025.0-20220531		
Lab Sample ID:	FA96080-9	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	60%	77%	89%	50-150%
	13C5-PFPeA	76%	73%	93%	50-150%
	13C5-PFHxA	83%	77%	94%	50-150%
	13C4-PFHpA	86%	82%	94%	50-150%
	13C8-PFOA	89%	92%	95%	50-150%
	13C9-PFNA	91%	89%	99%	50-150%
	13C6-PFDA	84%	88%	88%	50-150%
	13C7-PFUnDA	80%	85%	72%	50-150%
	13C2-PFDoDA	70%	78%	70%	50-150%
	13C2-PFTeDA	59%	36% [e]	59%	50-150%
	13C3-PFBS	82%	75%	92%	50-150%
	13C3-PFHxS	87%	85%	96%	50-150%
	13C8-PFOS	82%	88%	84%	50-150%
	13C8-FOSA	43% [e]	76%	45% [e]	50-150%
	d3-MeFOSA	3% [e]	9% [e]	9% [e]	50-150%
	d3-MeFOSAA	78%	85%	81%	50-150%
	d5-EtFOSAA	72%	85%	74%	50-150%
	13C2-4:2FTS	91%	74%	91%	50-150%
	13C2-6:2FTS	94%	88%	93%	50-150%
	13C2-8:2FTS	89%	85%	87%	50-150%
	13C3-HFPO-DA	75%	72%	89%	50-150%

(a) Confirmation run.
(b) Result is from Run# 3
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0009-025.0-20220531		
Lab Sample ID:	FA96080-9	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

reanalysis.

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0010-007.0-20220531		
Lab Sample ID:	FA96080-10	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93360.D	1	06/18/22 17:55	JB	06/15/22 09:00	OP91635	S2Q1307
Run #2 [a]	6Q1409.D	1	06/21/22 21:31	NG	06/20/22 11:15	OP91719	S6Q25
Run #3	2Q93361.D	5	06/18/22 18:11	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0058	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0053	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0153	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0065	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0148	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0229	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.429	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.331	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0010-007.0-20220531		
Lab Sample ID:	FA96080-10	**Date Sampled:**	05/31/22
Matrix:	AQ - Ground Water	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	93%	64%	114%	50-150%
	13C5-PFPeA	90%	76%	110%	50-150%
	13C5-PFHxA	94%	81%	111%	50-150%
	13C4-PFHpA	97%	82%	111%	50-150%
	13C8-PFOA	107%	82%	116%	50-150%
	13C9-PFNA	107%	85%	113%	50-150%
	13C6-PFDA	99%	72%	106%	50-150%
	13C7-PFUnDA	102%	65%	112%	50-150%
	13C2-PFDoDA	102%	62%	111%	50-150%
	13C2-PFTeDA	85%	54%	97%	50-150%
	13C3-PFBS	91%	81%	113%	50-150%
	13C3-PFHxS	102%	83%	115%	50-150%
	13C8-PFOS	103%	75%	115%	50-150%
	13C8-FOSA	94%	51%	104%	50-150%
	d3-MeFOSA	32% [d]	6% [d]	44% [d]	50-150%
	d3-MeFOSAA	113%	76%	124%	50-150%
	d5-EtFOSAA	114%	66%	122%	50-150%
	13C2-4:2FTS	90%	83%	106%	50-150%
	13C2-6:2FTS	102%	87%	109%	50-150%
	13C2-8:2FTS	102%	80%	107%	50-150%
	13C3-HFPO-DA	87%	75%	112%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220531-01
Lab Sample ID: FA96080-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/31/22
Date Received: 06/01/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93291.D	1	06/17/22 18:58	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2	2Q93362.D	10	06/18/22 18:28	JB	06/15/22 09:00	OP91635	S2Q1307

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0129	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0342	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0058	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0116	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0390	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0511	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.856 [a]	0.080	0.040	0.020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0146	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	1.11 [a]	0.080	0.040	0.020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220531-01
Lab Sample ID: FA96080-11 **Date Sampled:** 05/31/22
Matrix: AQ - Ground Water **Date Received:** 06/01/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%	102%	50-150%
	13C5-PFPeA	79%	100%	50-150%
	13C5-PFHxA	82%	98%	50-150%
	13C4-PFHpA	86%	99%	50-150%
	13C8-PFOA	96%	102%	50-150%
	13C9-PFNA	97%	100%	50-150%
	13C6-PFDA	95%	94%	50-150%
	13C7-PFUnDA	97%	99%	50-150%
	13C2-PFDoDA	97%	96%	50-150%
	13C2-PFTeDA	79%	79%	50-150%
	13C3-PFBS	81%	102%	50-150%
	13C3-PFHxS	90%	107%	50-150%
	13C8-PFOS	95%	106%	50-150%
	13C8-FOSA	92%	101%	50-150%
	d3-MeFOSA	56%	70%	50-150%
	d3-MeFOSAA	97%	109%	50-150%
	d5-EtFOSAA	96%	114%	50-150%
	13C2-4:2FTS	79%	97%	50-150%
	13C2-6:2FTS	93%	96%	50-150%
	13C2-8:2FTS	93%	95%	50-150%
	13C3-HFPO-DA	78%	98%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220531-01
Lab Sample ID: FA96080-12
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/31/22
Date Received: 06/01/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93292.D	1	06/17/22 19:15	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220531-01
Lab Sample ID: FA96080-12 **Date Sampled:** 05/31/22
Matrix: AQ - Field Blank Water **Date Received:** 06/01/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	105%		50-150%
	13C5-PFPeA	103%		50-150%
	13C5-PFHxA	104%		50-150%
	13C4-PFHpA	103%		50-150%
	13C8-PFOA	101%		50-150%
	13C9-PFNA	100%		50-150%
	13C6-PFDA	94%		50-150%
	13C7-PFUnDA	93%		50-150%
	13C2-PFDoDA	96%		50-150%
	13C2-PFTeDA	85%		50-150%
	13C3-PFBS	103%		50-150%
	13C3-PFHxS	101%		50-150%
	13C8-PFOS	96%		50-150%
	13C8-FOSA	101%		50-150%
	d3-MeFOSA	88%		50-150%
	d3-MeFOSAA	90%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	101%		50-150%
	13C2-6:2FTS	94%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	97%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220531-01		
Lab Sample ID:	FA96080-13	**Date Sampled:**	05/31/22
Matrix:	AQ - Equipment Blank	**Date Received:**	06/01/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93293.D	1	06/17/22 19:31	JB	06/15/22 09:00	OP91635	S2Q1306
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220531-01
Lab Sample ID: FA96080-13
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/31/22
Date Received: 06/01/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	100%		50-150%
	13C5-PFPeA	98%		50-150%
	13C5-PFHxA	99%		50-150%
	13C4-PFHpA	100%		50-150%
	13C8-PFOA	99%		50-150%
	13C9-PFNA	97%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	94%		50-150%
	13C2-PFDoDA	99%		50-150%
	13C2-PFTeDA	95%		50-150%
	13C3-PFBS	101%		50-150%
	13C3-PFHxS	98%		50-150%
	13C8-PFOS	95%		50-150%
	13C8-FOSA	96%		50-150%
	d3-MeFOSA	91%		50-150%
	d3-MeFOSAA	89%		50-150%
	d5-EtFOSAA	90%		50-150%
	13C2-4:2FTS	97%		50-150%
	13C2-6:2FTS	94%		50-150%
	13C2-8:2FTS	89%		50-150%
	13C3-HFPO-DA	93%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA96080

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 1 of 2	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee**		Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Brittany Follet/ 419-302-0236	Dustin Slater/ 407-766-0747	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537										Comments
1	A3RB-MW0001-0025.0-20220531	A3RB-MW0001	20220531	1400	WG	N	G	2	2										
2	A3RB-MW0002-0007.0-20220531	A3RB-MW0002	20220531	1306	WG	N	G	2	2										
3	A3RB-MW0003-0007.0-20220531	A3RB-MW0003	20220531	1342	WG	N	G	2	2										MS/MSD collected here
4	A3RB-MW0004-0007.0-20220531	A3RB-MW0004	20220531	1419	WG	N	G	2	2										
5	A3RB-MW0005-0007.0-20220531	A3RB-MW0005	20220531	1058	WG	N	G	2	2										
6	A3RB-MW0006-0025.0-20220531	A3RB-MW0006	20220531	1157	WG	N	G	2	2										
7	A3RB-MW0007-0025.0-20220531	A3RB-MW0007	20220531	1314	WG	N	G	2	2										
8	A3RB-MW0008-0025.0-20220531	A3RB-MW0008	20220531	1240	WG	N	G	2	2										
9	A3RB-MW0009-0025.0-20220531	A3RB-MW0009	20220531	1150	WG	N	G	2	2										
10	A3RB-MW0010-0011.5-20220522	A3RB-MW0010	20220531	1107	WG	N	G	2	2										
11	A3RB-~~DUP01~~ FD-20220531-01	A3RB-~~DUP01~~ FD-01	20220531	1155	WG	FD	G	2	2										
12	A3RB-~~FB01~~ 20220531-01	A3RB-~~FB01~~ FB-01	20220531	0920	WQ	FB	G	2	2										

INITIAL ASSESSMENT

LABEL VERIFICATION

IR#1

***Field* Comments:**

Report only per QAPP WS #15-2

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	5/31/22	0750
2	5/31/22	1700	2	5/31/22	1705
3			3		

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA96080: Chain of Custody
Page 1 of 4

FA96080

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 2 of 2	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee**		Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Brittany Follet/ 419-302-0236	Dustin Slater/ 407-766-0747	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537										Comments
~~A3RB-FB02~~	~~A3RB-FB02~~	~~A3RB-FB02~~	~~20220531~~		~~WQ~~	~~FB~~	~~G~~	~~2~~	~~2~~	BF									
13	~~A3RB-EB01~~ 20220531-01	~~A3RB-EB01~~ EB-01 BF	20220531	1428	WQ	EB	G	2	2										
~~A3RB-IDW01~~	~~A3RB-IDW01~~	~~A3RB-IDW01~~	~~20220531~~		~~IDW~~	~~IDW~~	~~G~~	~~2~~	~~2~~	BF									
~~A3RB-IDW02~~	~~A3RB-IDW02~~	~~A3RB-IDW02~~	~~20220531~~		~~IDW~~	~~IDW~~	~~G~~	~~2~~	~~2~~	BF									

Field* Comments:** ***PFAS IDW only on the COC. Separate chain for the rest of the parameters on a different COC

Report only per QAPP WS #15-2

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	5/31/22	0750
2	5/31/22	1700	2	5/31/22	1905
3			3		

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

SGS Sample Receipt Summary

Job Number: FA96080 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 6/1/2022 12:05:00 PM **Delivery Method:** CURIOR **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.6);

Cooler Temps (Corrected) °C: Cooler 1: (1.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: TORYW Date: 6/1/2022 12:05:00 PM Reviewer: _____ Date: _____

Job Change Order: FA96080

Requested Date:	7/6/2022	**Received Date:**	6/1/2022
Account Name:	AECOM, Inc	**Due Date:**	6/15/2022
Project Description:	NASA KSC, PFAS SA & Mitigation	**Deliverable:**	COMMBN
CSR:	AC	**TAT (Days):**	1

==========

Sample #: FA96080-10

Dept:

TAT: 1

A3RB-MW0010-011.5-20220531

Change:
Please change the sample ID to A3RB-MW0010-007.0-20220531

==========

FA96080: Chain of Custody
Page 4 of 4

Above Changes Per: Teresa Amentt Jennings **Date/Time:** 7/6/2022 7:24:26 AM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91635	EPA 537M QSM5.3 B-15						
OP91635-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP91635-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	89	%	72-129
OP91635-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP91635-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	87	%	72-130
OP91635-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP91635-BS	375-95-1	Perfluorononanoic acid	BSP	REC	87	%	69-130
OP91635-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	90	%	71-129
OP91635-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	86	%	69-133
OP91635-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	83	%	72-134
OP91635-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	80	%	65-144
OP91635-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP91635-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	87	%	72-130
OP91635-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	87	%	71-127
OP91635-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	88	%	68-131
OP91635-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	90	%	69-134
OP91635-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	91	%	65-140
OP91635-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	88	%	69-127
OP91635-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	86	%	53-142
OP91635-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP91635-BS	31506-32-8	MeFOSA	BSP	REC	91	%	68-141
OP91635-BS	2355-31-9	MeFOSAA	BSP	REC	88	%	65-136
OP91635-BS	2991-50-6	EtFOSAA	BSP	REC	87	%	61-135
OP91635-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	91	%	63-143
OP91635-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	92	%	64-140
OP91635-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP91635-MS	375-22-4	Perfluorobutanoic acid	MS	REC	85	%	73-129
OP91635-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	92	%	72-129
OP91635-MS	307-24-4	Perfluorohexanoic acid	MS	REC	91	%	72-129
OP91635-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	89	%	72-130
OP91635-MS	335-67-1	Perfluorooctanoic acid	MS	REC	91	%	71-133
OP91635-MS	375-95-1	Perfluorononanoic acid	MS	REC	87	%	69-130
OP91635-MS	335-76-2	Perfluorodecanoic acid	MS	REC	91	%	71-129
OP91635-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	84	%	69-133
OP91635-MS	307-55-1	Perfluorododecanoic acid	MS	REC	84	%	72-134
OP91635-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	78	%	65-144
OP91635-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP91635-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	90	%	72-130
OP91635-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	93	%	71-127
OP91635-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	469 [a]	%	68-131
OP91635-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	83	%	69-134
OP91635-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	213 [a]	%	65-140
OP91635-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	88	%	69-127

* Sample used for QC is not from job FA96080

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91635-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	82	%	53-142
OP91635-MS	754-91-6	PFOSA	MS	REC	89	%	67-137
OP91635-MS	31506-32-8	MeFOSA	MS	REC	97	%	68-141
OP91635-MS	2355-31-9	MeFOSAA	MS	REC	94	%	65-136
OP91635-MS	2991-50-6	EtFOSAA	MS	REC	87	%	61-135
OP91635-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	91	%	63-143
OP91635-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	94	%	64-140
OP91635-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	94	%	67-138
OP91635-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	85	%	73-129
OP91635-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	0	%	30
OP91635-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	96	%	72-129
OP91635-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP91635-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	94	%	72-129
OP91635-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP91635-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	91	%	72-130
OP91635-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP91635-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	92	%	71-133
OP91635-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	0	%	30
OP91635-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	89	%	69-130
OP91635-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP91635-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	91	%	71-129
OP91635-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP91635-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	86	%	69-133
OP91635-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	1	%	30
OP91635-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	87	%	72-134
OP91635-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	4	%	30
OP91635-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	82	%	65-144
OP91635-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	5	%	30
OP91635-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	90	%	71-132
OP91635-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	3	%	30
OP91635-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	85	%	72-130
OP91635-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP91635-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	83	%	71-127
OP91635-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP91635-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	644 [a]	%	68-131
OP91635-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	6	%	30
OP91635-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	90	%	69-134
OP91635-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	5	%	30
OP91635-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	-56 [a]	%	65-140
OP91635-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	7	%	30
OP91635-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	88	%	69-127
OP91635-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP91635-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	89	%	53-142
OP91635-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	8	%	30
OP91635-MSD	754-91-6	PFOSA	MSD	REC	90	%	67-137

* Sample used for QC is not from job FA96080

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96080
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/31/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91635-MSD	754-91-6	PFOSA	MSD	RPD	1	%	30
OP91635-MSD	31506-32-8	MeFOSA	MSD	REC	85	%	68-141
OP91635-MSD	31506-32-8	MeFOSA	MSD	RPD	13	%	30
OP91635-MSD	2355-31-9	MeFOSAA	MSD	REC	98	%	65-136
OP91635-MSD	2355-31-9	MeFOSAA	MSD	RPD	4	%	30
OP91635-MSD	2991-50-6	EtFOSAA	MSD	REC	93	%	61-135
OP91635-MSD	2991-50-6	EtFOSAA	MSD	RPD	6	%	30
OP91635-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	91	%	63-143
OP91635-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30
OP91635-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	96	%	64-140
OP91635-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91635-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	98	%	67-138
OP91635-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP91719	EPA 537M QSM5.3 B-15						
OP91719-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	107	%	73-129
OP91719-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	111	%	72-129
OP91719-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	104	%	72-129
OP91719-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	113	%	72-130
OP91719-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	114	%	71-133
OP91719-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP91719-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	114	%	71-129
OP91719-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	109	%	69-133
OP91719-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP91719-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	92	%	65-144
OP91719-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	113	%	71-132
OP91719-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	111	%	72-130
OP91719-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP91719-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	111	%	68-131
OP91719-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	112	%	69-134
OP91719-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	119	%	65-140
OP91719-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	104	%	69-127
OP91719-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	103	%	53-142
OP91719-BS	754-91-6	PFOSA	BSP	REC	104	%	67-137
OP91719-BS	31506-32-8	MeFOSA	BSP	REC	123	%	68-141
OP91719-BS	2355-31-9	MeFOSAA	BSP	REC	109	%	65-136
OP91719-BS	2991-50-6	EtFOSAA	BSP	REC	114	%	61-135
OP91719-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	110	%	63-143
OP91719-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	107	%	64-140
OP91719-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	106	%	67-138

(a) Outside control limits due to high level in sample relative to spike amount.

* Sample used for QC is not from job FA96080

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1306-IBLK	2Q93270.D	1	06/17/22	JB	n/a	n/a	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-11, FA96080-12, FA96080-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	104%	50-150%

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1306-IBLK	2Q93270.D	1	06/17/22	JB	n/a	n/a	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-11, FA96080-12, FA96080-13

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	104%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	101%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	105%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	114%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	109%	50-150%

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1307-IBLK	2Q93337.D	1	06/18/22	JB	n/a	n/a	S2Q1307

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	106%	50-150%
	13C5-PFHxA	106%	50-150%

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1307-IBLK	2Q93337.D	1	06/18/22	JB	n/a	n/a	S2Q1307

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	101%	50-150%
	13C7-PFUnDA	107%	50-150%
	13C2-PFDoDA	105%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	106%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	114%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	115%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	104%	50-150%

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q25-IBLK	6Q1374.D	1	06/21/22	NG	n/a	n/a	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	108%	50-150%
	13C5-PFPeA	113%	50-150%
	13C5-PFHxA	112%	50-150%

Instrument Blank

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q25-IBLK	6Q1374.D	1	06/21/22	NG	n/a	n/a	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	113%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	114%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	107%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	101%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	109%	50-150%

Method Blank Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-MB	2Q93274.D	1	06/17/22	JB	06/15/22	OP91635	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	100%	50-150%

Method Blank Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-MB	2Q93274.D	1	06/17/22	JB	06/15/22	OP91635	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	77%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	95%	50-150%
	13C3-HFPO-DA	97%	50-150%

Method Blank Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91719-MB	6Q1396.D	1	06/21/22	NG	06/20/22	OP91719	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	103%	50-150%

Method Blank Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91719-MB	6Q1396.D	1	06/21/22	NG	06/20/22	OP91719	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	63%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSA	48%* [a]	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	101%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-BS	2Q93273.D	1	06/17/22	JB	06/15/22	OP91635	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0702	88	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0709	89	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0703	88	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0697	87	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0688	86	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0692	87	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0716	90	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0686	86	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0665	83	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0638	80	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0704	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0695	87	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0693	87	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0700	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0723	90	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0731	91	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0705	88	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0684	86	53-142
754-91-6	PFOSA	0.08	0.0700	88	67-137
31506-32-8	MeFOSA	0.08	0.0730	91	68-141
2355-31-9	MeFOSAA	0.08	0.0701	88	65-136
2991-50-6	EtFOSAA	0.08	0.0699	87	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0731	91	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0739	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0758	95	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0730	91	60-140
919005-14-4	ADONA	0.08	0.0661	83	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0699	87	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0653	82	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	107%	50-150%
	13C5-PFPeA	106%	50-150%
	13C5-PFHxA	108%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-BS	2Q93273.D	1	06/17/22	JB	06/15/22	OP91635	S2Q1306

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	108%	50-150%
	13C9-PFNA	107%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	74%	50-150%
	d3-MeFOSAA	111%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	109%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91719-BS [a]	6Q1395.D	1	06/21/22	NG	06/20/22	OP91719	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.171	107	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.178	111	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.167	104	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.181	113	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.182	114	71-133
375-95-1	Perfluorononanoic acid	0.16	0.181	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.183	114	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.175	109	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.166	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.147	92	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.180	113	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.178	111	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.178	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.177	111	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.179	112	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.190	119	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.167	104	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.164	103	53-142
754-91-6	PFOSA	0.16	0.167	104	67-137
31506-32-8	MeFOSA	0.16	0.197	123	68-141
2355-31-9	MeFOSAA	0.16	0.175	109	65-136
2991-50-6	EtFOSAA	0.16	0.182	114	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.176	110	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.171	107	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.170	106	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.199	124	60-140
919005-14-4	ADONA	0.16	0.178	111	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.174	109	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.155	97	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91719-BS [a]	6Q1395.D	1	06/21/22	NG	06/20/22	OP91719	S6Q25

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-9

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	92%	50-150%
	13C2-PFTeDA	61%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSA	48%* [b]	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	85%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-MS	2Q93349.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307
OP91635-MSD	2Q93350.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307
FA96080-3	2Q93347.D	1	06/18/22	JB	06/15/22	OP91635	S2Q1307
FA96080-3	2Q93348.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	Compound	FA96080-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0146	J	0.16	0.150	85	0.16	0.150	85	0	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0329		0.16	0.180	92	0.16	0.186	96	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.127		0.16	0.273	91	0.16	0.278	94	2	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0240		0.16	0.166	89	0.16	0.169	91	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0768		0.16	0.223	91	0.16	0.224	92	0	71-133/30
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.139	87	0.16	0.142	89	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.145	91	0.16	0.146	91	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.135	84	0.16	0.137	86	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.134	84	0.16	0.139	87	4	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.124	78	0.16	0.131	82	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.140	88	0.16	0.144	90	3	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.116		0.16	0.260	90	0.16	0.252	85	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.195		0.16	0.343	93	0.16	0.327	83	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	3.72 [b]		0.16	4.47	469* [a]	0.16	4.75	644* [a]	6	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0782		0.16	0.211	83	0.16	0.222	90	5	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	6.29 [b]		0.16	6.63	213* [a]	0.16	6.20	-56* [a]	7	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.140	88	0.16	0.140	88	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.131	82	0.16	0.142	89	8	53-142/30
754-91-6	PFOSA	0.0080 U		0.16	0.143	89	0.16	0.144	90	1	67-137/30
31506-32-8	MeFOSA	0.16 U [b]		0.16	0.155	97	0.16	0.136	85	13	68-141/30
2355-31-9	MeFOSAA	0.016 U		0.16	0.150	94	0.16	0.156	98	4	65-136/30
2991-50-6	EtFOSAA	0.016 U		0.16	0.139	87	0.16	0.148	93	6	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.145	91	0.16	0.145	91	0	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.16	0.151	94	0.16	0.153	96	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.151	94	0.16	0.156	98	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016 U		0.16	0.161	101	0.16	0.150	94	7	60-140/30
919005-14-4	ADONA	0.016 U		0.16	0.127	79	0.16	0.130	81	2	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		0.16	0.140	88	0.16	0.141	88	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		0.16	0.127	79	0.16	0.137	86	8	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96080-3	FA96080-3	Limits
	13C4-PFBA	109%	103%	75%	100%	50-150%
	13C5-PFPeA	107%	105%	75%	99%	50-150%
	13C5-PFHxA	111%	109%	83%	100%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96080
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91635-MS	2Q93349.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307
OP91635-MSD	2Q93350.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307
FA96080-3	2Q93347.D	1	06/18/22	JB	06/15/22	OP91635	S2Q1307
FA96080-3	2Q93348.D	10	06/18/22	JB	06/15/22	OP91635	S2Q1307

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96080-1, FA96080-2, FA96080-3, FA96080-4, FA96080-5, FA96080-6, FA96080-7, FA96080-8, FA96080-10, FA96080-11, FA96080-12, FA96080-13

CAS No.	ID Standard Recoveries	MS	MSD	FA96080-3	FA96080-3	Limits
	13C4-PFHpA	113%	110%	84%	102%	50-150%
	13C8-PFOA	119%	116%	105%	108%	50-150%
	13C9-PFNA	116%	112%	98%	106%	50-150%
	13C6-PFDA	110%	109%	103%	99%	50-150%
	13C7-PFUnDA	116%	113%	106%	104%	50-150%
	13C2-PFDoDA	110%	108%	103%	100%	50-150%
	13C2-PFTeDA	91%	92%	78%	81%	50-150%
	13C3-PFBS	110%	116%	81%	105%	50-150%
	13C3-PFHxS	120%	113%	86%	107%	50-150%
	13C8-PFOS	113%	120%	97%	103%	50-150%
	13C8-FOSA	113%	99%	93%	100%	50-150%
	d3-MeFOSA	56%	35%* [c]	47%* [c]	57%	50-150%
	d3-MeFOSAA	129%	118%	114%	117%	50-150%
	d5-EtFOSAA	127%	122%	117%	121%	50-150%
	13C2-4:2FTS	114%	114%	81%	100%	50-150%
	13C2-6:2FTS	118%	116%	103%	106%	50-150%
	13C2-8:2FTS	116%	115%	105%	102%	50-150%
	13C3-HFPO-DA	96%	101%	77%	99%	50-150%

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA96400

Sampling Date: 06/10/22

Report to:

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Total number of pages in report: **66**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA96400

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96400-1	06/10/22	13:40	BF	06/10/22	AQ	Ground Water	A3RB-DPT0017-004.0-20220610
FA96400-2	06/10/22	14:10	BF	06/10/22	AQ	Ground Water	A3RB-DPT0017-010.0-20220610
FA96400-3	06/10/22	11:39	BF	06/10/22	AQ	Ground Water	A3RB-DPT0018-004.0-20220610
FA96400-3D	06/10/22	11:39	BF	06/10/22	AQ	Water Dup/MSD	A3RB-DPT0018-004.0-20220610
FA96400-3S	06/10/22	11:39	BF	06/10/22	AQ	Water Matrix Spike	A3RB-DPT0018-004.0-20220610
FA96400-4	06/10/22	12:06	BF	06/10/22	AQ	Ground Water	A3RB-DPT0018-010.0-20220610
FA96400-5	06/10/22	12:51	BF	06/10/22	AQ	Ground Water	A3RB-DPT0018-025.0-20220610
FA96400-6	06/10/22	10:06	BF	06/10/22	AQ	Ground Water	A3RB-DPT0019-004.0-20220610
FA96400-7	06/10/22	10:26	BF	06/10/22	AQ	Ground Water	A3RB-DPT0019-010.0-20220610
FA96400-8	06/10/22	10:52	BF	06/10/22	AQ	Ground Water	A3RB-DPT0019-025.0-20220610
FA96400-9	06/10/22	14:20	BF	06/10/22	AQ	Ground Water	A3RB-FD-20220610-01
FA96400-10	06/10/22	07:50	BF	06/10/22	AQ	Field Blank Water	A3RB-FB-20220610-01
FA96400-11	06/10/22	13:19	BF	06/10/22	AQ	Equipment Blank	A3RB-EB-20220610-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA96400

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 7/8/2022 7:27:16 PM

On 06/10/2022, 10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96400 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91765

Sample(s) FA96400-3MS, FA96400-3MSD were used as the QC samples indicated.

Sample(s) FA96400-1, FA96400-2, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9 have surrogates outside control limits.

FA96400-1 for 13C2-4:2FTS: Outside control limits.

FA96400-1 for 13C2-PFTeDA: Outside control limits.

FA96400-1 for 13C2-PFTeDA: Outside control limits.

FA96400-1 for 13C3-HFPO-DA: Outside control limits.

FA96400-1 for 13C5-PFHxA: Outside control limits.

FA96400-1 for 13C5-PFPeA: Outside control limits.

FA96400-1 for 13C8-FOSA: Outside control limits.

FA96400-1 for d3-MeFOSA: Outside control limits.

FA96400-1 for d3-MeFOSA: Outside control limits.

FA96400-1 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-2: Confirmation run.

FA96400-3 for 13C2-PFTeDA: Outside control limits.

FA96400-3 for d3-MeFOSA: Outside control limits.

FA96400-3 for MeFOSA: Associated ID Standard outside control limits, Confirmed by batch QC.

FA96400-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-3: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-4 for d3-MeFOSA: Outside control limits.

FA96400-4 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-4: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-5 for d3-MeFOSA: Outside control limits.

FA96400-5 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-5: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-6 for 13C5-PFPeA: Outside control limits.

FA96400-6 for d3-MeFOSA: Outside control limits.

FA96400-6 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-6 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FA96400-6: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-7 for d3-MeFOSA: Outside control limits.

FA96400-7 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-7: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-8 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-8: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FA96400-8: Dilution required due to matrix interference (ID recovery standard failure).

FA96400-9 for d3-MeFOSA: Outside control limits.

FA96400-9 for MeFOSA: Associated ID Standard outside control limits, Confirmed by re-analysis.

FA96400-9: Dilution required due to matrix interference (ID recovery standard failure).

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91896

Sample(s) FA96631-5MS, FA96631-6DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoropentanoic acid are outside control limits for sample OP91896-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FA96400-1, FA96400-2, FA96400-3 have surrogates outside control limits.

OP91896-MB for d3-MeFOSA: Outside control limits.

OP91896-MB for d3-MeFOSA: Outside control limits.

OP91896-BS for d3-MeFOSA: Outside control limits.

OP91896-BS for d3-MeFOSA: Outside control limits.

FA96400-1, FA96400-3: Confirmation run.

FA96400-2 for 13C5-PFPeA: Outside control limits.

FA96400-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for MeFOSA: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for HFPO-DA (GenX): Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluorohexanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for 13C2-PFDoDA: Outside control limits.

FA96400-2 for 13C3-HFPO-DA: Outside control limits.

FA96400-2 for d3-MeFOSA: Outside control limits.

FA96400-2 for 13C5-PFHxA: Outside control limits.

FA96400-2 for 13C4-PFHpA: Outside control limits.

FA96400-2 for 13C4-PFBA: Outside control limits.

FA96400-2 for 13C3-PFBS: Outside control limits.

FA96400-2 for Perfluorododecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluoroheptanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for 13C2-4:2FTS: Outside control limits.

FA96400-2 for Perfluorotridecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluoropentanoic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for 13C2-PFTeDA: Outside control limits.

FA96400-2 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

FA96400-2 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96400-1	**A3RB-DPT0017-004.0-20220610**					
Perfluorobutanoic acid		0.0312	0.017	0.0087	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0038 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0049 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0082 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0116	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FA96400-2	**A3RB-DPT0017-010.0-20220610**					
Perfluorobutanoic acid [a]		0.0074 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0043 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0034 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0036 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0038 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0418	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0489	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96400-3	**A3RB-DPT0018-004.0-20220610**					
No hits reported in this sample.						
FA96400-4	**A3RB-DPT0018-010.0-20220610**					
Perfluorobutanoic acid		0.0059 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0071 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0047 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0068 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0078 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.153	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0022 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.164	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96400-5	**A3RB-DPT0018-025.0-20220610**					
No hits reported in this sample.						
FA96400-6	**A3RB-DPT0019-004.0-20220610**					
Perfluorobutanoic acid		0.0058 J	0.017	0.0083	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0106	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0026 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0046 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0111	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanesulfonic acid		0.0155	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.236	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0041 J	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.260	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
FA96400-7	**A3RB-DPT0019-010.0-20220610**					
Perfluorobutanoic acid		0.0070 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0082	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0170	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0040 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0071 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0186	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0263	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.402	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0080	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.523	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FA96400-8	**A3RB-DPT0019-025.0-20220610**					
No hits reported in this sample.						
FA96400-9	**A3RB-FD-20220610-01**					
Perfluorobutanoic acid		0.0062 J	0.018	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0031 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0031 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0034 J	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0307	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0370	0.0091	0.0045	ug/l	EPA 537M QSM5.3 B-15
FA96400-10	**A3RB-FB-20220610-01**					
No hits reported in this sample.						
FA96400-11	**A3RB-EB-20220610-01**					
No hits reported in this sample.						

(a) Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-DPT0017-004.0-20220610		
Lab Sample ID:	FA96400-1	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61960.D	1	06/25/22 07:39	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	2Q94431.D	1	07/02/22 14:46	JB	06/30/22 09:15	OP91896	S2Q1320
Run #3	3Q62041.D	5	06/29/22 04:14	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	100 ml	1.0 ml
Run #3	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0312	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0038	0.0087	0.0043	0.0022	ug/l	J
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0049	0.0087	0.0043	0.0022	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0082	0.0087	0.0043	0.0022	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0116	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.022 U [b]	0.043	0.022	0.011	ug/l	
31506-32-8	MeFOSA [c]	0.043 U [b]	0.087	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0017-004.0-20220610		
Lab Sample ID:	FA96400-1	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.043 U [b]	0.087	0.043	0.022	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.043 U [b]	0.087	0.043	0.022	ug/l	
919005-14-4	ADONA	0.0087 U	0.017	0.0087	0.0043	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0087 U	0.017	0.0087	0.0043	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	52%	32%	61%	50-150%
	13C5-PFPeA	44% [d]	30%	59%	50-150%
	13C5-PFHxA	45% [d]	33%	58%	50-150%
	13C4-PFHpA	54%	39%	61%	50-150%
	13C8-PFOA	59%	43%	61%	50-150%
	13C9-PFNA	53%	46%	59%	50-150%
	13C6-PFDA	54%	45%	61%	50-150%
	13C7-PFUnDA	64%	45%	64%	50-150%
	13C2-PFDoDA	58%	43%	58%	50-150%
	13C2-PFTeDA	42% [d]	32%	42% [d]	50-150%
	13C3-PFBS	54%	33%	68%	50-150%
	13C3-PFHxS	73%	42%	74%	50-150%
	13C8-PFOS	65%	46%	71%	50-150%
	13C8-FOSA	48% [d]	33%	52%	50-150%
	d3-MeFOSA	17% [d]	9%	20% [d]	50-150%
	d3-MeFOSAA	70%	43%	62%	50-150%
	d5-EtFOSAA	67%	45%	63%	50-150%
	13C2-4:2FTS	49% [d]	34%	56%	50-150%
	13C2-6:2FTS	68%	40%	67%	50-150%
	13C2-8:2FTS	59%	45%	64%	50-150%
	13C3-HFPO-DA	42% [d]	30%	51%	50-150%

(a) Confirmation run.
(b) Result is from Run# 3
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0017-010.0-20220610
Lab Sample ID: FA96400-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q94432.D	1	07/02/22 15:02	JB	06/30/22 09:15	OP91896	S2Q1320
Run #2 [a]	3Q61961.D	1	06/25/22 07:57	MV	06/22/22 08:35	OP91765	S3Q845

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0074	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0035	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0043	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0036	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0038	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0418	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0489	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0017-010.0-20220610		
Lab Sample ID:	FA96400-2	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [c]	39%	50-150%
	13C5-PFPeA	41% [c]	36%	50-150%
	13C5-PFHxA	43% [c]	37%	50-150%
	13C4-PFHpA	49% [c]	43%	50-150%
	13C8-PFOA	54%	45%	50-150%
	13C9-PFNA	56%	43%	50-150%
	13C6-PFDA	55%	44%	50-150%
	13C7-PFUnDA	52%	49%	50-150%
	13C2-PFDoDA	46% [c]	46%	50-150%
	13C2-PFTeDA	47% [c]	49%	50-150%
	13C3-PFBS	43% [c]	44%	50-150%
	13C3-PFHxS	51%	54%	50-150%
	13C8-PFOS	54%	50%	50-150%
	13C8-FOSA	55%	51%	50-150%
	d3-MeFOSA	40% [c]	32%	50-150%
	d3-MeFOSAA	68%	60%	50-150%
	d5-EtFOSAA	56%	60%	50-150%
	13C2-4:2FTS	42% [c]	38%	50-150%
	13C2-6:2FTS	54%	48%	50-150%
	13C2-8:2FTS	53%	44%	50-150%
	13C3-HFPO-DA	40% [c]	36%	50-150%

(a) Confirmation run.

(b) Associated ID Standard outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0018-004.0-20220610
Lab Sample ID: FA96400-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61962.D	1	06/25/22 08:16	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	2Q94433.D	1	07/02/22 15:19	JB	06/30/22 09:15	OP91896	S2Q1320
Run #3 [b]	3Q62043.D	5	06/29/22 04:51	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.021 U [d]	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [e]	0.042 U [d]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0018-004.0-20220610		
Lab Sample ID:	FA96400-3	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	59%	45% [f]	60%	50-150%
	13C5-PFPeA	57%	44% [f]	60%	50-150%
	13C5-PFHxA	56%	46% [f]	61%	50-150%
	13C4-PFHpA	63%	51%	63%	50-150%
	13C8-PFOA	63%	53%	65%	50-150%
	13C9-PFNA	59%	54%	64%	50-150%
	13C6-PFDA	59%	53%	63%	50-150%
	13C7-PFUnDA	64%	52%	65%	50-150%
	13C2-PFDoDA	58%	52%	59%	50-150%
	13C2-PFTeDA	47% [f]	40% [f]	48% [f]	50-150%
	13C3-PFBS	68%	46% [f]	69%	50-150%
	13C3-PFHxS	71%	53%	71%	50-150%
	13C8-PFOS	67%	54%	70%	50-150%
	13C8-FOSA	63%	48% [f]	64%	50-150%
	d3-MeFOSA	38% [f]	17% [f]	43% [f]	50-150%
	d3-MeFOSAA	73%	53%	67%	50-150%
	d5-EtFOSAA	71%	54%	67%	50-150%
	13C2-4:2FTS	58%	46% [f]	59%	50-150%
	13C2-6:2FTS	68%	52%	65%	50-150%
	13C2-8:2FTS	59%	50%	63%	50-150%
	13C3-HFPO-DA	58%	41% [f]	56%	50-150%

(a) Confirmation run.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 3

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0018-004.0-20220610		
Lab Sample ID:	FA96400-3	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Associated ID Standard outside control limits, Confirmed by batch QC.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0018-010.0-20220610
Lab Sample ID: FA96400-4 **Date Sampled:** 06/10/22
Matrix: AQ - Ground Water **Date Received:** 06/10/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61965.D	1	06/25/22 09:12	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	3Q62044.D	5	06/29/22 05:09	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0059	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0071	0.0083	0.0042	0.0021	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0047	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0068	0.0083	0.0042	0.0021	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0078	0.0083	0.0042	0.0021	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.153	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.164	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [b]	0.042 U [c]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0018-010.0-20220610		
Lab Sample ID:	FA96400-4	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%	72%	50-150%
	13C5-PFPeA	57%	71%	50-150%
	13C5-PFHxA	58%	72%	50-150%
	13C4-PFHpA	67%	75%	50-150%
	13C8-PFOA	70%	79%	50-150%
	13C9-PFNA	65%	75%	50-150%
	13C6-PFDA	63%	74%	50-150%
	13C7-PFUnDA	68%	74%	50-150%
	13C2-PFDoDA	61%	67%	50-150%
	13C2-PFTeDA	59%	67%	50-150%
	13C3-PFBS	64%	78%	50-150%
	13C3-PFHxS	74%	80%	50-150%
	13C8-PFOS	66%	76%	50-150%
	13C8-FOSA	71%	78%	50-150%
	d3-MeFOSA	22% [d]	24% [d]	50-150%
	d3-MeFOSAA	81%	76%	50-150%
	d5-EtFOSAA	76%	78%	50-150%
	13C2-4:2FTS	59%	66%	50-150%
	13C2-6:2FTS	72%	74%	50-150%
	13C2-8:2FTS	60%	69%	50-150%
	13C3-HFPO-DA	57%	65%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0018-025.0-20220610
Lab Sample ID: FA96400-5 **Date Sampled:** 06/10/22
Matrix: AQ - Ground Water **Date Received:** 06/10/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61966.D	1	06/25/22 09:29	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	3Q62045.D	5	06/29/22 05:28	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	115 ml	1.0 ml
Run #2	115 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0087 U	0.017	0.0087	0.0043	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
31506-32-8	MeFOSA [b]	0.043 U [c]	0.087	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0018-025.0-20220610		
Lab Sample ID:	FA96400-5	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0087 U	0.017	0.0087	0.0043	ug/l	
919005-14-4	ADONA	0.0087 U	0.017	0.0087	0.0043	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0087 U	0.017	0.0087	0.0043	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0087 U	0.017	0.0087	0.0043	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%	63%	50-150%
	13C5-PFPeA	55%	63%	50-150%
	13C5-PFHxA	56%	64%	50-150%
	13C4-PFHpA	64%	68%	50-150%
	13C8-PFOA	68%	70%	50-150%
	13C9-PFNA	65%	70%	50-150%
	13C6-PFDA	65%	69%	50-150%
	13C7-PFUnDA	72%	71%	50-150%
	13C2-PFDoDA	67%	66%	50-150%
	13C2-PFTeDA	64%	67%	50-150%
	13C3-PFBS	61%	70%	50-150%
	13C3-PFHxS	73%	76%	50-150%
	13C8-PFOS	70%	73%	50-150%
	13C8-FOSA	74%	74%	50-150%
	d3-MeFOSA	31% [d]	35% [d]	50-150%
	d3-MeFOSAA	82%	73%	50-150%
	d5-EtFOSAA	84%	78%	50-150%
	13C2-4:2FTS	57%	59%	50-150%
	13C2-6:2FTS	70%	67%	50-150%
	13C2-8:2FTS	60%	63%	50-150%
	13C3-HFPO-DA	56%	61%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-004.0-20220610
Lab Sample ID: FA96400-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61967.D	1	06/25/22 09:48	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	3Q62049.D	5	06/29/22 06:29	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0058	0.017	0.0083	0.0042	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0106	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026	0.0083	0.0042	0.0021	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0046	0.0083	0.0042	0.0021	ug/l	J
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0111	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0155	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.236	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0041	0.0083	0.0042	0.0021	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.260	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [c]	0.042 U [d]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0019-004.0-20220610		
Lab Sample ID:	FA96400-6	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	58%	50-150%
	13C5-PFPeA	49% e	60%	50-150%
	13C5-PFHxA	52%	64%	50-150%
	13C4-PFHpA	61%	69%	50-150%
	13C8-PFOA	66%	71%	50-150%
	13C9-PFNA	62%	72%	50-150%
	13C6-PFDA	62%	71%	50-150%
	13C7-PFUnDA	64%	69%	50-150%
	13C2-PFDoDA	57%	61%	50-150%
	13C2-PFTeDA	57%	63%	50-150%
	13C3-PFBS	60%	70%	50-150%
	13C3-PFHxS	71%	78%	50-150%
	13C8-PFOS	65%	73%	50-150%
	13C8-FOSA	65%	72%	50-150%
	d3-MeFOSA	28% e	35% e	50-150%
	d3-MeFOSAA	76%	74%	50-150%
	d5-EtFOSAA	73%	73%	50-150%
	13C2-4:2FTS	53%	60%	50-150%
	13C2-6:2FTS	68%	69%	50-150%
	13C2-8:2FTS	58%	64%	50-150%
	13C3-HFPO-DA	52%	58%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-010.0-20220610
Lab Sample ID: FA96400-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61970.D	1	06/25/22 10:44	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	3Q62050.D	5	06/29/22 06:48	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0070	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0082	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0170	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0071	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0186	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0263	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.402	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0080	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.523	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-010.0-20220610
Lab Sample ID: FA96400-7 **Date Sampled:** 06/10/22
Matrix: AQ - Ground Water **Date Received:** 06/10/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	55%	50-150%
	13C5-PFPeA	51%	56%	50-150%
	13C5-PFHxA	52%	58%	50-150%
	13C4-PFHpA	61%	63%	50-150%
	13C8-PFOA	67%	65%	50-150%
	13C9-PFNA	63%	66%	50-150%
	13C6-PFDA	63%	68%	50-150%
	13C7-PFUnDA	69%	67%	50-150%
	13C2-PFDoDA	64%	61%	50-150%
	13C2-PFTeDA	64%	64%	50-150%
	13C3-PFBS	62%	65%	50-150%
	13C3-PFHxS	75%	72%	50-150%
	13C8-PFOS	68%	71%	50-150%
	13C8-FOSA	71%	72%	50-150%
	d3-MeFOSA	36% [d]	40% [d]	50-150%
	d3-MeFOSAA	80%	72%	50-150%
	d5-EtFOSAA	78%	75%	50-150%
	13C2-4:2FTS	54%	54%	50-150%
	13C2-6:2FTS	68%	64%	50-150%
	13C2-8:2FTS	61%	60%	50-150%
	13C3-HFPO-DA	53%	55%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-025.0-20220610
Lab Sample ID: FA96400-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q61971.D	1.14	06/25/22 11:02	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [b]	3Q62051.D	5.68	06/29/22 07:06	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0091 U	0.018	0.0091	0.0046	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
307-24-4	Perfluorohexanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
375-95-1	Perfluorononanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0046 U	0.0091	0.0046	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0046 U	0.0091	0.0046	0.0023	ug/l	
31506-32-8	MeFOSA [c]	0.045 U [d]	0.091	0.045	0.023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0046	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0046	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0046	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0019-025.0-20220610		
Lab Sample ID:	FA96400-8	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0046	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0046	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0046	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0046	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0046	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%	81%	50-150%
	13C5-PFPeA	65%	79%	50-150%
	13C5-PFHxA	65%	77%	50-150%
	13C4-PFHpA	74%	81%	50-150%
	13C8-PFOA	75%	82%	50-150%
	13C9-PFNA	70%	79%	50-150%
	13C6-PFDA	69%	79%	50-150%
	13C7-PFUnDA	74%	79%	50-150%
	13C2-PFDoDA	69%	73%	50-150%
	13C2-PFTeDA	58%	69%	50-150%
	13C3-PFBS	70%	83%	50-150%
	13C3-PFHxS	80%	86%	50-150%
	13C8-PFOS	72%	81%	50-150%
	13C8-FOSA	73%	82%	50-150%
	d3-MeFOSA	17% [e]	20% [e]	50-150%
	d3-MeFOSAA	87%	87%	50-150%
	d5-EtFOSAA	89%	89%	50-150%
	13C2-4:2FTS	66%	73%	50-150%
	13C2-6:2FTS	77%	79%	50-150%
	13C2-8:2FTS	63%	69%	50-150%
	13C3-HFPO-DA	65%	77%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required due to matrix interference (ID recovery standard failure).
(c) Associated ID Standard outside control limits, Confirmed by re-analysis.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20220610-01
Lab Sample ID: FA96400-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61972.D	1	06/25/22 11:21	MV	06/22/22 08:35	OP91765	S3Q845
Run #2 [a]	3Q62052.D	5	06/29/22 07:25	NG	06/22/22 08:35	OP91765	S3Q846

	Initial Volume	Final Volume
Run #1	110 ml	1.0 ml
Run #2	110 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0062	0.018	0.0091	0.0045	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0031	0.0091	0.0045	0.0023	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0031	0.0091	0.0045	0.0023	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-67-1	Perfluorooctanoic acid	0.0030	0.0091	0.0045	0.0023	ug/l	J
375-95-1	Perfluorononanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0034	0.0091	0.0045	0.0023	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0307	0.0091	0.0045	0.0023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0370	0.0091	0.0045	0.0023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
31506-32-8	MeFOSA [b]	0.045 U [c]	0.091	0.045	0.023	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
2991-50-6	EtFOSAA	0.0091 U	0.018	0.0091	0.0045	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20220610-01		
Lab Sample ID:	FA96400-9	**Date Sampled:**	06/10/22
Matrix:	AQ - Ground Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U	0.018	0.0091	0.0045	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0091 U	0.018	0.0091	0.0045	ug/l	
919005-14-4	ADONA	0.0091 U	0.018	0.0091	0.0045	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U	0.018	0.0091	0.0045	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091 U	0.018	0.0091	0.0045	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%	70%	50-150%
	13C5-PFPeA	60%	67%	50-150%
	13C5-PFHxA	61%	66%	50-150%
	13C4-PFHpA	72%	71%	50-150%
	13C8-PFOA	77%	74%	50-150%
	13C9-PFNA	71%	71%	50-150%
	13C6-PFDA	70%	69%	50-150%
	13C7-PFUnDA	74%	71%	50-150%
	13C2-PFDoDA	70%	62%	50-150%
	13C2-PFTeDA	68%	64%	50-150%
	13C3-PFBS	67%	72%	50-150%
	13C3-PFHxS	82%	77%	50-150%
	13C8-PFOS	74%	72%	50-150%
	13C8-FOSA	80%	79%	50-150%
	d3-MeFOSA	44% [d]	46% [d]	50-150%
	d3-MeFOSAA	90%	76%	50-150%
	d5-EtFOSAA	87%	73%	50-150%
	13C2-4:2FTS	63%	63%	50-150%
	13C2-6:2FTS	80%	70%	50-150%
	13C2-8:2FTS	74%	65%	50-150%
	13C3-HFPO-DA	59%	64%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by re-analysis.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220610-01
Lab Sample ID: FA96400-10
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61973.D	1	06/25/22 11:39	MV	06/22/22 08:35	OP91765	S3Q845
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0083 U	0.017	0.0083	0.0042	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
307-55-1	Perfluorododecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA	0.0083 U	0.017	0.0083	0.0042	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.017	0.0083	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20220610-01		
Lab Sample ID:	FA96400-10	**Date Sampled:**	06/10/22
Matrix:	AQ - Field Blank Water	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U	0.017	0.0083	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0083 U	0.017	0.0083	0.0042	ug/l	
919005-14-4	ADONA	0.0083 U	0.017	0.0083	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U	0.017	0.0083	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U	0.017	0.0083	0.0042	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	80%		50-150%
	13C9-PFNA	76%		50-150%
	13C6-PFDA	72%		50-150%
	13C7-PFUnDA	75%		50-150%
	13C2-PFDoDA	71%		50-150%
	13C2-PFTeDA	72%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	77%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSA	61%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	80%		50-150%
	13C2-8:2FTS	69%		50-150%
	13C3-HFPO-DA	77%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20220610-01		
Lab Sample ID:	FA96400-11	**Date Sampled:**	06/10/22
Matrix:	AQ - Equipment Blank	**Date Received:**	06/10/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q61974.D	1	06/25/22 11:58	MV	06/22/22 08:35	OP91765	S3Q845
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220610-01
Lab Sample ID: FA96400-11
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/10/22
Date Received: 06/10/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%		50-150%
	13C5-PFPeA	62%		50-150%
	13C5-PFHxA	63%		50-150%
	13C4-PFHpA	66%		50-150%
	13C8-PFOA	66%		50-150%
	13C9-PFNA	63%		50-150%
	13C6-PFDA	57%		50-150%
	13C7-PFUnDA	63%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	61%		50-150%
	13C3-PFBS	69%		50-150%
	13C3-PFHxS	67%		50-150%
	13C8-PFOS	63%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSA	54%		50-150%
	d3-MeFOSAA	73%		50-150%
	d5-EtFOSAA	76%		50-150%
	13C2-4:2FTS	59%		50-150%
	13C2-6:2FTS	66%		50-150%
	13C2-8:2FTS	57%		50-150%
	13C3-HFPO-DA	64%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA96400

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: of
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-DPT0017-004.0-20220610	A3RB-DPT0017	20220610	1340	WG	N	G	2	2	
2	A3RB-DPT0017-010.0-20220610	A3RB-DPT0017	20220610	1410	WG	N	G	2	2	
	~~A3RB-DPT0017-025.0-20220610~~	~~A3RB-DPT0017~~	~~20220610~~	~~1546~~ BF	~~WG~~	~~N~~	~~G~~	~~2~~	~~2~~	
3	A3RB-DPT0018-004.0-20220610	A3RB-DPT0018	20220610	1139	WG	N	G	2	2	BF
4	A3RB-DPT0018-010.0-20220610	A3RB-DPT0018	20220610	1206	WG	N	G	2	2	MS/MSD
5	A3RB-DPT0018-025.0-20220610	A3RB-DPT0018	20220610	1251	WG	N	G	2	2	
6	A3RB-DPT0019-004.0-20220610	A3RB-DPT0019	20220610	1006	WG	N	G	2	2	
7	A3RB-DPT0019-010.0-20220610	A3RB-DPT0019	20220610	1026	WG	N	G	2	2	
8	A3RB-DPT0019-025.0-20220610	A3RB-DPT0019	20220610	1052	WG	N	G	2	2	
9	A3RB-FD-20220610 -01	A3RB-FD -01	20220610	1420	WG	FD	G	2	2	
10	A3RB-FB-20220610 -01	A3RB-FB -01	20220610	0750	WQ	FB	G	2	2	
11	A3RB-EB-20220610 -01	A3RB-EB -01	20220610	1319	WQ	EB	G	2	2	

INITIAL ASSESSMENT

LABEL VERIFICATION

2.4 IR

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1		
2	6/10/22	1540	2	6/10/22	0640
3			3		1540

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <?**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

FA96400: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96400 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 6/10/2022 3:40:00 PM **Delivery Method:** D/O **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 6/10/2022 3:40:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91765	EPA 537M QSM5.3 B-15						
OP91765-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	91	%	73-129
OP91765-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	101	%	72-129
OP91765-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP91765-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	94	%	72-130
OP91765-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	71-133
OP91765-BS	375-95-1	Perfluorononanoic acid	BSP	REC	99	%	69-130
OP91765-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	88	%	71-129
OP91765-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	88	%	69-133
OP91765-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	93	%	72-134
OP91765-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	91	%	65-144
OP91765-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	90	%	71-132
OP91765-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	93	%	72-130
OP91765-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	91	%	71-127
OP91765-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	91	%	68-131
OP91765-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	101	%	69-134
OP91765-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP91765-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	93	%	69-127
OP91765-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	86	%	53-142
OP91765-BS	754-91-6	PFOSA	BSP	REC	94	%	67-137
OP91765-BS	31506-32-8	MeFOSA	BSP	REC	104	%	68-141
OP91765-BS	2355-31-9	MeFOSAA	BSP	REC	96	%	65-136
OP91765-BS	2991-50-6	EtFOSAA	BSP	REC	93	%	61-135
OP91765-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	95	%	63-143
OP91765-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	98	%	64-140
OP91765-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	94	%	67-138
OP91765-MS	375-22-4	Perfluorobutanoic acid	MS	REC	91	%	73-129
OP91765-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	103	%	72-129
OP91765-MS	307-24-4	Perfluorohexanoic acid	MS	REC	86	%	72-129
OP91765-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	94	%	72-130
OP91765-MS	335-67-1	Perfluorooctanoic acid	MS	REC	94	%	71-133
OP91765-MS	375-95-1	Perfluorononanoic acid	MS	REC	100	%	69-130
OP91765-MS	335-76-2	Perfluorodecanoic acid	MS	REC	88	%	71-129
OP91765-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	90	%	69-133
OP91765-MS	307-55-1	Perfluorododecanoic acid	MS	REC	94	%	72-134
OP91765-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	108	%	65-144
OP91765-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP91765-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	93	%	72-130
OP91765-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	95	%	71-127
OP91765-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	91	%	68-131
OP91765-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	106	%	69-134
OP91765-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	94	%	65-140
OP91765-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	94	%	69-127

* Sample used for QC is not from job FA96400

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91765-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	79	%	53-142
OP91765-MS	754-91-6	PFOSA	MS	REC	93	%	67-137
OP91765-MS	31506-32-8	MeFOSA	MS	REC	105	%	68-141
OP91765-MS	2355-31-9	MeFOSAA	MS	REC	96	%	65-136
OP91765-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP91765-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP91765-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	98	%	64-140
OP91765-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	95	%	67-138
OP91765-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	103	%	73-129
OP91765-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	12	%	30
OP91765-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	116	%	72-129
OP91765-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	11	%	30
OP91765-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	96	%	72-129
OP91765-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	12	%	30
OP91765-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	106	%	72-130
OP91765-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	13	%	30
OP91765-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	105	%	71-133
OP91765-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	11	%	30
OP91765-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	113	%	69-130
OP91765-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	12	%	30
OP91765-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	99	%	71-129
OP91765-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	13	%	30
OP91765-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	101	%	69-133
OP91765-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	12	%	30
OP91765-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	106	%	72-134
OP91765-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	12	%	30
OP91765-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	119	%	65-144
OP91765-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	10	%	30
OP91765-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	98	%	71-132
OP91765-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	10	%	30
OP91765-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	105	%	72-130
OP91765-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	12	%	30
OP91765-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	109	%	71-127
OP91765-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	13	%	30
OP91765-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	101	%	68-131
OP91765-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP91765-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	114	%	69-134
OP91765-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	8	%	30
OP91765-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	103	%	65-140
OP91765-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	8	%	30
OP91765-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	107	%	69-127
OP91765-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	13	%	30
OP91765-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	96	%	53-142
OP91765-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	19	%	30
OP91765-MSD	754-91-6	PFOSA	MSD	REC	106	%	67-137

* Sample used for QC is not from job FA96400

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91765-MSD	754-91-6	PFOSA	MSD	RPD	13	%	30
OP91765-MSD	31506-32-8	MeFOSA	MSD	REC	108	%	68-141
OP91765-MSD	31506-32-8	MeFOSA	MSD	RPD	3	%	30
OP91765-MSD	2355-31-9	MeFOSAA	MSD	REC	111	%	65-136
OP91765-MSD	2355-31-9	MeFOSAA	MSD	RPD	14	%	30
OP91765-MSD	2991-50-6	EtFOSAA	MSD	REC	107	%	61-135
OP91765-MSD	2991-50-6	EtFOSAA	MSD	RPD	12	%	30
OP91765-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	107	%	63-143
OP91765-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	10	%	30
OP91765-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	111	%	64-140
OP91765-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	13	%	30
OP91765-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	107	%	67-138
OP91765-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	12	%	30
OP91896	EPA 537M QSM5.3 B-15						
OP91896-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	121	%	73-129
OP91896-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	114	%	73-129
OP91896-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	114	%	72-129
OP91896-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	123	%	72-129
OP91896-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	123	%	72-129
OP91896-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	113	%	72-129
OP91896-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	111	%	72-130
OP91896-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	121	%	72-130
OP91896-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	123	%	71-133
OP91896-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	113	%	71-133
OP91896-BS	375-95-1	Perfluorononanoic acid	BSP	REC	121	%	69-130
OP91896-BS	375-95-1	Perfluorononanoic acid	BSP	REC	113	%	69-130
OP91896-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	126	%	71-129
OP91896-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	114	%	71-129
OP91896-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	121	%	69-133
OP91896-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	113	%	69-133
OP91896-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	119	%	72-134
OP91896-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	113	%	72-134
OP91896-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	106	%	65-144
OP91896-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	102	%	65-144
OP91896-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	124	%	71-132
OP91896-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	111	%	71-132
OP91896-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	124	%	72-130
OP91896-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	113	%	72-130
OP91896-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	125	%	71-127
OP91896-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	114	%	71-127
OP91896-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	116	%	68-131
OP91896-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	122	%	68-131
OP91896-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	118	%	69-134

* Sample used for QC is not from job FA96400

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91896-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	126	%	69-134
OP91896-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	118	%	65-140
OP91896-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	123	%	65-140
OP91896-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	125	%	69-127
OP91896-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	116	%	69-127
OP91896-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	118	%	53-142
OP91896-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	113	%	53-142
OP91896-BS	754-91-6	PFOSA	BSP	REC	113	%	67-137
OP91896-BS	754-91-6	PFOSA	BSP	REC	123	%	67-137
OP91896-BS	31506-32-8	MeFOSA	BSP	REC	119	%	68-141
OP91896-BS	31506-32-8	MeFOSA	BSP	REC	117	%	68-141
OP91896-BS	2355-31-9	MeFOSAA	BSP	REC	124	%	65-136
OP91896-BS	2355-31-9	MeFOSAA	BSP	REC	116	%	65-136
OP91896-BS	2991-50-6	EtFOSAA	BSP	REC	128	%	61-135
OP91896-BS	2991-50-6	EtFOSAA	BSP	REC	113	%	61-135
OP91896-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	113	%	63-143
OP91896-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	122	%	63-143
OP91896-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	121	%	64-140
OP91896-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	109	%	64-140
OP91896-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	123	%	67-138
OP91896-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	113	%	67-138
OP91896-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	111	%	73-129
OP91896-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	117	%	72-129
OP91896-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	114	%	72-129
OP91896-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	115	%	72-130
OP91896-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	118	%	71-133
OP91896-MS*	375-95-1	Perfluorononanoic acid	MS	REC	115	%	69-130
OP91896-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	117	%	71-129
OP91896-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	115	%	69-133
OP91896-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	115	%	72-134
OP91896-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	110	%	65-144
OP91896-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	115	%	71-132
OP91896-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	116	%	72-130
OP91896-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	122	%	71-127
OP91896-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	115	%	68-131
OP91896-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	120	%	69-134
OP91896-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	117	%	65-140
OP91896-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	120	%	69-127
OP91896-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	114	%	53-142
OP91896-MS*	754-91-6	PFOSA	MS	REC	119	%	67-137
OP91896-MS*	31506-32-8	MeFOSA	MS	REC	127	%	68-141
OP91896-MS*	2355-31-9	MeFOSAA	MS	REC	120	%	65-136
OP91896-MS*	2991-50-6	EtFOSAA	MS	REC	120	%	61-135
OP91896-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	116	%	63-143
OP91896-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140

* Sample used for QC is not from job FA96400

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96400
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/10/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91896-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	116	%	67-138
OP91896-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	5	%	30
OP91896-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	200	%	30
OP91896-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91896-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91896-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91896-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP91896-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91896-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91896-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91896-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91896-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA96400

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q845-IBLK	3Q61894.D	1	06/24/22	MV	n/a	n/a	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	106%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	104%	50-150%

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q845-IBLK	3Q61894.D	1	06/24/22	MV	n/a	n/a	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	113%	50-150%
	d3-MeFOSA	100%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	124%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	106%	50-150%

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q846-IBLK	3Q62000.D	1	06/28/22	NG	n/a	n/a	S3Q846

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	103%	50-150%
	d3-MeFOSA	104%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	103%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1320-IBLK	2Q94426.D	1	07/02/22	JB	n/a	n/a	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	97%	50-150%

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1320-IBLK	2Q94426.D	1	07/02/22	JB	n/a	n/a	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	100%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	85%	50-150%

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-MB	3Q61959.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-MB	3Q61959.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	80%	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	103%	50-150%

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94430.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	70%	50-150%
	13C5-PFPeA	69%	50-150%
	13C5-PFHxA	70%	50-150%

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94430.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	71%	50-150%
	13C8-PFOA	70%	50-150%
	13C9-PFNA	70%	50-150%
	13C6-PFDA	69%	50-150%
	13C7-PFUnDA	69%	50-150%
	13C2-PFDoDA	66%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	69%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	69%	50-150%
	13C8-FOSA	64%	50-150%
	d3-MeFOSA	37%* [a]	50-150%
	d3-MeFOSAA	72%	50-150%
	d5-EtFOSAA	67%	50-150%
	13C2-4:2FTS	67%	50-150%
	13C2-6:2FTS	69%	50-150%
	13C2-8:2FTS	66%	50-150%
	13C3-HFPO-DA	67%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94602.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	0.0020	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	0.0020	ug/l	
754-91-6	PFOSA	ND	0.0080	0.0020	ug/l	
31506-32-8	MeFOSA	ND	0.016	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.016	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.016	0.0040	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	0.0040	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.016	0.0040	ug/l	
919005-14-4	ADONA	ND	0.016	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.016	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.016	0.0040	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	82%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	83%	50-150%

Method Blank Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MB	2Q94602.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	83%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	82%	50-150%
	13C7-PFUnDA	81%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	84%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSA	42%* [a]	50-150%
	d3-MeFOSAA	78%	50-150%
	d5-EtFOSAA	74%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	79%	50-150%

(a) Outside control limits.

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91896-BS, OP91896-DUP, OP91896-MS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%

Instrument Blank

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1322-IBLK	2Q94596.D	1	07/06/22	JB	n/a	n/a	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91896-BS, OP91896-DUP, OP91896-MS

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	90%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	94%	50-150%

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-BS	3Q61958.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.146	91	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.161	101	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.140	88	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.151	94	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.149	93	71-133
375-95-1	Perfluorononanoic acid	0.16	0.158	99	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.140	88	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.140	88	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.148	93	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.146	91	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.144	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.149	93	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.146	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.146	91	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.161	101	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.143	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.148	93	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.137	86	53-142
754-91-6	PFOSA	0.16	0.150	94	67-137
31506-32-8	MeFOSA	0.16	0.166	104	68-141
2355-31-9	MeFOSAA	0.16	0.154	96	65-136
2991-50-6	EtFOSAA	0.16	0.148	93	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.152	95	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.156	98	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.151	94	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.153	96	60-140
919005-14-4	ADONA	0.16	0.145	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.165	103	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.153	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-BS	3Q61958.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	86%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	86%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	67%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	98%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94429.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.194	121	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.197	123	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.196	123	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.194	121	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.196	123	71-133
375-95-1	Perfluorononanoic acid	0.16	0.194	121	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.201	126	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.193	121	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.190	119	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.170	106	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.198	124	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.199	124	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.200	125	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.195	122	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.201	126	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.196	123	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.200	125	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.188	118	53-142
754-91-6	PFOSA	0.16	0.196	123	67-137
31506-32-8	MeFOSA	0.16	0.187	117	68-141
2355-31-9	MeFOSAA	0.16	0.199	124	65-136
2991-50-6	EtFOSAA	0.16	0.205	128	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.195	122	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.194	121	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.197	123	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.186	116	60-140
919005-14-4	ADONA	0.16	0.189	118	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.202	126	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.201	126	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	71%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	72%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94429.D	1	07/02/22	JB	06/30/22	OP91896	S2Q1320

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	73%	50-150%
	13C8-PFOA	72%	50-150%
	13C9-PFNA	72%	50-150%
	13C6-PFDA	70%	50-150%
	13C7-PFUnDA	70%	50-150%
	13C2-PFDoDA	67%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	70%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	63%	50-150%
	d3-MeFOSA	35%* [a]	50-150%
	d3-MeFOSAA	70%	50-150%
	d5-EtFOSAA	64%	50-150%
	13C2-4:2FTS	72%	50-150%
	13C2-6:2FTS	73%	50-150%
	13C2-8:2FTS	71%	50-150%
	13C3-HFPO-DA	67%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94601.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.16	0.182	114	73-129
2706-90-3	Perfluoropentanoic acid	0.16	0.182	114	72-129
307-24-4	Perfluorohexanoic acid	0.16	0.180	113	72-129
375-85-9	Perfluoroheptanoic acid	0.16	0.178	111	72-130
335-67-1	Perfluorooctanoic acid	0.16	0.181	113	71-133
375-95-1	Perfluorononanoic acid	0.16	0.180	113	69-130
335-76-2	Perfluorodecanoic acid	0.16	0.182	114	71-129
2058-94-8	Perfluoroundecanoic acid	0.16	0.181	113	69-133
307-55-1	Perfluorododecanoic acid	0.16	0.180	113	72-134
72629-94-8	Perfluorotridecanoic acid	0.16	0.163	102	65-144
376-06-7	Perfluorotetradecanoic acid	0.16	0.178	111	71-132
375-73-5	Perfluorobutanesulfonic acid	0.16	0.181	113	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.16	0.183	114	71-127
355-46-4	Perfluorohexanesulfonic acid	0.16	0.185	116	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.16	0.188	118	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.189	118	65-140
68259-12-1	Perfluorononanesulfonic acid	0.16	0.186	116	69-127
335-77-3	Perfluorodecanesulfonic acid	0.16	0.180	113	53-142
754-91-6	PFOSA	0.16	0.180	113	67-137
31506-32-8	MeFOSA	0.16	0.191	119	68-141
2355-31-9	MeFOSAA	0.16	0.186	116	65-136
2991-50-6	EtFOSAA	0.16	0.180	113	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.16	0.181	113	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.16	0.175	109	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.16	0.181	113	67-138
13252-13-6	HFPO-DA (GenX)	0.16	0.182	114	60-140
919005-14-4	ADONA	0.16	0.171	107	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.16	0.182	114	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.16	0.185	116	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-BS	2Q94601.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	82%	50-150%
	d3-MeFOSA	41%* [a]	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	88%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MS	2Q94605.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-5	2Q94603.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	FA96631-5 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.016 U	0.2	0.221	111	73-129
2706-90-3	Perfluoropentanoic acid	0.0080 U	0.2	0.234	117	72-129
307-24-4	Perfluorohexanoic acid	0.0080 U	0.2	0.227	114	72-129
375-85-9	Perfluoroheptanoic acid	0.0080 U	0.2	0.229	115	72-130
335-67-1	Perfluorooctanoic acid	0.0080 U	0.2	0.235	118	71-133
375-95-1	Perfluorononanoic acid	0.0080 U	0.2	0.229	115	69-130
335-76-2	Perfluorodecanoic acid	0.0080 U	0.2	0.233	117	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080 U	0.2	0.230	115	69-133
307-55-1	Perfluorododecanoic acid	0.0080 U	0.2	0.229	115	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080 U	0.2	0.219	110	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080 U	0.2	0.229	115	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0080 U	0.2	0.231	116	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U	0.2	0.244	122	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0080 U	0.2	0.230	115	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U	0.2	0.240	120	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U	0.2	0.233	117	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080 U	0.2	0.239	120	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U	0.2	0.228	114	53-142
754-91-6	PFOSA	0.0080 U	0.2	0.238	119	67-137
31506-32-8	MeFOSA	0.016 U	0.2	0.253	127	68-141
2355-31-9	MeFOSAA	0.016 U	0.2	0.239	120	65-136
2991-50-6	EtFOSAA	0.016 U	0.2	0.240	120	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U	0.2	0.232	116	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U	0.2	0.225	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U	0.2	0.231	116	67-138
13252-13-6	HFPO-DA (GenX)	0.016 U	0.2	0.239	120	60-140
919005-14-4	ADONA	0.016 U	0.2	0.209	105	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U	0.2	0.228	114	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U	0.2	0.239	120	60-140

CAS No.	ID Standard Recoveries	MS	FA96631-5	Limits
	13C4-PFBA	72%	66%	50-150%
	13C5-PFPeA	68%	62%	50-150%
	13C5-PFHxA	70%	63%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-MS	2Q94605.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-5	2Q94603.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries	MS	FA96631-5	Limits
	13C4-PFHpA	74%	68%	50-150%
	13C8-PFOA	78%	74%	50-150%
	13C9-PFNA	79%	77%	50-150%
	13C6-PFDA	76%	74%	50-150%
	13C7-PFUnDA	73%	72%	50-150%
	13C2-PFDoDA	70%	68%	50-150%
	13C2-PFTeDA	64%	60%	50-150%
	13C3-PFBS	70%	64%	50-150%
	13C3-PFHxS	76%	71%	50-150%
	13C8-PFOS	74%	74%	50-150%
	13C8-FOSA	57%	61%	50-150%
	d3-MeFOSAA	77%	79%	50-150%
	d5-EtFOSAA	77%	82%	50-150%
	13C2-4:2FTS	73%	63%	50-150%
	13C2-6:2FTS	78%	77%	50-150%
	13C2-8:2FTS	85%	79%	50-150%
	13C3-HFPO-DA	66%	60%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-MS	3Q61963.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
OP91765-MSD	3Q61964.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
FA96400-3	3Q61962.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
FA96400-3 [a]	3Q62043.D	5	06/29/22	NG	06/22/22	OP91765	S3Q846

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	Compound	FA96400-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.017 U		0.16	0.146	91	0.16	0.164	103	12	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0083 U		0.16	0.165	103	0.16	0.185	116	11	72-129/30
307-24-4	Perfluorohexanoic acid	0.0083 U		0.16	0.137	86	0.16	0.154	96	12	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0083 U		0.16	0.150	94	0.16	0.170	106	13	72-130/30
335-67-1	Perfluorooctanoic acid	0.0083 U		0.16	0.150	94	0.16	0.168	105	11	71-133/30
375-95-1	Perfluorononanoic acid	0.0083 U		0.16	0.160	100	0.16	0.181	113	12	69-130/30
335-76-2	Perfluorodecanoic acid	0.0083 U		0.16	0.140	88	0.16	0.159	99	13	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0083 U		0.16	0.144	90	0.16	0.162	101	12	69-133/30
307-55-1	Perfluorododecanoic acid	0.0083 U		0.16	0.150	94	0.16	0.169	106	12	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0083 U		0.16	0.172	108	0.16	0.191	119	10	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.042 U	[b]	0.16	0.141	88	0.16	0.156	98	10	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0083 U		0.16	0.149	93	0.16	0.168	105	12	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0083 U		0.16	0.152	95	0.16	0.174	109	13	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0083 U		0.16	0.146	91	0.16	0.162	101	10	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0083 U		0.16	0.169	106	0.16	0.183	114	8	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0083 U		0.16	0.151	94	0.16	0.164	103	8	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0083 U		0.16	0.150	94	0.16	0.171	107	13	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0083 U		0.16	0.127	79	0.16	0.154	96	19	53-142/30
754-91-6	PFOSA	0.0083 U		0.16	0.149	93	0.16	0.170	106	13	67-137/30
31506-32-8	MeFOSA	0.083 U	[b]	0.16	0.168	105	0.16	0.173	108	3	68-141/30
2355-31-9	MeFOSAA	0.017 U		0.16	0.154	96	0.16	0.178	111	14	65-136/30
2991-50-6	EtFOSAA	0.017 U		0.16	0.151	94	0.16	0.171	107	12	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		0.16	0.154	96	0.16	0.171	107	10	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U		0.16	0.156	98	0.16	0.177	111	13	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U		0.16	0.152	95	0.16	0.171	107	12	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017 U		0.16	0.160	100	0.16	0.181	113	12	60-140/30
919005-14-4	ADONA	0.017 U		0.16	0.132	83	0.16	0.144	90	9	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017 U		0.16	0.167	104	0.16	0.190	119	13	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017 U		0.16	0.149	93	0.16	0.175	109	16	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96400-3	FA96400-3	Limits
	13C4-PFBA	69%	64%	59%	60%	50-150%
	13C5-PFPeA	67%	61%	57%	60%	50-150%
	13C5-PFHxA	68%	63%	56%	61%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91765-MS	3Q61963.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
OP91765-MSD	3Q61964.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
FA96400-3	3Q61962.D	1	06/25/22	MV	06/22/22	OP91765	S3Q845
FA96400-3 [a]	3Q62043.D	5	06/29/22	NG	06/22/22	OP91765	S3Q846

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-1, FA96400-3, FA96400-4, FA96400-5, FA96400-6, FA96400-7, FA96400-8, FA96400-9, FA96400-10, FA96400-11

CAS No.	ID Standard Recoveries	MS	MSD	FA96400-3	FA96400-3	Limits
	13C4-PFHpA	76%	71%	63%	63%	50-150%
	13C8-PFOA	77%	72%	63%	65%	50-150%
	13C9-PFNA	74%	69%	59%	64%	50-150%
	13C6-PFDA	71%	69%	59%	63%	50-150%
	13C7-PFUnDA	76%	75%	64%	65%	50-150%
	13C2-PFDoDA	67%	68%	58%	59%	50-150%
	13C2-PFTeDA	50%	55%	47%* [c]	48%* [c]	50-150%
	13C3-PFBS	78%	73%	68%	69%	50-150%
	13C3-PFHxS	84%	82%	71%	71%	50-150%
	13C8-PFOS	76%	76%	67%	70%	50-150%
	13C8-FOSA	78%	76%	63%	64%	50-150%
	d3-MeFOSA	22%* [c]	31%* [c]	38%* [c]	43%* [c]	50-150%
	d3-MeFOSAA	91%	88%	73%	67%	50-150%
	d5-EtFOSAA	87%	86%	71%	67%	50-150%
	13C2-4:2FTS	70%	65%	58%	59%	50-150%
	13C2-6:2FTS	81%	77%	68%	65%	50-150%
	13C2-8:2FTS	73%	70%	59%	63%	50-150%
	13C3-HFPO-DA	69%	63%	58%	56%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-DUP	2Q94608.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6	2Q94606.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6 [a]	2Q94607.D	5	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	Compound	FA96631-6 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0045	J	0.0043	J	5	30
2706-90-3	Perfluoropentanoic acid	0.0080 U		0.0044	J	200*	30
307-24-4	Perfluorohexanoic acid	0.0080 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0080 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0080 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0080 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0080 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0080 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0080 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0080 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0080 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		ND		nc	30
754-91-6	PFOSA	0.0080 U		ND		nc	30
31506-32-8	MeFOSA	0.016 U		ND		nc	30
2355-31-9	MeFOSAA	0.016 U		ND		nc	30
2991-50-6	EtFOSAA	0.016 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.080 U [b]		ND		nc	30
919005-14-4	ADONA	0.016 U		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA96631-6	FA96631-6	Limits
	13C4-PFBA	59%	49%* [c]	63%	50-150%
	13C5-PFPeA	59%	50%	66%	50-150%
	13C5-PFHxA	63%	53%	70%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA96400
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91896-DUP	2Q94608.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6	2Q94606.D	1	07/06/22	JB	06/30/22	OP91896	S2Q1322
FA96631-6 [a]	2Q94607.D	5	07/06/22	JB	06/30/22	OP91896	S2Q1322

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96400-2

CAS No.	ID Standard Recoveries	DUP	FA96631-6	FA96631-6	Limits
	13C4-PFHpA	70%	60%	72%	50-150%
	13C8-PFOA	78%	65%	75%	50-150%
	13C9-PFNA	79%	65%	75%	50-150%
	13C6-PFDA	78%	65%	73%	50-150%
	13C7-PFUnDA	72%	62%	71%	50-150%
	13C2-PFDoDA	69%	59%	69%	50-150%
	13C2-PFTeDA	68%	53%	65%	50-150%
	13C3-PFBS	62%	53%	71%	50-150%
	13C3-PFHxS	73%	61%	78%	50-150%
	13C8-PFOS	78%	62%	71%	50-150%
	13C8-FOSA	77%	63%	75%	50-150%
	d3-MeFOSAA	73%	61%	72%	50-150%
	d5-EtFOSAA	74%	62%	72%	50-150%
	13C2-4:2FTS	62%	52%	67%	50-150%
	13C2-6:2FTS	78%	64%	71%	50-150%
	13C2-8:2FTS	73%	60%	66%	50-150%
	13C3-HFPO-DA	57%	49%* [c]	66%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA96419

Sampling Date: 06/13/22

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: **41**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA96419

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96419-1	06/13/22	14:50	CL	06/13/22	SO	Soil	A3RB-SB0048-061.0-20220613
FA96419-2	06/13/22	13:45	CL	06/13/22	AQ	Field Blank Soil	A3RB-FB-20220613-01
FA96419-3	06/13/22	14:05	CL	06/13/22	AQ	Equipment Blank	A3RB-EB-20220613-01

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA96419

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 6/28/2022 1:00:45 PM

On 06/13/2022, 2 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96419 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91767

Sample(s) FA96427-11MS, FA96427-11MSD were used as the QC samples indicated.

Matrix: SO **Batch ID:** OP91670

Sample(s) FA96359-1MS, FA96359-1MSD were used as the QC samples indicated.

General Chemistry By Method ASTM D2974-87

Matrix: SO **Batch ID:** GN91677

Sample(s) FA96419-1DUP were used as the QC samples for Fractional Organic Carbon.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN91635

Sample(s) FA96318-1DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96419-1	**A3RB-SB0048-061.0-20220613**					
Fractional Organic Carbon		1.5	0.01	0.01	%	ASTM D2974-87
FA96419-2	**A3RB-FB-20220613-01**					
No hits reported in this sample.						
FA96419-3	**A3RB-EB-20220613-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-SB0048-061.0-20220613		
Lab Sample ID:	FA96419-1	**Date Sampled:**	06/13/22
Matrix:	SO - Soil	**Date Received:**	06/13/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	83.7
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q29925.D	1	06/21/22 05:39	MV	06/16/22 06:00	OP91670	S4Q431
Run #2							

	Initial Weight	Final Volume
Run #1	2.10 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00057 U	0.0011	0.00057	0.00043	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00057 U	0.0011	0.00057	0.00030	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
31506-32-8	MeFOSA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0048-061.0-20220613		
Lab Sample ID:	FA96419-1	**Date Sampled:**	06/13/22
Matrix:	SO - Soil	**Date Received:**	06/13/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	83.7
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
919005-14-4	ADONA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00057 U	0.0011	0.00057	0.00033	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00057 U	0.0011	0.00057	0.00030	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	81%		50-150%
	13C5-PFHxA	82%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	87%		50-150%
	13C9-PFNA	88%		50-150%
	13C6-PFDA	79%		50-150%
	13C7-PFUnDA	86%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	78%		50-150%
	13C3-PFBS	85%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSA	67%		50-150%
	d3-MeFOSAA	88%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	84%		50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0048-061.0-20220613		
Lab Sample ID:	FA96419-1	**Date Sampled:**	06/13/22
Matrix:	SO - Soil	**Date Received:**	06/13/22
		Percent Solids:	83.7
Project:	NASA KSC, PFAS SA & Mitigation		

General Chemistry

Analyte	Result	LOQ	LOD	DL	Units	DF	Analyzed	By	Method
Fractional Organic Carbon	1.5	0.01	0.01	0.01	%	1	06/24/22 14:23	BW	ASTM D2974-87
Solids, Percent	83.7				%	1	06/22/22 10:24	JB	SM19 2540G

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result >= DL (MDL) but < LOQ

Report of Analysis

Client Sample ID: A3RB-FB-20220613-01
Lab Sample ID: FA96419-2
Matrix: AQ - Field Blank Soil
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/13/22
Date Received: 06/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93781.D	1	06/24/22 03:41	JB	06/22/22 08:00	OP91767	S2Q1312
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20220613-01
Lab Sample ID: FA96419-2 **Date Sampled:** 06/13/22
Matrix: AQ - Field Blank Soil **Date Received:** 06/13/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%		50-150%
	13C5-PFPeA	109%		50-150%
	13C5-PFHxA	109%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	104%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	104%		50-150%
	13C2-PFDoDA	100%		50-150%
	13C2-PFTeDA	103%		50-150%
	13C3-PFBS	110%		50-150%
	13C3-PFHxS	102%		50-150%
	13C8-PFOS	106%		50-150%
	13C8-FOSA	104%		50-150%
	d3-MeFOSA	84%		50-150%
	d3-MeFOSAA	103%		50-150%
	d5-EtFOSAA	107%		50-150%
	13C2-4:2FTS	100%		50-150%
	13C2-6:2FTS	96%		50-150%
	13C2-8:2FTS	95%		50-150%
	13C3-HFPO-DA	101%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220613-01
Lab Sample ID: FA96419-3
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 06/13/22
Date Received: 06/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93782.D	1	06/24/22 03:57	JB	06/22/22 08:00	OP91767	S2Q1312
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20220613-01
Lab Sample ID: FA96419-3 **Date Sampled:** 06/13/22
Matrix: AQ - Equipment Blank **Date Received:** 06/13/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	113%		50-150%
	13C5-PFPeA	113%		50-150%
	13C5-PFHxA	112%		50-150%
	13C4-PFHpA	110%		50-150%
	13C8-PFOA	114%		50-150%
	13C9-PFNA	111%		50-150%
	13C6-PFDA	104%		50-150%
	13C7-PFUnDA	110%		50-150%
	13C2-PFDoDA	106%		50-150%
	13C2-PFTeDA	110%		50-150%
	13C3-PFBS	116%		50-150%
	13C3-PFHxS	111%		50-150%
	13C8-PFOS	111%		50-150%
	13C8-FOSA	110%		50-150%
	d3-MeFOSA	99%		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	115%		50-150%
	13C2-4:2FTS	105%		50-150%
	13C2-6:2FTS	103%		50-150%
	13C2-8:2FTS	102%		50-150%
	13C3-HFPO-DA	106%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	SO	SGS is not certified for this parameter.
Fractional Organic Carbon		**ASTM D2974-87**	SO	SGS is not certified for this parameter.

FA96419

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 1 of 1
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Chad Lee/ 864-650-4338		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2 & FOC

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	4 DEG FOC	Comments
1	A3RB-SB0048- 20220613-01	A3RB-SB0048	20220613 BF	1450	SO	N	G	2	1	1	
2	A3RB-FB01 20220613-01	A3RB-FB01	20220613 BF	1345	WQ	FB	G	1	1		
3	A3RB-EB01 20220613-01	A3RB-EB01	20220613 BF	1405	WQ	EB	G	1	1		

INITIAL ASSESSMENT

LABEL VERIFICATION ZB

2.0

***Field* Comments:**
Report only per QAPP WS #15-2 & Fractional Organic Carbon (FOC)

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	6/13/22	0736
2	6/13/22	1637	2	6-15-22	1646
3			3		

Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FA96419: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96419 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 6/13/2022 4:46:00 PM **Delivery Method:** D/O **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 6/13/2022 4:46:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91670	EPA 537M QSM5.3 B-15						
OP91670-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	107	%	71-135
OP91670-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	109	%	69-132
OP91670-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	109	%	70-132
OP91670-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	108	%	71-131
OP91670-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	104	%	69-133
OP91670-BS	375-95-1	Perfluorononanoic acid	BSP	REC	106	%	72-129
OP91670-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	115	%	69-133
OP91670-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	105	%	64-136
OP91670-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	103	%	69-135
OP91670-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	96	%	66-139
OP91670-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	98	%	69-133
OP91670-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	106	%	72-128
OP91670-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	107	%	73-123
OP91670-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	103	%	67-130
OP91670-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	108	%	70-132
OP91670-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	107	%	68-136
OP91670-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	111	%	69-125
OP91670-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	103	%	59-134
OP91670-BS	754-91-6	PFOSA	BSP	REC	108	%	67-137
OP91670-BS	2355-31-9	MeFOSAA	BSP	REC	102	%	63-144
OP91670-BS	2991-50-6	EtFOSAA	BSP	REC	106	%	61-139
OP91670-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	102	%	62-145
OP91670-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	104	%	64-140
OP91670-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	104	%	65-137
OP91670-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	106	%	71-135
OP91670-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	109	%	69-132
OP91670-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	108	%	70-132
OP91670-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	107	%	71-131
OP91670-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	104	%	69-133
OP91670-MS*	375-95-1	Perfluorononanoic acid	MS	REC	105	%	72-129
OP91670-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	111	%	69-133
OP91670-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	102	%	64-136
OP91670-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	101	%	69-135
OP91670-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	96	%	66-139
OP91670-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	107	%	69-133
OP91670-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	105	%	72-128
OP91670-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	106	%	73-123
OP91670-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	105	%	67-130
OP91670-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	105	%	70-132
OP91670-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	109	%	68-136
OP91670-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	109	%	69-125
OP91670-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	101	%	59-134

* Sample used for QC is not from job FA96419

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91670-MS*	754-91-6	PFOSA	MS	REC	105	%	67-137
OP91670-MS*	2355-31-9	MeFOSAA	MS	REC	109	%	63-144
OP91670-MS*	2991-50-6	EtFOSAA	MS	REC	109	%	61-139
OP91670-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	100	%	62-145
OP91670-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	105	%	64-140
OP91670-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	105	%	65-137
OP91670-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	104	%	71-135
OP91670-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	0	%	30
OP91670-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	107	%	69-132
OP91670-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	107	%	70-132
OP91670-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	106	%	71-131
OP91670-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	103	%	69-133
OP91670-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	2	%	30
OP91670-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	104	%	72-129
OP91670-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	111	%	69-133
OP91670-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	2	%	30
OP91670-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	101	%	64-136
OP91670-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP91670-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	99	%	69-135
OP91670-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	96	%	66-139
OP91670-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP91670-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	106	%	69-133
OP91670-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP91670-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	103	%	72-128
OP91670-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP91670-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	103	%	73-123
OP91670-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP91670-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	105	%	67-130
OP91670-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP91670-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	106	%	70-132
OP91670-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP91670-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	118	%	68-136
OP91670-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	9	%	30
OP91670-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	106	%	69-125
OP91670-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP91670-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	101	%	59-134
OP91670-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP91670-MSD*	754-91-6	PFOSA	MSD	REC	104	%	67-137
OP91670-MSD*	754-91-6	PFOSA	MSD	RPD	1	%	30
OP91670-MSD*	31506-32-8	MeFOSA	MSD	RPD	1	%	30

* Sample used for QC is not from job FA96419

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91670-MSD*	2355-31-9	MeFOSAA	MSD	REC	104	%	63-144
OP91670-MSD*	2355-31-9	MeFOSAA	MSD	RPD	2	%	30
OP91670-MSD*	2991-50-6	EtFOSAA	MSD	REC	105	%	61-139
OP91670-MSD*	2991-50-6	EtFOSAA	MSD	RPD	1	%	30
OP91670-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	100	%	62-145
OP91670-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP91670-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	104	%	64-140
OP91670-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP91670-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	104	%	65-137
OP91670-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91767	EPA 537M QSM5.3 B-15						
OP91767-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP91767-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	88	%	72-129
OP91767-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP91767-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	88	%	72-130
OP91767-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP91767-BS	375-95-1	Perfluorononanoic acid	BSP	REC	88	%	69-130
OP91767-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	88	%	71-129
OP91767-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	84	%	69-133
OP91767-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	87	%	72-134
OP91767-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	80	%	65-144
OP91767-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP91767-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	83	%	72-130
OP91767-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	86	%	71-127
OP91767-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	88	%	68-131
OP91767-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	91	%	69-134
OP91767-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP91767-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	86	%	69-127
OP91767-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	82	%	53-142
OP91767-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP91767-BS	31506-32-8	MeFOSA	BSP	REC	95	%	68-141
OP91767-BS	2355-31-9	MeFOSAA	BSP	REC	88	%	65-136
OP91767-BS	2991-50-6	EtFOSAA	BSP	REC	87	%	61-135
OP91767-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP91767-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	94	%	64-140
OP91767-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	94	%	67-138
OP91767-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	86	%	73-129
OP91767-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	88	%	72-129
OP91767-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	88	%	72-129
OP91767-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	89	%	72-130
OP91767-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	87	%	71-133
OP91767-MS*	375-95-1	Perfluorononanoic acid	MS	REC	86	%	69-130
OP91767-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	88	%	71-129

* Sample used for QC is not from job FA96419

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91767-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	84	%	69-133
OP91767-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	87	%	72-134
OP91767-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	84	%	65-144
OP91767-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP91767-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	86	%	72-130
OP91767-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	88	%	71-127
OP91767-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	90	%	68-131
OP91767-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	93	%	69-134
OP91767-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	87	%	65-140
OP91767-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	83	%	69-127
OP91767-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	86	%	53-142
OP91767-MS*	754-91-6	PFOSA	MS	REC	88	%	67-137
OP91767-MS*	31506-32-8	MeFOSA	MS	REC	97	%	68-141
OP91767-MS*	2355-31-9	MeFOSAA	MS	REC	90	%	65-136
OP91767-MS*	2991-50-6	EtFOSAA	MS	REC	89	%	61-135
OP91767-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP91767-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	93	%	64-140
OP91767-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	97	%	67-138
OP91767-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	84	%	73-129
OP91767-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	85	%	72-129
OP91767-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	84	%	72-129
OP91767-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	87	%	72-130
OP91767-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	83	%	71-133
OP91767-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	86	%	69-130
OP91767-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	85	%	71-129
OP91767-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	83	%	69-133
OP91767-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	86	%	72-134
OP91767-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	80	%	65-144
OP91767-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	87	%	71-132
OP91767-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	81	%	72-130
OP91767-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	84	%	71-127
OP91767-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	86	%	68-131

* Sample used for QC is not from job FA96419

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96419
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91767-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP91767-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	88	%	69-134
OP91767-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	6	%	30
OP91767-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	87	%	65-140
OP91767-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	0	%	30
OP91767-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	83	%	69-127
OP91767-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP91767-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	81	%	53-142
OP91767-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	754-91-6	PFOSA	MSD	REC	86	%	67-137
OP91767-MSD*	754-91-6	PFOSA	MSD	RPD	2	%	30
OP91767-MSD*	31506-32-8	MeFOSA	MSD	REC	97	%	68-141
OP91767-MSD*	31506-32-8	MeFOSA	MSD	RPD	0	%	30
OP91767-MSD*	2355-31-9	MeFOSAA	MSD	REC	89	%	65-136
OP91767-MSD*	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP91767-MSD*	2991-50-6	EtFOSAA	MSD	REC	89	%	61-135
OP91767-MSD*	2991-50-6	EtFOSAA	MSD	RPD	0	%	30
OP91767-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	94	%	63-143
OP91767-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP91767-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	92	%	64-140
OP91767-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91767-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	93	%	67-138
OP91767-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30

* Sample used for QC is not from job FA96419

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q431-IBLK	4Q29892.D	1	06/20/22	MV	n/a	n/a	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	98%	50-150%

Instrument Blank

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q431-IBLK	4Q29892.D	1	06/20/22	MV	n/a	n/a	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	93%	50-150%

Instrument Blank

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1312-IBLK	2Q93735.D	1	06/23/22	JB	n/a	n/a	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	101%	50-150%

Instrument Blank

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1312-IBLK	2Q93735.D	1	06/23/22	JB	n/a	n/a	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	107%	50-150%

Method Blank Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-MB	4Q29899.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	77%	50-150%
	13C5-PFPeA	77%	50-150%
	13C5-PFHxA	79%	50-150%

Method Blank Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-MB	4Q29899.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	82%	50-150%
	13C8-PFOA	88%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	90%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSA	83%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	75%	50-150%

Method Blank Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MB	2Q93779.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	112%	50-150%
	13C5-PFHxA	111%	50-150%

Method Blank Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MB	2Q93779.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	113%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	104%	50-150%

Blank Spike Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-BS	4Q29898.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.7	107	71-135
2706-90-3	Perfluoropentanoic acid	10	10.9	109	69-132
307-24-4	Perfluorohexanoic acid	10	10.9	109	70-132
375-85-9	Perfluoroheptanoic acid	10	10.8	108	71-131
335-67-1	Perfluorooctanoic acid	10	10.4	104	69-133
375-95-1	Perfluorononanoic acid	10	10.6	106	72-129
335-76-2	Perfluorodecanoic acid	10	11.5	115	69-133
2058-94-8	Perfluoroundecanoic acid	10	10.5	105	64-136
307-55-1	Perfluorododecanoic acid	10	10.3	103	69-135
72629-94-8	Perfluorotridecanoic acid	10	9.6	96	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.8	98	69-133
375-73-5	Perfluorobutanesulfonic acid	10	10.6	106	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	10.7	107	73-123
355-46-4	Perfluorohexanesulfonic acid	10	10.3	103	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	10.8	108	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	10.7	107	68-136
68259-12-1	Perfluorononanesulfonic acid	10	11.1	111	69-125
335-77-3	Perfluorodecanesulfonic acid	10	10.3	103	59-134
754-91-6	PFOSA	10	10.8	108	67-137
31506-32-8	MeFOSA	10	10.8	108	60-140
2355-31-9	MeFOSAA	10	10.2	102	63-144
2991-50-6	EtFOSAA	10	10.6	106	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.2	102	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	10.4	104	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	10.4	104	65-137
13252-13-6	HFPO-DA (GenX)	10	10.9	109	60-140
919005-14-4	ADONA	10	9.2	92	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	10.5	105	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	10.3	103	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	63%	50-150%
	13C5-PFPeA	63%	50-150%
	13C5-PFHxA	66%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-BS	4Q29898.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	69%	50-150%
	13C8-PFOA	75%	50-150%
	13C9-PFNA	77%	50-150%
	13C6-PFDA	73%	50-150%
	13C7-PFUnDA	78%	50-150%
	13C2-PFDoDA	78%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	77%	50-150%
	13C3-PFHxS	78%	50-150%
	13C8-PFOS	78%	50-150%
	13C8-FOSA	60%	50-150%
	d3-MeFOSA	61%	50-150%
	d3-MeFOSAA	80%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	79%	50-150%
	13C3-HFPO-DA	61%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-BS	2Q93778.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0689	86	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0703	88	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0705	88	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0705	88	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0686	86	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0700	88	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0705	88	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0671	84	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0694	87	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0643	80	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0707	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0666	83	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0690	86	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0705	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0726	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0713	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0689	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0656	82	53-142
754-91-6	PFOSA	0.08	0.0704	88	67-137
31506-32-8	MeFOSA	0.08	0.0760	95	68-141
2355-31-9	MeFOSAA	0.08	0.0706	88	65-136
2991-50-6	EtFOSAA	0.08	0.0694	87	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0764	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0750	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0752	94	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0764	96	60-140
919005-14-4	ADONA	0.08	0.0654	82	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0703	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0713	89	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-BS	2Q93778.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	97%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-MS	4Q29901.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431
OP91670-MSD	4Q29902.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431
FA96359-1	4Q29900.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	Compound	FA96359-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.3 U		12.7	13.5	106	13	13.5	104	0	71-135/30
2706-90-3	Perfluoropentanoic acid	1.3 U		12.7	13.8	109	13	13.9	107	1	69-132/30
307-24-4	Perfluorohexanoic acid	1.3 U		12.7	13.7	108	13	13.9	107	1	70-132/30
375-85-9	Perfluoroheptanoic acid	1.3 U		12.7	13.6	107	13	13.8	106	1	71-131/30
335-67-1	Perfluorooctanoic acid	1.3 U		12.7	13.2	104	13	13.4	103	2	69-133/30
375-95-1	Perfluorononanoic acid	1.3 U		12.7	13.4	105	13	13.6	104	1	72-129/30
335-76-2	Perfluorodecanoic acid	1.3 U		12.7	14.1	111	13	14.4	111	2	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.3 U		12.7	12.9	102	13	13.2	101	2	64-136/30
307-55-1	Perfluorododecanoic acid	1.3 U		12.7	12.8	101	13	12.9	99	1	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.3 U		12.7	12.2	96	13	12.5	96	2	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.3 U		12.7	13.6	107	13	13.8	106	1	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.3 U		12.7	13.4	105	13	13.4	103	0	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.3 U		12.7	13.5	106	13	13.4	103	1	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.3 U		12.7	13.4	105	13	13.7	105	2	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.3 U		12.7	13.3	105	13	13.8	106	4	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.8		12.7	15.7	109	13	17.2	118	9	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.3 U		12.7	13.8	109	13	13.8	106	0	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.3 U		12.7	12.8	101	13	13.2	101	3	59-134/30
754-91-6	PFOSA	1.3 U		12.7	13.4	105	13	13.6	104	1	67-137/30
31506-32-8	MeFOSA	1.3 U		12.7	13.9	109	13	13.8	106	1	60-140/30
2355-31-9	MeFOSAA	1.3 U		12.7	13.8	109	13	13.5	104	2	63-144/30
2991-50-6	EtFOSAA	1.3 U		12.7	13.8	109	13	13.7	105	1	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.3 U		12.7	12.7	100	13	13.0	100	2	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.3 U		12.7	13.3	105	13	13.6	104	2	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.39	J	12.7	13.7	105	13	13.9	104	1	65-137/30
13252-13-6	HFPO-DA (GenX)	1.3 U		12.7	13.5	106	13	14.3	110	6	60-140/30
919005-14-4	ADONA	1.3 U		12.7	13.1	103	13	13.2	101	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.3 U		12.7	13.2	104	13	13.8	106	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.3 U		12.7	13.1	103	13	13.4	103	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96359-1	Limits
	13C4-PFBA	88%	84%	85%	50-150%
	13C5-PFPeA	88%	84%	84%	50-150%
	13C5-PFHxA	88%	86%	85%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91670-MS	4Q29901.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431
OP91670-MSD	4Q29902.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431
FA96359-1	4Q29900.D	1	06/20/22	MV	06/16/22	OP91670	S4Q431

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-1

CAS No.	ID Standard Recoveries	MS	MSD	FA96359-1	Limits
	13C4-PFHpA	88%	85%	86%	50-150%
	13C8-PFOA	92%	88%	89%	50-150%
	13C9-PFNA	92%	89%	90%	50-150%
	13C6-PFDA	87%	83%	85%	50-150%
	13C7-PFUnDA	93%	90%	89%	50-150%
	13C2-PFDoDA	91%	88%	88%	50-150%
	13C2-PFTeDA	90%	87%	75%	50-150%
	13C3-PFBS	90%	89%	86%	50-150%
	13C3-PFHxS	91%	89%	87%	50-150%
	13C8-PFOS	92%	89%	88%	50-150%
	13C8-FOSA	86%	69%		50-150%
	d3-MeFOSA	84%	69%		50-150%
	d3-MeFOSAA	82%	82%	79%	50-150%
	d5-EtFOSAA	83%	81%	79%	50-150%
	13C2-4:2FTS	93%	90%	83%	50-150%
	13C2-6:2FTS	92%	89%	84%	50-150%
	13C2-8:2FTS	92%	89%	84%	50-150%
	13C3-HFPO-DA	85%	80%	84%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MS	2Q93793.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
OP91767-MSD	2Q93794.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
FA96427-11	2Q93792.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	Compound	FA96427-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0184		0.16	0.156	86	0.16	0.152	84	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0100		0.16	0.150	88	0.16	0.146	85	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0056	J	0.16	0.147	88	0.16	0.140	84	5	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0021	J	0.16	0.144	89	0.16	0.142	87	1	72-130/30
335-67-1	Perfluorooctanoic acid	0.0057	J	0.16	0.145	87	0.16	0.138	83	5	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.138	86	0.16	0.137	86	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.140	88	0.16	0.136	85	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.135	84	0.16	0.133	83	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.139	87	0.16	0.137	86	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.135	84	0.16	0.128	80	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.141	88	0.16	0.139	87	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.137	86	0.16	0.130	81	5	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.141	88	0.16	0.134	84	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0199		0.16	0.164	90	0.16	0.158	86	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.149	93	0.16	0.140	88	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0082		0.16	0.148	87	0.16	0.148	87	0	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.133	83	0.16	0.133	83	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.137	86	0.16	0.130	81	5	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.141	88	0.16	0.138	86	2	67-137/30
31506-32-8	MeFOSA	0.016	U	0.16	0.155	97	0.16	0.155	97	0	68-141/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.144	90	0.16	0.142	89	1	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.143	89	0.16	0.143	89	0	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.153	96	0.16	0.150	94	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.149	93	0.16	0.147	92	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.155	97	0.16	0.149	93	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.153	96	0.16	0.147	92	4	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.134	84	0.16	0.129	81	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.141	88	0.16	0.135	84	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.145	91	0.16	0.143	89	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96427-11	Limits
	13C4-PFBA	113%	112%		50-150%
	13C5-PFPeA	113%	111%		50-150%
	13C5-PFHxA	112%	111%	110%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96419
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MS	2Q93793.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
OP91767-MSD	2Q93794.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
FA96427-11	2Q93792.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96419-2, FA96419-3

CAS No.	ID Standard Recoveries	MS	MSD	FA96427-11	Limits
	13C4-PFHpA	110%	108%	108%	50-150%
	13C8-PFOA	113%	111%	112%	50-150%
	13C9-PFNA	113%	109%	110%	50-150%
	13C6-PFDA	106%	102%	102%	50-150%
	13C7-PFUnDA	109%	101%	106%	50-150%
	13C2-PFDoDA	105%	95%	104%	50-150%
	13C2-PFTeDA	109%	94%	106%	50-150%
	13C3-PFBS	114%	114%	112%	50-150%
	13C3-PFHxS	106%	106%	107%	50-150%
	13C8-PFOS	115%	107%	110%	50-150%
	13C8-FOSA	109%	104%		50-150%
	d3-MeFOSAA	110%	100%	108%	50-150%
	d5-EtFOSAA	114%	100%	111%	50-150%
	13C2-4:2FTS	109%	106%		50-150%
	13C2-6:2FTS	107%	105%	98%	50-150%
	13C2-8:2FTS	108%	103%	101%	50-150%
	13C3-HFPO-DA	107%	107%		50-150%

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FA96419
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Fractional Organic Carbon	GN91677	FA96419-1	%	1.5	18.2	1.8	0-40%
Solids, Percent	GN91635	FA96318-1	%	95.1	95.4	0.3	0-5%

Associated Samples:
Batch GN91635: FA96419-1
Batch GN91677: FA96419-1
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA96421

Sampling Date: 06/13/22

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: 25

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections:

1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FA96421

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA96421-1	06/13/22	08:54	BF	06/13/22	AQ	Ground Water	A3RB-DPT0017-025.0-20220613

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA96421

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 6/27/2022 11:58:38 AM

On 06/13/2022, 1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA96421 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP91767

Sample(s) FA96427-11MS, FA96427-11MSD were used as the QC samples indicated.

Sample(s) FA96421-1 have surrogates outside control limits.

FA96421-1: Dilution required due to matrix interference (ID recovery standard failure).

FA96421-1 for d3-MeFOSA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA96421
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA96421-1	**A3RB-DPT0017-025.0-20220613**					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-DPT0017-025.0-20220613		
Lab Sample ID:	FA96421-1	**Date Sampled:**	06/13/22
Matrix:	AQ - Ground Water	**Date Received:**	06/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q93783.D	1	06/24/22 04:14	JB	06/22/22 08:00	OP91767	S2Q1312
Run #2 [a]	2Q93854.D	5	06/25/22 02:15	JB	06/22/22 08:00	OP91767	S2Q1313

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0017-025.0-20220613
Lab Sample ID: FA96421-1 **Date Sampled:** 06/13/22
Matrix: AQ - Ground Water **Date Received:** 06/13/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%	113%	50-150%
	13C5-PFPeA	89%	111%	50-150%
	13C5-PFHxA	91%	110%	50-150%
	13C4-PFHpA	95%	109%	50-150%
	13C8-PFOA	102%	114%	50-150%
	13C9-PFNA	102%	113%	50-150%
	13C6-PFDA	94%	105%	50-150%
	13C7-PFUnDA	95%	106%	50-150%
	13C2-PFDoDA	90%	101%	50-150%
	13C2-PFTeDA	91%	103%	50-150%
	13C3-PFBS	89%	114%	50-150%
	13C3-PFHxS	91%	109%	50-150%
	13C8-PFOS	97%	113%	50-150%
	13C8-FOSA	91%	106%	50-150%
	d3-MeFOSA	48% [c]	63%	50-150%
	d3-MeFOSAA	106%	116%	50-150%
	d5-EtFOSAA	99%	115%	50-150%
	13C2-4:2FTS	84%	104%	50-150%
	13C2-6:2FTS	94%	108%	50-150%
	13C2-8:2FTS	94%	104%	50-150%
	13C3-HFPO-DA	84%	110%	50-150%

(a) Dilution required due to matrix interference (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FA96421

SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # | SKIFF #

Client / Reporting Information

Company Name: AECOM
Address: 150 N. Orange Ave. Ste 200
City: Orlando State: FL Zip: 32801
Project Contact: Jennifer Chesteen Email: Jennifer.chesteen@aecom.com
Phone #:
Sampler(s) Name(s) (Printed)
Sampler 1: Brittany Follett Sampler 2:

Project Information

Project Name: KSC PFAS Site Mitigation & Assessment
Street: NASA KSC
City State
Project # 60667657
Fax #
Client Purchase Order # 142581

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	Select PFAS 537	LAB USE ONLY
1	A3RB-DPT0017-025-0-20220613	06/13/22	0854	BF	GW	2										X	

Turnaround Time (Business days)

10 Day (Business) Approved By: / Date:
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

INITIAL ASSESSMENT
LABEL VERIFICATION ZB

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1			2	3	6/13/22 1637	4
5	Relinquished by/Affiliation	Date Time: 1644 6/13/22	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.0 IR

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

FA96421: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA96421 **Client:** AECOM **Project:** KSC PFAS SITE MITIGATION ASSESMENT

Date / Time Received: 6/13/2022 4:47:00 PM **Delivery Method:** D/O **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 6/13/2022 4:47:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96421
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91767	EPA 537M QSM5.3 B-15						
OP91767-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP91767-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	88	%	72-129
OP91767-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	88	%	72-129
OP91767-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	88	%	72-130
OP91767-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP91767-BS	375-95-1	Perfluorononanoic acid	BSP	REC	88	%	69-130
OP91767-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	88	%	71-129
OP91767-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	84	%	69-133
OP91767-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	87	%	72-134
OP91767-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	80	%	65-144
OP91767-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP91767-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	83	%	72-130
OP91767-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	86	%	71-127
OP91767-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	88	%	68-131
OP91767-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	91	%	69-134
OP91767-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP91767-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	86	%	69-127
OP91767-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	82	%	53-142
OP91767-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP91767-BS	31506-32-8	MeFOSA	BSP	REC	95	%	68-141
OP91767-BS	2355-31-9	MeFOSAA	BSP	REC	88	%	65-136
OP91767-BS	2991-50-6	EtFOSAA	BSP	REC	87	%	61-135
OP91767-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP91767-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	94	%	64-140
OP91767-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	94	%	67-138
OP91767-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	86	%	73-129
OP91767-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	88	%	72-129
OP91767-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	88	%	72-129
OP91767-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	89	%	72-130
OP91767-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	87	%	71-133
OP91767-MS*	375-95-1	Perfluorononanoic acid	MS	REC	86	%	69-130
OP91767-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	88	%	71-129
OP91767-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	84	%	69-133
OP91767-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	87	%	72-134
OP91767-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	84	%	65-144
OP91767-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP91767-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	86	%	72-130
OP91767-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	88	%	71-127
OP91767-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	90	%	68-131
OP91767-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	93	%	69-134
OP91767-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	87	%	65-140
OP91767-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	83	%	69-127

* Sample used for QC is not from job FA96421

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96421
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91767-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	86	%	53-142
OP91767-MS*	754-91-6	PFOSA	MS	REC	88	%	67-137
OP91767-MS*	31506-32-8	MeFOSA	MS	REC	97	%	68-141
OP91767-MS*	2355-31-9	MeFOSAA	MS	REC	90	%	65-136
OP91767-MS*	2991-50-6	EtFOSAA	MS	REC	89	%	61-135
OP91767-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP91767-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	93	%	64-140
OP91767-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	97	%	67-138
OP91767-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	84	%	73-129
OP91767-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	85	%	72-129
OP91767-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	84	%	72-129
OP91767-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	87	%	72-130
OP91767-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	83	%	71-133
OP91767-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	86	%	69-130
OP91767-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	85	%	71-129
OP91767-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	3	%	30
OP91767-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	83	%	69-133
OP91767-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	86	%	72-134
OP91767-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	80	%	65-144
OP91767-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	5	%	30
OP91767-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	87	%	71-132
OP91767-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP91767-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	81	%	72-130
OP91767-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	84	%	71-127
OP91767-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	86	%	68-131
OP91767-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP91767-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	88	%	69-134
OP91767-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	6	%	30
OP91767-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	87	%	65-140
OP91767-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	0	%	30
OP91767-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	83	%	69-127
OP91767-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP91767-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	81	%	53-142
OP91767-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	5	%	30
OP91767-MSD*	754-91-6	PFOSA	MSD	REC	86	%	67-137

* Sample used for QC is not from job FA96421

QC Evaluation: DOD QSM5.x Limits

Job Number: FA96421
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 06/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91767-MSD*	754-91-6	PFOSA	MSD	RPD	2	%	30
OP91767-MSD*	31506-32-8	MeFOSA	MSD	REC	97	%	68-141
OP91767-MSD*	31506-32-8	MeFOSA	MSD	RPD	0	%	30
OP91767-MSD*	2355-31-9	MeFOSAA	MSD	REC	89	%	65-136
OP91767-MSD*	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP91767-MSD*	2991-50-6	EtFOSAA	MSD	REC	89	%	61-135
OP91767-MSD*	2991-50-6	EtFOSAA	MSD	RPD	0	%	30
OP91767-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	94	%	63-143
OP91767-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP91767-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	92	%	64-140
OP91767-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP91767-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	93	%	67-138
OP91767-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30

* Sample used for QC is not from job FA96421

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1312-IBLK	2Q93735.D	1	06/23/22	JB	n/a	n/a	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	100%	50-150%

Instrument Blank

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1312-IBLK	2Q93735.D	1	06/23/22	JB	n/a	n/a	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	103%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	107%	50-150%

Instrument Blank

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1313-IBLK	2Q93807.D	1	06/24/22	JB	n/a	n/a	S2Q1313

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	Compound	Result	RL	MDL	Units	Q
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	101%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	102%	50-150%
	13C2-PFTeDA	104%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSA	110%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	100%	50-150%

Method Blank Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MB	2Q93779.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	112%	50-150%
	13C5-PFPeA	112%	50-150%
	13C5-PFHxA	111%	50-150%

Method Blank Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MB	2Q93779.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	113%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	107%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	108%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	104%	50-150%

Blank Spike Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-BS	2Q93778.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0689	86	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0703	88	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0705	88	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0705	88	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0686	86	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0700	88	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0705	88	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0671	84	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0694	87	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0643	80	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0707	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0666	83	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0690	86	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0705	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0726	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0713	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0689	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0656	82	53-142
754-91-6	PFOSA	0.08	0.0704	88	67-137
31506-32-8	MeFOSA	0.08	0.0760	95	68-141
2355-31-9	MeFOSAA	0.08	0.0706	88	65-136
2991-50-6	EtFOSAA	0.08	0.0694	87	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0764	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0750	94	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0752	94	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0764	96	60-140
919005-14-4	ADONA	0.08	0.0654	82	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0703	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0713	89	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-BS	2Q93778.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	106%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	97%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MS	2Q93793.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
OP91767-MSD	2Q93794.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
FA96427-11	2Q93792.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	Compound	FA96427-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0184		0.16	0.156	86	0.16	0.152	84	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0100		0.16	0.150	88	0.16	0.146	85	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0056	J	0.16	0.147	88	0.16	0.140	84	5	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0021	J	0.16	0.144	89	0.16	0.142	87	1	72-130/30
335-67-1	Perfluorooctanoic acid	0.0057	J	0.16	0.145	87	0.16	0.138	83	5	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.138	86	0.16	0.137	86	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.140	88	0.16	0.136	85	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.135	84	0.16	0.133	83	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.139	87	0.16	0.137	86	1	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.135	84	0.16	0.128	80	5	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.141	88	0.16	0.139	87	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0080	U	0.16	0.137	86	0.16	0.130	81	5	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.141	88	0.16	0.134	84	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0199		0.16	0.164	90	0.16	0.158	86	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.149	93	0.16	0.140	88	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0082		0.16	0.148	87	0.16	0.148	87	0	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.133	83	0.16	0.133	83	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.137	86	0.16	0.130	81	5	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.141	88	0.16	0.138	86	2	67-137/30
31506-32-8	MeFOSA	0.016	U	0.16	0.155	97	0.16	0.155	97	0	68-141/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.144	90	0.16	0.142	89	1	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.143	89	0.16	0.143	89	0	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.153	96	0.16	0.150	94	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.149	93	0.16	0.147	92	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.155	97	0.16	0.149	93	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.153	96	0.16	0.147	92	4	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.134	84	0.16	0.129	81	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.141	88	0.16	0.135	84	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.145	91	0.16	0.143	89	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA96427-11	Limits
	13C4-PFBA	113%	112%		50-150%
	13C5-PFPeA	113%	111%		50-150%
	13C5-PFHxA	112%	111%	110%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA96421
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91767-MS	2Q93793.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
OP91767-MSD	2Q93794.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312
FA96427-11	2Q93792.D	1	06/24/22	JB	06/22/22	OP91767	S2Q1312

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA96421-1

CAS No.	ID Standard Recoveries	MS	MSD	FA96427-11	Limits
	13C4-PFHpA	110%	108%	108%	50-150%
	13C8-PFOA	113%	111%	112%	50-150%
	13C9-PFNA	113%	109%	110%	50-150%
	13C6-PFDA	106%	102%	102%	50-150%
	13C7-PFUnDA	109%	101%	106%	50-150%
	13C2-PFDoDA	105%	95%	104%	50-150%
	13C2-PFTeDA	109%	94%	106%	50-150%
	13C3-PFBS	114%	114%	112%	50-150%
	13C3-PFHxS	106%	106%	107%	50-150%
	13C8-PFOS	115%	107%	110%	50-150%
	13C8-FOSA	109%	104%		50-150%
	d3-MeFOSAA	110%	100%	108%	50-150%
	d5-EtFOSAA	114%	100%	111%	50-150%
	13C2-4:2FTS	109%	106%		50-150%
	13C2-6:2FTS	107%	105%	98%	50-150%
	13C2-8:2FTS	108%	103%	101%	50-150%
	13C3-HFPO-DA	107%	107%		50-150%

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC1310

Sampling Dates: 12/12/22 - 12/13/22

Report to:

AECOM
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Total number of pages in report: **137**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC1310

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1310-1	12/12/22	09:21	DS	12/13/22	AQ	Ground Water	A3RB-DPT0020-004.0-20221212
FC1310-2	12/12/22	09:41	DS	12/13/22	AQ	Ground Water	A3RB-DPT0020-010.0-20221212
FC1310-3	12/12/22	10:09	DS	12/13/22	AQ	Ground Water	A3RB-DPT0020-025.0-20221212
FC1310-4	12/12/22	10:48	DS	12/13/22	AQ	Ground Water	A3RB-DPT0020-042.0-20221212
FC1310-5	12/12/22	11:30	DS	12/13/22	AQ	Ground Water	A3RB-DPT0020-057.0-20221212
FC1310-6	12/12/22	13:00	DS	12/13/22	AQ	Ground Water	A3RB-DPT0021-004.0-20221212
FC1310-7	12/12/22	13:20	DS	12/13/22	AQ	Ground Water	A3RB-DPT0021-010.0-20221212
FC1310-8	12/12/22	13:57	DS	12/13/22	AQ	Ground Water	A3RB-DPT0021-025.0-20221212
FC1310-9	12/12/22	14:25	DS	12/13/22	AQ	Ground Water	A3RB-DPT0021-042.0-20221212
FC1310-10	12/12/22	14:55	DS	12/13/22	AQ	Ground Water	A3RB-DPT0021-057.0-20221212
FC1310-11	12/12/22	15:59	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-004.0-20221212
FC1310-12	12/13/22	07:50	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-010.0-20221213
FC1310-13	12/13/22	08:12	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-018.0-20221213

Sample Summary
(continued)

AECOM, Inc

Job No: FC1310

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1310-14	12/13/22	08:40	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-025.0-20221213
FC1310-15	12/13/22	09:07	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-042.0-20221213
FC1310-16	12/13/22	09:34	DS	12/13/22	AQ	Ground Water	A3RB-DPT0022-057.0-20221213
FC1310-17	12/13/22	12:20	DS	12/13/22	AQ	Ground Water	A3RB-DPT0023-004.0-20221213
FC1310-18	12/13/22	13:09	DS	12/13/22	AQ	Ground Water	A3RB-DPT0023-010.0-20221213
FC1310-19	12/13/22	13:32	DS	12/13/22	AQ	Ground Water	A3RB-DPT0023-025.0-20221213
FC1310-20	12/13/22	14:05	DS	12/13/22	AQ	Ground Water	A3RB-DPT0023-042.0-20221213
FC1310-20D	12/13/22	14:05	DS	12/13/22	AQ	Water Dup/MSD	A3RB-DPT0023-042.0-20221213
FC1310-20S	12/13/22	14:05	DS	12/13/22	AQ	Water Matrix Spike	A3RB-DPT0023-042.0-20221213
FC1310-21	12/13/22	14:45	DS	12/13/22	AQ	Ground Water	A3RB-DPT0023-057.0-20221213
FC1310-22	12/13/22	07:15	DS	12/13/22	AQ	Field Blank Water	A3RB-FB-20221213-01
FC1310-23	12/13/22	15:15	DS	12/13/22	AQ	Field Blank Water	A3RB-FB-20221213-02
FC1310-24	12/12/22	15:10	DS	12/13/22	AQ	Equipment Blank	A3RB-EB-20221212-01

Sample Summary
(continued)

AECOM, Inc

Job No: FC1310

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1310-25	12/13/22	15:10	DS	12/13/22	AQ	Equipment Blank	A3RB-EB-20221213-02
FC1310-26	12/12/22	14:15	DS	12/13/22	AQ	Ground Water	A3RB-FD-20221212-01
FC1310-27	12/13/22	13:50	DS	12/13/22	AQ	Ground Water	A3RB-FD-20221213-02

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC1310

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 1/16/2023 3:45:44 PM

On 12/13/2022, 25 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1310 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

Sample(s) FC1310-20MS, FC1310-20MSD were used as the QC samples indicated.

Sample(s) FC1310-1, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-2, FC1310-20, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9 have surrogates outside control limits.

OP94550-BS for d3-MeFOSA: Outside control limits.

OP94550-MB for d3-MeFOSA: Outside control limits.

Sample(s) FC1310-3, FC1310-4, FC1310-6 are outside limits due to dilution.

FC1310-1 for 13C2-4:2FTS: Outside control limits.

FC1310-1 for 13C2-PFTeDA: Outside control limits.

FC1310-1 for 13C3-HFPO-DA: Outside control limits.

FC1310-1 for 13C3-PFBS: Outside control limits.

FC1310-1 for 13C4-PFBA: Outside control limits.

FC1310-1 for 13C4-PFHpA: Outside control limits.

FC1310-1 for 13C5-PFHxA: Outside control limits.

FC1310-1 for 13C5-PFPeA: Outside control limits.

FC1310-1 for 13C8-FOSA: Outside control limits.

FC1310-1 for d3-MeFOSA: Outside control limits.

FC1310-1 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC1310-1 for MeFOSA: Associated ID Standard outside control limits.

FC1310-1 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1310-1: Dilution required (ID recovery standard failure).

FC1310-2 for 13C2-4:2FTS: Outside control limits.

FC1310-2 for 13C3-HFPO-DA: Outside control limits.

FC1310-2 for 13C3-PFBS: Outside control limits.

FC1310-2 for 13C4-PFBA: Outside control limits.

FC1310-2 for 13C4-PFHpA: Outside control limits.

FC1310-2 for 13C5-PFHxA: Outside control limits.

FC1310-2 for 13C5-PFPeA: Outside control limits.

FC1310-2 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

FC1310-2 for d3-MeFOSA: Outside control limits.

FC1310-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC1310-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1310-2: Dilution required (ID recovery standard failure).

FC1310-3 for 13C3-PFBS: Outside control limits.

FC1310-3 for 13C4-PFBA: Outside control limits due to dilution.

FC1310-3 for 13C4-PFBA: Outside control limits.

FC1310-3 for 13C5-PFPeA: Outside control limits.

FC1310-3 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1310-3: Dilution required (ID recovery standard failure).

FC1310-4 for 13C2-PFTeDA: Outside control limits.

FC1310-4 for 13C3-HFPO-DA: Outside control limits due to dilution.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

FC1310-4 for 13C3-PFBS: Outside control limits.
FC1310-4 for 13C4-PFBA: Outside control limits.
FC1310-4 for 13C5-PFPeA: Outside control limits.
FC1310-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1310-4: Dilution required (ID recovery standard failure).
FC1310-5 for 13C2-4:2FTS: Outside control limits.
FC1310-5 for 13C3-PFBS: Outside control limits.
FC1310-5 for 13C4-PFBA: Outside control limits.
FC1310-5 for 13C5-PFHxA: Outside control limits.
FC1310-5 for 13C5-PFPeA: Outside control limits.
FC1310-5 for 13C8-FOSA: Outside control limits.
FC1310-5 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC1310-5 for d3-MeFOSA: Outside control limits.
FC1310-5 for MeFOSA: Associated ID Standard outside control limits.
FC1310-5 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-5 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1310-5 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1310-5: Dilution required (ID recovery standard failure).
FC1310-6 for 13C2-4:2FTS: Outside control limits.
FC1310-6 for 13C2-PFTeDA: Outside control limits due to dilution.
FC1310-6 for 13C2-PFTeDA: Outside control limits.
FC1310-6 for 13C3-HFPO-DA: Outside control limits.
FC1310-6 for 13C3-PFBS: Outside control limits.
FC1310-6 for 13C4-PFBA: Outside control limits.
FC1310-6 for 13C5-PFHxA: Outside control limits.
FC1310-6 for 13C5-PFPeA: Outside control limits.
FC1310-6 for 13C8-FOSA: Outside control limits.
FC1310-6 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC1310-6 for d3-MeFOSA: Outside control limits.
FC1310-6 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-6 for MeFOSA: Associated ID Standard outside control limits.
FC1310-6 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1310-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1310-6: Dilution required (ID recovery standard failure).
FC1310-7 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1310-7 for 13C2-4:2FTS: Outside control limits.
FC1310-7 for 13C2-8:2FTS: Outside control limits.
FC1310-7 for 13C2-PFDoDA: Outside control limits.
FC1310-7 for 13C2-PFTeDA: Outside control limits.
FC1310-7 for 13C3-HFPO-DA: Outside control limits.
FC1310-7 for 13C3-PFBS: Outside control limits.
FC1310-7 for 13C3-PFHxS: Outside control limits.
FC1310-7 for 13C4-PFBA: Outside control limits.
FC1310-7 for 13C4-PFHpA: Outside control limits.
FC1310-7 for 13C5-PFHxA: Outside control limits.
FC1310-7 for 13C5-PFPeA: Outside control limits.
FC1310-7 for 13C6-PFDA: Outside control limits.
FC1310-7 for 13C7-PFUnDA: Outside control limits.
FC1310-7 for 13C8-FOSA: Outside control limits.
FC1310-7 for d3-MeFOSA: Outside control limits.
FC1310-7 for d3-MeFOSAA: Outside control limits.
FC1310-7 for d5-EtFOSAA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

FC1310-7 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-7 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-7: Dilution required (ID recovery standard failure).
FC1310-8 for 13C2-4:2FTS: Outside control limits.
FC1310-8 for 13C3-PFBS: Outside control limits.
FC1310-8 for 13C4-PFBA: Outside control limits.
FC1310-8 for 13C5-PFHxA: Outside control limits.
FC1310-8 for 13C5-PFPeA: Outside control limits.
FC1310-8 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC1310-8 for d3-MeFOSA: Outside control limits.
FC1310-8 for MeFOSA: Associated ID Standard outside control limits.
FC1310-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-8 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1310-8: Dilution required (ID recovery standard failure).
FC1310-9 for 13C3-PFBS: Outside control limits.
FC1310-9 for 13C4-PFBA: Outside control limits.
FC1310-9 for 13C5-PFPeA: Outside control limits.
FC1310-9: Dilution required (ID recovery standard failure).
FC1310-10 for 13C3-PFBS: Outside control limits.
FC1310-10 for 13C4-PFBA: Outside control limits.
FC1310-10 for 13C5-PFPeA: Outside control limits.
FC1310-10 for d3-MeFOSA: Outside control limits.
FC1310-10 for MeFOSA: Associated ID Standard outside control limits.
FC1310-10 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-10: Dilution required (ID recovery standard failure).
FC1310-11 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1310-11 for 13C2-4:2FTS: Outside control limits.
FC1310-11 for 13C2-PFDoDA: Outside control limits.
FC1310-11 for 13C2-PFTeDA: Outside control limits.
FC1310-11 for 13C3-HFPO-DA: Outside control limits.
FC1310-11 for 13C3-PFBS: Outside control limits.
FC1310-11 for 13C4-PFBA: Outside control limits.
FC1310-11 for 13C4-PFHpA: Outside control limits.
FC1310-11 for 13C5-PFHxA: Outside control limits.
FC1310-11 for 13C5-PFPeA: Outside control limits.
FC1310-11 for 13C8-FOSA: Outside control limits.
FC1310-11 for d3-MeFOSA: Outside control limits.
FC1310-11 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-11 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-11: Dilution required (ID recovery standard failure).
FC1310-12 for 13C2-4:2FTS: Outside control limits.
FC1310-12 for 13C2-PFTeDA: Outside control limits.
FC1310-12 for 13C3-HFPO-DA: Outside control limits.
FC1310-12 for 13C3-PFBS: Outside control limits.
FC1310-12 for 13C4-PFBA: Outside control limits.
FC1310-12 for 13C4-PFHpA: Outside control limits.
FC1310-12 for 13C5-PFHxA: Outside control limits.
FC1310-12 for 13C5-PFPeA: Outside control limits.
FC1310-12 for 13C8-FOSA: Outside control limits.
FC1310-12 for d3-MeFOSA: Outside control limits.
FC1310-12 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-12 for MeFOSA: Associated ID Standard outside control limits.
FC1310-12 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

FC1310-12: Dilution required (ID recovery standard failure).
FC1310-13 for 13C3-PFBS: Outside control limits.
FC1310-13 for 13C4-PFBA: Outside control limits.
FC1310-13 for 13C5-PFPeA: Outside control limits.
FC1310-13 for d3-MeFOSA: Outside control limits.
FC1310-13 for MeFOSA: Associated ID Standard outside control limits.
FC1310-13: Dilution required (ID recovery standard failure).
FC1310-14 for 13C2-PFDoDA: Outside control limits.
FC1310-14 for 13C3-PFBS: Outside control limits.
FC1310-14 for 13C4-PFBA: Outside control limits.
FC1310-14 for 13C5-PFPeA: Outside control limits.
FC1310-14 for 13C7-PFUnDA: Outside control limits.
FC1310-14 for d3-MeFOSA: Outside control limits.
FC1310-14 for d3-MeFOSAA: Outside control limits.
FC1310-14 for d5-EtFOSAA: Outside control limits.
FC1310-14 for MeFOSA: Associated ID Standard outside control limits.
FC1310-14: Dilution required (ID recovery standard failure).
FC1310-15 for 13C2-PFDoDA: Outside control limits.
FC1310-15 for 13C2-PFTeDA: Outside control limits.
FC1310-15 for 13C3-PFBS: Outside control limits.
FC1310-15 for 13C4-PFBA: Outside control limits.
FC1310-15 for 13C5-PFPeA: Outside control limits.
FC1310-15 for 13C8-FOSA: Outside control limits.
FC1310-15 for d3-MeFOSA: Outside control limits.
FC1310-15 for MeFOSA: Associated ID Standard outside control limits.
FC1310-15: Dilution required (ID recovery standard failure).
FC1310-16 for 13C2-4:2FTS: Outside control limits.
FC1310-16 for 13C2-PFDoDA: Outside control limits.
FC1310-16 for 13C2-PFTeDA: Outside control limits.
FC1310-16 for 13C3-HFPO-DA: Outside control limits.
FC1310-16 for 13C3-PFBS: Outside control limits.
FC1310-16 for 13C4-PFBA: Outside control limits.
FC1310-16 for 13C4-PFHpA: Outside control limits.
FC1310-16 for 13C5-PFHxA: Outside control limits.
FC1310-16 for 13C5-PFPeA: Outside control limits.
FC1310-16 for 13C7-PFUnDA: Outside control limits.
FC1310-16 for 13C8-FOSA: Outside control limits.
FC1310-16 for d3-MeFOSA: Outside control limits.
FC1310-16 for d5-EtFOSAA: Outside control limits.
FC1310-16 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-16 for MeFOSA: Associated ID Standard outside control limits.
FC1310-16 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-16: Dilution required (ID recovery standard failure).
FC1310-17 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1310-17 for 13C2-4:2FTS: Outside control limits.
FC1310-17 for 13C2-PFDoDA: Outside control limits.
FC1310-17 for 13C2-PFTeDA: Outside control limits.
FC1310-17 for 13C3-HFPO-DA: Outside control limits.
FC1310-17 for 13C3-PFBS: Outside control limits.
FC1310-17 for 13C3-PFHxS: Outside control limits.
FC1310-17 for 13C4-PFBA: Outside control limits.
FC1310-17 for 13C4-PFHpA: Outside control limits.
FC1310-17 for 13C5-PFHxA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

FC1310-17 for 13C5-PFPeA: Outside control limits.
FC1310-17 for 13C7-PFUnDA: Outside control limits.
FC1310-17 for 13C8-FOSA: Outside control limits.
FC1310-17 for 13C8-PFOA: Outside control limits.
FC1310-17 for d3-MeFOSA: Outside control limits.
FC1310-17 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-17 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-17 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.
FC1310-17 for Perfluorohexanesulfonic acid: Associated ID Standard outside control limits.
FC1310-17 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1310-17 for Perfluorooctanoic acid: Associated ID Standard outside control limits.
FC1310-17: Dilution required (ID recovery standard failure).
FC1310-18 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1310-18 for 13C2-4:2FTS: Outside control limits.
FC1310-18 for 13C2-PFDoDA: Outside control limits.
FC1310-18 for 13C2-PFTeDA: Outside control limits.
FC1310-18 for 13C2-PFTeDA: Outside control limits.
FC1310-18 for 13C3-HFPO-DA: Outside control limits.
FC1310-18 for 13C3-PFBS: Outside control limits.
FC1310-18 for 13C4-PFBA: Outside control limits.
FC1310-18 for 13C4-PFBA: Outside control limits.
FC1310-18 for 13C4-PFHpA: Outside control limits.
FC1310-18 for 13C5-PFHxA: Outside control limits.
FC1310-18 for 13C5-PFPeA: Outside control limits.
FC1310-18 for 13C5-PFPeA: Outside control limits.
FC1310-18 for 13C7-PFUnDA: Outside control limits.
FC1310-18 for 13C8-FOSA: Outside control limits.
FC1310-18 for 13C8-FOSA: Outside control limits.
FC1310-18 for 13C8-PFOS: Outside control limits.
FC1310-18 for d3-MeFOSA: Outside control limits.
FC1310-18 for d3-MeFOSA: Outside control limits.
FC1310-18 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-18 for MeFOSA: Associated ID Standard outside control limits.
FC1310-18 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorodecanesulfonic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluoroheptanesulfonic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorononanesulfonic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1310-18 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC1310-18 for PFOSA: Associated ID Standard outside control limits.
FC1310-19 for 13C2-4:2FTS: Outside control limits.
FC1310-19 for 13C2-PFTeDA: Outside control limits.
FC1310-19 for 13C3-HFPO-DA: Outside control limits.
FC1310-19 for 13C3-PFBS: Outside control limits.
FC1310-19 for 13C4-PFBA: Outside control limits.
FC1310-19 for 13C4-PFHpA: Outside control limits.
FC1310-19 for 13C5-PFHxA: Outside control limits.
FC1310-19 for 13C5-PFPeA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94550

FC1310-19 for 13C7-PFUnDA: Outside control limits.
FC1310-19 for 13C8-FOSA: Outside control limits.
FC1310-19 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC1310-19 for d3-MeFOSA: Outside control limits.
FC1310-19 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1310-19: Dilution required (ID recovery standard failure).
FC1310-20 for 13C2-PFTeDA: Outside control limits.
FC1310-20 for 13C3-PFBS: Outside control limits.
FC1310-20 for 13C4-PFBA: Outside control limits.
FC1310-20 for 13C5-PFPeA: Outside control limits.
FC1310-20 for 13C8-FOSA: Outside control limits.
FC1310-20 for d3-MeFOSA: Outside control limits.
FC1310-20 for MeFOSA: Associated ID Standard outside control limits.
FC1310-20: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP94557

Sample(s) FC1304-1MS, FC1304-1MSD were used as the QC samples indicated.
Matrix Spike Recovery(s) for PFOSA are outside control limits. Probable cause is due to matrix interference.
Sample(s) FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-26, FC1310-27 have surrogates outside control limits.
OP94557-BS for d3-MeFOSA: Outside control limits.
OP94557-MB for d3-MeFOSA: Outside control limits.
FC1310-21 for 13C2-PFTeDA: Outside control limits.
FC1310-21 for 13C3-PFBS: Outside control limits.
FC1310-21 for 13C4-PFBA: Outside control limits.
FC1310-21 for 13C5-PFPeA: Outside control limits.
FC1310-21 for 13C8-FOSA: Outside control limits.
FC1310-21 for d3-MeFOSA: Outside control limits.
FC1310-21 for MeFOSA: Associated ID Standard outside control limits.
FC1310-21: Dilution required (ID recovery standard failure).
FC1310-22 for 13C2-PFTeDA: Outside control limits.
FC1310-22 for d3-MeFOSA: Outside control limits.
FC1310-22 for MeFOSA: Associated ID Standard outside control limits.
FC1310-22: Dilution required (ID recovery standard failure).
FC1310-23 for 13C2-PFTeDA: Outside control limits.
FC1310-23: Dilution required (ID recovery standard failure).
FC1310-24 for 13C2-PFTeDA: Outside control limits.
FC1310-24 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1310-24: Dilution required (ID recovery standard failure).
FC1310-26 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC1310-26: Dilution required (ID recovery standard failure).
FC1310-27 for MeFOSA: Associated ID Standard outside control limits.
FC1310-27: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC1310-27: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP94893

Sample(s) FC1310-21, FC1310-26, FC1310-27 have surrogates outside control limits.
FC1310-27: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC1310-21: Dilution due to sample clogging SPE cartridge, only partial volume was extracted. Confirmation run.
FC1310-26 for 13C8-FOSA: Outside control limits.
FC1310-26 for 13C5-PFHxA: Outside control limits.
FC1310-26 for 13C4-PFHpA: Outside control limits.
FC1310-26 for d3-MeFOSA: Outside control limits.
FC1310-26 for 13C5-PFPeA: Outside control limits.
FC1310-26 for 13C4-PFBA: Outside control limits.
FC1310-26 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94893

FC1310-26 for 13C2-4:2FTS: Outside control limits.

FC1310-26 for 13C3-HFPO-DA: Outside control limits.

Matrix: AQ **Batch ID:** OP94936

Sample(s) FC1310-1, FC1310-11, FC1310-12, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-2, FC1310-7 have surrogates outside control limits.

FC1310-1: Confirmation run.

FC1310-2: Confirmation run.

FC1310-7: Confirmation run.

FC1310-11: Confirmation run.

FC1310-12: Confirmation run.

FC1310-16: Confirmation run.

FC1310-17: Confirmation run.

FC1310-18: Confirmation run.

FC1310-19: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1310-1	**A3RB-DPT0020-004.0-20221212**					
Perfluorobutanoic acid [a]		0.0103 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0287	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FC1310-2	**A3RB-DPT0020-010.0-20221212**					
Perfluorobutanoic acid [a]		0.0023 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0020 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1310-3	**A3RB-DPT0020-025.0-20221212**					
No hits reported in this sample.						
FC1310-4	**A3RB-DPT0020-042.0-20221212**					
No hits reported in this sample.						
FC1310-5	**A3RB-DPT0020-057.0-20221212**					
Perfluorobutanoic acid [a]		0.113	0.022	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0077 J	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0082 J	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0050 J	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0081 J	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0299	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0246	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0083	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0160	0.011	0.0056	ug/l	EPA 537M QSM5.3 B-15
FC1310-6	**A3RB-DPT0021-004.0-20221212**					
Perfluorohexanesulfonic acid		0.0078 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FC1310-7	**A3RB-DPT0021-010.0-20221212**					
Perfluorobutanoic acid [a]		0.0048 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0020 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00070 J	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0012 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1310-8	**A3RB-DPT0021-025.0-20221212**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1310-9	**A3RB-DPT0021-042.0-20221212**					
No hits reported in this sample.						
FC1310-10	**A3RB-DPT0021-057.0-20221212**					
Perfluorobutanoic acid [a]		0.0076 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0029 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorodecanoic acid		0.0035 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0092 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0104	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0043	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0056 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
FC1310-11	**A3RB-DPT0022-004.0-20221212**					
Perfluorobutanoic acid [a]		0.0069 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
FC1310-12	**A3RB-DPT0022-010.0-20221213**					
Perfluorobutanoic acid [a]		0.0026 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
FC1310-13	**A3RB-DPT0022-018.0-20221213**					
No hits reported in this sample.						
FC1310-14	**A3RB-DPT0022-025.0-20221213**					
No hits reported in this sample.						
FC1310-15	**A3RB-DPT0022-042.0-20221213**					
No hits reported in this sample.						
FC1310-16	**A3RB-DPT0022-057.0-20221213**					
Perfluorobutanoic acid [a]		0.0068 J	0.012	0.0061	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0018 J	0.0061	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0038 J	0.0061	0.0030	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0012 J	0.0024	0.0012	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0025 J	0.0061	0.0030	ug/l	EPA 537M QSM5.3 B-15
FC1310-17	**A3RB-DPT0023-004.0-20221213**					
Perfluorobutanoic acid [a]		0.0073 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanoic acid [a]		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0019 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0136	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0078	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0020	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0059	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1310-18	**A3RB-DPT0023-010.0-20221213**					
Perfluorobutanoic acid [a]		0.0054 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0038	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0139	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0037	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0068	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0021 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0114	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0254	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.375	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.0156	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.993	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.122	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.934	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC1310-19	**A3RB-DPT0023-025.0-20221213**					
Perfluorooctanesulfonic acid		0.0014 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0013 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1310-20	**A3RB-DPT0023-042.0-20221213**					
Perfluorohexanesulfonic acid		0.0125	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0234	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0035	0.0015	0.00077	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0219	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1310-21	**A3RB-DPT0023-057.0-20221213**					
Perfluorohexanesulfonic acid		0.0149	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0281	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0033	0.0016	0.00078	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0269	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1310-22	**A3RB-FB-20221213-01**					
No hits reported in this sample.						
FC1310-23	**A3RB-FB-20221213-02**					
No hits reported in this sample.						
FC1310-24	**A3RB-EB-20221212-01**					
No hits reported in this sample.						
FC1310-25	**A3RB-EB-20221213-02**					
No hits reported in this sample.						
FC1310-26	**A3RB-FD-20221212-01**					
No hits reported in this sample.						
FC1310-27	**A3RB-FD-20221213-02**					
Perfluorohexanesulfonic acid [b]		0.0029 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [b]		0.0077	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [b]		0.00085 J	0.0018	0.00091	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [b]		0.0069	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15

(a) Associated ID Standard outside control limits.
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0020-004.0-20221212
Lab Sample ID: FC1310-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38880.D	1	01/07/23 18:09	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39154.D	1	01/13/23 00:31	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38960.D	5	01/09/23 19:43	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	210 ml	1.0 ml
Run #3	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0103	0.020	0.010	0.0050	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0287	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
31506-32-8	MeFOSA [c]	0.050 U [d]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-004.0-20221212		
Lab Sample ID:	FC1310-1	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.050 U [d]	0.10	0.050	0.025	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	36% [e]	32% [e]	47% [e]	50-150%
	13C5-PFPeA	33% [e]	36% [e]	47% [e]	50-150%
	13C5-PFHxA	45% [e]	43% [e]	50%	50-150%
	13C4-PFHpA	49% [e]	50%	50%	50-150%
	13C8-PFOA	54%	62%	51%	50-150%
	13C9-PFNA	55%	65%	53%	50-150%
	13C6-PFDA	56%	62%	55%	50-150%
	13C7-PFUnDA	54%	51%	56%	50-150%
	13C2-PFDoDA	50%	41% [e]	46% [e]	50-150%
	13C2-PFTeDA	29% [e]	22% [e]	25% [e]	50-150%
	13C3-PFBS	39% [e]	39% [e]	54%	50-150%
	13C3-PFHxS	55%	59%	56%	50-150%
	13C8-PFOS	61%	63%	56%	50-150%
	13C8-FOSA	34% [e]	26% [e]	34% [e]	50-150%
	d3-MeFOSA	3% [e]	6% [e]	9% [e]	50-150%
	d3-MeFOSAA	63%	58%	63%	50-150%
	d5-EtFOSAA	53%	49% [e]	60%	50-150%
	13C2-4:2FTS	46% [e]	44% [e]	51%	50-150%
	13C2-6:2FTS	59%	69%	54%	50-150%
	13C2-8:2FTS	63%	68%	58%	50-150%
	13C3-HFPO-DA	46% [e]	39% [e]	52%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-004.0-20221212		
Lab Sample ID:	FC1310-1	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-010.0-20221212		
Lab Sample ID:	FC1310-2	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38881.D	1	01/07/23 18:24	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39155.D	1	01/13/23 00:46	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38961.D	5	01/09/23 19:59	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	225 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0023	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020	0.0037	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-010.0-20221212		
Lab Sample ID:	FC1310-2	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	27% [e]	31% [e]	35% [e]	50-150%
	13C5-PFPeA	30% [e]	45% [e]	44% [e]	50-150%
	13C5-PFHxA	43% [e]	57%	50%	50-150%
	13C4-PFHpA	48% [e]	62%	52%	50-150%
	13C8-PFOA	55%	73%	54%	50-150%
	13C9-PFNA	57%	75%	58%	50-150%
	13C6-PFDA	57%	68%	59%	50-150%
	13C7-PFUnDA	54%	60%	61%	50-150%
	13C2-PFDoDA	55%	58%	57%	50-150%
	13C2-PFTeDA	51%	52%	50%	50-150%
	13C3-PFBS	35% [e]	46% [e]	46% [e]	50-150%
	13C3-PFHxS	50%	69%	53%	50-150%
	13C8-PFOS	56%	69%	54%	50-150%
	13C8-FOSA	52%	40% [e]	50%	50-150%
	d3-MeFOSA	9% [e]	8% [e]	16% [e]	50-150%
	d3-MeFOSAA	78%	74%	73%	50-150%
	d5-EtFOSAA	63%	65%	69%	50-150%
	13C2-4:2FTS	42% [e]	58%	49% [e]	50-150%
	13C2-6:2FTS	56%	79%	54%	50-150%
	13C2-8:2FTS	60%	68%	58%	50-150%
	13C3-HFPO-DA	45% [e]	50%	48% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-010.0-20221212		
Lab Sample ID:	FC1310-2	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-025.0-20221212		
Lab Sample ID:	FC1310-3	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38882.D	1	01/07/23 18:40	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38962.D	5	01/09/23 20:14	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.050 U [c]	0.10	0.050	0.025	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.025 U [c]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA	0.010 U	0.020	0.010	0.0050	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-025.0-20221212		
Lab Sample ID:	FC1310-3	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [e]	45% [d]	50-150%
	13C5-PFPeA	38% [e]	49% [d]	50-150%
	13C5-PFHxA	54%	56%	50-150%
	13C4-PFHpA	58%	58%	50-150%
	13C8-PFOA	63%	60%	50-150%
	13C9-PFNA	66%	61%	50-150%
	13C6-PFDA	67%	63%	50-150%
	13C7-PFUnDA	64%	70%	50-150%
	13C2-PFDoDA	65%	65%	50-150%
	13C2-PFTeDA	55%	54%	50-150%
	13C3-PFBS	45% [e]	55%	50-150%
	13C3-PFHxS	61%	59%	50-150%
	13C8-PFOS	66%	63%	50-150%
	13C8-FOSA	70%	67%	50-150%
	d3-MeFOSA	63%	72%	50-150%
	d3-MeFOSAA	82%	81%	50-150%
	d5-EtFOSAA	71%	81%	50-150%
	13C2-4:2FTS	52%	53%	50-150%
	13C2-6:2FTS	62%	59%	50-150%
	13C2-8:2FTS	68%	60%	50-150%
	13C3-HFPO-DA	54%	53%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-025.0-20221212		
Lab Sample ID:	FC1310-3	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits due to dilution.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0020-042.0-20221212
Lab Sample ID: FC1310-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38883.D	1	01/07/23 18:56	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38963.D	5	01/09/23 20:30	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.050 U [c]	0.10	0.050	0.025	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.025 U [c]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA	0.010 U	0.020	0.010	0.0050	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-042.0-20221212		
Lab Sample ID:	FC1310-4	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	44% [d]	50-150%
	13C5-PFPeA	38% [d]	46% [d]	50-150%
	13C5-PFHxA	51%	52%	50-150%
	13C4-PFHpA	55%	53%	50-150%
	13C8-PFOA	59%	53%	50-150%
	13C9-PFNA	60%	56%	50-150%
	13C6-PFDA	61%	59%	50-150%
	13C7-PFUnDA	58%	62%	50-150%
	13C2-PFDoDA	57%	56%	50-150%
	13C2-PFTeDA	45% [d]	44% [d]	50-150%
	13C3-PFBS	43% [d]	52%	50-150%
	13C3-PFHxS	56%	53%	50-150%
	13C8-PFOS	58%	57%	50-150%
	13C8-FOSA	65%	60%	50-150%
	d3-MeFOSA	57%	62%	50-150%
	d3-MeFOSAA	74%	76%	50-150%
	d5-EtFOSAA	65%	68%	50-150%
	13C2-4:2FTS	50%	49% [d]	50-150%
	13C2-6:2FTS	57%	54%	50-150%
	13C2-8:2FTS	61%	61%	50-150%
	13C3-HFPO-DA	51%	48% [e]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-042.0-20221212		
Lab Sample ID:	FC1310-4	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.
(e) Outside control limits due to dilution.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0020-057.0-20221212
Lab Sample ID: FC1310-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38884.D	1	01/07/23 19:11	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38964.D	5	01/09/23 20:46	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	90.0 ml	1.0 ml
Run #2	90.0 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.113	0.022	0.011	0.0056	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0077	0.011	0.0056	0.0028	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0082	0.011	0.0056	0.0028	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0050	0.011	0.0056	0.0028	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0081	0.011	0.0056	0.0028	ug/l	J
375-95-1	Perfluorononanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
335-76-2	Perfluorodecanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
307-55-1	Perfluorododecanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.028 U [c]	0.056	0.028	0.014	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.028 U [c]	0.056	0.028	0.014	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0299	0.011	0.0056	0.0028	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0246	0.011	0.0056	0.0028	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0056 U	0.011	0.0056	0.0028	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.028 U [c]	0.056	0.028	0.014	ug/l	
31506-32-8	MeFOSA [b]	0.056 U [c]	0.11	0.056	0.028	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.011 U	0.022	0.011	0.0056	ug/l	
2991-50-6	EtFOSAA	0.011 U	0.022	0.011	0.0056	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.011 U	0.022	0.011	0.0056	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0020-057.0-20221212
Lab Sample ID: FC1310-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0056	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0056	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.011 U	0.022	0.011	0.0056	ug/l	
919005-14-4	ADONA	0.011 U	0.022	0.011	0.0056	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.011 U	0.022	0.011	0.0056	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.011 U	0.022	0.011	0.0056	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0083	0.0044	0.0022	0.0011	ug/l	
	PFOS (Linear Isomer)	0.0160	0.011	0.0056	0.0028	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	33% [d]	45% [d]	50-150%
	13C5-PFPeA	32% [d]	48% [d]	50-150%
	13C5-PFHxA	49% [d]	55%	50-150%
	13C4-PFHpA	52%	58%	50-150%
	13C8-PFOA	60%	60%	50-150%
	13C9-PFNA	61%	65%	50-150%
	13C6-PFDA	63%	66%	50-150%
	13C7-PFUnDA	55%	64%	50-150%
	13C2-PFDoDA	58%	60%	50-150%
	13C2-PFTeDA	53%	52%	50-150%
	13C3-PFBS	34% [d]	50%	50-150%
	13C3-PFHxS	56%	62%	50-150%
	13C8-PFOS	61%	65%	50-150%
	13C8-FOSA	42% [d]	52%	50-150%
	d3-MeFOSA	8% [d]	27% [d]	50-150%
	d3-MeFOSAA	78%	80%	50-150%
	d5-EtFOSAA	66%	72%	50-150%
	13C2-4:2FTS	47% [d]	55%	50-150%
	13C2-6:2FTS	61%	61%	50-150%
	13C2-8:2FTS	64%	63%	50-150%
	13C3-HFPO-DA	50%	55%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0020-057.0-20221212		
Lab Sample ID:	FC1310-5	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0021-004.0-20221212
Lab Sample ID: FC1310-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38885.D	1	01/07/23 19:27	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38965.D	5	01/09/23 21:01	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.025 U [b]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [b]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [b]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0078	0.010	0.0050	0.0025	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.025 U [b]	0.050	0.025	0.013	ug/l	
31506-32-8	MeFOSA [c]	0.050 U [b]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-004.0-20221212		
Lab Sample ID:	FC1310-6	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	38% [d]	50%	50-150%
	13C5-PFPeA	35% [d]	48% [e]	50-150%
	13C5-PFHxA	46% [d]	54%	50-150%
	13C4-PFHpA	51%	55%	50-150%
	13C8-PFOA	60%	59%	50-150%
	13C9-PFNA	60%	61%	50-150%
	13C6-PFDA	63%	63%	50-150%
	13C7-PFUnDA	57%	64%	50-150%
	13C2-PFDoDA	53%	54%	50-150%
	13C2-PFTeDA	36% [d]	31% [e]	50-150%
	13C3-PFBS	41% [d]	55%	50-150%
	13C3-PFHxS	57%	62%	50-150%
	13C8-PFOS	60%	68%	50-150%
	13C8-FOSA	41% [d]	45% [e]	50-150%
	d3-MeFOSA	7% [d]	13% [e]	50-150%
	d3-MeFOSAA	77%	79%	50-150%
	d5-EtFOSAA	68%	72%	50-150%
	13C2-4:2FTS	48% [d]	55%	50-150%
	13C2-6:2FTS	56%	61%	50-150%
	13C2-8:2FTS	67%	66%	50-150%
	13C3-HFPO-DA	49% [d]	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-004.0-20221212		
Lab Sample ID:	FC1310-6	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.
(e) Outside control limits due to dilution.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-010.0-20221212		
Lab Sample ID:	FC1310-7	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38886.D	1	01/07/23 19:42	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39156.D	1	01/13/23 01:02	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38966.D	10	01/09/23 21:17	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	230 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0048	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
2058-94-8	Perfluoroundecanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.019 U [d]	0.037	0.019	0.0093	ug/l	
31506-32-8	MeFOSA [c]	0.037 U [d]	0.074	0.037	0.019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.037 U [d]	0.074	0.037	0.019	ug/l	
2991-50-6	EtFOSAA	0.037 U [d]	0.074	0.037	0.019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-010.0-20221212		
Lab Sample ID:	FC1310-7	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.037 U [d]	0.074	0.037	0.019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.037 U [d]	0.074	0.037	0.019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major) [c]	0.037 U [d]	0.074	0.037	0.019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.037 U [d]	0.074	0.037	0.019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00070	0.0015	0.00074	0.00037	ug/l	J
	PFOS (Linear Isomer)	0.0012	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	29% [e]	24%	37% [e]	50-150%
	13C5-PFPeA	29% [e]	35%	42% [e]	50-150%
	13C5-PFHxA	43% [e]	49%	46% [e]	50-150%
	13C4-PFHpA	45% [e]	53%	47% [e]	50-150%
	13C8-PFOA	50%	57%	49% [e]	50-150%
	13C9-PFNA	56%	61%	50%	50-150%
	13C6-PFDA	38% [e]	9%	49% [e]	50-150%
	13C7-PFUnDA	1% [e]	1%	38% [e]	50-150%
	13C2-PFDoDA	1% [e]	1%	16% [e]	50-150%
	13C2-PFTeDA	41% [e]	49%	42% [e]	50-150%
	13C3-PFBS	32% [e]	36%	48% [e]	50-150%
	13C3-PFHxS	48% [e]	58%	48% [e]	50-150%
	13C8-PFOS	53%	62%	54%	50-150%
	13C8-FOSA	44% [e]	0%	56%	50-150%
	d3-MeFOSA	0% [e]	0%	37% [e]	50-150%
	d3-MeFOSAA	0% [e]	0%	66%	50-150%
	d5-EtFOSAA	0% [e]	0%	62%	50-150%
	13C2-4:2FTS	42% [e]	50%	46% [e]	50-150%
	13C2-6:2FTS	54%	64%	50%	50-150%
	13C2-8:2FTS	46% [e]	39%	52%	50-150%
	13C3-HFPO-DA	45% [e]	44%	48% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-010.0-20221212		
Lab Sample ID:	FC1310-7	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0021-025.0-20221212
Lab Sample ID: FC1310-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38887.D	1	01/07/23 19:58	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38967.D	5	01/09/23 21:32	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-025.0-20221212		
Lab Sample ID:	FC1310-8	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	35% [d]	45% [d]	50-150%
	13C5-PFPeA	34% [d]	49% [d]	50-150%
	13C5-PFHxA	49% [d]	58%	50-150%
	13C4-PFHpA	54%	60%	50-150%
	13C8-PFOA	62%	63%	50-150%
	13C9-PFNA	64%	65%	50-150%
	13C6-PFDA	63%	67%	50-150%
	13C7-PFUnDA	55%	66%	50-150%
	13C2-PFDoDA	55%	59%	50-150%
	13C2-PFTeDA	52%	53%	50-150%
	13C3-PFBS	38% [d]	52%	50-150%
	13C3-PFHxS	59%	67%	50-150%
	13C8-PFOS	62%	63%	50-150%
	13C8-FOSA	66%	68%	50-150%
	d3-MeFOSA	43% [d]	52%	50-150%
	d3-MeFOSAA	83%	79%	50-150%
	d5-EtFOSAA	67%	73%	50-150%
	13C2-4:2FTS	49% [d]	56%	50-150%
	13C2-6:2FTS	65%	63%	50-150%
	13C2-8:2FTS	68%	66%	50-150%
	13C3-HFPO-DA	52%	56%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-025.0-20221212		
Lab Sample ID:	FC1310-8	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0021-042.0-20221212
Lab Sample ID: FC1310-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/12/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38890.D	1	01/07/23 20:44	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38970.D	5	01/09/23 22:19	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
2706-90-3	Perfluoropentanoic acid	0.025 U [b]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [b]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [b]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA	0.010 U	0.020	0.010	0.0050	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-042.0-20221212		
Lab Sample ID:	FC1310-9	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	54%	50-150%
	13C5-PFPeA	43% [c]	55%	50-150%
	13C5-PFHxA	61%	61%	50-150%
	13C4-PFHpA	63%	61%	50-150%
	13C8-PFOA	66%	62%	50-150%
	13C9-PFNA	67%	65%	50-150%
	13C6-PFDA	65%	67%	50-150%
	13C7-PFUnDA	63%	69%	50-150%
	13C2-PFDoDA	63%	64%	50-150%
	13C2-PFTeDA	52%	53%	50-150%
	13C3-PFBS	49% [c]	60%	50-150%
	13C3-PFHxS	64%	63%	50-150%
	13C8-PFOS	65%	66%	50-150%
	13C8-FOSA	71%	71%	50-150%
	d3-MeFOSA	61%	68%	50-150%
	d3-MeFOSAA	80%	83%	50-150%
	d5-EtFOSAA	72%	78%	50-150%
	13C2-4:2FTS	58%	57%	50-150%
	13C2-6:2FTS	66%	60%	50-150%
	13C2-8:2FTS	65%	67%	50-150%
	13C3-HFPO-DA	61%	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-057.0-20221212		
Lab Sample ID:	FC1310-10	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38891.D	1	01/07/23 21:00	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38971.D	5	01/09/23 22:34	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0076	0.020	0.010	0.0050	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0029	0.010	0.0050	0.0025	ug/l	J
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0035	0.010	0.0050	0.0025	ug/l	J
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [c]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0092	0.010	0.0050	0.0025	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0104	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA [b]	0.050 U [c]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-057.0-20221212		
Lab Sample ID:	FC1310-10	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0043	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0056	0.010	0.0050	0.0025	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [d]	54%	50-150%
	13C5-PFPeA	40% [d]	54%	50-150%
	13C5-PFHxA	61%	62%	50-150%
	13C4-PFHpA	62%	63%	50-150%
	13C8-PFOA	65%	62%	50-150%
	13C9-PFNA	66%	68%	50-150%
	13C6-PFDA	64%	68%	50-150%
	13C7-PFUnDA	57%	66%	50-150%
	13C2-PFDoDA	58%	64%	50-150%
	13C2-PFTeDA	54%	55%	50-150%
	13C3-PFBS	41% [d]	59%	50-150%
	13C3-PFHxS	65%	64%	50-150%
	13C8-PFOS	66%	61%	50-150%
	13C8-FOSA	62%	61%	50-150%
	d3-MeFOSA	17% [d]	33% [d]	50-150%
	d3-MeFOSAA	85%	86%	50-150%
	d5-EtFOSAA	71%	75%	50-150%
	13C2-4:2FTS	59%	58%	50-150%
	13C2-6:2FTS	64%	62%	50-150%
	13C2-8:2FTS	65%	66%	50-150%
	13C3-HFPO-DA	61%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0021-057.0-20221212		
Lab Sample ID:	FC1310-10	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-004.0-20221212		
Lab Sample ID:	FC1310-11	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38892.D	1	01/07/23 21:15	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39157.D	1	01/13/23 01:17	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38972.D	5	01/09/23 22:50	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	240 ml	1.0 ml
Run #3	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0069	0.020	0.010	0.0050	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.025 U [d]	0.050	0.025	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
31506-32-8	MeFOSA [c]	0.050 U [d]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-004.0-20221212		
Lab Sample ID:	FC1310-11	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.050 U [d]	0.10	0.050	0.025	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.050 U [d]	0.10	0.050	0.025	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	29% [e]	21%	46% [e]	50-150%
	13C5-PFPeA	28% [e]	29%	45% [e]	50-150%
	13C5-PFHxA	37% [e]	25%	52%	50-150%
	13C4-PFHpA	43% [e]	33%	54%	50-150%
	13C8-PFOA	53%	47%	58%	50-150%
	13C9-PFNA	56%	59%	63%	50-150%
	13C6-PFDA	57%	62%	62%	50-150%
	13C7-PFUnDA	51%	55%	56%	50-150%
	13C2-PFDoDA	42% [e]	36%	37% [e]	50-150%
	13C2-PFTeDA	16% [e]	16%	6% [e]	50-150%
	13C3-PFBS	32% [e]	29%	50%	50-150%
	13C3-PFHxS	52%	43%	60%	50-150%
	13C8-PFOS	61%	63%	68%	50-150%
	13C8-FOSA	33% [e]	10%	34% [e]	50-150%
	d3-MeFOSA	5% [e]	5%	9% [e]	50-150%
	d3-MeFOSAA	69%	58%	71%	50-150%
	d5-EtFOSAA	58%	49%	62%	50-150%
	13C2-4:2FTS	37% [e]	26%	52%	50-150%
	13C2-6:2FTS	59%	53%	62%	50-150%
	13C2-8:2FTS	65%	68%	65%	50-150%
	13C3-HFPO-DA	39% [e]	24%	51%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-004.0-20221212		
Lab Sample ID:	FC1310-11	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-010.0-20221213		
Lab Sample ID:	FC1310-12	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38893.D	1	01/07/23 21:31	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39158.D	1	01/13/23 01:33	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38973.D	5	01/09/23 23:05	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	220 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0026	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-010.0-20221213		
Lab Sample ID:	FC1310-12	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [d]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	30% [e]	30%	42% [e]	50-150%
	13C5-PFPeA	29% [e]	38%	44% [e]	50-150%
	13C5-PFHxA	41% [e]	47%	52%	50-150%
	13C4-PFHpA	45% [e]	53%	55%	50-150%
	13C8-PFOA	55%	63%	56%	50-150%
	13C9-PFNA	57%	68%	58%	50-150%
	13C6-PFDA	58%	65%	55%	50-150%
	13C7-PFUnDA	55%	56%	59%	50-150%
	13C2-PFDoDA	54%	49%	53%	50-150%
	13C2-PFTeDA	47% [e]	41%	51%	50-150%
	13C3-PFBS	33% [e]	40%	48% [e]	50-150%
	13C3-PFHxS	51%	58%	53%	50-150%
	13C8-PFOS	58%	62%	58%	50-150%
	13C8-FOSA	38% [e]	31%	41% [e]	50-150%
	d3-MeFOSA	4% [e]	7%	14% [e]	50-150%
	d3-MeFOSAA	72%	73%	69%	50-150%
	d5-EtFOSAA	63%	62%	65%	50-150%
	13C2-4:2FTS	40% [e]	47%	51%	50-150%
	13C2-6:2FTS	58%	68%	55%	50-150%
	13C2-8:2FTS	60%	66%	56%	50-150%
	13C3-HFPO-DA	43% [e]	42%	50%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-010.0-20221213		
Lab Sample ID:	FC1310-12	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-018.0-20221213		
Lab Sample ID:	FC1310-13	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38894.D	1	01/07/23 21:46	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38974.D	5	01/09/23 23:21	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-018.0-20221213		
Lab Sample ID:	FC1310-13	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	56%	50-150%
	13C5-PFPeA	37% [d]	53%	50-150%
	13C5-PFHxA	55%	61%	50-150%
	13C4-PFHpA	59%	62%	50-150%
	13C8-PFOA	67%	66%	50-150%
	13C9-PFNA	69%	69%	50-150%
	13C6-PFDA	65%	67%	50-150%
	13C7-PFUnDA	58%	67%	50-150%
	13C2-PFDoDA	58%	58%	50-150%
	13C2-PFTeDA	55%	57%	50-150%
	13C3-PFBS	42% [d]	58%	50-150%
	13C3-PFHxS	64%	68%	50-150%
	13C8-PFOS	68%	65%	50-150%
	13C8-FOSA	64%	67%	50-150%
	d3-MeFOSA	11% [d]	25% [d]	50-150%
	d3-MeFOSAA	85%	83%	50-150%
	d5-EtFOSAA	71%	75%	50-150%
	13C2-4:2FTS	53%	63%	50-150%
	13C2-6:2FTS	71%	65%	50-150%
	13C2-8:2FTS	71%	66%	50-150%
	13C3-HFPO-DA	59%	62%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-018.0-20221213		
Lab Sample ID:	FC1310-13	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-025.0-20221213		
Lab Sample ID:	FC1310-14	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38895.D	1	01/07/23 22:02	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38975.D	10	01/09/23 23:36	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.10 U [b]	0.20	0.10	0.050	ug/l	
2706-90-3	Perfluoropentanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
307-55-1	Perfluorododecanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.050 U [b]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0050 U	0.010	0.0050	0.0025	ug/l	
31506-32-8	MeFOSA [c]	0.10 U [b]	0.20	0.10	0.050	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.10 U [b]	0.20	0.10	0.050	ug/l	
2991-50-6	EtFOSAA	0.10 U [b]	0.20	0.10	0.050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-025.0-20221213		
Lab Sample ID:	FC1310-14	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.10 U [b]	0.20	0.10	0.050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [d]	56%	50-150%
	13C5-PFPeA	36% [d]	55%	50-150%
	13C5-PFHxA	59%	60%	50-150%
	13C4-PFHpA	62%	60%	50-150%
	13C8-PFOA	69%	62%	50-150%
	13C9-PFNA	72%	64%	50-150%
	13C6-PFDA	57%	62%	50-150%
	13C7-PFUnDA	43% [d]	57%	50-150%
	13C2-PFDoDA	26% [d]	55%	50-150%
	13C2-PFTeDA	55%	53%	50-150%
	13C3-PFBS	35% [d]	62%	50-150%
	13C3-PFHxS	69%	69%	50-150%
	13C8-PFOS	75%	72%	50-150%
	13C8-FOSA	55%	64%	50-150%
	d3-MeFOSA	0% [d]	24% [d]	50-150%
	d3-MeFOSAA	2% [d]	75%	50-150%
	d5-EtFOSAA	4% [d]	57%	50-150%
	13C2-4:2FTS	58%	60%	50-150%
	13C2-6:2FTS	71%	60%	50-150%
	13C2-8:2FTS	64%	61%	50-150%
	13C3-HFPO-DA	60%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-025.0-20221213		
Lab Sample ID:	FC1310-14	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-042.0-20221213		
Lab Sample ID:	FC1310-15	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38896.D	1	01/07/23 22:18	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38976.D	5	01/09/23 23:52	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-042.0-20221213		
Lab Sample ID:	FC1310-15	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U [b]	0.037	0.019	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [d]	65%	50-150%
	13C5-PFPeA	41% [d]	63%	50-150%
	13C5-PFHxA	64%	75%	50-150%
	13C4-PFHpA	69%	76%	50-150%
	13C8-PFOA	78%	83%	50-150%
	13C9-PFNA	79%	84%	50-150%
	13C6-PFDA	77%	81%	50-150%
	13C7-PFUnDA	61%	72%	50-150%
	13C2-PFDoDA	34% [d]	65%	50-150%
	13C2-PFTeDA	47% [d]	58%	50-150%
	13C3-PFBS	45% [d]	67%	50-150%
	13C3-PFHxS	79%	81%	50-150%
	13C8-PFOS	80%	85%	50-150%
	13C8-FOSA	43% [d]	52%	50-150%
	d3-MeFOSA	3% [d]	16% [d]	50-150%
	d3-MeFOSAA	95%	96%	50-150%
	d5-EtFOSAA	69%	83%	50-150%
	13C2-4:2FTS	62%	75%	50-150%
	13C2-6:2FTS	83%	80%	50-150%
	13C2-8:2FTS	79%	80%	50-150%
	13C3-HFPO-DA	67%	70%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-042.0-20221213		
Lab Sample ID:	FC1310-15	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0022-057.0-20221213
Lab Sample ID: FC1310-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/13/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38897.D	1	01/07/23 22:33	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39159.D	1	01/13/23 01:48	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38977.D	5	01/10/23 00:07	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	165 ml	1.0 ml
Run #2	115 ml	1.0 ml
Run #3	165 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0068	0.012	0.0061	0.0030	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.015 U [d]	0.030	0.015	0.0076	ug/l	
307-24-4	Perfluorohexanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
375-85-9	Perfluoroheptanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
335-67-1	Perfluorooctanoic acid	0.0030 U	0.0061	0.0030	0.0015	ug/l	
375-95-1	Perfluorononanoic acid	0.0030 U	0.0061	0.0030	0.0015	ug/l	
335-76-2	Perfluorodecanoic acid	0.0030 U	0.0061	0.0030	0.0015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
307-55-1	Perfluorododecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.015 U [d]	0.030	0.015	0.0076	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.015 U [d]	0.030	0.015	0.0076	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0018	0.0061	0.0030	0.0015	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0030 U	0.0061	0.0030	0.0015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0038	0.0061	0.0030	0.0015	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0030 U	0.0061	0.0030	0.0015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.015 U [d]	0.030	0.015	0.0076	ug/l	
31506-32-8	MeFOSA [c]	0.030 U [d]	0.061	0.030	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0061 U	0.012	0.0061	0.0030	ug/l	
2991-50-6	EtFOSAA	0.030 U [d]	0.061	0.030	0.015	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-057.0-20221213		
Lab Sample ID:	FC1310-16	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.030 U [d]	0.061	0.030	0.015	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0061 U	0.012	0.0061	0.0030	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0061 U	0.012	0.0061	0.0030	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0061 U	0.012	0.0061	0.0030	ug/l	
919005-14-4	ADONA	0.0061 U	0.012	0.0061	0.0030	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0061 U	0.012	0.0061	0.0030	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.030 U [d]	0.061	0.030	0.015	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0012	0.0024	0.0012	0.00061	ug/l	J
	PFOS (Linear Isomer)	0.0025	0.0061	0.0030	0.0015	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	31% [e]	32%	44% [e]	50-150%
	13C5-PFPeA	25% [e]	31%	42% [e]	50-150%
	13C5-PFHxA	42% [e]	42%	52%	50-150%
	13C4-PFHpA	44% [e]	46%	53%	50-150%
	13C8-PFOA	53%	56%	59%	50-150%
	13C9-PFNA	57%	61%	62%	50-150%
	13C6-PFDA	56%	62%	55%	50-150%
	13C7-PFUnDA	36% [e]	53%	53%	50-150%
	13C2-PFDoDA	18% [e]	53%	54%	50-150%
	13C2-PFTeDA	48% [e]	59%	55%	50-150%
	13C3-PFBS	25% [e]	28%	42% [e]	50-150%
	13C3-PFHxS	54%	52%	59%	50-150%
	13C8-PFOS	61%	62%	61%	50-150%
	13C8-FOSA	28% [e]	33%	48% [e]	50-150%
	d3-MeFOSA	4% [e]	29%	17% [e]	50-150%
	d3-MeFOSAA	66%	67%	72%	50-150%
	d5-EtFOSAA	13% [e]	59%	57%	50-150%
	13C2-4:2FTS	40% [e]	41%	52%	50-150%
	13C2-6:2FTS	56%	61%	58%	50-150%
	13C2-8:2FTS	61%	63%	57%	50-150%
	13C3-HFPO-DA	45% [e]	38%	49% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0022-057.0-20221213		
Lab Sample ID:	FC1310-16	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-004.0-20221213		
Lab Sample ID:	FC1310-17	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38898.D	1	01/07/23 22:49	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q39162.D	1	01/13/23 02:35	AL	01/11/23 10:58	OP94936	S4Q562
Run #3 [b]	4Q38978.D	5	01/10/23 00:23	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	235 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0073	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0023	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid [c]	0.0023	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid [c]	0.0019	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0136	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0078	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-004.0-20221213		
Lab Sample ID:	FC1310-17	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [d]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.019 U [d]	0.037	0.019	0.0093	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0059	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	30% [e]	32%	44% [e]	50-150%
	13C5-PFPeA	28% [e]	35%	43% [e]	50-150%
	13C5-PFHxA	39% [e]	42%	49% [e]	50-150%
	13C4-PFHpA	41% [e]	46%	50%	50-150%
	13C8-PFOA	49% [e]	54%	53%	50-150%
	13C9-PFNA	51%	60%	56%	50-150%
	13C6-PFDA	51%	59%	54%	50-150%
	13C7-PFUnDA	45% [e]	50%	50%	50-150%
	13C2-PFDoDA	37% [e]	40%	36% [e]	50-150%
	13C2-PFTeDA	18% [e]	24%	15% [e]	50-150%
	13C3-PFBS	32% [e]	37%	49% [e]	50-150%
	13C3-PFHxS	48% [e]	53%	56%	50-150%
	13C8-PFOS	53%	63%	58%	50-150%
	13C8-FOSA	29% [e]	17%	41% [e]	50-150%
	d3-MeFOSA	7% [e]	6%	17% [e]	50-150%
	d3-MeFOSAA	72%	63%	60%	50-150%
	d5-EtFOSAA	56%	58%	55%	50-150%
	13C2-4:2FTS	39% [e]	44%	51%	50-150%
	13C2-6:2FTS	54%	63%	57%	50-150%
	13C2-8:2FTS	61%	65%	58%	50-150%
	13C3-HFPO-DA	39% [e]	37%	49% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-004.0-20221213		
Lab Sample ID:	FC1310-17	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-010.0-20221213		
Lab Sample ID:	FC1310-18	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38899.D	1	01/07/23 23:04	AL	12/16/22 09:30	OP94550	S4Q559
Run #2	4Q38979.D	5	01/10/23 00:38	AL	12/16/22 09:30	OP94550	S4Q560
Run #3 [a]	4Q39164.D	5	01/13/23 03:06	AL	01/11/23 10:58	OP94936	S4Q562

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0054	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0038	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0139	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid [b]	0.0037	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0068	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0021	0.0037	0.0019	0.00093	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0114	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0254	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.375 [c]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic aci [b]	0.0156	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.993 [c]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-010.0-20221213		
Lab Sample ID:	FC1310-18	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [c]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.122 [c]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Linear Isomer)	0.934 [c]	0.019	0.0093	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	32% [d]	46% [d]	42%	50-150%
	13C5-PFPeA	29% [d]	45% [d]	45%	50-150%
	13C5-PFHxA	41% [d]	53%	52%	50-150%
	13C4-PFHpA	44% [d]	55%	55%	50-150%
	13C8-PFOA	56%	61%	59%	50-150%
	13C9-PFNA	53%	59%	59%	50-150%
	13C6-PFDA	59%	59%	58%	50-150%
	13C7-PFUnDA	48% [d]	58%	57%	50-150%
	13C2-PFDoDA	48% [d]	52%	48%	50-150%
	13C2-PFTeDA	44% [d]	49% [d]	40%	50-150%
	13C3-PFBS	34% [d]	50%	49%	50-150%
	13C3-PFHxS	53%	62%	60%	50-150%
	13C8-PFOS	49% [d]	63%	62%	50-150%
	13C8-FOSA	21% [d]	27% [d]	43%	50-150%
	d3-MeFOSA	2% [d]	8% [d]	12%	50-150%
	d3-MeFOSAA	69%	69%	68%	50-150%
	d5-EtFOSAA	59%	65%	62%	50-150%
	13C2-4:2FTS	40% [d]	53%	55%	50-150%
	13C2-6:2FTS	58%	60%	63%	50-150%
	13C2-8:2FTS	62%	59%	65%	50-150%
	13C3-HFPO-DA	42% [d]	51%	49%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-010.0-20221213		
Lab Sample ID:	FC1310-18	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-025.0-20221213		
Lab Sample ID:	FC1310-19	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q39165.D	1	01/13/23 03:21	AL	01/11/23 10:58	OP94936	S4Q562
Run #2	4Q38902.D	1.1	01/07/23 23:51	AL	12/16/22 09:30	OP94550	S4Q559
Run #3 [b]	4Q38982.D	5.5	01/10/23 01:25	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.020 U [d]	0.041	0.020	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U [d]	0.020	0.010	0.0051	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0014 [e]	0.0041	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U [e]	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U [d]	0.020	0.010	0.0051	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [d]	0.041	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-025.0-20221213		
Lab Sample ID:	FC1310-19	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.020 U [d]	0.041	0.020	0.010	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U [e]	0.0081	0.0041	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00081 U [e]	0.0016	0.00081	0.00041	ug/l	
	PFOS (Linear Isomer)	0.0013 [e]	0.0041	0.0020	0.0010	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	37%	30% [f]	36% [f]	50-150%
	13C5-PFPeA	42%	28% [f]	39% [f]	50-150%
	13C5-PFHxA	54%	43% [f]	45% [f]	50-150%
	13C4-PFHpA	58%	48% [f]	47% [f]	50-150%
	13C8-PFOA	68%	55%	52%	50-150%
	13C9-PFNA	70%	57%	54%	50-150%
	13C6-PFDA	65%	54%	53%	50-150%
	13C7-PFUnDA	57%	49% [f]	51%	50-150%
	13C2-PFDoDA	51%	50%	49% [f]	50-150%
	13C2-PFTeDA	38%	45% [f]	46% [f]	50-150%
	13C3-PFBS	44%	34% [f]	46% [f]	50-150%
	13C3-PFHxS	62%	53%	55%	50-150%
	13C8-PFOS	68%	56%	58%	50-150%
	13C8-FOSA	44%	28% [f]	30% [f]	50-150%
	d3-MeFOSA	10%	3% [f]	8% [f]	50-150%
	d3-MeFOSAA	70%	68%	69%	50-150%
	d5-EtFOSAA	62%	60%	62%	50-150%
	13C2-4:2FTS	54%	41% [f]	47% [f]	50-150%
	13C2-6:2FTS	72%	58%	50%	50-150%
	13C2-8:2FTS	67%	56%	55%	50-150%
	13C3-HFPO-DA	46%	43% [f]	45% [f]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-025.0-20221213		
Lab Sample ID:	FC1310-19	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Result is from Run# 2
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-042.0-20221213		
Lab Sample ID:	FC1310-20	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38903.D	1	01/08/23 00:06	AL	12/16/22 09:30	OP94550	S4Q559
Run #2 [a]	4Q38984.D	5	01/10/23 01:56	AL	12/16/22 09:30	OP94550	S4Q560

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0125	0.0038	0.0019	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0234	0.0038	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-042.0-20221213		
Lab Sample ID:	FC1310-20	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0035	0.0015	0.00077	0.00038	ug/l	
	PFOS (Linear Isomer)	0.0219	0.0038	0.0019	0.00096	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [d]	51%	50-150%
	13C5-PFPeA	35% [d]	50%	50-150%
	13C5-PFHxA	54%	61%	50-150%
	13C4-PFHpA	58%	61%	50-150%
	13C8-PFOA	65%	64%	50-150%
	13C9-PFNA	63%	67%	50-150%
	13C6-PFDA	61%	63%	50-150%
	13C7-PFUnDA	50%	56%	50-150%
	13C2-PFDoDA	50%	51%	50-150%
	13C2-PFTeDA	46% [d]	50%	50-150%
	13C3-PFBS	37% [d]	54%	50-150%
	13C3-PFHxS	63%	68%	50-150%
	13C8-PFOS	63%	63%	50-150%
	13C8-FOSA	31% [d]	35% [d]	50-150%
	d3-MeFOSA	3% [d]	13% [d]	50-150%
	d3-MeFOSAA	79%	74%	50-150%
	d5-EtFOSAA	62%	67%	50-150%
	13C2-4:2FTS	53%	60%	50-150%
	13C2-6:2FTS	69%	64%	50-150%
	13C2-8:2FTS	66%	64%	50-150%
	13C3-HFPO-DA	57%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-042.0-20221213		
Lab Sample ID:	FC1310-20	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-057.0-20221213		
Lab Sample ID:	FC1310-21	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38660.D	1	01/04/23 22:47	AL	12/16/22 08:55	OP94557	S4Q556
Run #2 [a]	4Q38730.D	2	01/05/23 20:35	AL	12/16/22 08:55	OP94557	S4Q557
Run #3 [b]	4Q39135.D	2	01/12/23 19:36	AL	01/09/23 09:40	OP94893	S4Q562

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml
Run #3	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0078 U [d]	0.016	0.0078	0.0039	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0039 U [d]	0.0078	0.0039	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0039 U [d]	0.0078	0.0039	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0039 U [d]	0.0078	0.0039	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0039 U [d]	0.0078	0.0039	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0149	0.0039	0.0020	0.00098	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0281	0.0039	0.0020	0.00098	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0039 U [d]	0.0078	0.0039	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.0078 U [d]	0.016	0.0078	0.0039	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-057.0-20221213		
Lab Sample ID:	FC1310-21	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
919005-14-4	ADONA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0033	0.0016	0.00078	0.00039	ug/l	
	PFOS (Linear Isomer)	0.0269	0.0039	0.0020	0.00098	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	37% e	43% e	49% e	50-150%
	13C5-PFPeA	33% e	42% e	51%	50-150%
	13C5-PFHxA	52%	58%	68%	50-150%
	13C4-PFHpA	55%	63%	71%	50-150%
	13C8-PFOA	61%	66%	74%	50-150%
	13C9-PFNA	61%	66%	73%	50-150%
	13C6-PFDA	59%	68%	69%	50-150%
	13C7-PFUnDA	51%	61%	73%	50-150%
	13C2-PFDoDA	51%	61%	80%	50-150%
	13C2-PFTeDA	48% e	54%	64%	50-150%
	13C3-PFBS	42% e	49% e	52%	50-150%
	13C3-PFHxS	58%	59%	71%	50-150%
	13C8-PFOS	58%	63%	76%	50-150%
	13C8-FOSA	38% e	46% e	22% e	50-150%
	d3-MeFOSA	5% e	21% e	5% e	50-150%
	d3-MeFOSAA	75%	86%	84%	50-150%
	d5-EtFOSAA	65%	74%	81%	50-150%
	13C2-4:2FTS	51%	57%	68%	50-150%
	13C2-6:2FTS	63%	68%	78%	50-150%
	13C2-8:2FTS	62%	68%	69%	50-150%
	13C3-HFPO-DA	51%	55%	62%	50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0023-057.0-20221213		
Lab Sample ID:	FC1310-21	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution required (ID recovery standard failure).
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted. Confirmation run.
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221213-01		
Lab Sample ID:	FC1310-22	**Date Sampled:**	12/13/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38661.D	1	01/04/23 23:03	AL	12/16/22 08:55	OP94557	S4Q556
Run #2 [a]	4Q38731.D	2	01/05/23 20:50	AL	12/16/22 08:55	OP94557	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0037 U [b]	0.0074	0.0037	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.0074 U [b]	0.015	0.0074	0.0037	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221213-01		
Lab Sample ID:	FC1310-22	**Date Sampled:**	12/13/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	60%	50-150%
	13C5-PFPeA	57%	60%	50-150%
	13C5-PFHxA	57%	60%	50-150%
	13C4-PFHpA	56%	62%	50-150%
	13C8-PFOA	57%	62%	50-150%
	13C9-PFNA	58%	63%	50-150%
	13C6-PFDA	58%	70%	50-150%
	13C7-PFUnDA	58%	68%	50-150%
	13C2-PFDoDA	51%	61%	50-150%
	13C2-PFTeDA	45% [d]	51%	50-150%
	13C3-PFBS	62%	63%	50-150%
	13C3-PFHxS	59%	58%	50-150%
	13C8-PFOS	57%	58%	50-150%
	13C8-FOSA	66%	70%	50-150%
	d3-MeFOSA	30% [d]	48% [d]	50-150%
	d3-MeFOSAA	70%	80%	50-150%
	d5-EtFOSAA	63%	70%	50-150%
	13C2-4:2FTS	54%	56%	50-150%
	13C2-6:2FTS	55%	60%	50-150%
	13C2-8:2FTS	58%	63%	50-150%
	13C3-HFPO-DA	56%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221213-01		
Lab Sample ID:	FC1310-22	**Date Sampled:**	12/13/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20221213-02
Lab Sample ID: FC1310-23
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/13/22
Date Received: 12/13/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38662.D	1	01/04/23 23:18	AL	12/16/22 08:55	OP94557	S4Q556
Run #2 [a]	4Q38732.D	2	01/05/23 21:06	AL	12/16/22 08:55	OP94557	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0037 U [b]	0.0074	0.0037	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221213-02		
Lab Sample ID:	FC1310-23	**Date Sampled:**	12/13/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%	54%	50-150%
	13C5-PFPeA	53%	55%	50-150%
	13C5-PFHxA	55%	57%	50-150%
	13C4-PFHpA	55%	58%	50-150%
	13C8-PFOA	58%	61%	50-150%
	13C9-PFNA	59%	64%	50-150%
	13C6-PFDA	61%	67%	50-150%
	13C7-PFUnDA	59%	67%	50-150%
	13C2-PFDoDA	52%	61%	50-150%
	13C2-PFTeDA	46% [c]	50%	50-150%
	13C3-PFBS	58%	59%	50-150%
	13C3-PFHxS	59%	56%	50-150%
	13C8-PFOS	57%	61%	50-150%
	13C8-FOSA	70%	75%	50-150%
	d3-MeFOSA	58%	65%	50-150%
	d3-MeFOSAA	72%	81%	50-150%
	d5-EtFOSAA	66%	70%	50-150%
	13C2-4:2FTS	51%	53%	50-150%
	13C2-6:2FTS	56%	58%	50-150%
	13C2-8:2FTS	58%	65%	50-150%
	13C3-HFPO-DA	53%	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221212-01		
Lab Sample ID:	FC1310-24	**Date Sampled:**	12/12/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38663.D	1	01/04/23 23:34	AL	12/16/22 08:55	OP94557	S4Q556
Run #2 [a]	4Q38733.D	2	01/05/23 21:21	AL	12/16/22 08:55	OP94557	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0037 U [c]	0.0074	0.0037	0.0019	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221212-01		
Lab Sample ID:	FC1310-24	**Date Sampled:**	12/12/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%	64%	50-150%
	13C5-PFPeA	62%	62%	50-150%
	13C5-PFHxA	63%	62%	50-150%
	13C4-PFHpA	64%	65%	50-150%
	13C8-PFOA	68%	68%	50-150%
	13C9-PFNA	67%	72%	50-150%
	13C6-PFDA	72%	80%	50-150%
	13C7-PFUnDA	73%	80%	50-150%
	13C2-PFDoDA	59%	68%	50-150%
	13C2-PFTeDA	47% [d]	49% [d]	50-150%
	13C3-PFBS	67%	65%	50-150%
	13C3-PFHxS	65%	62%	50-150%
	13C8-PFOS	65%	65%	50-150%
	13C8-FOSA	78%	85%	50-150%
	d3-MeFOSA	77%	85%	50-150%
	d3-MeFOSAA	91%	97%	50-150%
	d5-EtFOSAA	80%	88%	50-150%
	13C2-4:2FTS	59%	59%	50-150%
	13C2-6:2FTS	61%	63%	50-150%
	13C2-8:2FTS	69%	74%	50-150%
	13C3-HFPO-DA	61%	60%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221212-01		
Lab Sample ID:	FC1310-24	**Date Sampled:**	12/12/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221213-02		
Lab Sample ID:	FC1310-25	**Date Sampled:**	12/13/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38734.D	1	01/05/23 21:37	AL	12/16/22 08:55	OP94557	S4Q557
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221213-02		
Lab Sample ID:	FC1310-25	**Date Sampled:**	12/13/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	66%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	67%		50-150%
	13C4-PFHpA	69%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	71%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	62%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	68%		50-150%
	13C3-PFHxS	66%		50-150%
	13C8-PFOS	65%		50-150%
	13C8-FOSA	81%		50-150%
	d3-MeFOSA	69%		50-150%
	d3-MeFOSAA	89%		50-150%
	d5-EtFOSAA	79%		50-150%
	13C2-4:2FTS	62%		50-150%
	13C2-6:2FTS	66%		50-150%
	13C2-8:2FTS	70%		50-150%
	13C3-HFPO-DA	65%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221212-01		
Lab Sample ID:	FC1310-26	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q38665.D	1	01/05/23 00:05	AL	12/16/22 08:55	OP94557	S4Q556
Run #2	4Q39136.D	1	01/12/23 19:51	AL	01/09/23 09:40	OP94893	S4Q562
Run #3 [b]	4Q38736.D	5	01/05/23 22:08	AL	12/16/22 08:55	OP94557	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U [e]	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221212-01		
Lab Sample ID:	FC1310-26	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	36% [f]	36% [f]	46% [f]	50-150%
	13C5-PFPeA	30% [f]	34% [f]	42% [f]	50-150%
	13C5-PFHxA	44% [f]	46% [f]	51%	50-150%
	13C4-PFHpA	48% [f]	49% [f]	52%	50-150%
	13C8-PFOA	52%	53%	53%	50-150%
	13C9-PFNA	55%	54%	59%	50-150%
	13C6-PFDA	54%	53%	63%	50-150%
	13C7-PFUnDA	54%	54%	62%	50-150%
	13C2-PFDoDA	51%	55%	58%	50-150%
	13C2-PFTeDA	48% [f]	52%	48% [f]	50-150%
	13C3-PFBS	37% [f]	33% [f]	45% [f]	50-150%
	13C3-PFHxS	51%	50%	50%	50-150%
	13C8-PFOS	54%	55%	53%	50-150%
	13C8-FOSA	60%	43% [f]	67%	50-150%
	d3-MeFOSA	24% [f]	25% [f]	44% [f]	50-150%
	d3-MeFOSAA	80%	66%	78%	50-150%
	d5-EtFOSAA	71%	61%	72%	50-150%
	13C2-4:2FTS	43% [f]	47% [f]	49% [f]	50-150%
	13C2-6:2FTS	56%	55%	55%	50-150%
	13C2-8:2FTS	58%	53%	60%	50-150%
	13C3-HFPO-DA	43% [f]	41% [f]	50%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221212-01		
Lab Sample ID:	FC1310-26	**Date Sampled:**	12/12/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Result is from Run# 2
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221213-02		
Lab Sample ID:	FC1310-27	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q38666.D	1.2	01/05/23 00:21	AL	12/16/22 08:55	OP94557	S4Q556
Run #2 [a]	4Q39137.D	3.9	01/12/23 20:07	AL	01/09/23 09:40	OP94893	S4Q562
Run #3 [b]	4Q38737.D	5.9	01/05/23 22:23	AL	12/16/22 08:55	OP94557	S4Q557

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.014 U [c]	0.029	0.014	0.0072	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0072 U [c]	0.014	0.0072	0.0036	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0072 U [c]	0.014	0.0072	0.0036	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0072 U [c]	0.014	0.0072	0.0036	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0029	0.0045	0.0023	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0077	0.0045	0.0023	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0072 U [c]	0.014	0.0072	0.0036	ug/l	
31506-32-8	MeFOSA [d]	0.022 U [e]	0.045	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221213-02		
Lab Sample ID:	FC1310-27	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
919005-14-4	ADONA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00085	0.0018	0.00091	0.00045	ug/l	J
	PFOS (Linear Isomer)	0.0069	0.0045	0.0023	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	46% f	76%	60%	50-150%
	13C5-PFPeA	36% f	75%	51%	50-150%
	13C5-PFHxA	53%	93%	62%	50-150%
	13C4-PFHpA	58%	96%	65%	50-150%
	13C8-PFOA	66%	105%	68%	50-150%
	13C9-PFNA	68%	106%	72%	50-150%
	13C6-PFDA	66%	102%	76%	50-150%
	13C7-PFUnDA	59%	113%	73%	50-150%
	13C2-PFDoDA	59%	124%	70%	50-150%
	13C2-PFTeDA	54%	100%	57%	50-150%
	13C3-PFBS	46% f	81%	57%	50-150%
	13C3-PFHxS	61%	108%	69%	50-150%
	13C8-PFOS	65%	109%	69%	50-150%
	13C8-FOSA	36% f	65%	47% f	50-150%
	d3-MeFOSA	5% f	17% f	28% f	50-150%
	d3-MeFOSAA	83%	134%	92%	50-150%
	d5-EtFOSAA	71%	125%	83%	50-150%
	13C2-4:2FTS	52%	91%	61%	50-150%
	13C2-6:2FTS	70%	106%	67%	50-150%
	13C2-8:2FTS	69%	103%	72%	50-150%
	13C3-HFPO-DA	51%	81%	61%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221213-02		
Lab Sample ID:	FC1310-27	**Date Sampled:**	12/13/22
Matrix:	AQ - Ground Water	**Date Received:**	12/13/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Result is from Run# 3
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC1310

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 1 of 3
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-DPT0020-004.0-20221212	A3RB-DPT0020	20221212	0921	WG	N	G	2	2	
2	A3RB-DPT0020-010.0-20221212	A3RB-DPT0020	20221212	0941	WG	N	G	2	2	
3	A3RB-DPT0020-025.0-20221212	A3RB-DPT0020	20221212	1009	WG	N	G	2	2	
4	A3RB-DPT0020-042.0-20221212	A3RB-DPT0020	20221212	1048	WG	N	G	2	2	
5	A3RB-DPT0020-057.0-20221212	A3RB-DPT0020	20221212	1130	WG	N	G	2	2	
6	A3RB-DPT0021-004.0-20221212	A3RB-DPT0021	20221212	1300	WG	N	G	2	2	
7	A3RB-DPT0021-010.0-20221212	A3RB-DPT0021	20221212	1320	WG	N	G	2	2	
8	A3RB-DPT0021-025.0-20221212	A3RB-DPT0021	20221212	1357	WG	N	G	2	2	
9	A3RB-DPT0021-042.0-20221212	A3RB-DPT0021	20221212	1425	WG	N	G	2	2	
10	A3RB-DPT0021-057.0-20221212	A3RB-DPT0021	20221212	1455	WG	N	G	2	2	
11	A3RB-DPT0022-004.0-20221212	A3RB-DPT0022	20221212	1559	WG	N	G	2	2	
12	A3RB-DPT0022-010.0-20221213	A3RB-DPT0022	20221213	0750	WG	N	G	2	2	

INITIAL ASSESSMENT SM

LABEL VERIFICATION SM

2.6 IR: 1.46 SM

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/13/22	1540	1	12/13/22	15:40
2	12/13/22	17:35	2	12/13/22	1735
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1310: Chain of Custody
Page 1 of 4

FC1310

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 2 of 3	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747			Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
13	A3RB-DPT0022-018.0-20221213	A3RB-DPT0022	221213	0812	WG	N	G	2	2	
14	A3RB-DPT0022-025.0-20221213	A3RB-DPT0022	221213	0840	WG	N	G	2	2	
15	A3RB-DPT0022-042.0-20221213	A3RB-DPT0022	221213	0907	WG	N	G	2	2	
16	A3RB-DPT0022-057.0-20221213	A3RB-DPT0022	221213	0934	WG	N	G	2	2	
17	A3RB-DPT0023-004.0-20221213	A3RB-DPT0023	221213	1220	WG	N	G	2	2	
18	A3RB-DPT0023-010.0-20221213	A3RB-DPT0023	221213	1309	WG	N	G	2	2	
19	A3RB-DPT0023-018.0-20221213	A3RB-DPT0023	221213	1332	WG	N	G	2	2	
20	A3RB-DPT0023-042.0-20221213	A3RB-DPT0023	221213	1405	WG	N	G	2	2	
21	A3RB-DPT0023-057.0-20221213	A3RB-DPT0023	221213	1445	WG	N	G	2	2	
22	A3RB-FB-20221213-01	A3RB-FB	221213	0715	WQ	FB	G	2	2	
23	A3RB-FB-20221213-02	A3RB-FB	221213	1515	WQ	FB	G	2	2	
24	A3RB-EB-20221213-01	A3RB-EB	221213	1510	WQ	EB	G	2	2	

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/13/22	1540	1	12/13/22	15:40
2	12/13/22	17:35	2	12/13/22	1735
3			3		

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1310: Chain of Custody
Page 2 of 4

FC 1310

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: 3 of 3	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	**Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747			Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
25	A3RB-EB-20221213-02	A3RB-EB	20221213	1510	WQ	EB	G	2	2	
20	A3RB-MS/MSD-20221213-01	A3RB-MS/MSD	20221213	1225	GW	N	G	2	2	0FD023-042.0
26	A3RB-FD-20221212-01	A3RB-FD	20221212	1415	GW	N	G	2	2	
27	A3RB-FD-20221213-02	A3RB-FD	20221213	1350	GW	N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	
			202212			N	G	2	2	

***Field* Comments:** Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/13/22	1540	1	12/13/22	15:40
2	12/13/22	17:35	2	12/13/22	1735
3			3		

Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1310: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC1310 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 12/13/2022 5:35:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6); Cooler 2: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.8); Cooler 2: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/13/2022 5:35:00 P Reviewer: _____ Date: _____

FC1310: Chain of Custody
Page 4 of 4

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94550	EPA 537M QSM5.3 B-15						
OP94550-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	102	%	73-129
OP94550-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	93	%	72-129
OP94550-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP94550-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	97	%	72-130
OP94550-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP94550-BS	375-95-1	Perfluorononanoic acid	BSP	REC	96	%	69-130
OP94550-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	96	%	71-129
OP94550-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	94	%	69-133
OP94550-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	101	%	72-134
OP94550-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	80	%	65-144
OP94550-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	96	%	71-132
OP94550-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-130
OP94550-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	87	%	71-127
OP94550-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	99	%	68-131
OP94550-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	96	%	69-134
OP94550-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	65-140
OP94550-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	105	%	69-127
OP94550-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	102	%	53-142
OP94550-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP94550-BS	31506-32-8	MeFOSA	BSP	REC	91	%	68-141
OP94550-BS	2355-31-9	MeFOSAA	BSP	REC	91	%	65-136
OP94550-BS	2991-50-6	EtFOSAA	BSP	REC	98	%	61-135
OP94550-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP94550-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	104	%	64-140
OP94550-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	102	%	67-138
OP94550-MS	375-22-4	Perfluorobutanoic acid	MS	REC	102	%	73-129
OP94550-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	93	%	72-129
OP94550-MS	307-24-4	Perfluorohexanoic acid	MS	REC	99	%	72-129
OP94550-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	102	%	72-130
OP94550-MS	335-67-1	Perfluorooctanoic acid	MS	REC	97	%	71-133
OP94550-MS	375-95-1	Perfluorononanoic acid	MS	REC	97	%	69-130
OP94550-MS	335-76-2	Perfluorodecanoic acid	MS	REC	101	%	71-129
OP94550-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	97	%	69-133
OP94550-MS	307-55-1	Perfluorododecanoic acid	MS	REC	103	%	72-134
OP94550-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	82	%	65-144
OP94550-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	89	%	71-132
OP94550-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	100	%	72-130
OP94550-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	90	%	71-127
OP94550-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	95	%	68-131
OP94550-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	88	%	69-134
OP94550-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	85	%	65-140
OP94550-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	101	%	69-127

* Sample used for QC is not from job FC1310

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94550-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	112	%	53-142
OP94550-MS	754-91-6	PFOSA	MS	REC	93	%	67-137
OP94550-MS	31506-32-8	MeFOSA	MS	REC	107	%	68-141
OP94550-MS	2355-31-9	MeFOSAA	MS	REC	98	%	65-136
OP94550-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP94550-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	98	%	63-143
OP94550-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	105	%	64-140
OP94550-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	106	%	67-138
OP94550-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	107	%	73-129
OP94550-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	4	%	30
OP94550-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	95	%	72-129
OP94550-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP94550-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	99	%	72-129
OP94550-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP94550-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	102	%	72-130
OP94550-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	0	%	30
OP94550-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	97	%	71-133
OP94550-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP94550-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	99	%	69-130
OP94550-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP94550-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	103	%	71-129
OP94550-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP94550-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	97	%	69-133
OP94550-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	0	%	30
OP94550-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	105	%	72-134
OP94550-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP94550-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	72	%	65-144
OP94550-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	13	%	30
OP94550-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	93	%	71-132
OP94550-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	4	%	30
OP94550-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	100	%	72-130
OP94550-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP94550-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	93	%	71-127
OP94550-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP94550-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	100	%	68-131
OP94550-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	5	%	30
OP94550-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	88	%	69-134
OP94550-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	1	%	30
OP94550-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	87	%	65-140
OP94550-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	3	%	30
OP94550-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	108	%	69-127
OP94550-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	6	%	30
OP94550-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	118	%	53-142
OP94550-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	6	%	30
OP94550-MSD	754-91-6	PFOSA	MSD	REC	101	%	67-137

* Sample used for QC is not from job FC1310

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94550-MSD	754-91-6	PFOSA	MSD	RPD	9	%	30
OP94550-MSD	31506-32-8	MeFOSA	MSD	REC	88	%	68-141
OP94550-MSD	31506-32-8	MeFOSA	MSD	RPD	20	%	30
OP94550-MSD	2355-31-9	MeFOSAA	MSD	REC	97	%	65-136
OP94550-MSD	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP94550-MSD	2991-50-6	EtFOSAA	MSD	REC	100	%	61-135
OP94550-MSD	2991-50-6	EtFOSAA	MSD	RPD	7	%	30
OP94550-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	99	%	63-143
OP94550-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP94550-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	108	%	64-140
OP94550-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP94550-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	102	%	67-138
OP94550-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP94557	EPA 537M QSM5.3 B-15						
OP94557-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	119	%	73-129
OP94557-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	109	%	73-129
OP94557-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	100	%	72-129
OP94557-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	106	%	72-129
OP94557-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	113	%	72-129
OP94557-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	105	%	72-129
OP94557-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	105	%	72-130
OP94557-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	112	%	72-130
OP94557-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	109	%	71-133
OP94557-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	102	%	71-133
OP94557-BS	375-95-1	Perfluorononanoic acid	BSP	REC	108	%	69-130
OP94557-BS	375-95-1	Perfluorononanoic acid	BSP	REC	101	%	69-130
OP94557-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	110	%	71-129
OP94557-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	106	%	71-129
OP94557-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	110	%	69-133
OP94557-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	102	%	69-133
OP94557-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	119	%	72-134
OP94557-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	108	%	72-134
OP94557-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	109	%	65-144
OP94557-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	99	%	65-144
OP94557-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	112	%	71-132
OP94557-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	106	%	71-132
OP94557-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	111	%	72-130
OP94557-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	106	%	72-130
OP94557-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	111	%	71-127
OP94557-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	95	%	71-127
OP94557-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	108	%	68-131
OP94557-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	113	%	68-131
OP94557-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	123	%	69-134

* Sample used for QC is not from job FC1310

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94557-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	104	%	69-134
OP94557-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	106	%	65-140
OP94557-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	121	%	65-140
OP94557-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	117	%	69-127
OP94557-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	109	%	69-127
OP94557-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	107	%	53-142
OP94557-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	114	%	53-142
OP94557-BS	754-91-6	PFOSA	BSP	REC	101	%	67-137
OP94557-BS	754-91-6	PFOSA	BSP	REC	116	%	67-137
OP94557-BS	31506-32-8	MeFOSA	BSP	REC	104	%	68-141
OP94557-BS	31506-32-8	MeFOSA	BSP	REC	108	%	68-141
OP94557-BS	2355-31-9	MeFOSAA	BSP	REC	113	%	65-136
OP94557-BS	2355-31-9	MeFOSAA	BSP	REC	98	%	65-136
OP94557-BS	2991-50-6	EtFOSAA	BSP	REC	108	%	61-135
OP94557-BS	2991-50-6	EtFOSAA	BSP	REC	101	%	61-135
OP94557-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	104	%	63-143
OP94557-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	114	%	63-143
OP94557-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	100	%	64-140
OP94557-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	108	%	64-140
OP94557-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	117	%	67-138
OP94557-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	108	%	67-138
OP94557-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	129	%	73-129
OP94557-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	110	%	72-129
OP94557-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	119	%	72-129
OP94557-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	120	%	72-130
OP94557-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	118	%	71-133
OP94557-MS*	375-95-1	Perfluorononanoic acid	MS	REC	115	%	69-130
OP94557-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	116	%	71-129
OP94557-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	116	%	69-133
OP94557-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	124	%	72-134
OP94557-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	108	%	65-144
OP94557-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	108	%	71-132
OP94557-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	118	%	72-130
OP94557-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	115	%	71-127
OP94557-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	123	%	68-131
OP94557-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	126	%	69-134
OP94557-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	123	%	65-140
OP94557-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	110	%	69-127
OP94557-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	103	%	53-142
OP94557-MS*	754-91-6	PFOSA	MS	REC	142	%	67-137
OP94557-MS*	31506-32-8	MeFOSA	MS	REC	103	%	68-141
OP94557-MS*	2355-31-9	MeFOSAA	MS	REC	116	%	65-136
OP94557-MS*	2991-50-6	EtFOSAA	MS	REC	115	%	61-135
OP94557-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	119	%	63-143
OP94557-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	106	%	64-140

* Sample used for QC is not from job FC1310

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94557-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	122	%	67-138
OP94557-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	116	%	73-129
OP94557-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	7	%	30
OP94557-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	100	%	72-129
OP94557-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	6	%	30
OP94557-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	108	%	72-129
OP94557-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	6	%	30
OP94557-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	107	%	72-130
OP94557-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	7	%	30
OP94557-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	104	%	71-133
OP94557-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	8	%	30
OP94557-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	104	%	69-130
OP94557-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	6	%	30
OP94557-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	104	%	71-129
OP94557-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	7	%	30
OP94557-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	105	%	69-133
OP94557-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	6	%	30
OP94557-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	112	%	72-134
OP94557-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	6	%	30
OP94557-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	100	%	65-144
OP94557-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP94557-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	101	%	71-132
OP94557-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP94557-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	107	%	72-130
OP94557-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	5	%	30
OP94557-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	108	%	71-127
OP94557-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP94557-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	105	%	68-131
OP94557-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	11	%	30
OP94557-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	113	%	69-134
OP94557-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	7	%	30
OP94557-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	107	%	65-140
OP94557-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	8	%	30
OP94557-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	105	%	69-127
OP94557-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	1	%	30
OP94557-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	98	%	53-142
OP94557-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	0	%	30
OP94557-MSD*	754-91-6	PFOSA	MSD	REC	128	%	67-137
OP94557-MSD*	754-91-6	PFOSA	MSD	RPD	6	%	30
OP94557-MSD*	31506-32-8	MeFOSA	MSD	REC	86	%	68-141
OP94557-MSD*	31506-32-8	MeFOSA	MSD	RPD	14	%	30
OP94557-MSD*	2355-31-9	MeFOSAA	MSD	REC	109	%	65-136
OP94557-MSD*	2355-31-9	MeFOSAA	MSD	RPD	3	%	30
OP94557-MSD*	2991-50-6	EtFOSAA	MSD	REC	100	%	61-135
OP94557-MSD*	2991-50-6	EtFOSAA	MSD	RPD	10	%	30

* Sample used for QC is not from job FC1310

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1310
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/12/22 thru 12/13/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94557-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	110	%	63-143
OP94557-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP94557-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	97	%	64-140
OP94557-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30
OP94557-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	112	%	67-138
OP94557-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30
OP94893	EPA 537M QSM5.3 B-15						
OP94893-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	108	%	73-129
OP94893-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	72-129
OP94893-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP94893-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	103	%	72-130
OP94893-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	93	%	71-127
OP94893-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137

* Sample used for QC is not from job FC1310

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q556-IBLK	4Q38646.D	1	01/04/23	AL	n/a	n/a	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-22, FC1310-23, FC1310-24, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q556-IBLK	4Q38646.D	1	01/04/23	AL	n/a	n/a	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-22, FC1310-23, FC1310-24, FC1310-27

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	111%	50-150%
	d3-MeFOSA	117%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	127%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	129%	50-150%
	13C5-PFHxA	129%	50-150%
	13C4-PFHpA	132%	50-150%
	13C8-PFOA	132%	50-150%
	13C9-PFNA	130%	50-150%
	13C6-PFDA	143%	50-150%
	13C7-PFUnDA	145%	50-150%
	13C2-PFDoDA	148%	50-150%
	13C2-PFTeDA	139%	50-150%
	13C3-PFBS	126%	50-150%
	13C3-PFHxS	125%	50-150%
	13C8-PFOS	124%	50-150%
	13C8-FOSA	131%	50-150%
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	139%	50-150%
	d5-EtFOSAA	138%	50-150%
	13C2-4:2FTS	117%	50-150%
	13C2-6:2FTS	124%	50-150%
	13C2-8:2FTS	126%	50-150%
	13C3-HFPO-DA	134%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q559-IBLK	4Q38872.D	1	01/07/23	AL	n/a	n/a	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	131%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q559-IBLK	4Q38872.D	1	01/07/23	AL	n/a	n/a	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	133%	50-150%
	13C5-PFHxA	134%	50-150%
	13C4-PFHpA	135%	50-150%
	13C8-PFOA	136%	50-150%
	13C9-PFNA	134%	50-150%
	13C6-PFDA	133%	50-150%
	13C7-PFUnDA	134%	50-150%
	13C2-PFDoDA	130%	50-150%
	13C2-PFTeDA	131%	50-150%
	13C3-PFBS	137%	50-150%
	13C3-PFHxS	137%	50-150%
	13C8-PFOS	136%	50-150%
	13C8-FOSA	139%	50-150%
	d3-MeFOSAA	138%	50-150%
	d5-EtFOSAA	136%	50-150%
	13C2-4:2FTS	125%	50-150%
	13C2-6:2FTS	129%	50-150%
	13C2-8:2FTS	125%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	110%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	ID Standard Recoveries		Limits
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	113%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	117%	50-150%
	d5-EtFOSAA	118%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	103%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q562-IBLK	4Q39127.D	1	01/12/23	AL	n/a	n/a	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-26, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	90%	50-150%

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MB	3Q70128.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	94%	50-150%

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MB	3Q70128.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	74%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	84%	50-150%

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MB	4Q38659.D	1	01/04/23	AL	12/16/22	OP94557	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	87%	50-150%

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MB	4Q38659.D	1	01/04/23	AL	12/16/22	OP94557	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSA	6%* [a]	50-150%
	d3-MeFOSAA	120%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	89%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-MB	4Q38879.D	1	01/07/23	AL	12/16/22	OP94550	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-MB	4Q38879.D	1	01/07/23	AL	12/16/22	OP94550	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	91%	50-150%
	13C2-PFTeDA	75%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	75%	50-150%
	d3-MeFOSA	12%* [a]	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	89%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-MB	4Q39134.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-26, FC1310-27

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	0.0024	0.0080	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	91%	50-150%
	d3-MeFOSA	52%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	81%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q960-IBLK	3Q70083.D	1	12/22/22	JL	n/a	n/a	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP94557-BS, OP94557-MS, OP94557-MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%

Instrument Blank

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q960-IBLK	3Q70083.D	1	12/22/22	JL	n/a	n/a	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP94557-BS, OP94557-MS, OP94557-MSD

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	90%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	86%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	107%	50-150%

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-BS	3Q70127.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0949	119	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0845	106	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0905	113	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0897	112	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0871	109	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0865	108	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0883	110	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0878	110	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0953	119	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0874	109	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0893	112	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0888	111	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0884	111	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0906	113	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0986	123	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0965	121	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0936	117	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0855	107	53-142
754-91-6	PFOSA	0.08	0.0926	116	67-137
31506-32-8	MeFOSA	0.08	0.0863	108	68-141
2355-31-9	MeFOSAA	0.08	0.0906	113	65-136
2991-50-6	EtFOSAA	0.08	0.0860	108	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0913	114	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0796	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0937	117	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0986	123	60-140
919005-14-4	ADONA	0.08	0.0884	111	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0852	107	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0899	112	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	99%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-BS	3Q70127.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	79%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSAA	113%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-BS	4Q38658.D	1	01/04/23	AL	12/16/22	OP94557	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0869	109	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0800	100	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0842	105	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0838	105	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0815	102	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0807	101	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0844	106	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0813	102	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0860	108	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0790	99	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0849	106	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0851	106	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0762	95	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0861	108	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0833	104	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0849	106	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0870	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0908	114	53-142
754-91-6	PFOSA	0.08	0.0810	101	67-137
31506-32-8	MeFOSA	0.08	0.0832	104	68-141
2355-31-9	MeFOSAA	0.08	0.0787	98	65-136
2991-50-6	EtFOSAA	0.08	0.0811	101	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0828	104	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0862	108	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0865	108	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0828	104	60-140
919005-14-4	ADONA	0.08	0.0829	104	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0852	107	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0925	116	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-BS	4Q38658.D	1	01/04/23	AL	12/16/22	OP94557	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	84%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	85%	50-150%
	d3-MeFOSA	21%* [a]	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	94%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-BS	4Q38878.D	1	01/07/23	AL	12/16/22	OP94550	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0816	102	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0740	93	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0785	98	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0776	97	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0781	98	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0765	96	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0767	96	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0750	94	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0808	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0637	80	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0767	96	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0787	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0696	87	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0790	99	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0768	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0789	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0839	105	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0814	102	53-142
754-91-6	PFOSA	0.08	0.0741	93	67-137
31506-32-8	MeFOSA	0.08	0.0728	91	68-141
2355-31-9	MeFOSAA	0.08	0.0729	91	65-136
2991-50-6	EtFOSAA	0.08	0.0784	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0782	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0835	104	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0818	102	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0793	99	60-140
919005-14-4	ADONA	0.08	0.0795	99	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0758	95	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0764	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-BS	4Q38878.D	1	01/07/23	AL	12/16/22	OP94550	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	86%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	76%	50-150%
	d3-MeFOSA	14%* [a]	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	92%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-BS	4Q39133.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-26, FC1310-27

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0864	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0766	96	72-129
376-06-7	Perfluorotetradecanoic acid	0.08	0.0799	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0824	103	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0741	93	71-127
754-91-6	PFOSA	0.08	0.0765	96	67-137

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSA	65%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MS	3Q70139.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960
OP94557-MSD	3Q70140.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960
FC1304-1	3Q70138.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	Compound	FC1304-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.016	U	0.16	0.206	129	0.167	0.193	116	7	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0024	J	0.16	0.179	110	0.167	0.169	100	6	72-129/30
307-24-4	Perfluorohexanoic acid	0.0030	J	0.16	0.194	119	0.167	0.183	108	6	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0027	J	0.16	0.195	120	0.167	0.181	107	7	72-130/30
335-67-1	Perfluorooctanoic acid	0.0094		0.16	0.198	118	0.167	0.182	104	8	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.184	115	0.167	0.173	104	6	69-130/30
335-76-2	Perfluorodecanoic acid	0.0029	J	0.16	0.188	116	0.167	0.176	104	7	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.186	116	0.167	0.175	105	6	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.198	124	0.167	0.186	112	6	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.173	108	0.167	0.166	100	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	0.16	0.173	108	0.167	0.169	101	2	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0106		0.16	0.199	118	0.167	0.189	107	5	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080	U	0.16	0.184	115	0.167	0.180	108	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0045	J	0.16	0.201	123	0.167	0.180	105	11	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.201	126	0.167	0.188	113	7	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0301		0.16	0.227	123	0.167	0.209	107	8	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.176	110	0.167	0.175	105	1	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.164	103	0.167	0.164	98	0	53-142/30
754-91-6	PFOSA	0.0092		0.16	0.236	142*	0.167	0.222	128	6	67-137/30
31506-32-8	MeFOSA	0.016	U	0.16	0.165	103	0.167	0.143	86	14	68-141/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.186	116	0.167	0.181	109	3	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.184	115	0.167	0.166	100	10	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.191	119	0.167	0.183	110	4	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.169	106	0.167	0.161	97	5	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.195	122	0.167	0.186	112	5	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.208	130	0.167	0.200	120	4	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.186	116	0.167	0.167	100	11	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.182	114	0.167	0.169	101	7	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.171	107	0.167	0.171	103	0	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1304-1	Limits
	13C4-PFBA	50%	52%	57%	50-150%
	13C5-PFPeA	51%	52%	57%	50-150%
	13C5-PFHxA	58%	60%	65%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94557-MS	3Q70139.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960
OP94557-MSD	3Q70140.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960
FC1304-1	3Q70138.D	1	12/23/22	JL	12/16/22	OP94557	S3Q960

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-21, FC1310-22, FC1310-23, FC1310-24, FC1310-25, FC1310-26, FC1310-27

CAS No.	ID Standard Recoveries	MS	MSD	FC1304-1	Limits
	13C4-PFHpA	58%	62%	67%	50-150%
	13C8-PFOA	59%	63%	68%	50-150%
	13C9-PFNA	58%	61%	63%	50-150%
	13C6-PFDA	58%	61%	61%	50-150%
	13C7-PFUnDA	55%	58%	56%	50-150%
	13C2-PFDoDA	52%	55%	52%	50-150%
	13C2-PFTeDA	42%* [b]	46%* [b]	44%* [a]	50-150%
	13C3-PFBS	58%	60%	66%	50-150%
	13C3-PFHxS	57%	63%	65%	50-150%
	13C8-PFOS	56%	59%	57%	50-150%
	13C8-FOSA	56%	57%	59%	50-150%
	d3-MeFOSAA	67%	69%	67%	50-150%
	d5-EtFOSAA	66%	73%	68%	50-150%
	13C2-4:2FTS	59%	62%	64%	50-150%
	13C2-6:2FTS	60%	64%	65%	50-150%
	13C2-8:2FTS	60%	63%	59%	50-150%
	13C3-HFPO-DA	54%	55%		50-150%

(a) Outside control limits. Confirmed by MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-MS	4Q38983.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560
OP94550-MSD	4Q38985.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560
FC1310-20	4Q38903.D	1	01/08/23	AL	12/16/22	OP94550	S4Q559
FC1310-20 [a]	4Q38984.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	Compound	FC1310-20 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.038 U [b]		0.2	0.204	102	0.2	0.213	107	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.019 U [b]		0.2	0.185	93	0.2	0.190	95	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0038 U		0.2	0.197	99	0.2	0.198	99	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0038 U		0.2	0.203	102	0.2	0.203	102	0	72-130/30
335-67-1	Perfluorooctanoic acid	0.0038 U		0.2	0.193	97	0.2	0.194	97	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0038 U		0.2	0.194	97	0.2	0.197	99	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0038 U		0.2	0.202	101	0.2	0.205	103	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0038 U		0.2	0.194	97	0.2	0.194	97	0	69-133/30
307-55-1	Perfluorododecanoic acid	0.0038 U		0.2	0.205	103	0.2	0.210	105	2	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0038 U		0.2	0.164	82	0.2	0.144	72	13	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.019 U [b]		0.2	0.178	89	0.2	0.185	93	4	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.019 U [b]		0.2	0.199	100	0.2	0.199	100	0	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [b]		0.2	0.180	90	0.2	0.185	93	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0125		0.2	0.202	95	0.2	0.212	100	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U		0.2	0.176	88	0.2	0.175	88	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0234		0.2	0.193	85	0.2	0.198	87	3	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0038 U		0.2	0.202	101	0.2	0.215	108	6	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0038 U		0.2	0.223	112	0.2	0.236	118	6	53-142/30
754-91-6	PFOSA	0.019 U [b]		0.2	0.185	93	0.2	0.202	101	9	67-137/30
31506-32-8	MeFOSA	0.038 U [b]		0.2	0.213	107	0.2	0.175	88	20	68-141/30
2355-31-9	MeFOSAA	0.0077 U		0.2	0.195	98	0.2	0.194	97	1	65-136/30
2991-50-6	EtFOSAA	0.0077 U		0.2	0.187	94	0.2	0.200	100	7	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077 U		0.2	0.196	98	0.2	0.198	99	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077 U		0.2	0.210	105	0.2	0.215	108	2	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077 U		0.2	0.212	106	0.2	0.203	102	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0077 U		0.2	0.202	101	0.2	0.210	105	4	60-140/30
919005-14-4	ADONA	0.0077 U		0.2	0.186	93	0.2	0.176	88	6	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0077 U		0.2	0.218	109	0.2	0.252	126	14	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0077 U		0.2	0.192	96	0.2	0.222	111	14	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1310-20	FC1310-20	Limits
	13C4-PFBA	55%	45%* [c]	39%* [c]	51%	50-150%
	13C5-PFPeA	54%	44%* [c]	35%* [c]	50%	50-150%
	13C5-PFHxA	59%	50%	54%	61%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1310
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94550-MS	4Q38983.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560
OP94550-MSD	4Q38985.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560
FC1310-20	4Q38903.D	1	01/08/23	AL	12/16/22	OP94550	S4Q559
FC1310-20 [a]	4Q38984.D	5	01/10/23	AL	12/16/22	OP94550	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1310-1, FC1310-2, FC1310-3, FC1310-4, FC1310-5, FC1310-6, FC1310-7, FC1310-8, FC1310-9, FC1310-10, FC1310-11, FC1310-12, FC1310-13, FC1310-14, FC1310-15, FC1310-16, FC1310-17, FC1310-18, FC1310-19, FC1310-20

CAS No.	ID Standard Recoveries	MS	MSD	FC1310-20	FC1310-20	Limits
	13C4-PFHpA	59%	50%	58%	61%	50-150%
	13C8-PFOA	61%	52%	65%	64%	50-150%
	13C9-PFNA	61%	51%	63%	67%	50-150%
	13C6-PFDA	59%	49%* [c]	61%	63%	50-150%
	13C7-PFUnDA	61%	52%	50%	56%	50-150%
	13C2-PFDoDA	56%	46%* [c]	50%	51%	50-150%
	13C2-PFTeDA	54%	31%* [c]	46%* [c]	50%	50-150%
	13C3-PFBS	60%	54%	37%* [c]	54%	50-150%
	13C3-PFHxS	63%	57%	63%	68%	50-150%
	13C8-PFOS	68%	63%	63%	63%	50-150%
	13C8-FOSA	65%	37%* [c]	31%* [c]	35%* [c]	50-150%
	d3-MeFOSA	32%* [c]	10%* [c]	3%* [c]	13%* [c]	50-150%
	d3-MeFOSAA	77%	65%	79%	74%	50-150%
	d5-EtFOSAA	73%	58%	62%	67%	50-150%
	13C2-4:2FTS	62%	54%	53%	60%	50-150%
	13C2-6:2FTS	61%	57%	69%	64%	50-150%
	13C2-8:2FTS	62%	60%	66%	64%	50-150%
	13C3-HFPO-DA	56%	44%* [c]	57%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC1363

Sampling Dates: 12/14/22 - 12/15/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: **100**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

January 23, 2023

Ms. Teresa Amentt Jennings
AECOM
5438 Wade Park Blvd.
Raleigh, NC 27607

RE: SGS North America Inc. - Orlando job FC1363 Reissue

Dear Ms. Amentt Jennings,

The final report for job number FC1363 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The data qualifier has been revised on -21.

SGS North America Inc. - Orlando apologies for any inconvenience this may have caused. Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Florida ♦ 4405 Vineland Road ♦ Suite C-15 ♦ Orlando, FL 32811 ♦ tel: 407 425-6700 ♦ fax: 407 425-0707

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC1363

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1363-1	12/14/22	08:10	DS	12/15/22	AQ	Ground Water	A3RB-DPT0024-004.0-20221214
FC1363-2	12/14/22	08:42	DS	12/15/22	AQ	Ground Water	A3RB-DPT0024-010.0-20221214
FC1363-3	12/14/22	09:23	DS	12/15/22	AQ	Ground Water	A3RB-DPT0024-025.0-20221214
FC1363-4	12/14/22	09:45	DS	12/15/22	AQ	Ground Water	A3RB-DPT0024-042.0-20221214
FC1363-5	12/14/22	10:11	DS	12/15/22	AQ	Ground Water	A3RB-DPT0024-057.0-20221214
FC1363-6	12/14/22	11:25	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-004.0-20221214
FC1363-7	12/14/22	11:48	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-010.0-20221214
FC1363-8	12/14/22	12:55	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-018.0-20221214
FC1363-9	12/14/22	13:19	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-025.0-20221214
FC1363-10	12/14/22	13:56	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-042.0-20221214
FC1363-11	12/14/22	14:34	DS	12/15/22	AQ	Ground Water	A3RB-DPT0025-057.0-20221214
FC1363-11D	12/14/22	14:34	DS	12/15/22	AQ	Water Dup/MSD	A3RB-DPT0025-057.0-20221214
FC1363-11S	12/14/22	14:34	DS	12/15/22	AQ	Water Matrix Spike	A3RB-DPT0025-057.0-20221214

Sample Summary
(continued)

AECOM, Inc

Job No: FC1363

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC1363-12	12/15/22	07:59	DS	12/15/22	AQ	Ground Water	A3RB-DPT0026-004.0-20221215
FC1363-13	12/15/22	08:25	DS	12/15/22	AQ	Ground Water	A3RB-DPT0026-010.0-20221215
FC1363-14	12/15/22	08:49	DS	12/15/22	AQ	Ground Water	A3RB-DPT0026-025.0-20221215
FC1363-15	12/15/22	09:22	DS	12/15/22	AQ	Ground Water	A3RB-DPT0026-042.0-20221215
FC1363-16	12/15/22	09:55	DS	12/15/22	AQ	Ground Water	A3RB-DPT0026-057.0-20221215
FC1363-17	12/15/22	11:30	DS	12/15/22	AQ	Ground Water	A3RB-DPT0027-004.0-20221215
FC1363-18	12/15/22	12:02	DS	12/15/22	AQ	Ground Water	A3RB-DPT0027-010.0-20221215
FC1363-19	12/14/22	11:00	DS	12/15/22	AQ	Ground Water	A3RB-FD-20221214-03
FC1363-20	12/14/22	10:30	DS	12/15/22	AQ	Ground Water	A3RB-FD-20221214-04
FC1363-21	12/14/22	14:45	DS	12/15/22	AQ	Equipment Blank	A3RB-EB-20221214-02
FC1363-22	12/14/22	14:55	DS	12/15/22	AQ	Field Blank Water	A3RB-FB-20221214-03

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC1363

Site: NASA KSC, PFAS SA & Mitigation **Report Revised Date:** 1/23/2023 1:46:48 PM

On 12/15/2022, 21 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1363 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94590

Sample(s) FC1363-11MS, FC1363-11MSD were used as the QC samples indicated.

Sample(s) FC1363-17 have compounds reported with "E" qualifiers indicating estimated value exceeding calibration range.

Matrix Spike Recovery(s) for MeFOSA are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for MeFOSA are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC1363-1, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-2, FC1363-20, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9 have surrogates outside control limits.

OP94590-BS for d3-MeFOSA: Outside control limits.

OP94590-MB for d3-MeFOSA: Outside control limits.

FC1363-1 for 13C2-PFTeDA: Outside control limits.

FC1363-1 for 13C8-FOSA: Outside control limits.

FC1363-1 for d3-MeFOSA: Outside control limits.

FC1363-1 for MeFOSA: Associated ID Standard outside control limits.

FC1363-1: Dilution required (ID recovery standard failure).

FC1363-2 for 13C2-PFDoDA: Outside control limits.

FC1363-2 for 13C2-PFTeDA: Outside control limits.

FC1363-2 for 13C3-PFBS: Outside control limits.

FC1363-2 for 13C4-PFBA: Outside control limits.

FC1363-2 for 13C5-PFPeA: Outside control limits.

FC1363-2 for 13C8-FOSA: Outside control limits.

FC1363-2 for d3-MeFOSA: Outside control limits.

FC1363-2 for MeFOSA: Associated ID Standard outside control limits.

FC1363-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1363-2: Dilution required (ID recovery standard failure).

FC1363-3 for 13C2-PFDoDA: Outside control limits.

FC1363-3 for 13C2-PFTeDA: Outside control limits.

FC1363-3 for 13C3-PFBS: Outside control limits.

FC1363-3 for 13C5-PFPeA: Outside control limits.

FC1363-3 for 13C8-FOSA: Outside control limits.

FC1363-3 for d3-MeFOSA: Outside control limits.

FC1363-3 for MeFOSA: Associated ID Standard outside control limits.

FC1363-3: Dilution required (ID recovery standard failure).

FC1363-4 for 13C8-FOSA: Outside control limits.

FC1363-4 for d3-MeFOSA: Outside control limits.

FC1363-4 for MeFOSA: Associated ID Standard outside control limits.

FC1363-4: Dilution required (ID recovery standard failure).

FC1363-5 for 13C3-PFBS: Outside control limits.

FC1363-5 for 13C5-PFPeA: Outside control limits.

FC1363-5 for d3-MeFOSA: Outside control limits.

FC1363-5 for MeFOSA: Associated ID Standard outside control limits.

FC1363-5: Dilution required (ID recovery standard failure).

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94590

FC1363-6 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1363-6 for 13C2-PFDoDA: Outside control limits.
FC1363-6 for 13C2-PFTeDA: Outside control limits.
FC1363-6 for 13C7-PFUnDA: Outside control limits.
FC1363-6 for d3-MeFOSA: Outside control limits.
FC1363-6: Dilution required (ID recovery standard failure).
FC1363-7 for 13C2-PFTeDA: Outside control limits.
FC1363-7 for 13C5-PFPeA: Outside control limits.
FC1363-7 for 13C8-FOSA: Outside control limits.
FC1363-7 for d3-MeFOSA: Outside control limits.
FC1363-7 for MeFOSA: Associated ID Standard outside control limits.
FC1363-7: Dilution required (ID recovery standard failure).
FC1363-8 for 13C5-PFPeA: Outside control limits.
FC1363-8 for 13C8-FOSA: Outside control limits.
FC1363-8 for d3-MeFOSA: Outside control limits.
FC1363-8 for MeFOSA: Associated ID Standard outside control limits.
FC1363-8: Dilution required (ID recovery standard failure).
FC1363-9 for 13C2-PFTeDA: Outside control limits.
FC1363-9 for 13C5-PFPeA: Outside control limits.
FC1363-9 for d3-MeFOSA: Outside control limits.
FC1363-9 for MeFOSA: Associated ID Standard outside control limits.
FC1363-9: Dilution required (ID recovery standard failure).
FC1363-10 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1363-10 for 13C2-PFDoDA: Outside control limits.
FC1363-10 for 13C3-PFBS: Outside control limits.
FC1363-10 for 13C5-PFPeA: Outside control limits.
FC1363-10 for 13C7-PFUnDA: Outside control limits.
FC1363-10 for d3-MeFOSA: Outside control limits.
FC1363-10 for d3-MeFOSAA: Outside control limits.
FC1363-10 for d5-EtFOSAA: Outside control limits.
FC1363-10: Dilution required (ID recovery standard failure).
FC1363-11 for 13C3-PFBS: Outside control limits.
FC1363-11 for 13C5-PFPeA: Outside control limits.
FC1363-11 for d3-MeFOSA: Outside control limits.
FC1363-11 for MeFOSA: Associated ID Standard outside control limits.
FC1363-11: Dilution required (ID recovery standard failure).
FC1363-12 for 13C8-FOSA: Outside control limits.
FC1363-12 for d3-MeFOSA: Outside control limits.
FC1363-12 for MeFOSA: Associated ID Standard outside control limits.
FC1363-12: Dilution required (ID recovery standard failure).
FC1363-13 for 13C2-PFTeDA: Outside control limits.
FC1363-13 for d3-MeFOSA: Outside control limits.
FC1363-13 for MeFOSA: Associated ID Standard outside control limits.
FC1363-13: Dilution required (ID recovery standard failure).
FC1363-14 for 13C5-PFPeA: Outside control limits.
FC1363-14 for d3-MeFOSA: Outside control limits.
FC1363-14 for MeFOSA: Associated ID Standard outside control limits.
FC1363-14: Dilution required (ID recovery standard failure).
FC1363-15 for 13C8-FOSA: Outside control limits.
FC1363-15 for d3-MeFOSA: Outside control limits.
FC1363-15 for MeFOSA: Associated ID Standard outside control limits.
FC1363-15: Dilution required (ID recovery standard failure).
FC1363-16 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94590

FC1363-16 for 13C2-PFDoDA: Outside control limits.
FC1363-16 for 13C2-PFTeDA: Outside control limits.
FC1363-16 for 13C3-PFBS: Outside control limits.
FC1363-16 for 13C5-PFPeA: Outside control limits.
FC1363-16 for 13C7-PFUnDA: Outside control limits.
FC1363-16 for d3-MeFOSA: Outside control limits.
FC1363-16 for d3-MeFOSAA: Outside control limits.
FC1363-16 for d5-EtFOSAA: Outside control limits.
FC1363-16: Dilution required (ID recovery standard failure).
FC1363-17 for 13C3-PFBS: Outside control limits.
FC1363-17 for 13C4-PFBA: Outside control limits.
FC1363-17 for 13C5-PFPeA: Outside control limits.
FC1363-17 for 13C8-FOSA: Outside control limits.
FC1363-17 for 13C8-FOSA: Outside control limits.
FC1363-17 for d3-MeFOSA: Outside control limits.
FC1363-17 for d3-MeFOSA: Outside control limits.
FC1363-17 for MeFOSA: Associated ID Standard outside control limits.
FC1363-17 for PFOSA: Associated ID Standard outside control limits.
FC1363-18 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1363-18 for 13C2-PFDoDA: Outside control limits.
FC1363-18 for 13C2-PFDoDA: Outside control limits.
FC1363-18 for 13C2-PFTeDA: Outside control limits.
FC1363-18 for 13C7-PFUnDA: Outside control limits.
FC1363-18 for d3-MeFOSA: Outside control limits.
FC1363-18 for d3-MeFOSA: Outside control limits.
FC1363-18 for d5-EtFOSAA: Outside control limits.
FC1363-18 for EtFOSAA: Associated ID Standard outside control limits.
FC1363-18 for MeFOSA: Associated ID Standard outside control limits.
FC1363-18 for Perfluorodecanesulfonic acid: Associated ID Standard outside control limits.
FC1363-18 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC1363-18 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC1363-18 for Perfluoroundecanoic acid: Associated ID Standard outside control limits.
FC1363-19 for 13C5-PFPeA: Outside control limits.
FC1363-19 for 13C8-FOSA: Outside control limits.
FC1363-19 for d3-MeFOSA: Outside control limits.
FC1363-19 for MeFOSA: Associated ID Standard outside control limits.
FC1363-19: Dilution required (ID recovery standard failure).
FC1363-20 for 13C3-PFBS: Outside control limits.
FC1363-20 for 13C4-PFBA: Outside control limits.
FC1363-20 for 13C5-PFPeA: Outside control limits.
FC1363-20 for d3-MeFOSA: Outside control limits.
FC1363-20 for d3-MeFOSA: Outside control limits.
FC1363-20 for MeFOSA: Associated ID Standard outside control limits.
FC1363-20 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC1363-20 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1363-20 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC1363-20 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP94603

Sample(s) FC1363-21 have surrogates outside control limits.
FC1363-21: Confirmation run.

Matrix: AQ **Batch ID:** OP94893

Sample(s) FC1363-21 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative revised January 23, 2023 by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1363-1	**A3RB-DPT0024-004.0-20221214**					
Perfluorobutanoic acid		0.0051 J	0.020	0.010	ug/l	EPA 537M QSM5.3 B-15
FC1363-2	**A3RB-DPT0024-010.0-20221214**					
Perfluorobutanoic acid [a]		0.0042 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
FC1363-3	**A3RB-DPT0024-025.0-20221214**					
Perfluorooctanesulfonic acid		0.0056	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00063 J	0.0016	0.00080	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0055	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1363-4	**A3RB-DPT0024-042.0-20221214**					
No hits reported in this sample.						
FC1363-5	**A3RB-DPT0024-057.0-20221214**					
Perfluorooctanesulfonic acid		0.0037 J	0.0050	0.0025	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00071 J	0.0020	0.0010	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0032 J	0.0050	0.0025	ug/l	EPA 537M QSM5.3 B-15
FC1363-6	**A3RB-DPT0025-004.0-20221214**					
Perfluorobutanoic acid		0.0079	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0109	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0020 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1363-7	**A3RB-DPT0025-010.0-20221214**					
Perfluorobutanesulfonic acid		0.0030 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0024 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0109	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0065	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0040	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0015 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1363-8	**A3RB-DPT0025-018.0-20221214**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1363-9	**A3RB-DPT0025-025.0-20221214**					
Perfluorooctanesulfonic acid		0.0023 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00067 J	0.0016	0.00080	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0017 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC1363-10	**A3RB-DPT0025-042.0-20221214**					
Perfluorobutanoic acid		0.0040 J	0.010	0.0050	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0014 J	0.0050	0.0025	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0036 J	0.0050	0.0025	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0013 J	0.0020	0.0010	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0022 J	0.0050	0.0025	ug/l	EPA 537M QSM5.3 B-15
FC1363-11	**A3RB-DPT0025-057.0-20221214**					
No hits reported in this sample.						
FC1363-12	**A3RB-DPT0026-004.0-20221215**					
Perfluorobutanoic acid		0.0115	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0095	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0048	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0201	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0052	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0038	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
FC1363-13	**A3RB-DPT0026-010.0-20221215**					
Perfluorobutanoic acid		0.0031 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0024 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0018 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0088	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0016	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
FC1363-14	**A3RB-DPT0026-025.0-20221215**					
No hits reported in this sample.						
FC1363-15	**A3RB-DPT0026-042.0-20221215**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1363-16	**A3RB-DPT0026-057.0-20221215**					
Perfluorobutanoic acid		0.0037 J	0.011	0.0053	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0014 J	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033 J	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0013 J	0.0021	0.0011	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0020 J	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15
FC1363-17	**A3RB-DPT0027-004.0-20221215**					
Perfluorobutanoic acid		0.0188 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0063 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0148	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0035 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0079	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.00099 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0121 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0145 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.285	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0092	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.745 E	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.200 E	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.479 E	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1363-18	**A3RB-DPT0027-010.0-20221215**					
Perfluorobutanoic acid		0.0073 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0064	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0203	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0041 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0075	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0238	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0374	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.487	0.022	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0120	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.812	0.022	0.011	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.158	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.658	0.022	0.011	ug/l	EPA 537M QSM5.3 B-15
FC1363-19	**A3RB-FD-20221214-03**					
Perfluorobutanesulfonic acid		0.0030 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0106	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0063	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
PFOS (Branched Isomers)		0.0039	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0014 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1363-20	**A3RB-FD-20221214-04**					
Perfluorobutanoic acid [a]		0.0194	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0059	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0141	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0034 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0069	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0118	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0173	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.259	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0079	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.582	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.156	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.386	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC1363-21	**A3RB-EB-20221214-02**					
Perfluorobutanoic acid		0.0027 JB	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
FC1363-22	**A3RB-FB-20221214-03**					

No hits reported in this sample.

(a) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0024-004.0-20221214
Lab Sample ID: FC1363-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/14/22
Date Received: 12/15/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38911.D	1	01/08/23 02:11	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38989.D	5	01/10/23 03:13	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2	100 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0051	0.020	0.010	0.0050	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-24-4	Perfluorohexanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-67-1	Perfluorooctanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-95-1	Perfluorononanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-76-2	Perfluorodecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
307-55-1	Perfluorododecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.025 U [c]	0.050	0.025	0.013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.025 U [c]	0.050	0.025	0.013	ug/l	
31506-32-8	MeFOSA [b]	0.050 U [c]	0.10	0.050	0.025	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
2991-50-6	EtFOSAA	0.010 U	0.020	0.010	0.0050	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-004.0-20221214		
Lab Sample ID:	FC1363-1	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.020	0.010	0.0050	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.010 U	0.020	0.010	0.0050	ug/l	
919005-14-4	ADONA	0.010 U	0.020	0.010	0.0050	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.020	0.010	0.0050	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U	0.020	0.010	0.0050	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020 U	0.0040	0.0020	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0050 U	0.010	0.0050	0.0025	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	74%	50-150%
	13C5-PFPeA	55%	75%	50-150%
	13C5-PFHxA	73%	81%	50-150%
	13C4-PFHpA	81%	82%	50-150%
	13C8-PFOA	89%	86%	50-150%
	13C9-PFNA	89%	84%	50-150%
	13C6-PFDA	82%	82%	50-150%
	13C7-PFUnDA	71%	75%	50-150%
	13C2-PFDoDA	58%	55%	50-150%
	13C2-PFTeDA	21% [d]	23% [d]	50-150%
	13C3-PFBS	66%	88%	50-150%
	13C3-PFHxS	89%	92%	50-150%
	13C8-PFOS	92%	90%	50-150%
	13C8-FOSA	38% [d]	43% [d]	50-150%
	d3-MeFOSA	3% [d]	6% [d]	50-150%
	d3-MeFOSAA	75%	74%	50-150%
	d5-EtFOSAA	56%	65%	50-150%
	13C2-4:2FTS	75%	82%	50-150%
	13C2-6:2FTS	93%	84%	50-150%
	13C2-8:2FTS	89%	86%	50-150%
	13C3-HFPO-DA	75%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-004.0-20221214		
Lab Sample ID:	FC1363-1	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-010.0-20221214		
Lab Sample ID:	FC1363-2	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38912.D	1	01/08/23 02:26	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38990.D	5	01/10/23 03:29	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0042	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-010.0-20221214		
Lab Sample ID:	FC1363-2	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U [c]	0.037	0.019	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [d]	61%	50-150%
	13C5-PFPeA	41% [d]	62%	50-150%
	13C5-PFHxA	61%	77%	50-150%
	13C4-PFHpA	68%	80%	50-150%
	13C8-PFOA	82%	86%	50-150%
	13C9-PFNA	81%	85%	50-150%
	13C6-PFDA	73%	75%	50-150%
	13C7-PFUnDA	52%	63%	50-150%
	13C2-PFDoDA	25% [d]	57%	50-150%
	13C2-PFTeDA	43% [d]	58%	50-150%
	13C3-PFBS	45% [d]	68%	50-150%
	13C3-PFHxS	79%	82%	50-150%
	13C8-PFOS	73%	80%	50-150%
	13C8-FOSA	23% [d]	33% [d]	50-150%
	d3-MeFOSA	1% [d]	8% [d]	50-150%
	d3-MeFOSAA	92%	90%	50-150%
	d5-EtFOSAA	64%	76%	50-150%
	13C2-4:2FTS	60%	76%	50-150%
	13C2-6:2FTS	88%	85%	50-150%
	13C2-8:2FTS	80%	76%	50-150%
	13C3-HFPO-DA	65%	75%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-010.0-20221214		
Lab Sample ID:	FC1363-2	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-025.0-20221214		
Lab Sample ID:	FC1363-3	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38913.D	1	01/08/23 02:42	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38991.D	5	01/10/23 03:44	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0056	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.010 U [b]	0.020	0.010	0.0050	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-025.0-20221214		
Lab Sample ID:	FC1363-3	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.020 U [b]	0.040	0.020	0.010	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00063	0.0016	0.00080	0.00040	ug/l	J
	PFOS (Linear Isomer)	0.0055	0.0040	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	71%	50-150%
	13C5-PFPeA	45% [d]	66%	50-150%
	13C5-PFHxA	74%	83%	50-150%
	13C4-PFHpA	79%	84%	50-150%
	13C8-PFOA	90%	91%	50-150%
	13C9-PFNA	90%	92%	50-150%
	13C6-PFDA	84%	86%	50-150%
	13C7-PFUnDA	57%	71%	50-150%
	13C2-PFDoDA	25% [d]	58%	50-150%
	13C2-PFTeDA	44% [d]	57%	50-150%
	13C3-PFBS	44% [d]	70%	50-150%
	13C3-PFHxS	86%	93%	50-150%
	13C8-PFOS	88%	93%	50-150%
	13C8-FOSA	39% [d]	50%	50-150%
	d3-MeFOSA	2% [d]	11% [d]	50-150%
	d3-MeFOSAA	97%	101%	50-150%
	d5-EtFOSAA	65%	79%	50-150%
	13C2-4:2FTS	73%	84%	50-150%
	13C2-6:2FTS	95%	89%	50-150%
	13C2-8:2FTS	88%	87%	50-150%
	13C3-HFPO-DA	76%	80%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-025.0-20221214		
Lab Sample ID:	FC1363-3	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-042.0-20221214		
Lab Sample ID:	FC1363-4	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38914.D	1	01/08/23 02:57	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38992.D	5	01/10/23 04:00	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.010 U [c]	0.020	0.010	0.0050	ug/l	
31506-32-8	MeFOSA [b]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0024-042.0-20221214
Lab Sample ID: FC1363-4 **Date Sampled:** 12/14/22
Matrix: AQ - Ground Water **Date Received:** 12/15/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00080 U	0.0016	0.00080	0.00040	ug/l	
	PFOS (Linear Isomer)	0.0020 U	0.0040	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	74%	50-150%
	13C5-PFPeA	50%	72%	50-150%
	13C5-PFHxA	76%	85%	50-150%
	13C4-PFHpA	82%	85%	50-150%
	13C8-PFOA	90%	92%	50-150%
	13C9-PFNA	90%	93%	50-150%
	13C6-PFDA	84%	85%	50-150%
	13C7-PFUnDA	67%	79%	50-150%
	13C2-PFDoDA	66%	70%	50-150%
	13C2-PFTeDA	55%	69%	50-150%
	13C3-PFBS	54%	77%	50-150%
	13C3-PFHxS	87%	94%	50-150%
	13C8-PFOS	84%	92%	50-150%
	13C8-FOSA	23% [d]	37% [d]	50-150%
	d3-MeFOSA	1% [d]	6% [d]	50-150%
	d3-MeFOSAA	93%	103%	50-150%
	d5-EtFOSAA	83%	93%	50-150%
	13C2-4:2FTS	76%	87%	50-150%
	13C2-6:2FTS	97%	91%	50-150%
	13C2-8:2FTS	88%	86%	50-150%
	13C3-HFPO-DA	78%	85%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-042.0-20221214		
Lab Sample ID:	FC1363-4	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-057.0-20221214		
Lab Sample ID:	FC1363-5	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38915.D	1	01/08/23 03:13	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38993.D	5	01/10/23 04:15	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	200 ml	1.0 ml
Run #2	200 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0050 U	0.010	0.0050	0.0025	ug/l	
2706-90-3	Perfluoropentanoic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
307-24-4	Perfluorohexanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-76-2	Perfluorodecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
307-55-1	Perfluorododecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0037	0.0050	0.0025	0.0013	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0025 U	0.0050	0.0025	0.0013	ug/l	
31506-32-8	MeFOSA [c]	0.025 U [b]	0.050	0.025	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0050 U	0.010	0.0050	0.0025	ug/l	
2991-50-6	EtFOSAA	0.0050 U	0.010	0.0050	0.0025	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-057.0-20221214		
Lab Sample ID:	FC1363-5	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0050 U	0.010	0.0050	0.0025	ug/l	
919005-14-4	ADONA	0.0050 U	0.010	0.0050	0.0025	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0050 U	0.010	0.0050	0.0025	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0050 U	0.010	0.0050	0.0025	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00071	0.0020	0.0010	0.00050	ug/l	J
	PFOS (Linear Isomer)	0.0032	0.0050	0.0025	0.0013	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	61%	50-150%
	13C5-PFPeA	45% [d]	66%	50-150%
	13C5-PFHxA	80%	81%	50-150%
	13C4-PFHpA	83%	81%	50-150%
	13C8-PFOA	88%	84%	50-150%
	13C9-PFNA	81%	78%	50-150%
	13C6-PFDA	68%	67%	50-150%
	13C7-PFUnDA	55%	60%	50-150%
	13C2-PFDoDA	57%	54%	50-150%
	13C2-PFTeDA	60%	51%	50-150%
	13C3-PFBS	44% [d]	71%	50-150%
	13C3-PFHxS	89%	88%	50-150%
	13C8-PFOS	73%	66%	50-150%
	13C8-FOSA	53%	65%	50-150%
	d3-MeFOSA	2% [d]	17% [d]	50-150%
	d3-MeFOSAA	80%	76%	50-150%
	d5-EtFOSAA	65%	70%	50-150%
	13C2-4:2FTS	80%	83%	50-150%
	13C2-6:2FTS	94%	82%	50-150%
	13C2-8:2FTS	74%	70%	50-150%
	13C3-HFPO-DA	83%	84%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0024-057.0-20221214		
Lab Sample ID:	FC1363-5	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-004.0-20221214		
Lab Sample ID:	FC1363-6	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38916.D	1	01/08/23 03:28	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38994.D	5	01/10/23 04:31	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0079	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0109	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0023	0.0037	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-004.0-20221214		
Lab Sample ID:	FC1363-6	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%	72%	50-150%
	13C5-PFPeA	57%	71%	50-150%
	13C5-PFHxA	72%	77%	50-150%
	13C4-PFHpA	75%	77%	50-150%
	13C8-PFOA	84%	81%	50-150%
	13C9-PFNA	77%	78%	50-150%
	13C6-PFDA	68%	66%	50-150%
	13C7-PFUnDA	49% [d]	56%	50-150%
	13C2-PFDoDA	23% [d]	47% [d]	50-150%
	13C2-PFTeDA	45% [d]	53%	50-150%
	13C3-PFBS	64%	78%	50-150%
	13C3-PFHxS	80%	84%	50-150%
	13C8-PFOS	70%	68%	50-150%
	13C8-FOSA	58%	63%	50-150%
	d3-MeFOSA	7% [d]	17% [d]	50-150%
	d3-MeFOSAA	76%	73%	50-150%
	d5-EtFOSAA	62%	66%	50-150%
	13C2-4:2FTS	70%	75%	50-150%
	13C2-6:2FTS	88%	80%	50-150%
	13C2-8:2FTS	70%	67%	50-150%
	13C3-HFPO-DA	76%	71%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-004.0-20221214		
Lab Sample ID:	FC1363-6	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-010.0-20221214		
Lab Sample ID:	FC1363-7	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38917.D	1	01/08/23 03:44	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38995.D	5	01/10/23 04:46	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0024	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0109	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0065	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-010.0-20221214		
Lab Sample ID:	FC1363-7	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0040	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0015	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	68%	50-150%
	13C5-PFPeA	49% [d]	70%	50-150%
	13C5-PFHxA	69%	81%	50-150%
	13C4-PFHpA	76%	84%	50-150%
	13C8-PFOA	87%	90%	50-150%
	13C9-PFNA	86%	87%	50-150%
	13C6-PFDA	81%	81%	50-150%
	13C7-PFUnDA	66%	74%	50-150%
	13C2-PFDoDA	62%	64%	50-150%
	13C2-PFTeDA	47% [d]	73%	50-150%
	13C3-PFBS	56%	78%	50-150%
	13C3-PFHxS	83%	91%	50-150%
	13C8-PFOS	78%	83%	50-150%
	13C8-FOSA	41% [d]	51%	50-150%
	d3-MeFOSA	3% [d]	11% [d]	50-150%
	d3-MeFOSAA	94%	96%	50-150%
	d5-EtFOSAA	88%	90%	50-150%
	13C2-4:2FTS	69%	83%	50-150%
	13C2-6:2FTS	95%	89%	50-150%
	13C2-8:2FTS	84%	80%	50-150%
	13C3-HFPO-DA	72%	79%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-010.0-20221214		
Lab Sample ID:	FC1363-7	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0025-018.0-20221214
Lab Sample ID: FC1363-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/14/22
Date Received: 12/15/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38918.D	1	01/08/23 03:59	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38996.D	5	01/10/23 05:02	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-018.0-20221214		
Lab Sample ID:	FC1363-8	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	66%	50-150%
	13C5-PFPeA	48% [d]	68%	50-150%
	13C5-PFHxA	70%	80%	50-150%
	13C4-PFHpA	77%	81%	50-150%
	13C8-PFOA	88%	89%	50-150%
	13C9-PFNA	86%	87%	50-150%
	13C6-PFDA	80%	79%	50-150%
	13C7-PFUnDA	65%	74%	50-150%
	13C2-PFDoDA	59%	61%	50-150%
	13C2-PFTeDA	51%	66%	50-150%
	13C3-PFBS	54%	75%	50-150%
	13C3-PFHxS	85%	89%	50-150%
	13C8-PFOS	81%	81%	50-150%
	13C8-FOSA	49% [d]	62%	50-150%
	d3-MeFOSA	4% [d]	12% [d]	50-150%
	d3-MeFOSAA	106%	96%	50-150%
	d5-EtFOSAA	87%	87%	50-150%
	13C2-4:2FTS	70%	83%	50-150%
	13C2-6:2FTS	95%	88%	50-150%
	13C2-8:2FTS	88%	80%	50-150%
	13C3-HFPO-DA	74%	76%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-018.0-20221214		
Lab Sample ID:	FC1363-8	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-025.0-20221214		
Lab Sample ID:	FC1363-9	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38921.D	1	01/08/23 04:46	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q38999.D	5	01/10/23 05:48	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023	0.0040	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-025.0-20221214		
Lab Sample ID:	FC1363-9	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00067	0.0016	0.00080	0.00040	ug/l	J
	PFOS (Linear Isomer)	0.0017	0.0040	0.0020	0.0010	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	74%	50-150%
	13C5-PFPeA	49% [d]	68%	50-150%
	13C5-PFHxA	72%	81%	50-150%
	13C4-PFHpA	78%	82%	50-150%
	13C8-PFOA	88%	88%	50-150%
	13C9-PFNA	88%	89%	50-150%
	13C6-PFDA	81%	83%	50-150%
	13C7-PFUnDA	61%	70%	50-150%
	13C2-PFDoDA	58%	59%	50-150%
	13C2-PFTeDA	43% [d]	60%	50-150%
	13C3-PFBS	53%	76%	50-150%
	13C3-PFHxS	85%	89%	50-150%
	13C8-PFOS	84%	86%	50-150%
	13C8-FOSA	64%	78%	50-150%
	d3-MeFOSA	3% [d]	12% [d]	50-150%
	d3-MeFOSAA	95%	99%	50-150%
	d5-EtFOSAA	77%	84%	50-150%
	13C2-4:2FTS	72%	84%	50-150%
	13C2-6:2FTS	96%	87%	50-150%
	13C2-8:2FTS	88%	84%	50-150%
	13C3-HFPO-DA	76%	76%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-025.0-20221214		
Lab Sample ID:	FC1363-9	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-042.0-20221214		
Lab Sample ID:	FC1363-10	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38922.D	1	01/08/23 05:01	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39000.D	5	01/10/23 06:04	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	200 ml	1.0 ml
Run #2	200 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040	0.010	0.0050	0.0025	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
307-24-4	Perfluorohexanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-76-2	Perfluorodecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.013 U [b]	0.025	0.013	0.0063	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.013 U [b]	0.025	0.013	0.0063	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0014	0.0050	0.0025	0.0013	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0036	0.0050	0.0025	0.0013	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0025 U	0.0050	0.0025	0.0013	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.013 U [b]	0.025	0.013	0.0063	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0025 U	0.0050	0.0025	0.0013	ug/l	
31506-32-8	MeFOSA [c]	0.025 U [b]	0.050	0.025	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.025 U [b]	0.050	0.025	0.013	ug/l	
2991-50-6	EtFOSAA	0.025 U [b]	0.050	0.025	0.013	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-042.0-20221214		
Lab Sample ID:	FC1363-10	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0050 U	0.010	0.0050	0.0025	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0050 U	0.010	0.0050	0.0025	ug/l	
919005-14-4	ADONA	0.0050 U	0.010	0.0050	0.0025	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0050 U	0.010	0.0050	0.0025	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.025 U [b]	0.050	0.025	0.013	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0013	0.0020	0.0010	0.00050	ug/l	J
	PFOS (Linear Isomer)	0.0022	0.0050	0.0025	0.0013	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	67%	50-150%
	13C5-PFPeA	40% [d]	63%	50-150%
	13C5-PFHxA	83%	86%	50-150%
	13C4-PFHpA	85%	87%	50-150%
	13C8-PFOA	91%	90%	50-150%
	13C9-PFNA	94%	89%	50-150%
	13C6-PFDA	73%	79%	50-150%
	13C7-PFUnDA	11% [d]	58%	50-150%
	13C2-PFDoDA	9% [d]	47% [d]	50-150%
	13C2-PFTeDA	54%	57%	50-150%
	13C3-PFBS	36% [d]	64%	50-150%
	13C3-PFHxS	96%	98%	50-150%
	13C8-PFOS	90%	89%	50-150%
	13C8-FOSA	57%	83%	50-150%
	d3-MeFOSA	0% [d]	19% [d]	50-150%
	d3-MeFOSAA	2% [d]	85%	50-150%
	d5-EtFOSAA	4% [d]	52%	50-150%
	13C2-4:2FTS	84%	87%	50-150%
	13C2-6:2FTS	99%	90%	50-150%
	13C2-8:2FTS	83%	81%	50-150%
	13C3-HFPO-DA	83%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-042.0-20221214		
Lab Sample ID:	FC1363-10	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-057.0-20221214		
Lab Sample ID:	FC1363-11	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38923.D	1	01/08/23 05:17	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39001.D	5	01/10/23 06:19	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.020	0.010	0.0050	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-057.0-20221214		
Lab Sample ID:	FC1363-11	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00080 U	0.0016	0.00080	0.00040	ug/l	
	PFOS (Linear Isomer)	0.0020 U	0.0040	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	71%	50-150%
	13C5-PFPeA	47% d	68%	50-150%
	13C5-PFHxA	81%	83%	50-150%
	13C4-PFHpA	86%	83%	50-150%
	13C8-PFOA	90%	86%	50-150%
	13C9-PFNA	88%	84%	50-150%
	13C6-PFDA	83%	81%	50-150%
	13C7-PFUnDA	72%	78%	50-150%
	13C2-PFDoDA	73%	70%	50-150%
	13C2-PFTeDA	59%	71%	50-150%
	13C3-PFBS	48% d	76%	50-150%
	13C3-PFHxS	89%	89%	50-150%
	13C8-PFOS	93%	86%	50-150%
	13C8-FOSA	82%	89%	50-150%
	d3-MeFOSA	12% d	28% d	50-150%
	d3-MeFOSAA	111%	110%	50-150%
	d5-EtFOSAA	92%	96%	50-150%
	13C2-4:2FTS	81%	82%	50-150%
	13C2-6:2FTS	95%	86%	50-150%
	13C2-8:2FTS	90%	82%	50-150%
	13C3-HFPO-DA	82%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0025-057.0-20221214		
Lab Sample ID:	FC1363-11	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-004.0-20221215		
Lab Sample ID:	FC1363-12	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38926.D	1	01/08/23 06:04	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39004.D	5	01/10/23 07:06	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0115	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0095	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0048	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0201	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-004.0-20221215		
Lab Sample ID:	FC1363-12	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0038	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	77%	50-150%
	13C5-PFPeA	61%	79%	50-150%
	13C5-PFHxA	73%	82%	50-150%
	13C4-PFHpA	79%	83%	50-150%
	13C8-PFOA	88%	87%	50-150%
	13C9-PFNA	84%	87%	50-150%
	13C6-PFDA	80%	77%	50-150%
	13C7-PFUnDA	71%	76%	50-150%
	13C2-PFDoDA	70%	67%	50-150%
	13C2-PFTeDA	53%	65%	50-150%
	13C3-PFBS	71%	91%	50-150%
	13C3-PFHxS	84%	87%	50-150%
	13C8-PFOS	84%	80%	50-150%
	13C8-FOSA	21% [d]	28% [d]	50-150%
	d3-MeFOSA	2% [d]	9% [d]	50-150%
	d3-MeFOSAA	97%	99%	50-150%
	d5-EtFOSAA	83%	93%	50-150%
	13C2-4:2FTS	73%	84%	50-150%
	13C2-6:2FTS	92%	84%	50-150%
	13C2-8:2FTS	84%	78%	50-150%
	13C3-HFPO-DA	76%	76%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-004.0-20221215		
Lab Sample ID:	FC1363-12	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-010.0-20221215		
Lab Sample ID:	FC1363-13	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38927.D	1	01/08/23 06:19	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39005.D	5	01/10/23 07:21	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0031	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0024	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0018	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0088	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0026-010.0-20221215
Lab Sample ID: FC1363-13 **Date Sampled:** 12/15/22
Matrix: AQ - Ground Water **Date Received:** 12/15/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0016	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	80%	50-150%
	13C5-PFPeA	52%	74%	50-150%
	13C5-PFHxA	75%	88%	50-150%
	13C4-PFHpA	83%	90%	50-150%
	13C8-PFOA	92%	98%	50-150%
	13C9-PFNA	92%	96%	50-150%
	13C6-PFDA	84%	87%	50-150%
	13C7-PFUnDA	74%	82%	50-150%
	13C2-PFDoDA	66%	67%	50-150%
	13C2-PFTeDA	42% [d]	92%	50-150%
	13C3-PFBS	59%	85%	50-150%
	13C3-PFHxS	91%	97%	50-150%
	13C8-PFOS	88%	98%	50-150%
	13C8-FOSA	58%	70%	50-150%
	d3-MeFOSA	4% [d]	13% [d]	50-150%
	d3-MeFOSAA	103%	104%	50-150%
	d5-EtFOSAA	85%	94%	50-150%
	13C2-4:2FTS	74%	89%	50-150%
	13C2-6:2FTS	100%	97%	50-150%
	13C2-8:2FTS	92%	88%	50-150%
	13C3-HFPO-DA	78%	87%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-010.0-20221215		
Lab Sample ID:	FC1363-13	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-025.0-20221215		
Lab Sample ID:	FC1363-14	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38928.D	1	01/08/23 06:35	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39006.D	5	01/10/23 07:37	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-025.0-20221215		
Lab Sample ID:	FC1363-14	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	57%	74%	50-150%
	13C5-PFPeA	48% [d]	69%	50-150%
	13C5-PFHxA	71%	81%	50-150%
	13C4-PFHpA	76%	84%	50-150%
	13C8-PFOA	88%	92%	50-150%
	13C9-PFNA	87%	91%	50-150%
	13C6-PFDA	83%	86%	50-150%
	13C7-PFUnDA	70%	80%	50-150%
	13C2-PFDoDA	71%	74%	50-150%
	13C2-PFTeDA	64%	75%	50-150%
	13C3-PFBS	54%	79%	50-150%
	13C3-PFHxS	85%	93%	50-150%
	13C8-PFOS	87%	94%	50-150%
	13C8-FOSA	64%	83%	50-150%
	d3-MeFOSA	5% [d]	15% [d]	50-150%
	d3-MeFOSAA	109%	110%	50-150%
	d5-EtFOSAA	91%	100%	50-150%
	13C2-4:2FTS	69%	86%	50-150%
	13C2-6:2FTS	95%	92%	50-150%
	13C2-8:2FTS	90%	87%	50-150%
	13C3-HFPO-DA	74%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-025.0-20221215		
Lab Sample ID:	FC1363-14	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-042.0-20221215		
Lab Sample ID:	FC1363-15	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38929.D	1	01/08/23 06:50	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39007.D	5	01/10/23 07:52	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.010 U [b]	0.020	0.010	0.0050	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-042.0-20221215		
Lab Sample ID:	FC1363-15	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00080 U	0.0016	0.00080	0.00040	ug/l	
	PFOS (Linear Isomer)	0.0020 U	0.0040	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	79%	50-150%
	13C5-PFPeA	52%	73%	50-150%
	13C5-PFHxA	77%	85%	50-150%
	13C4-PFHpA	81%	87%	50-150%
	13C8-PFOA	91%	93%	50-150%
	13C9-PFNA	89%	92%	50-150%
	13C6-PFDA	84%	86%	50-150%
	13C7-PFUnDA	70%	80%	50-150%
	13C2-PFDoDA	66%	66%	50-150%
	13C2-PFTeDA	50%	65%	50-150%
	13C3-PFBS	57%	81%	50-150%
	13C3-PFHxS	90%	96%	50-150%
	13C8-PFOS	87%	95%	50-150%
	13C8-FOSA	47% [d]	63%	50-150%
	d3-MeFOSA	3% [d]	11% [d]	50-150%
	d3-MeFOSAA	111%	111%	50-150%
	d5-EtFOSAA	90%	97%	50-150%
	13C2-4:2FTS	75%	88%	50-150%
	13C2-6:2FTS	97%	93%	50-150%
	13C2-8:2FTS	93%	88%	50-150%
	13C3-HFPO-DA	79%	81%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-042.0-20221215		
Lab Sample ID:	FC1363-15	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-057.0-20221215		
Lab Sample ID:	FC1363-16	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38930.D	1	01/08/23 07:06	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39008.D	5	01/10/23 08:08	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	190 ml	1.0 ml
Run #2	190 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037	0.011	0.0053	0.0026	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
307-24-4	Perfluorohexanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-76-2	Perfluorodecanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.013 U [b]	0.026	0.013	0.0066	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.013 U [b]	0.026	0.013	0.0066	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0014	0.0053	0.0026	0.0013	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0053	0.0026	0.0013	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0026 U	0.0053	0.0026	0.0013	ug/l	
31506-32-8	MeFOSA [c]	0.026 U [b]	0.053	0.026	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.026 U [b]	0.053	0.026	0.013	ug/l	
2991-50-6	EtFOSAA	0.026 U [b]	0.053	0.026	0.013	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0026-057.0-20221215
Lab Sample ID: FC1363-16 **Date Sampled:** 12/15/22
Matrix: AQ - Ground Water **Date Received:** 12/15/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0053 U	0.011	0.0053	0.0026	ug/l	
919005-14-4	ADONA	0.0053 U	0.011	0.0053	0.0026	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0053 U	0.011	0.0053	0.0026	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.026 U [b]	0.053	0.026	0.013	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0013	0.0021	0.0011	0.00053	ug/l	J
	PFOS (Linear Isomer)	0.0020	0.0053	0.0026	0.0013	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	70%	50-150%
	13C5-PFPeA	39% [d]	63%	50-150%
	13C5-PFHxA	86%	89%	50-150%
	13C4-PFHpA	86%	90%	50-150%
	13C8-PFOA	96%	96%	50-150%
	13C9-PFNA	93%	91%	50-150%
	13C6-PFDA	70%	78%	50-150%
	13C7-PFUnDA	42% [d]	57%	50-150%
	13C2-PFDoDA	23% [d]	47% [d]	50-150%
	13C2-PFTeDA	48% [d]	55%	50-150%
	13C3-PFBS	37% [d]	58%	50-150%
	13C3-PFHxS	100%	101%	50-150%
	13C8-PFOS	84%	81%	50-150%
	13C8-FOSA	56%	78%	50-150%
	d3-MeFOSA	0% [d]	13% [d]	50-150%
	d3-MeFOSAA	8% [d]	86%	50-150%
	d5-EtFOSAA	4% [d]	52%	50-150%
	13C2-4:2FTS	85%	93%	50-150%
	13C2-6:2FTS	100%	95%	50-150%
	13C2-8:2FTS	78%	79%	50-150%
	13C3-HFPO-DA	89%	85%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0026-057.0-20221215		
Lab Sample ID:	FC1363-16	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-004.0-20221215		
Lab Sample ID:	FC1363-17	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38933.D	1	01/08/23 07:52	AL	12/19/22 09:00	OP94590	S4Q559
Run #2	4Q39011.D	5	01/10/23 08:55	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0188 [a]	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0063 [a]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0148	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0035	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0079	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.00099	0.0037	0.0019	0.00093	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0121 [a]	0.019	0.0093	0.0046	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0145 [a]	0.019	0.0093	0.0046	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.285	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0092	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.745	0.0037	0.0019	0.00093	ug/l	E
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [a]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [a]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-004.0-20221215		
Lab Sample ID:	FC1363-17	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.200	0.0015	0.00074	0.00037	ug/l	E
	PFOS (Linear Isomer)	0.479	0.0037	0.0019	0.00093	ug/l	E

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	68%	50-150%
	13C5-PFPeA	42% [c]	67%	50-150%
	13C5-PFHxA	53%	75%	50-150%
	13C4-PFHpA	60%	79%	50-150%
	13C8-PFOA	77%	93%	50-150%
	13C9-PFNA	77%	92%	50-150%
	13C6-PFDA	89%	85%	50-150%
	13C7-PFUnDA	73%	83%	50-150%
	13C2-PFDoDA	72%	77%	50-150%
	13C2-PFTeDA	57%	69%	50-150%
	13C3-PFBS	48% [c]	76%	50-150%
	13C3-PFHxS	73%	88%	50-150%
	13C8-PFOS	75%	92%	50-150%
	13C8-FOSA	22% [c]	38% [c]	50-150%
	d3-MeFOSA	2% [c]	7% [c]	50-150%
	d3-MeFOSAA	109%	109%	50-150%
	d5-EtFOSAA	93%	101%	50-150%
	13C2-4:2FTS	52%	78%	50-150%
	13C2-6:2FTS	83%	93%	50-150%
	13C2-8:2FTS	99%	85%	50-150%
	13C3-HFPO-DA	57%	77%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0027-010.0-20221215
Lab Sample ID: FC1363-18
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/15/22
Date Received: 12/15/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39012.D	1	01/10/23 09:10	AL	12/19/22 09:00	OP94590	S4Q560
Run #2	4Q39013.D	5	01/10/23 09:26	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0073	0.0087	0.0043	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0064	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0203	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0041	0.0043	0.0022	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0075	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid [a]	0.011 U [b]	0.022	0.011	0.0054	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0238	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0374	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.487 [b]	0.022	0.011	0.0054	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0120	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.812 [b]	0.022	0.011	0.0054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA [a]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-010.0-20221215		
Lab Sample ID:	FC1363-18	**Date Sampled:**	12/15/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [a]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.158 [b]	0.0087	0.0043	0.0022	ug/l	
	PFOS (Linear Isomer)	0.658 [b]	0.022	0.011	0.0054	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	69%	50-150%
	13C5-PFPeA	54%	67%	50-150%
	13C5-PFHxA	71%	80%	50-150%
	13C4-PFHpA	77%	82%	50-150%
	13C8-PFOA	93%	89%	50-150%
	13C9-PFNA	82%	81%	50-150%
	13C6-PFDA	71%	71%	50-150%
	13C7-PFUnDA	49% [c]	56%	50-150%
	13C2-PFDoDA	25% [c]	49% [c]	50-150%
	13C2-PFTeDA	51%	47% [c]	50-150%
	13C3-PFBS	55%	74%	50-150%
	13C3-PFHxS	85%	88%	50-150%
	13C8-PFOS	73%	74%	50-150%
	13C8-FOSA	63%	81%	50-150%
	d3-MeFOSA	11% [c]	18% [c]	50-150%
	d3-MeFOSAA	70%	82%	50-150%
	d5-EtFOSAA	41% [c]	67%	50-150%
	13C2-4:2FTS	74%	83%	50-150%
	13C2-6:2FTS	95%	87%	50-150%
	13C2-8:2FTS	72%	69%	50-150%
	13C3-HFPO-DA	75%	80%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-20221214-03
Lab Sample ID: FC1363-19
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/14/22
Date Received: 12/15/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38935.D	1	01/08/23 08:23	AL	12/19/22 09:00	OP94590	S4Q559
Run #2 [a]	4Q39014.D	5	01/10/23 09:41	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0030	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0023	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0106	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0063	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221214-03		
Lab Sample ID:	FC1363-19	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0039	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0014	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	69%	50-150%
	13C5-PFPeA	48% [d]	68%	50-150%
	13C5-PFHxA	69%	78%	50-150%
	13C4-PFHpA	75%	82%	50-150%
	13C8-PFOA	85%	88%	50-150%
	13C9-PFNA	85%	88%	50-150%
	13C6-PFDA	78%	80%	50-150%
	13C7-PFUnDA	65%	71%	50-150%
	13C2-PFDoDA	62%	61%	50-150%
	13C2-PFTeDA	54%	63%	50-150%
	13C3-PFBS	55%	77%	50-150%
	13C3-PFHxS	83%	86%	50-150%
	13C8-PFOS	76%	81%	50-150%
	13C8-FOSA	31% [d]	43% [d]	50-150%
	d3-MeFOSA	2% [d]	10% [d]	50-150%
	d3-MeFOSAA	96%	99%	50-150%
	d5-EtFOSAA	83%	93%	50-150%
	13C2-4:2FTS	69%	81%	50-150%
	13C2-6:2FTS	93%	86%	50-150%
	13C2-8:2FTS	84%	80%	50-150%
	13C3-HFPO-DA	71%	80%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221214-03		
Lab Sample ID:	FC1363-19	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221214-04		
Lab Sample ID:	FC1363-20	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38936.D	1	01/08/23 08:39	AL	12/19/22 09:00	OP94590	S4Q559
Run #2	4Q39015.D	5	01/10/23 09:57	AL	12/19/22 09:00	OP94590	S4Q560

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0194	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0059	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0141	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0034	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0069	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0118	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0173	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.259	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0079	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.582 [b]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20221214-04		
Lab Sample ID:	FC1363-20	**Date Sampled:**	12/14/22
Matrix:	AQ - Ground Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.156 [b]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Linear Isomer)	0.386 [b]	0.019	0.0093	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [c]	64%	50-150%
	13C5-PFPeA	45% [c]	65%	50-150%
	13C5-PFHxA	55%	73%	50-150%
	13C4-PFHpA	62%	77%	50-150%
	13C8-PFOA	79%	90%	50-150%
	13C9-PFNA	79%	88%	50-150%
	13C6-PFDA	90%	84%	50-150%
	13C7-PFUnDA	79%	84%	50-150%
	13C2-PFDoDA	76%	77%	50-150%
	13C2-PFTeDA	65%	70%	50-150%
	13C3-PFBS	49% [c]	72%	50-150%
	13C3-PFHxS	73%	86%	50-150%
	13C8-PFOS	77%	92%	50-150%
	13C8-FOSA	51%	76%	50-150%
	d3-MeFOSA	6% [c]	22% [c]	50-150%
	d3-MeFOSAA	111%	107%	50-150%
	d5-EtFOSAA	97%	106%	50-150%
	13C2-4:2FTS	56%	75%	50-150%
	13C2-6:2FTS	84%	89%	50-150%
	13C2-8:2FTS	98%	85%	50-150%
	13C3-HFPO-DA	59%	76%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20221214-02
Lab Sample ID: FC1363-21
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/14/22
Date Received: 12/15/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39138.D	1	01/12/23 20:22	AL	01/09/23 09:40	OP94893	S4Q562
Run #2 [a]	4Q38654.D	1	01/04/23 21:14	AL	12/20/22 09:20	OP94603	S4Q556

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0027	0.0074	0.0037	0.0019	ug/l	JB
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20221214-02		
Lab Sample ID:	FC1363-21	**Date Sampled:**	12/14/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%	47% [b]	50-150%
	13C5-PFPeA	86%	50%	50-150%
	13C5-PFHxA	85%	53%	50-150%
	13C4-PFHpA	86%	56%	50-150%
	13C8-PFOA	89%	60%	50-150%
	13C9-PFNA	89%	64%	50-150%
	13C6-PFDA	87%	69%	50-150%
	13C7-PFUnDA	85%	69%	50-150%
	13C2-PFDoDA	86%	65%	50-150%
	13C2-PFTeDA	78%	55%	50-150%
	13C3-PFBS	89%	59%	50-150%
	13C3-PFHxS	85%	61%	50-150%
	13C8-PFOS	85%	66%	50-150%
	13C8-FOSA	97%	67%	50-150%
	d3-MeFOSA	76%	17% [b]	50-150%
	d3-MeFOSAA	96%	83%	50-150%
	d5-EtFOSAA	91%	73%	50-150%
	13C2-4:2FTS	79%	48% [b]	50-150%
	13C2-6:2FTS	86%	56%	50-150%
	13C2-8:2FTS	84%	65%	50-150%
	13C3-HFPO-DA	76%	52%	50-150%

(a) Confirmation run.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221214-03		
Lab Sample ID:	FC1363-22	**Date Sampled:**	12/14/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39139.D	1	01/12/23 20:38	AL	01/09/23 09:40	OP94893	S4Q562
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221214-03		
Lab Sample ID:	FC1363-22	**Date Sampled:**	12/14/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/15/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%		50-150%
	13C5-PFPeA	59%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	61%		50-150%
	13C8-PFOA	62%		50-150%
	13C9-PFNA	64%		50-150%
	13C6-PFDA	65%		50-150%
	13C7-PFUnDA	64%		50-150%
	13C2-PFDoDA	64%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	66%		50-150%
	13C3-PFHxS	63%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	72%		50-150%
	d3-MeFOSA	51%		50-150%
	d3-MeFOSAA	75%		50-150%
	d5-EtFOSAA	69%		50-150%
	13C2-4:2FTS	56%		50-150%
	13C2-6:2FTS	61%		50-150%
	13C2-8:2FTS	63%		50-150%
	13C3-HFPO-DA	52%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC1363

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 1 of

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537										Comments
1	A3RB-DPT0024-004.0-20221214	A3RB-DPT0024	20221214	0810	WG	N	G	2	2										
2	A3RB-DPT0024-010.0-20221214	A3RB-DPT0024	20221214	0842	WG	N	G	2	2										
3	A3RB-DPT0024-015.0-20221214	A3RB-DPT0024	20221214	0923	WG	N	G	2	2										
4	A3RB-DPT0024-042.0-20221214	A3RB-DPT0024	20221214	0945	WG	N	G	2	2										
5	A3RB-DPT0024-057.0-20221214	A3RB-DPT0024	20221214	1011	WG	N	G	2	2										
6	A3RB-DPT0025-004.0-20221214	A3RB-DPT0025	20221214	1125	WG	N	G	2	2										
7	A3RB-DPT0025-010.0-20221214	A3RB-DPT0025	20221214	1148	WG	N	G	2	2										
8	A3RB-DPT0025-018.0-20221214	A3RB-DPT0025	20221214	1255	WG	N	G	2	2										
9	A3RB-DPT0025-025.0-20221214	A3RB-DPT0025	20221214	1319	WG	N	G	2	2										
10	A3RB-DPT0025-042.0-20221214	A3RB-DPT0025	20221214	1356	WG	N	G	2	2										
11	A3RB-DPT0025-057.0-20221214	A3RB-DPT0025	20221214	1434	WG	N	G	2	2										
12	A3RB-DPT0026-004.0-20221215	A3RB-DPT0026	20221215	0759	WG	N	G	2	2										

INITIAL ASSESSMENT

LABEL VERIFICATION

1,4CTM

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		12/15/22	1340		12/15/22	1340
2						
3						

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1363: Chain of Custody
Page 1 of 3

FC1363

SGS	CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD			COC No.		Page: 2 of	
	Project Name: NASA KSC			PO No. 142581		Project No. 60667657.4	Phase:
	Site Location: Site Assessment and Mitigation (SA&M)			Send Invoice To: Instructions in MSA # 195-24548-GV03			EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
	TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando			Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747			Deliver Samples To:			Site-Spicific WS# 15 from QAPP: 15-2
Lab Name:	SGS Orlando	Turnaround Time(specify):	Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)			

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537										Comments
13	A3RB-DPT0026-010.0-20221215	A3RB-DPT0026	202212 15	0825	WG	N	G	2	2										
14	A3RB-DPT0026-035.0-20221215	A3RB-DPT0026	202212 15	0849	WG	N	G	2	2										
15	A3RB-DPT0026-042.0-20221215	A3RB-DPT0026	202212 15	0922	WG	N	G	2	2										
16	A3RB-DPT0026-057.0-20221215	A3RB-DPT0026	202212 15	0955	WG	N	G	2	2										
17	A3RB-DPT0027-004.0-20221215	A3RB-DPT0027	202212 15	1130	WG	N	G	2	2										
18	A3RB-DPT0027-016.0-20221215	A3RB-DPT0027	202212 15	1202	WG	N	G	2	2										
19	A3RB-FD-20221214-03	A3RB-FD	202212 14	1100	WG	N	G	2	2										
20H	A3RB-FD-20221215-04	A3RB-FD	202212 14	1030	WG	N	G	2	2										
11 20	A3RB-MS/MSD-20221214-02	A3RB-MS/MSD	202212 14	1438	WG	N	G	2	2										DPT0026-057.0
21	A3RB-EB-20221214-01	A3RB-EB	202212 14	1445	WQ	EB	G	2	2										
22	A3RB-FB-20221214-03	A3RB-FB	202212 14	1455	WQ	FB	G	2	2										
			202212			N	G	2	2										

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/15/22	1340	1	12/15/22	1340
2			2		
3			3		

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

FC1363: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FC1363 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 12/15/2022 1:40:00 PM **Delivery Method:** D/O **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 12/15/2022 1:40:00 P Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94590	EPA 537M QSM5.3 B-15						
OP94590-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	96	%	73-129
OP94590-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	86	%	72-129
OP94590-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	90	%	72-129
OP94590-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	91	%	72-130
OP94590-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	92	%	71-133
OP94590-BS	375-95-1	Perfluorononanoic acid	BSP	REC	89	%	69-130
OP94590-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP94590-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	92	%	69-133
OP94590-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	94	%	72-134
OP94590-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	79	%	65-144
OP94590-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	90	%	71-132
OP94590-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	92	%	72-130
OP94590-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	82	%	71-127
OP94590-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP94590-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	88	%	69-134
OP94590-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	92	%	65-140
OP94590-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP94590-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	105	%	53-142
OP94590-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP94590-BS	31506-32-8	MeFOSA	BSP	REC	79	%	68-141
OP94590-BS	2355-31-9	MeFOSAA	BSP	REC	87	%	65-136
OP94590-BS	2991-50-6	EtFOSAA	BSP	REC	89	%	61-135
OP94590-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	91	%	63-143
OP94590-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	98	%	64-140
OP94590-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	94	%	67-138
OP94590-MS	375-22-4	Perfluorobutanoic acid	MS	REC	103	%	73-129
OP94590-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	89	%	72-129
OP94590-MS	307-24-4	Perfluorohexanoic acid	MS	REC	95	%	72-129
OP94590-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	98	%	72-130
OP94590-MS	335-67-1	Perfluorooctanoic acid	MS	REC	91	%	71-133
OP94590-MS	375-95-1	Perfluorononanoic acid	MS	REC	91	%	69-130
OP94590-MS	335-76-2	Perfluorodecanoic acid	MS	REC	96	%	71-129
OP94590-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	93	%	69-133
OP94590-MS	307-55-1	Perfluorododecanoic acid	MS	REC	99	%	72-134
OP94590-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	82	%	65-144
OP94590-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP94590-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	94	%	72-130
OP94590-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	99	%	71-127
OP94590-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	97	%	68-131
OP94590-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	95	%	69-134
OP94590-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	104	%	65-140
OP94590-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	100	%	69-127

* Sample used for QC is not from job FC1363

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94590-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	117	%	53-142
OP94590-MS	754-91-6	PFOSA	MS	REC	101	%	67-137
OP94590-MS	31506-32-8	MeFOSA	MS	REC	0	%	68-141
OP94590-MS	2355-31-9	MeFOSAA	MS	REC	92	%	65-136
OP94590-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP94590-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	63-143
OP94590-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	103	%	64-140
OP94590-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	99	%	67-138
OP94590-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	104	%	73-129
OP94590-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	6	%	30
OP94590-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	91	%	72-129
OP94590-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	7	%	30
OP94590-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	96	%	72-129
OP94590-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	6	%	30
OP94590-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	103	%	72-130
OP94590-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	9	%	30
OP94590-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	97	%	71-133
OP94590-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	11	%	30
OP94590-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	94	%	69-130
OP94590-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	8	%	30
OP94590-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	97	%	71-129
OP94590-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	6	%	30
OP94590-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	96	%	69-133
OP94590-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	7	%	30
OP94590-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	102	%	72-134
OP94590-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	7	%	30
OP94590-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	81	%	65-144
OP94590-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP94590-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	91	%	71-132
OP94590-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	8	%	30
OP94590-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	94	%	72-130
OP94590-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	4	%	30
OP94590-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	100	%	71-127
OP94590-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP94590-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	103	%	68-131
OP94590-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP94590-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	89	%	69-134
OP94590-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	3	%	30
OP94590-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	93	%	65-140
OP94590-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	8	%	30
OP94590-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	93	%	69-127
OP94590-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	4	%	30
OP94590-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	114	%	53-142
OP94590-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP94590-MSD	754-91-6	PFOSA	MSD	REC	97	%	67-137

* Sample used for QC is not from job FC1363

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1363
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/14/22 thru 12/15/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94590-MSD	754-91-6	PFOSA	MSD	RPD	0	%	30
OP94590-MSD	31506-32-8	MeFOSA	MSD	REC	0	%	68-141
OP94590-MSD	31506-32-8	MeFOSA	MSD	RPD	0	%	30
OP94590-MSD	2355-31-9	MeFOSAA	MSD	REC	100	%	65-136
OP94590-MSD	2355-31-9	MeFOSAA	MSD	RPD	13	%	30
OP94590-MSD	2991-50-6	EtFOSAA	MSD	REC	97	%	61-135
OP94590-MSD	2991-50-6	EtFOSAA	MSD	RPD	7	%	30
OP94590-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	97	%	63-143
OP94590-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30
OP94590-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	105	%	64-140
OP94590-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP94590-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	96	%	67-138
OP94590-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP94893	EPA 537M QSM5.3 B-15						
OP94893-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	108	%	73-129
OP94893-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	72-129
OP94893-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	101	%	72-129
OP94893-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP94893-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	71-133
OP94893-BS	375-95-1	Perfluorononanoic acid	BSP	REC	98	%	69-130
OP94893-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	99	%	71-129
OP94893-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	69-133
OP94893-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP94893-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	92	%	65-144
OP94893-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP94893-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	103	%	72-130
OP94893-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	93	%	71-127
OP94893-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	103	%	68-131
OP94893-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP94893-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	103	%	65-140
OP94893-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	101	%	69-127
OP94893-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	108	%	53-142
OP94893-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP94893-BS	31506-32-8	MeFOSA	BSP	REC	97	%	68-141
OP94893-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	65-136
OP94893-BS	2991-50-6	EtFOSAA	BSP	REC	96	%	61-135
OP94893-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	99	%	63-143
OP94893-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	105	%	64-140
OP94893-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138

* Sample used for QC is not from job FC1363

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q559-IBLK	4Q38872.D	1	01/07/23	AL	n/a	n/a	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-19, FC1363-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	131%	50-150%
	13C5-PFPeA	133%	50-150%

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q559-IBLK	4Q38872.D	1	01/07/23	AL	n/a	n/a	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-19, FC1363-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	134%	50-150%
	13C4-PFHpA	135%	50-150%
	13C8-PFOA	136%	50-150%
	13C9-PFNA	134%	50-150%
	13C6-PFDA	133%	50-150%
	13C7-PFUnDA	134%	50-150%
	13C2-PFDoDA	130%	50-150%
	13C2-PFTeDA	131%	50-150%
	13C3-PFBS	137%	50-150%
	13C3-PFHxS	137%	50-150%
	13C8-PFOS	136%	50-150%
	13C8-FOSA	139%	50-150%
	d3-MeFOSAA	138%	50-150%
	d5-EtFOSAA	136%	50-150%
	13C2-4:2FTS	125%	50-150%
	13C2-6:2FTS	129%	50-150%
	13C2-8:2FTS	125%	50-150%

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	113%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	117%	50-150%
	d5-EtFOSAA	118%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	103%	50-150%

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q562-IBLK	4Q39127.D	1	01/12/23	AL	n/a	n/a	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%

Instrument Blank

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q562-IBLK	4Q39127.D	1	01/12/23	AL	n/a	n/a	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	90%	50-150%

Method Blank Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-MB	4Q38910.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%

Method Blank Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-MB	4Q38910.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	105%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	85%	50-150%
	13C3-PFBS	109%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	106%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSA	2%* [a]	50-150%
	d3-MeFOSAA	123%	50-150%
	d5-EtFOSAA	113%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	108%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	107%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-MB	4Q39134.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	0.0024	0.0080	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%

Method Blank Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-MB	4Q39134.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	91%	50-150%
	d3-MeFOSA	52%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	81%	50-150%

Blank Spike Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-BS	4Q38909.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0771	96	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0687	86	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0723	90	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0728	91	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0735	92	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0713	89	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0753	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0738	92	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0748	94	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0631	79	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0722	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0733	92	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0659	82	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0744	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0703	88	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0737	92	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0771	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0838	105	53-142
754-91-6	PFOSA	0.08	0.0703	88	67-137
31506-32-8	MeFOSA	0.08	0.0631	79	68-141
2355-31-9	MeFOSAA	0.08	0.0695	87	65-136
2991-50-6	EtFOSAA	0.08	0.0715	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0725	91	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0785	98	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0750	94	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0763	95	60-140
919005-14-4	ADONA	0.08	0.0699	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0748	94	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0756	95	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	101%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-BS	4Q38909.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	86%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	103%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSA	7%* [a]	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	99%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	101%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-BS	4Q39133.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0864	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0766	96	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0809	101	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0818	102	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0794	99	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0787	98	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0792	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0777	97	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0837	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0739	92	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0799	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0824	103	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0741	93	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0825	103	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0787	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0823	103	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0809	101	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0860	108	53-142
754-91-6	PFOSA	0.08	0.0765	96	67-137
31506-32-8	MeFOSA	0.08	0.0776	97	68-141
2355-31-9	MeFOSAA	0.08	0.0793	99	65-136
2991-50-6	EtFOSAA	0.08	0.0770	96	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0789	99	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0838	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0805	101	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0831	104	60-140
919005-14-4	ADONA	0.08	0.0813	102	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0805	101	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0784	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-BS	4Q39133.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-21, FC1363-22

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSA	65%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-MS	4Q39002.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560
OP94590-MSD	4Q39003.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560
FC1363-11	4Q38923.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559
FC1363-11 [a]	4Q39001.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	Compound	FC1363-11 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0080	U	0.08	0.0821	103	0.0833	0.0870	104	6	73-129/30
2706-90-3	Perfluoropentanoic acid	0.020	U [b]	0.08	0.0708	89	0.0833	0.0762	91	7	72-129/30
307-24-4	Perfluorohexanoic acid	0.0040	U	0.08	0.0758	95	0.0833	0.0804	96	6	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0040	U	0.08	0.0785	98	0.0833	0.0860	103	9	72-130/30
335-67-1	Perfluorooctanoic acid	0.0040	U	0.08	0.0726	91	0.0833	0.0810	97	11	71-133/30
375-95-1	Perfluorononanoic acid	0.0040	U	0.08	0.0727	91	0.0833	0.0785	94	8	69-130/30
335-76-2	Perfluorodecanoic acid	0.0040	U	0.08	0.0767	96	0.0833	0.0812	97	6	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0040	U	0.08	0.0747	93	0.0833	0.0802	96	7	69-133/30
307-55-1	Perfluorododecanoic acid	0.0040	U	0.08	0.0788	99	0.0833	0.0848	102	7	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0040	U	0.08	0.0654	82	0.0833	0.0679	81	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0040	U	0.08	0.0700	88	0.0833	0.0755	91	8	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.020	U [b]	0.08	0.0750	94	0.0833	0.0782	94	4	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.020	U [b]	0.08	0.0790	99	0.0833	0.0834	100	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0040	U	0.08	0.0773	97	0.0833	0.0856	103	10	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0040	U	0.08	0.0762	95	0.0833	0.0739	89	3	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0040	U	0.08	0.0833	104	0.0833	0.0771	93	8	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0040	U	0.08	0.0803	100	0.0833	0.0774	93	4	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0040	U	0.08	0.0938	117	0.0833	0.0953	114	2	53-142/30
754-91-6	PFOSA	0.0040	U	0.08	0.0809	101	0.0833	0.0812	97	0	67-137/30
31506-32-8	MeFOSA	0.040	U [b]	0.08	ND	0*	0.0833	ND	0*	nc	68-141/30
2355-31-9	MeFOSAA	0.0080	U	0.08	0.0732	92	0.0833	0.0830	100	13	65-136/30
2991-50-6	EtFOSAA	0.0080	U	0.08	0.0749	94	0.0833	0.0806	97	7	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080	U	0.08	0.0770	96	0.0833	0.0806	97	5	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080	U	0.08	0.0823	103	0.0833	0.0874	105	6	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080	U	0.08	0.0793	99	0.0833	0.0801	96	1	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0080	U	0.08	0.0757	95	0.0833	0.0777	93	3	60-140/30
919005-14-4	ADONA	0.0080	U	0.08	0.0703	88	0.0833	0.0779	93	10	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080	U	0.08	0.0843	105	0.0833	0.0914	110	8	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080	U	0.08	0.0762	95	0.0833	0.0836	100	9	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1363-11	FC1363-11	Limits
	13C4-PFBA	65%	69%	59%	71%	50-150%
	13C5-PFPeA	65%	67%	47%* [c]	68%	50-150%
	13C5-PFHxA	79%	82%	81%	83%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1363
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94590-MS	4Q39002.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560
OP94590-MSD	4Q39003.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560
FC1363-11	4Q38923.D	1	01/08/23	AL	12/19/22	OP94590	S4Q559
FC1363-11 [a]	4Q39001.D	5	01/10/23	AL	12/19/22	OP94590	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1363-1, FC1363-2, FC1363-3, FC1363-4, FC1363-5, FC1363-6, FC1363-7, FC1363-8, FC1363-9, FC1363-10, FC1363-11, FC1363-12, FC1363-13, FC1363-14, FC1363-15, FC1363-16, FC1363-17, FC1363-18, FC1363-19, FC1363-20

CAS No.	ID Standard Recoveries	MS	MSD	FC1363-11	FC1363-11	Limits
	13C4-PFHpA	79%	81%	86%	83%	50-150%
	13C8-PFOA	82%	85%	90%	86%	50-150%
	13C9-PFNA	81%	86%	88%	84%	50-150%
	13C6-PFDA	76%	80%	83%	81%	50-150%
	13C7-PFUnDA	69%	75%	72%	78%	50-150%
	13C2-PFDoDA	64%	70%	73%	70%	50-150%
	13C2-PFTeDA	62%	56%	59%	71%	50-150%
	13C3-PFBS	75%	78%	48%* [c]	76%	50-150%
	13C3-PFHxS	86%	87%	89%	89%	50-150%
	13C8-PFOS	81%	92%	93%	86%	50-150%
	13C8-FOSA	26%* [c]	36%* [c]	82%	89%	50-150%
	d3-MeFOSA	7%* [c]	5%* [c]	12%* [c]	28%* [c]	50-150%
	d3-MeFOSAA	96%	97%	111%	110%	50-150%
	d5-EtFOSAA	89%	91%	92%	96%	50-150%
	13C2-4:2FTS	84%	88%	81%	82%	50-150%
	13C2-6:2FTS	86%	88%	95%	86%	50-150%
	13C2-8:2FTS	79%	87%	90%	82%	50-150%
	13C3-HFPO-DA	77%	81%	82%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FC1412

Sampling Date: 12/16/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: 62

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FC1412

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1412-1	12/16/22	07:45	DS	12/16/22	AQ	Ground Water	A3RB-SW0001-001.0-20221216
FC1412-2	12/16/22	08:05	DS	12/16/22	AQ	Ground Water	A3RB-SW0002-001.0-20221216
FC1412-3	12/16/22	08:20	DS	12/16/22	AQ	Ground Water	A3RB-SW0003-001.0-20221216
FC1412-4	12/16/22	08:35	DS	12/16/22	AQ	Ground Water	A3RB-SW0004-001.0-20221216
FC1412-5	12/16/22	08:55	DS	12/16/22	AQ	Ground Water	A3RB-SW0005-001.0-20221216
FC1412-6	12/16/22	09:10	DS	12/16/22	AQ	Ground Water	A3RB-SW0006-001.0-20221216
FC1412-7	12/16/22	09:25	DS	12/16/22	AQ	Ground Water	A3RB-SW0007-001.0-20221216
FC1412-8	12/16/22	09:40	DS	12/16/22	AQ	Ground Water	A3RB-SW0008-001.0-20221216
FC1412-8D	12/16/22	09:40	DS	12/16/22	AQ	Water Dup/MSD	A3RB-SW0008-001.0-20221216
FC1412-8S	12/16/22	09:40	DS	12/16/22	AQ	Water Matrix Spike	A3RB-SW0008-001.0-20221216
FC1412-9	12/16/22	08:00	DS	12/16/22	AQ	Ground Water	A3RB-FD01-20221216
FC1412-10	12/16/22	10:00	DS	12/16/22	AQ	Field Blank Water	A3RB-FB01-20221216
FC1412-11	12/16/22	10:10	DS	12/16/22	AQ	Equipment Blank	A3RB-EB01-20221216

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC1412

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 1/11/2023 9:52:38 AM

On 12/16/2022, 10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1412 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94618

Sample(s) FC1412-8MS, FC1412-8MSD were used as the QC samples indicated.

Sample(s) FC1412-1, FC1412-10, FC1412-11, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9 have surrogates outside control limits.

OP94618-BS for d3-MeFOSA: Outside control limits.

OP94618-MB for d3-MeFOSA: Outside control limits.

FC1412-1 for 13C2-PFDoDA: Outside control limits.

FC1412-1 for 13C2-PFTeDA: Outside control limits.

FC1412-1 for 13C3-PFBS: Outside control limits.

FC1412-1 for 13C4-PFBA: Outside control limits.

FC1412-1 for 13C5-PFPeA: Outside control limits.

FC1412-1 for 13C7-PFUnDA: Outside control limits.

FC1412-1 for 13C8-FOSA: Outside control limits.

FC1412-1 for d3-MeFOSA: Outside control limits.

FC1412-1 for MeFOSA: Associated ID Standard outside control limits.

FC1412-1 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1412-1 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC1412-1: Dilution required (ID recovery standard failure).

FC1412-2 for 13C2-PFDoDA: Outside control limits.

FC1412-2 for 13C2-PFTeDA: Outside control limits.

FC1412-2 for 13C3-PFBS: Outside control limits.

FC1412-2 for 13C4-PFBA: Outside control limits.

FC1412-2 for 13C5-PFPeA: Outside control limits.

FC1412-2 for 13C8-FOSA: Outside control limits.

FC1412-2 for d3-MeFOSA: Outside control limits.

FC1412-2 for MeFOSA: Associated ID Standard outside control limits.

FC1412-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1412-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC1412-2: Dilution required (ID recovery standard failure).

FC1412-3 for 13C2-PFTeDA: Outside control limits.

FC1412-3 for 13C3-PFBS: Outside control limits.

FC1412-3 for 13C4-PFBA: Outside control limits.

FC1412-3 for 13C5-PFPeA: Outside control limits.

FC1412-3 for 13C8-FOSA: Outside control limits.

FC1412-3 for d3-MeFOSA: Outside control limits.

FC1412-3 for MeFOSA: Associated ID Standard outside control limits.

FC1412-3 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1412-3 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC1412-3: Dilution required (ID recovery standard failure).

FC1412-4 for 13C2-PFTeDA: Outside control limits.

FC1412-4 for 13C3-PFBS: Outside control limits.

FC1412-4 for 13C4-PFBA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94618

FC1412-4 for 13C5-PFPeA: Outside control limits.
FC1412-4 for 13C8-FOSA: Outside control limits.
FC1412-4 for d3-MeFOSA: Outside control limits.
FC1412-4 for MeFOSA: Associated ID Standard outside control limits.
FC1412-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1412-4 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1412-4: Dilution required (ID recovery standard failure).
FC1412-5 for 13C3-PFBS: Outside control limits.
FC1412-5 for 13C4-PFBA: Outside control limits.
FC1412-5 for 13C5-PFPeA: Outside control limits.
FC1412-5 for 13C8-FOSA: Outside control limits.
FC1412-5 for d3-MeFOSA: Outside control limits.
FC1412-5 for MeFOSA: Associated ID Standard outside control limits.
FC1412-5 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1412-5 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1412-5: Dilution required (ID recovery standard failure).
FC1412-6 for 13C2-PFTeDA: Outside control limits.
FC1412-6 for 13C3-PFBS: Outside control limits.
FC1412-6 for 13C4-PFBA: Outside control limits.
FC1412-6 for 13C5-PFPeA: Outside control limits.
FC1412-6 for 13C8-FOSA: Outside control limits.
FC1412-6 for d3-MeFOSA: Outside control limits.
FC1412-6 for MeFOSA: Associated ID Standard outside control limits.
FC1412-6 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1412-6 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1412-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1412-6: Dilution required (ID recovery standard failure).
FC1412-7 for 13C2-PFTeDA: Outside control limits.
FC1412-7 for 13C3-PFBS: Outside control limits.
FC1412-7 for 13C4-PFBA: Outside control limits.
FC1412-7 for 13C5-PFPeA: Outside control limits.
FC1412-7 for 13C8-FOSA: Outside control limits.
FC1412-7 for d3-MeFOSA: Outside control limits.
FC1412-7 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1412-7 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1412-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1412-7: Dilution required (ID recovery standard failure).
FC1412-8 for 13C4-PFBA: Outside control limits.
FC1412-8 for 13C5-PFPeA: Outside control limits.
FC1412-8 for 13C8-FOSA: Outside control limits.
FC1412-8 for d3-MeFOSA: Outside control limits.
FC1412-8 for MeFOSA: Associated ID Standard outside control limits.
FC1412-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.
FC1412-8 for Perfluoropentanoic acid: Associated ID Standard outside control limits, Confirmed by batch QC.
FC1412-8: Dilution required (ID recovery standard failure).
FC1412-9 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1412-9 for 13C2-PFDoDA: Outside control limits.
FC1412-9 for 13C2-PFTeDA: Outside control limits.
FC1412-9 for 13C3-PFBS: Outside control limits.
FC1412-9 for 13C4-PFBA: Outside control limits.
FC1412-9 for 13C5-PFHxA: Outside control limits.
FC1412-9 for 13C5-PFPeA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94618

FC1412-9 for 13C8-FOSA: Outside control limits.

FC1412-9 for d3-MeFOSA: Outside control limits.

FC1412-9 for MeFOSA: Associated ID Standard outside control limits.

FC1412-9 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC1412-9 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1412-9 for Perfluorohexanoic acid: Associated ID Standard outside control limits.

FC1412-9 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC1412-9 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC1412-9: Dilution required (ID recovery standard failure).

FC1412-10 for d3-MeFOSA: Outside control limits.

FC1412-10 for MeFOSA: Associated ID Standard outside control limits.

FC1412-10: Dilution required (ID recovery standard failure).

FC1412-11 for d3-MeFOSA: Outside control limits.

FC1412-11 for MeFOSA: Associated ID Standard outside control limits.

FC1412-11: Dilution required (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1412-1	**A3RB-SW0001-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0106	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0022 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0076	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0613	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0017 J	0.0020	0.00098	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0057	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC1412-2	**A3RB-SW0002-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0108 J	0.013	0.0065	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0016 J	0.0065	0.0032	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0055 J	0.0065	0.0032	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0271	0.013	0.0065	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0015 J	0.0026	0.0013	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0038 J	0.0065	0.0032	ug/l	EPA 537M QSM5.3 B-15
FC1412-3	**A3RB-SW0003-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0085 J	0.0089	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0022 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0011 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0013 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0029 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0197	0.0089	0.0044	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0011 J	0.0018	0.00089	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0017 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC1412-4	**A3RB-SW0004-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0093 J	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0013 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0094 J	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0011 J	0.0020	0.00098	ug/l	EPA 537M QSM5.3 B-15
FC1412-5	**A3RB-SW0005-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0080 J	0.0089	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0037 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0046	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0021 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0049	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0646	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoroheptanesulfonic acid		0.0011 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0723	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0164	0.0089	0.0044	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0189	0.0018	0.00089	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0552	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC1412-6	**A3RB-SW0006-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0077	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0021 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0019 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0016 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0058	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0150	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0496	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0114	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0123	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0392	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1412-7	**A3RB-SW0007-001.0-20221216**					
Perfluorobutanoic acid [a]		0.0083	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0026 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0029 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0017 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0055	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0315	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.00094 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0697	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0169	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0153	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0579	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1412-8	**A3RB-SW0008-001.0-20221216**					
Perfluorobutanoic acid [b]		0.0094	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0031 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0053	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0018 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0055	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0071	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0080	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0783	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0027 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0861	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
PFOS (Branched Isomers)		0.0278	0.0015	0.00077	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0566	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC1412-9	**A3RB-FD01-20221216**					
Perfluorobutanoic acid [a]		0.0083	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0029 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0019 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0054	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0035 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0027 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0312	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.00098 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0716	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0119	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0157	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0592	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

FC1412-10 **A3RB-FB01-20221216**

No hits reported in this sample.

FC1412-11 **A3RB-EB01-20221216**

No hits reported in this sample.

(a) Associated ID Standard outside control limits.
(b) Associated ID Standard outside control limits, Confirmed by batch QC.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-SW0001-001.0-20221216		
Lab Sample ID:	FC1412-1	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38708.D	1	01/05/23 14:48	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38786.D	5	01/06/23 16:27	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	205 ml	1.0 ml
Run #2	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0106	0.0098	0.0049	0.0024	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
307-55-1	Perfluorododecanoic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022	0.0049	0.0024	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0076	0.0049	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
31506-32-8	MeFOSA [b]	0.024 U [c]	0.049	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0001-001.0-20221216		
Lab Sample ID:	FC1412-1	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0613	0.0098	0.0049	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
919005-14-4	ADONA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.024 U [c]	0.049	0.024	0.012	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0017	0.0020	0.00098	0.00049	ug/l	J
	PFOS (Linear Isomer)	0.0057	0.0049	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	28% [d]	52%	50-150%
	13C5-PFPeA	38% [d]	57%	50-150%
	13C5-PFHxA	52%	66%	50-150%
	13C4-PFHpA	59%	71%	50-150%
	13C8-PFOA	69%	74%	50-150%
	13C9-PFNA	75%	81%	50-150%
	13C6-PFDA	79%	80%	50-150%
	13C7-PFUnDA	18% [d]	70%	50-150%
	13C2-PFDoDA	5% [d]	58%	50-150%
	13C2-PFTeDA	44% [d]	40% [d]	50-150%
	13C3-PFBS	45% [d]	66%	50-150%
	13C3-PFHxS	63%	75%	50-150%
	13C8-PFOS	72%	86%	50-150%
	13C8-FOSA	21% [d]	33% [d]	50-150%
	d3-MeFOSA	3% [d]	9% [d]	50-150%
	d3-MeFOSAA	86%	88%	50-150%
	d5-EtFOSAA	76%	79%	50-150%
	13C2-4:2FTS	52%	67%	50-150%
	13C2-6:2FTS	78%	80%	50-150%
	13C2-8:2FTS	82%	81%	50-150%
	13C3-HFPO-DA	55%	68%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0001-001.0-20221216		
Lab Sample ID:	FC1412-1	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0002-001.0-20221216
Lab Sample ID: FC1412-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/16/22
Date Received: 12/16/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38709.D	1	01/05/23 15:03	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38787.D	5	01/06/23 16:43	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	155 ml	1.0 ml
Run #2	155 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0108	0.013	0.0065	0.0032	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.016 U [c]	0.032	0.016	0.0081	ug/l	
307-24-4	Perfluorohexanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
335-67-1	Perfluorooctanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
375-95-1	Perfluorononanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
335-76-2	Perfluorodecanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
307-55-1	Perfluorododecanoic acid	0.016 U [c]	0.032	0.016	0.0081	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.016 U [c]	0.032	0.016	0.0081	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0032 U	0.0065	0.0032	0.0016	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.016 U [c]	0.032	0.016	0.0081	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.016 U [c]	0.032	0.016	0.0081	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016	0.0065	0.0032	0.0016	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0055	0.0065	0.0032	0.0016	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0032 U	0.0065	0.0032	0.0016	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.016 U [c]	0.032	0.016	0.0081	ug/l	
31506-32-8	MeFOSA [b]	0.032 U [c]	0.065	0.032	0.016	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0065 U	0.013	0.0065	0.0032	ug/l	
2991-50-6	EtFOSAA	0.0065 U	0.013	0.0065	0.0032	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0065 U	0.013	0.0065	0.0032	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0002-001.0-20221216		
Lab Sample ID:	FC1412-2	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0271	0.013	0.0065	0.0032	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0065 U	0.013	0.0065	0.0032	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0065 U	0.013	0.0065	0.0032	ug/l	
919005-14-4	ADONA	0.0065 U	0.013	0.0065	0.0032	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0065 U	0.013	0.0065	0.0032	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.032 U [c]	0.065	0.032	0.016	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0015	0.0026	0.0013	0.00065	ug/l	J
	PFOS (Linear Isomer)	0.0038	0.0065	0.0032	0.0016	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	45% [d]	71%	50-150%
	13C5-PFPeA	44% [d]	64%	50-150%
	13C5-PFHxA	57%	73%	50-150%
	13C4-PFHpA	64%	77%	50-150%
	13C8-PFOA	77%	82%	50-150%
	13C9-PFNA	80%	82%	50-150%
	13C6-PFDA	76%	75%	50-150%
	13C7-PFUnDA	61%	66%	50-150%
	13C2-PFDoDA	47% [d]	50%	50-150%
	13C2-PFTeDA	38% [d]	34% [d]	50-150%
	13C3-PFBS	48% [d]	71%	50-150%
	13C3-PFHxS	69%	82%	50-150%
	13C8-PFOS	69%	77%	50-150%
	13C8-FOSA	42% [d]	56%	50-150%
	d3-MeFOSA	5% [d]	17% [d]	50-150%
	d3-MeFOSAA	81%	91%	50-150%
	d5-EtFOSAA	67%	70%	50-150%
	13C2-4:2FTS	57%	74%	50-150%
	13C2-6:2FTS	84%	84%	50-150%
	13C2-8:2FTS	77%	79%	50-150%
	13C3-HFPO-DA	61%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0002-001.0-20221216		
Lab Sample ID:	FC1412-2	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0003-001.0-20221216
Lab Sample ID: FC1412-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/16/22
Date Received: 12/16/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38710.D	1	01/05/23 15:19	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38788.D	5	01/06/23 16:58	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	225 ml	1.0 ml
Run #2	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0085	0.0089	0.0044	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0022	0.0044	0.0022	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0011	0.0044	0.0022	0.0011	ug/l	J
375-95-1	Perfluorononanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0013	0.0044	0.0022	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0029	0.0044	0.0022	0.0011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.022	0.011	0.0056	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0003-001.0-20221216		
Lab Sample ID:	FC1412-3	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0197	0.0089	0.0044	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
919005-14-4	ADONA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0011	0.0018	0.00089	0.00044	ug/l	J
	PFOS (Linear Isomer)	0.0017	0.0044	0.0022	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [d]	67%	50-150%
	13C5-PFPeA	39% [d]	59%	50-150%
	13C5-PFHxA	51%	69%	50-150%
	13C4-PFHpA	59%	72%	50-150%
	13C8-PFOA	72%	80%	50-150%
	13C9-PFNA	76%	84%	50-150%
	13C6-PFDA	81%	82%	50-150%
	13C7-PFUnDA	71%	75%	50-150%
	13C2-PFDoDA	56%	58%	50-150%
	13C2-PFTeDA	38% [d]	41% [d]	50-150%
	13C3-PFBS	44% [d]	66%	50-150%
	13C3-PFHxS	65%	81%	50-150%
	13C8-PFOS	73%	88%	50-150%
	13C8-FOSA	35% [d]	50%	50-150%
	d3-MeFOSA	3% [d]	9% [d]	50-150%
	d3-MeFOSAA	93%	97%	50-150%
	d5-EtFOSAA	78%	81%	50-150%
	13C2-4:2FTS	51%	67%	50-150%
	13C2-6:2FTS	77%	82%	50-150%
	13C2-8:2FTS	83%	85%	50-150%
	13C3-HFPO-DA	56%	71%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0003-001.0-20221216		
Lab Sample ID:	FC1412-3	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0004-001.0-20221216
Lab Sample ID: FC1412-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/16/22
Date Received: 12/16/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38711.D	1	01/05/23 15:34	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38789.D	5	01/06/23 17:14	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	205 ml	1.0 ml
Run #2	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0093	0.0098	0.0049	0.0024	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0013	0.0049	0.0024	0.0012	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0049	0.0024	0.0012	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
31506-32-8	MeFOSA [b]	0.024 U [c]	0.049	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0004-001.0-20221216
Lab Sample ID: FC1412-4 **Date Sampled:** 12/16/22
Matrix: AQ - Ground Water **Date Received:** 12/16/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0094	0.0098	0.0049	0.0024	ug/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
919005-14-4	ADONA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0011	0.0020	0.00098	0.00049	ug/l	J
	PFOS (Linear Isomer)	0.0024 U	0.0049	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [d]	73%	50-150%
	13C5-PFPeA	43% [d]	64%	50-150%
	13C5-PFHxA	54%	73%	50-150%
	13C4-PFHpA	64%	77%	50-150%
	13C8-PFOA	76%	84%	50-150%
	13C9-PFNA	81%	85%	50-150%
	13C6-PFDA	85%	86%	50-150%
	13C7-PFUnDA	73%	75%	50-150%
	13C2-PFDoDA	59%	60%	50-150%
	13C2-PFTeDA	43% [d]	40% [d]	50-150%
	13C3-PFBS	48% [d]	70%	50-150%
	13C3-PFHxS	68%	81%	50-150%
	13C8-PFOS	76%	90%	50-150%
	13C8-FOSA	23% [d]	36% [d]	50-150%
	d3-MeFOSA	2% [d]	8% [d]	50-150%
	d3-MeFOSAA	93%	96%	50-150%
	d5-EtFOSAA	72%	78%	50-150%
	13C2-4:2FTS	55%	75%	50-150%
	13C2-6:2FTS	83%	84%	50-150%
	13C2-8:2FTS	86%	88%	50-150%
	13C3-HFPO-DA	59%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0004-001.0-20221216		
Lab Sample ID:	FC1412-4	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0005-001.0-20221216
Lab Sample ID: FC1412-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/16/22
Date Received: 12/16/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38712.D	1	01/05/23 15:50	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38790.D	5	01/06/23 17:29	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	225 ml	1.0 ml
Run #2	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0080	0.0089	0.0044	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0037	0.0044	0.0022	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0046	0.0044	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021	0.0044	0.0022	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0049	0.0044	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0646	0.0044	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0011	0.0044	0.0022	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0723	0.0044	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0005-001.0-20221216		
Lab Sample ID:	FC1412-5	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0164	0.0089	0.0044	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
919005-14-4	ADONA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0189	0.0018	0.00089	0.00044	ug/l	
	PFOS (Linear Isomer)	0.0552	0.0044	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [d]	74%	50-150%
	13C5-PFPeA	42% [d]	63%	50-150%
	13C5-PFHxA	54%	74%	50-150%
	13C4-PFHpA	63%	80%	50-150%
	13C8-PFOA	75%	87%	50-150%
	13C9-PFNA	77%	87%	50-150%
	13C6-PFDA	86%	86%	50-150%
	13C7-PFUnDA	73%	75%	50-150%
	13C2-PFDoDA	56%	61%	50-150%
	13C2-PFTeDA	54%	48% [d]	50-150%
	13C3-PFBS	48% [d]	71%	50-150%
	13C3-PFHxS	66%	86%	50-150%
	13C8-PFOS	73%	91%	50-150%
	13C8-FOSA	12% [d]	27% [d]	50-150%
	d3-MeFOSA	2% [d]	13% [d]	50-150%
	d3-MeFOSAA	93%	99%	50-150%
	d5-EtFOSAA	75%	81%	50-150%
	13C2-4:2FTS	55%	75%	50-150%
	13C2-6:2FTS	81%	90%	50-150%
	13C2-8:2FTS	90%	86%	50-150%
	13C3-HFPO-DA	60%	75%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0005-001.0-20221216		
Lab Sample ID:	FC1412-5	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0006-001.0-20221216		
Lab Sample ID:	FC1412-6	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38713.D	1	01/05/23 16:05	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38791.D	5	01/06/23 17:45	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0077	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0021	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0019	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0016	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0058	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0150	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0496	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0006-001.0-20221216		
Lab Sample ID:	FC1412-6	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0114	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0123	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0392	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% d	65%	50-150%
	13C5-PFPeA	37% d	56%	50-150%
	13C5-PFHxA	52%	68%	50-150%
	13C4-PFHpA	60%	71%	50-150%
	13C8-PFOA	70%	77%	50-150%
	13C9-PFNA	71%	80%	50-150%
	13C6-PFDA	79%	79%	50-150%
	13C7-PFUnDA	69%	71%	50-150%
	13C2-PFDoDA	54%	59%	50-150%
	13C2-PFTeDA	49% d	45% d	50-150%
	13C3-PFBS	44% d	65%	50-150%
	13C3-PFHxS	62%	75%	50-150%
	13C8-PFOS	66%	83%	50-150%
	13C8-FOSA	20% d	40% d	50-150%
	d3-MeFOSA	2% d	9% d	50-150%
	d3-MeFOSAA	94%	96%	50-150%
	d5-EtFOSAA	80%	83%	50-150%
	13C2-4:2FTS	53%	66%	50-150%
	13C2-6:2FTS	77%	78%	50-150%
	13C2-8:2FTS	82%	80%	50-150%
	13C3-HFPO-DA	58%	69%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0006-001.0-20221216		
Lab Sample ID:	FC1412-6	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0007-001.0-20221216
Lab Sample ID: FC1412-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/16/22
Date Received: 12/16/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38714.D	1	01/05/23 16:26	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38792.D	5	01/06/23 18:00	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0083	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0026	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0029	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0017	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0055	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0315	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00094	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0697	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0007-001.0-20221216		
Lab Sample ID:	FC1412-7	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0169	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0153	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0579	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	61%	50-150%
	13C5-PFPeA	37% [d]	54%	50-150%
	13C5-PFHxA	51%	65%	50-150%
	13C4-PFHpA	58%	68%	50-150%
	13C8-PFOA	68%	71%	50-150%
	13C9-PFNA	68%	71%	50-150%
	13C6-PFDA	75%	70%	50-150%
	13C7-PFUnDA	67%	65%	50-150%
	13C2-PFDoDA	51%	51%	50-150%
	13C2-PFTeDA	45% [d]	37%	50-150%
	13C3-PFBS	44% [d]	61%	50-150%
	13C3-PFHxS	63%	72%	50-150%
	13C8-PFOS	65%	79%	50-150%
	13C8-FOSA	19% [d]	35%	50-150%
	d3-MeFOSA	2% [d]	12%	50-150%
	d3-MeFOSAA	87%	82%	50-150%
	d5-EtFOSAA	73%	72%	50-150%
	13C2-4:2FTS	51%	64%	50-150%
	13C2-6:2FTS	74%	74%	50-150%
	13C2-8:2FTS	79%	71%	50-150%
	13C3-HFPO-DA	54%	65%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0007-001.0-20221216		
Lab Sample ID:	FC1412-7	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0008-001.0-20221216
Lab Sample ID: FC1412-8 **Date Sampled:** 12/16/22
Matrix: AQ - Ground Water **Date Received:** 12/16/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38717.D	1	01/05/23 17:13	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q39016.D	5	01/10/23 10:12	AL	12/20/22 12:25	OP94618	S4Q560

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0094	0.0077	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0031	0.0038	0.0019	0.00096	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0053	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0018	0.0038	0.0019	0.00096	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0055	0.0038	0.0019	0.00096	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0071	0.0038	0.0019	0.00096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0080	0.0038	0.0019	0.00096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0783	0.0038	0.0019	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0027	0.0038	0.0019	0.00096	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0861	0.0038	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0096 U [d]	0.019	0.0096	0.0048	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0008-001.0-20221216		
Lab Sample ID:	FC1412-8	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0278	0.0015	0.00077	0.00038	ug/l	
	PFOS (Linear Isomer)	0.0566	0.0038	0.0019	0.00096	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [e]	59%	50-150%
	13C5-PFPeA	43% [e]	61%	50-150%
	13C5-PFHxA	59%	70%	50-150%
	13C4-PFHpA	70%	72%	50-150%
	13C8-PFOA	80%	80%	50-150%
	13C9-PFNA	82%	79%	50-150%
	13C6-PFDA	93%	77%	50-150%
	13C7-PFUnDA	81%	72%	50-150%
	13C2-PFDoDA	69%	58%	50-150%
	13C2-PFTeDA	56%	47% [e]	50-150%
	13C3-PFBS	51%	71%	50-150%
	13C3-PFHxS	72%	81%	50-150%
	13C8-PFOS	72%	81%	50-150%
	13C8-FOSA	23% [e]	39% [e]	50-150%
	d3-MeFOSA	2% [e]	15% [e]	50-150%
	d3-MeFOSAA	106%	98%	50-150%
	d5-EtFOSAA	90%	85%	50-150%
	13C2-4:2FTS	59%	73%	50-150%
	13C2-6:2FTS	88%	80%	50-150%
	13C2-8:2FTS	93%	73%	50-150%
	13C3-HFPO-DA	62%	68%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits, Confirmed by batch QC.
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0008-001.0-20221216		
Lab Sample ID:	FC1412-8	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20221216		
Lab Sample ID:	FC1412-9	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39019.D	1	01/10/23 10:59	AL	12/20/22 12:25	OP94618	S4Q560
Run #2 [a]	4Q38795.D	5	01/06/23 18:47	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0083	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0023	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0029	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0054	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0035	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0027	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0312	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00098	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0716	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20221216		
Lab Sample ID:	FC1412-9	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0119	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0157	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0592	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	36% [d]	60%	50-150%
	13C5-PFPeA	40% [d]	55%	50-150%
	13C5-PFHxA	48% [d]	66%	50-150%
	13C4-PFHpA	53%	68%	50-150%
	13C8-PFOA	64%	75%	50-150%
	13C9-PFNA	64%	77%	50-150%
	13C6-PFDA	60%	75%	50-150%
	13C7-PFUnDA	53%	66%	50-150%
	13C2-PFDoDA	43% [d]	52%	50-150%
	13C2-PFTeDA	40% [d]	35% [d]	50-150%
	13C3-PFBS	43% [d]	60%	50-150%
	13C3-PFHxS	62%	72%	50-150%
	13C8-PFOS	66%	82%	50-150%
	13C8-FOSA	42% [d]	79%	50-150%
	d3-MeFOSA	24% [d]	28% [d]	50-150%
	d3-MeFOSAA	71%	92%	50-150%
	d5-EtFOSAA	63%	80%	50-150%
	13C2-4:2FTS	50%	64%	50-150%
	13C2-6:2FTS	66%	75%	50-150%
	13C2-8:2FTS	62%	75%	50-150%
	13C3-HFPO-DA	51%	67%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20221216		
Lab Sample ID:	FC1412-9	**Date Sampled:**	12/16/22
Matrix:	AQ - Ground Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20221216		
Lab Sample ID:	FC1412-10	**Date Sampled:**	12/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38721.D	1	01/05/23 18:15	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38796.D	2	01/06/23 19:03	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.0074 U [c]	0.015	0.0074	0.0037	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20221216		
Lab Sample ID:	FC1412-10	**Date Sampled:**	12/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	83%	80%	50-150%
	13C5-PFPeA	83%	79%	50-150%
	13C5-PFHxA	83%	79%	50-150%
	13C4-PFHpA	84%	79%	50-150%
	13C8-PFOA	86%	80%	50-150%
	13C9-PFNA	90%	82%	50-150%
	13C6-PFDA	96%	82%	50-150%
	13C7-PFUnDA	87%	75%	50-150%
	13C2-PFDoDA	71%	60%	50-150%
	13C2-PFTeDA	65%	47% d	50-150%
	13C3-PFBS	84%	89%	50-150%
	13C3-PFHxS	86%	81%	50-150%
	13C8-PFOS	81%	86%	50-150%
	13C8-FOSA	88%	91%	50-150%
	d3-MeFOSA	27% d	40% d	50-150%
	d3-MeFOSAA	102%	98%	50-150%
	d5-EtFOSAA	87%	84%	50-150%
	13C2-4:2FTS	78%	76%	50-150%
	13C2-6:2FTS	86%	79%	50-150%
	13C2-8:2FTS	89%	83%	50-150%
	13C3-HFPO-DA	82%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20221216		
Lab Sample ID:	FC1412-10	**Date Sampled:**	12/16/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20221216		
Lab Sample ID:	FC1412-11	**Date Sampled:**	12/16/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38722.D	1	01/05/23 18:30	AL	12/20/22 12:25	OP94618	S4Q557
Run #2 [a]	4Q38797.D	2	01/06/23 19:18	AL	12/20/22 12:25	OP94618	S4Q558

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
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Report of Analysis

Client Sample ID:	A3RB-EB01-20221216		
Lab Sample ID:	FC1412-11	**Date Sampled:**	12/16/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
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763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
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	13C5-PFHxA	88%	80%	50-150%
	13C4-PFHpA	90%	79%	50-150%
	13C8-PFOA	94%	82%	50-150%
	13C9-PFNA	93%	82%	50-150%
	13C6-PFDA	103%	86%	50-150%
	13C7-PFUnDA	96%	80%	50-150%
	13C2-PFDoDA	76%	59%	50-150%
	13C2-PFTeDA	66%	45% [d]	50-150%
	13C3-PFBS	88%	89%	50-150%
	13C3-PFHxS	87%	86%	50-150%
	13C8-PFOS	89%	93%	50-150%
	13C8-FOSA	74%	77%	50-150%
	d3-MeFOSA	19% [d]	36% [d]	50-150%
	d3-MeFOSAA	110%	102%	50-150%
	d5-EtFOSAA	90%	84%	50-150%
	13C2-4:2FTS	81%	74%	50-150%
	13C2-6:2FTS	87%	79%	50-150%
	13C2-8:2FTS	94%	84%	50-150%
	13C3-HFPO-DA	87%	79%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20221216		
Lab Sample ID:	FC1412-11	**Date Sampled:**	12/16/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/16/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC1412

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 1 of	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747			Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	Total No. of Containers (3)	Select PFAS by 537 (4 DEG)											Comments
1	A3RB-SW0001-001.0-20221216	A3RB-SW0001	20221216	0745	WS	N	G	2	2											
2	A3RB-SW0002-001.0-20221216	A3RB-SW0002	20221216	0805	WS	N	G	2	2											
3	A3RB-SW0003-001.0-20221216	A3RB-SW0003	20221216	0820	WS	N	G	2	2											
4	A3RB-SW0004-001.0-20221216	A3RB-SW0004	20221216	0835	WS	N	G	2	2											
5	A3RB-SW0005-001.0-20221216	A3RB-SW0005	20221216	0855	WS	N	G	2	2											
6	A3RB-SW0006-001.0-20221216	A3RB-SW0006	20221216	0910	WS	N	G	2	2											
7	A3RB-SW0007-001.0-20221216	A3RB-SW0007	20221216	0925	WS	N	G	2	2											
8	A3RB-SW0008-001.0-20221216	A3RB-SW0008	20221216	0940	WS	N	G	2	2											
8	A3RB-MS/MSD-20221216	A3RB-MS/MSD	20221216	0945	WS	N	G	4	4											SW0008
9	A3RB-FD01-20221216	A3RB-FD01	20221216	0800	WS	N	G	2	2											
10	A3RB-FB01-20221216	A3RB-FB01	20221216	1000	WQ	FB	G	2	2											
11	A3RB-EB01-20221216	A3RB-EB01	20221216	1010	WQ	EB	G	2	2											

INITIAL ASSESSMENT

LABEL VERIFICATION

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/16/22	1355	1	12/16/22	1355
2			2		
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples delivered via:
Shipping Company:
Tracking No:
Date Shipped:

3.0 CJM

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2 3/gal**=Add 3 ml. 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1412: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC1412 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 12/16/2022 1:55:00 PM **Delivery Method:** DROPOFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/16/2022 1:55:00 P Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94618	EPA 537M QSM5.3 B-15						
OP94618-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	113	%	73-129
OP94618-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	102	%	72-129
OP94618-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	108	%	72-129
OP94618-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	103	%	72-130
OP94618-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	103	%	71-133
OP94618-BS	375-95-1	Perfluorononanoic acid	BSP	REC	103	%	69-130
OP94618-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	102	%	71-129
OP94618-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	98	%	69-133
OP94618-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	112	%	72-134
OP94618-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	89	%	65-144
OP94618-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	102	%	71-132
OP94618-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	112	%	72-130
OP94618-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	99	%	71-127
OP94618-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	110	%	68-131
OP94618-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	106	%	69-134
OP94618-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	110	%	65-140
OP94618-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	112	%	69-127
OP94618-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	100	%	53-142
OP94618-BS	754-91-6	PFOSA	BSP	REC	104	%	67-137
OP94618-BS	31506-32-8	MeFOSA	BSP	REC	103	%	68-141
OP94618-BS	2355-31-9	MeFOSAA	BSP	REC	98	%	65-136
OP94618-BS	2991-50-6	EtFOSAA	BSP	REC	103	%	61-135
OP94618-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	108	%	63-143
OP94618-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	112	%	64-140
OP94618-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	112	%	67-138
OP94618-MS	375-22-4	Perfluorobutanoic acid	MS	REC	106	%	73-129
OP94618-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	99	%	72-129
OP94618-MS	307-24-4	Perfluorohexanoic acid	MS	REC	98	%	72-129
OP94618-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	99	%	72-130
OP94618-MS	335-67-1	Perfluorooctanoic acid	MS	REC	99	%	71-133
OP94618-MS	375-95-1	Perfluorononanoic acid	MS	REC	98	%	69-130
OP94618-MS	335-76-2	Perfluorodecanoic acid	MS	REC	97	%	71-129
OP94618-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	94	%	69-133
OP94618-MS	307-55-1	Perfluorododecanoic acid	MS	REC	104	%	72-134
OP94618-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	90	%	65-144
OP94618-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	94	%	71-132
OP94618-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	104	%	72-130
OP94618-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	114	%	71-127
OP94618-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	105	%	68-131
OP94618-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	107	%	69-134
OP94618-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	113	%	65-140
OP94618-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	109	%	69-127

* Sample used for QC is not from job FC1412

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94618-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	86	%	53-142
OP94618-MS	754-91-6	PFOSA	MS	REC	99	%	67-137
OP94618-MS	31506-32-8	MeFOSA	MS	REC	90	%	68-141
OP94618-MS	2355-31-9	MeFOSAA	MS	REC	97	%	65-136
OP94618-MS	2991-50-6	EtFOSAA	MS	REC	98	%	61-135
OP94618-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	101	%	63-143
OP94618-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	107	%	64-140
OP94618-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	106	%	67-138
OP94618-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	112	%	73-129
OP94618-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	5	%	30
OP94618-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	104	%	72-129
OP94618-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	5	%	30
OP94618-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	103	%	72-129
OP94618-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	4	%	30
OP94618-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	103	%	72-130
OP94618-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	4	%	30
OP94618-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	103	%	71-133
OP94618-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	4	%	30
OP94618-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	103	%	69-130
OP94618-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	5	%	30
OP94618-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	101	%	71-129
OP94618-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	4	%	30
OP94618-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	101	%	69-133
OP94618-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	7	%	30
OP94618-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	108	%	72-134
OP94618-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	4	%	30
OP94618-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	91	%	65-144
OP94618-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP94618-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	99	%	71-132
OP94618-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	6	%	30
OP94618-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	109	%	72-130
OP94618-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	4	%	30
OP94618-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	120	%	71-127
OP94618-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	5	%	30
OP94618-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	121	%	68-131
OP94618-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	7	%	30
OP94618-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	110	%	69-134
OP94618-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	3	%	30
OP94618-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	123	%	65-140
OP94618-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	4	%	30
OP94618-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	109	%	69-127
OP94618-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP94618-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	85	%	53-142
OP94618-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	1	%	30
OP94618-MSD	754-91-6	PFOSA	MSD	REC	103	%	67-137

* Sample used for QC is not from job FC1412

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1412
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/16/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94618-MSD	754-91-6	PFOSA	MSD	RPD	4	%	30
OP94618-MSD	31506-32-8	MeFOSA	MSD	REC	116	%	68-141
OP94618-MSD	31506-32-8	MeFOSA	MSD	RPD	25	%	30
OP94618-MSD	2355-31-9	MeFOSAA	MSD	REC	93	%	65-136
OP94618-MSD	2355-31-9	MeFOSAA	MSD	RPD	4	%	30
OP94618-MSD	2991-50-6	EtFOSAA	MSD	REC	99	%	61-135
OP94618-MSD	2991-50-6	EtFOSAA	MSD	RPD	1	%	30
OP94618-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	104	%	63-143
OP94618-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP94618-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	122	%	64-140
OP94618-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	13	%	30
OP94618-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	111	%	67-138
OP94618-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	5	%	30

* Sample used for QC is not from job FC1412

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-10, FC1412-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	127%	50-150%
	13C5-PFPeA	129%	50-150%

Instrument Blank

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-10, FC1412-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	129%	50-150%
	13C4-PFHpA	132%	50-150%
	13C8-PFOA	132%	50-150%
	13C9-PFNA	130%	50-150%
	13C6-PFDA	143%	50-150%
	13C7-PFUnDA	145%	50-150%
	13C2-PFDoDA	148%	50-150%
	13C2-PFTeDA	139%	50-150%
	13C3-PFBS	126%	50-150%
	13C3-PFHxS	125%	50-150%
	13C8-PFOS	124%	50-150%
	13C8-FOSA	131%	50-150%
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	139%	50-150%
	d5-EtFOSAA	138%	50-150%
	13C2-4:2FTS	117%	50-150%
	13C2-6:2FTS	124%	50-150%
	13C2-8:2FTS	126%	50-150%
	13C3-HFPO-DA	134%	50-150%

Instrument Blank

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q558-IBLK	4Q38780.D	1	01/06/23	AL	n/a	n/a	S4Q558

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-9, FC1412-10, FC1412-11

CAS No.	Compound	Result	RL	MDL	Units	Q
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	134%	50-150%
	13C5-PFPeA	133%	50-150%
	13C5-PFHxA	133%	50-150%
	13C4-PFHpA	133%	50-150%
	13C8-PFOA	136%	50-150%
	13C9-PFNA	133%	50-150%
	13C6-PFDA	132%	50-150%
	13C7-PFUnDA	133%	50-150%
	13C2-PFDoDA	131%	50-150%
	13C2-PFTeDA	128%	50-150%
	13C3-PFBS	136%	50-150%
	13C3-PFHxS	134%	50-150%
	13C8-PFOS	136%	50-150%
	13C8-FOSA	139%	50-150%
	d3-MeFOSA	136%	50-150%
	d3-MeFOSAA	142%	50-150%
	d5-EtFOSAA	139%	50-150%
	13C2-4:2FTS	124%	50-150%
	13C2-6:2FTS	128%	50-150%
	13C2-8:2FTS	125%	50-150%
	13C3-HFPO-DA	136%	50-150%

Instrument Blank

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-8, FC1412-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	106%	50-150%
	13C4-PFHpA	106%	50-150%

Instrument Blank

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q560-IBLK	4Q38954.D	1	01/09/23	AL	n/a	n/a	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-8, FC1412-9

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	107%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	113%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	113%	50-150%
	d3-MeFOSAA	117%	50-150%
	d5-EtFOSAA	118%	50-150%
	13C2-4:2FTS	99%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	103%	50-150%

Method Blank Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-MB	4Q38707.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%

Method Blank Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-MB	4Q38707.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	22%* [a]	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	92%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-BS	4Q38706.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0900	113	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0816	102	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0861	108	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0824	103	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0826	103	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0821	103	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0816	102	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0781	98	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0892	112	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0714	89	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0812	102	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0899	112	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0794	99	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0877	110	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0849	106	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0882	110	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0892	112	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0796	100	53-142
754-91-6	PFOSA	0.08	0.0828	104	67-137
31506-32-8	MeFOSA	0.08	0.0825	103	68-141
2355-31-9	MeFOSAA	0.08	0.0787	98	65-136
2991-50-6	EtFOSAA	0.08	0.0826	103	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0865	108	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0898	112	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0896	112	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0895	112	60-140
919005-14-4	ADONA	0.08	0.0878	110	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0799	100	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0889	111	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	88%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-BS	4Q38706.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	77%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	59%	50-150%
	d3-MeFOSA	6%* [a]	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	92%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-MS	4Q38718.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
OP94618-MSD	4Q38719.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
FC1412-8	4Q38717.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
FC1412-8 [a]	4Q39016.D	5	01/10/23	AL	12/20/22	OP94618	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	Compound	FC1412-8 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0094		0.0741	0.0877	106	0.0741	0.0921	112	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0031	J	0.0741	0.0763	99	0.0741	0.0805	104	5	72-129/30
307-24-4	Perfluorohexanoic acid	0.0053		0.0741	0.0781	98	0.0741	0.0814	103	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0018	J	0.0741	0.0748	99	0.0741	0.0781	103	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.0055		0.0741	0.0786	99	0.0741	0.0818	103	4	71-133/30
375-95-1	Perfluorononanoic acid	0.0038	U	0.0741	0.0727	98	0.0741	0.0761	103	5	69-130/30
335-76-2	Perfluorodecanoic acid	0.0038	U	0.0741	0.0717	97	0.0741	0.0748	101	4	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0038	U	0.0741	0.0697	94	0.0741	0.0748	101	7	69-133/30
307-55-1	Perfluorododecanoic acid	0.0038	U	0.0741	0.0771	104	0.0741	0.0800	108	4	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0038	U	0.0741	0.0668	90	0.0741	0.0677	91	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0038	U	0.0741	0.0694	94	0.0741	0.0735	99	6	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0071		0.0741	0.0845	104	0.0741	0.0879	109	4	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0080		0.0741	0.0922	114	0.0741	0.0968	120	5	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0783		0.0741	0.156	105	0.0741	0.168	121	7	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0027	J	0.0741	0.0817	107	0.0741	0.0842	110	3	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0861		0.0741	0.170	113	0.0741	0.177	123	4	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0038	U	0.0741	0.0807	109	0.0741	0.0811	109	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0038	U	0.0741	0.0636	86	0.0741	0.0631	85	1	53-142/30
754-91-6	PFOSA	0.019	U [b]	0.0741	0.0735	99	0.0741	0.0764	103	4	67-137/30
31506-32-8	MeFOSA	0.038	U [b]	0.0741	0.0670	90	0.0741	0.0860	116	25	68-141/30
2355-31-9	MeFOSAA	0.0077	U	0.0741	0.0718	97	0.0741	0.0687	93	4	65-136/30
2991-50-6	EtFOSAA	0.0077	U	0.0741	0.0723	98	0.0741	0.0730	99	1	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0077	U	0.0741	0.0746	101	0.0741	0.0770	104	3	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0077	U	0.0741	0.0791	107	0.0741	0.0902	122	13	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0077	U	0.0741	0.0784	106	0.0741	0.0822	111	5	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0077	U	0.0741	0.0833	112	0.0741	0.0835	113	0	60-140/30
919005-14-4	ADONA	0.0077	U	0.0741	0.0733	99	0.0741	0.0786	106	7	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0077	U	0.0741	0.0639	86	0.0741	0.0668	90	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0077	U	0.0741	0.0718	97	0.0741	0.0709	96	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1412-8	FC1412-8	Limits
	13C4-PFBA	44%* [c]	40%* [c]	48%* [c]	59%	50-150%
	13C5-PFPeA	39%* [c]	38%* [c]	43%* [c]	61%	50-150%
	13C5-PFHxA	54%	52%	59%	70%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1412
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94618-MS	4Q38718.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
OP94618-MSD	4Q38719.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
FC1412-8	4Q38717.D	1	01/05/23	AL	12/20/22	OP94618	S4Q557
FC1412-8 [a]	4Q39016.D	5	01/10/23	AL	12/20/22	OP94618	S4Q560

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1412-1, FC1412-2, FC1412-3, FC1412-4, FC1412-5, FC1412-6, FC1412-7, FC1412-8, FC1412-9, FC1412-10, FC1412-11

CAS No.	ID Standard Recoveries	MS	MSD	FC1412-8	FC1412-8	Limits
	13C4-PFHpA	61%	61%	70%	72%	50-150%
	13C8-PFOA	69%	69%	80%	80%	50-150%
	13C9-PFNA	72%	72%	82%	79%	50-150%
	13C6-PFDA	83%	83%	93%	77%	50-150%
	13C7-PFUnDA	76%	73%	81%	72%	50-150%
	13C2-PFDoDA	61%	54%	69%	58%	50-150%
	13C2-PFTeDA	56%	46%* [c]	56%	47%* [c]	50-150%
	13C3-PFBS	45%* [c]	44%* [c]	51%	71%	50-150%
	13C3-PFHxS	65%	63%	72%	81%	50-150%
	13C8-PFOS	65%	65%	72%	81%	50-150%
	13C8-FOSA	47%* [c]	20%* [c]	23%* [c]	39%* [c]	50-150%
	d3-MeFOSA	9%* [c]	1%* [c]	2%* [c]	15%* [c]	50-150%
	d3-MeFOSAA	96%	96%	106%	98%	50-150%
	d5-EtFOSAA	87%	84%	90%	85%	50-150%
	13C2-4:2FTS	56%	55%	59%	73%	50-150%
	13C2-6:2FTS	78%	80%	88%	80%	50-150%
	13C2-8:2FTS	88%	90%	93%	73%	50-150%
	13C3-HFPO-DA	54%	53%	62%	68%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC1492

Sampling Dates: 12/19/22 - 12/20/22

Report to:

andrea.colby@sgs.com

Total number of pages in report: 88

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

January 23, 2023

Ms. Teresa Amentt Jennings
AECOM
5438 Wade Park Blvd.
Raleigh, NC 27607

RE: SGS North America Inc. - Orlando job FC1492 Reissue

Dear Ms. Amentt Jennings,

The final report for job number FC1492 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The data qualifier has been revised on -6 & -8.

SGS North America Inc. - Orlando apologies for any inconvenience this may have caused. Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Sections: 1 2 3 4 5 6

Table of Contents

SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FC1492

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1492-1	12/19/22	13:40	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-004.0-20221219
FC1492-2	12/19/22	14:15	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-010.0-20221219
FC1492-3	12/19/22	14:55	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-018.0-20221219
FC1492-4	12/19/22	15:30	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-025.0-20221219
FC1492-5	12/19/22	16:00	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-042.0-20221219
FC1492-6	12/19/22	16:40	DS	12/20/22	AQ	Ground Water	A3RB-DPT0028-057.0-20221219
FC1492-7	12/20/22	08:25	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-004.0-20221220
FC1492-8	12/20/22	08:50	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-010.0-20221220
FC1492-9	12/20/22	09:12	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-018.0-20221220
FC1492-9D	12/20/22	09:12	DS	12/20/22	AQ	Water Dup/MSD	A3RB-DPT0029-018.0-20221220
FC1492-9S	12/20/22	09:12	DS	12/20/22	AQ	Water Matrix Spike	A3RB-DPT0029-018.0-20221220
FC1492-10	12/20/22	10:05	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-025.0-20221220
FC1492-11	12/20/22	10:50	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-042.0-20221220

Sample Summary
(continued)

AECOM, Inc

Job No: FC1492

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1492-12	12/20/22	11:15	DS	12/20/22	AQ	Ground Water	A3RB-DPT0029-057.0-20221220
FC1492-13	12/20/22	10:10	DS	12/20/22	AQ	Ground Water	A3RB-FD-2022120-05
FC1492-14	12/20/22	12:55	DS	12/20/22	AQ	Ground Water	A3RB-DPT0027-018.0-20221220
FC1492-15	12/20/22	13:30	DS	12/20/22	AQ	Ground Water	A3RB-DPT0027-025.0-20221220
FC1492-16	12/20/22	14:40	DS	12/20/22	AQ	Ground Water	A3RB-DPT0027-057.0-20221220
FC1492-17	12/20/22	13:40	DS	12/20/22	AQ	Field Blank Water	A3RB-FB-20221220-04

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC1492

Site: NASA KSC, PFAS SA & Mitigation **Report Revised Date:** 1/23/2023 1:47:42 PM

On 12/20/2022, 16 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1492 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94716

Sample(s) FC1492-9MS, FC1492-9MSD were used as the QC samples indicated.

Sample(s) FC1492-1, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-8, FC1492-9 have surrogates outside control limits.

OP94716-BS for d3-MeFOSA: Outside control limits.

OP94716-MB for d3-MeFOSA: Outside control limits.

FC1492-1 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC1492-1: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC1492-1: Dilution required (ID recovery standard failure).

FC1492-10 for 13C2-4:2FTS: Outside control limits.

FC1492-10 for 13C3-HFPO-DA: Outside control limits.

FC1492-10 for 13C3-PFBS: Outside control limits.

FC1492-10 for 13C4-PFBA: Outside control limits.

FC1492-10 for 13C5-PFHxA: Outside control limits.

FC1492-10 for 13C5-PFPeA: Outside control limits.

FC1492-10 for 13C8-FOSA: Outside control limits.

FC1492-10 for d3-MeFOSA: Outside control limits.

FC1492-10 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC1492-10 for MeFOSA: Associated ID Standard outside control limits.

FC1492-10: Dilution required (ID recovery standard failure).

FC1492-11 for 13C3-PFBS: Outside control limits.

FC1492-11 for 13C4-PFBA: Outside control limits.

FC1492-11 for 13C5-PFPeA: Outside control limits.

FC1492-11 for 13C8-FOSA: Outside control limits.

FC1492-11 for d3-MeFOSA: Outside control limits.

FC1492-11 for MeFOSA: Associated ID Standard outside control limits.

FC1492-11 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC1492-11: Dilution required (ID recovery standard failure).

FC1492-12 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC1492-12 for 13C2-PFDoDA: Outside control limits.

FC1492-12 for 13C2-PFTeDA: Outside control limits.

FC1492-12 for 13C3-PFBS: Outside control limits.

FC1492-12 for 13C4-PFBA: Outside control limits.

FC1492-12 for 13C5-PFPeA: Outside control limits.

FC1492-12 for 13C7-PFUnDA: Outside control limits.

FC1492-12 for 13C8-FOSA: Outside control limits.

FC1492-12 for d3-MeFOSA: Outside control limits.

FC1492-12: Dilution required (ID recovery standard failure).

FC1492-13 for 13C2-4:2FTS: Outside control limits.

FC1492-13 for 13C2-PFTeDA: Outside control limits.

FC1492-13 for 13C3-HFPO-DA: Outside control limits.

FC1492-13 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94716

FC1492-13 for 13C4-PFBA: Outside control limits.
FC1492-13 for 13C5-PFHxA: Outside control limits.
FC1492-13 for 13C5-PFPeA: Outside control limits.
FC1492-13 for d3-MeFOSA: Outside control limits.
FC1492-13 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1492-13 for MeFOSA: Associated ID Standard outside control limits.
FC1492-13: Dilution required (ID recovery standard failure).
FC1492-14 for 13C2-4:2FTS: Outside control limits.
FC1492-14 for 13C2-6:2FTS: Outside control limits.
FC1492-14 for 13C3-HFPO-DA: Outside control limits.
FC1492-14 for 13C3-PFBS: Outside control limits.
FC1492-14 for 13C4-PFBA: Outside control limits.
FC1492-14 for 13C5-PFHxA: Outside control limits.
FC1492-14 for 13C5-PFPeA: Outside control limits.
FC1492-14 for 13C8-FOSA: Outside control limits.
FC1492-14 for d3-MeFOSA: Outside control limits.
FC1492-14 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC1492-14 for MeFOSA: Associated ID Standard outside control limits.
FC1492-14 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1492-14 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC1492-14 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1492-14: Dilution required (ID recovery standard failure).
FC1492-15 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1492-15 for 13C2-PFDoDA: Outside control limits.
FC1492-15 for 13C3-PFBS: Outside control limits.
FC1492-15 for 13C4-PFBA: Outside control limits.
FC1492-15 for 13C5-PFPeA: Outside control limits.
FC1492-15 for 13C7-PFUnDA: Outside control limits.
FC1492-15 for d3-MeFOSA: Outside control limits.
FC1492-15 for d3-MeFOSAA: Outside control limits.
FC1492-15 for d5-EtFOSAA: Outside control limits.
FC1492-15 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC1492-15 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC1492-15: Dilution required (ID recovery standard failure).
FC1492-16 for 13C2-PFTeDA: Outside control limits.
FC1492-16 for 13C3-PFBS: Outside control limits.
FC1492-16 for 13C4-PFBA: Outside control limits.
FC1492-16 for 13C5-PFPeA: Outside control limits.
FC1492-16 for d3-MeFOSA: Outside control limits.
FC1492-16 for MeFOSA: Associated ID Standard outside control limits.
FC1492-16 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1492-16: Dilution required (ID recovery standard failure).
FC1492-17 for 13C2-PFTeDA: Outside control limits.
FC1492-17 for d3-MeFOSA: Outside control limits.
FC1492-17 for MeFOSA: Associated ID Standard outside control limits.
FC1492-17 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC1492-17: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP94893

Sample(s) FC1492-6, FC1492-8 have compound(s) reported with a “B” qualifier, indicating analyte is found in the associated method blank.
Sample(s) FC1492-5, FC1492-6, FC1492-8 have surrogates outside control limits.
FC1492-5: Confirmation run.
FC1492-6 for PFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94893

FC1492-6: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC1492-8 for MeFOSA: Associated ID Standard outside control limits.

FC1492-8: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative revised January 23, 2023 by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1492-1	**A3RB-DPT0028-004.0-20221219**					
Perfluorobutanoic acid [a]		0.0111	0.0096	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0012 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0023 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0049	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [a]		0.0015 J	0.0019	0.00096	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [a]		0.0030 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC1492-2	**A3RB-DPT0028-010.0-20221219**					
No hits reported in this sample.						
FC1492-3	**A3RB-DPT0028-018.0-20221219**					
No hits reported in this sample.						
FC1492-4	**A3RB-DPT0028-025.0-20221219**					
No hits reported in this sample.						
FC1492-5	**A3RB-DPT0028-042.0-20221219**					
No hits reported in this sample.						
FC1492-6	**A3RB-DPT0028-057.0-20221219**					
Perfluorobutanoic acid [a]		0.0060 JB	0.021	0.010	ug/l	EPA 537M QSM5.3 B-15
FC1492-7	**A3RB-DPT0029-004.0-20221220**					
Perfluorobutanoic acid [b]		0.0435	0.043	0.022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0043	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]		0.0040 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [c]		0.0027 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0056	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0106	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0061	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0488	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0350	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0146	0.0017	0.00087	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0183	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1492-8	**A3RB-DPT0029-010.0-20221220**					
Perfluorobutanoic acid [a]		0.0073 JB	0.0096	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [d]		0.0012 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0019 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0018 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0038 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0034 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0329	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0430	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [a]		0.0107	0.0019	0.00096	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [a]		0.0328	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC1492-9	**A3RB-DPT0029-018.0-20221220**					
No hits reported in this sample.						
FC1492-10	**A3RB-DPT0029-025.0-20221220**					
No hits reported in this sample.						
FC1492-11	**A3RB-DPT0029-042.0-20221220**					
Perfluorobutanoic acid [c]		0.0030 J	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0031 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0073	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0019 J	0.0020	0.00098	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0045 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC1492-12	**A3RB-DPT0029-057.0-20221220**					
Perfluorohexanesulfonic acid		0.0021 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0042 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0011 J	0.0018	0.00091	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0028 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
FC1492-13	**A3RB-FD-2022120-05**					
Perfluorohexanesulfonic acid		0.0014 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
FC1492-14	**A3RB-DPT0027-018.0-20221220**					
Perfluorobutanoic acid [c]		0.0050 J	0.0085	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0065	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]		0.0193	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoroheptanoic acid		0.0050	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0078	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0292	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0300	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.285	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0069	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.107	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0248	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0860	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC1492-15	**A3RB-DPT0027-025.0-20221220**					
Perfluorobutanoic acid [c]		0.0045 J	0.0098	0.0049	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0059	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0192	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0043 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0097	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0302	0.024	0.012	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0358	0.024	0.012	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.417	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0136	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.142	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0849	0.0020	0.00098	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0236	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC1492-16	**A3RB-DPT0027-057.0-20221220**					
Perfluorooctanesulfonic acid		0.0012 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC1492-17	**A3RB-FB-20221220-04**					

No hits reported in this sample.

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Dilution due to sample clogging SPE cartridge, only partial volume was extracted. Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0028-004.0-20221219
Lab Sample ID: FC1492-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q38672.D	1.3	01/05/23 01:54	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [b]	4Q38740.D	6.3	01/05/23 23:10	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0111	0.0096	0.0048	0.0024	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0012	0.0048	0.0024	0.0012	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0023	0.0048	0.0024	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0049	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-004.0-20221219		
Lab Sample ID:	FC1492-1	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0048 U	0.0096	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0096	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.0048 U	0.0096	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0015	0.0019	0.00096	0.00048	ug/l	J
	PFOS (Linear Isomer)	0.0030	0.0048	0.0024	0.0012	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%	85%	50-150%
	13C5-PFPeA	55%	74%	50-150%
	13C5-PFHxA	64%	77%	50-150%
	13C4-PFHpA	67%	80%	50-150%
	13C8-PFOA	76%	84%	50-150%
	13C9-PFNA	78%	90%	50-150%
	13C6-PFDA	75%	90%	50-150%
	13C7-PFUnDA	61%	76%	50-150%
	13C2-PFDoDA	44% [e]	50%	50-150%
	13C2-PFTeDA	27% [e]	30% [e]	50-150%
	13C3-PFBS	64%	80%	50-150%
	13C3-PFHxS	75%	84%	50-150%
	13C8-PFOS	78%	86%	50-150%
	13C8-FOSA	62%	80%	50-150%
	d3-MeFOSA	19% [e]	24% [e]	50-150%
	d3-MeFOSAA	96%	98%	50-150%
	d5-EtFOSAA	73%	81%	50-150%
	13C2-4:2FTS	67%	79%	50-150%
	13C2-6:2FTS	86%	87%	50-150%
	13C2-8:2FTS	86%	91%	50-150%
	13C3-HFPO-DA	61%	74%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-004.0-20221219		
Lab Sample ID:	FC1492-1	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0028-010.0-20221219
Lab Sample ID: FC1492-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/19/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38673.D	1	01/05/23 02:09	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38741.D	5	01/05/23 23:25	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.011 U [b]	0.022	0.011	0.0054	ug/l	
307-24-4	Perfluorohexanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.011 U [b]	0.022	0.011	0.0054	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.022 U [b]	0.043	0.022	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-010.0-20221219		
Lab Sample ID:	FC1492-2	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00087 U	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0022 U	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	56%	50-150%
	13C5-PFPeA	32% [d]	47% [d]	50-150%
	13C5-PFHxA	43% [d]	56%	50-150%
	13C4-PFHpA	50%	62%	50-150%
	13C8-PFOA	60%	66%	50-150%
	13C9-PFNA	62%	68%	50-150%
	13C6-PFDA	60%	72%	50-150%
	13C7-PFUnDA	57%	68%	50-150%
	13C2-PFDoDA	52%	58%	50-150%
	13C2-PFTeDA	48% [d]	49% [d]	50-150%
	13C3-PFBS	38% [d]	52%	50-150%
	13C3-PFHxS	55%	62%	50-150%
	13C8-PFOS	61%	68%	50-150%
	13C8-FOSA	54%	66%	50-150%
	d3-MeFOSA	7% [d]	20% [d]	50-150%
	d3-MeFOSAA	79%	82%	50-150%
	d5-EtFOSAA	62%	71%	50-150%
	13C2-4:2FTS	42% [d]	55%	50-150%
	13C2-6:2FTS	63%	64%	50-150%
	13C2-8:2FTS	66%	71%	50-150%
	13C3-HFPO-DA	44% [d]	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-010.0-20221219		
Lab Sample ID:	FC1492-2	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-018.0-20221219		
Lab Sample ID:	FC1492-3	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38674.D	1	01/05/23 02:25	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38742.D	5	01/05/23 23:41	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	210 ml	1.0 ml
Run #2	210 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.024 U [b]	0.048	0.024	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.012 U [b]	0.024	0.012	0.0060	ug/l	
307-24-4	Perfluorohexanoic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.012 U [b]	0.024	0.012	0.0060	ug/l	
31506-32-8	MeFOSA [c]	0.024 U [b]	0.048	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.024 U [b]	0.048	0.024	0.012	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-018.0-20221219		
Lab Sample ID:	FC1492-3	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0048 U	0.0095	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00095 U	0.0019	0.00095	0.00048	ug/l	
	PFOS (Linear Isomer)	0.0024 U	0.0048	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	53%	50-150%
	13C5-PFPeA	30% [d]	45% [d]	50-150%
	13C5-PFHxA	44% [d]	54%	50-150%
	13C4-PFHpA	49% [d]	57%	50-150%
	13C8-PFOA	56%	61%	50-150%
	13C9-PFNA	58%	65%	50-150%
	13C6-PFDA	57%	68%	50-150%
	13C7-PFUnDA	51%	64%	50-150%
	13C2-PFDoDA	52%	61%	50-150%
	13C2-PFTeDA	53%	55%	50-150%
	13C3-PFBS	39% [d]	50%	50-150%
	13C3-PFHxS	53%	60%	50-150%
	13C8-PFOS	55%	65%	50-150%
	13C8-FOSA	36% [d]	47% [d]	50-150%
	d3-MeFOSA	5% [d]	15% [d]	50-150%
	d3-MeFOSAA	74%	82%	50-150%
	d5-EtFOSAA	65%	75%	50-150%
	13C2-4:2FTS	43% [d]	52%	50-150%
	13C2-6:2FTS	59%	61%	50-150%
	13C2-8:2FTS	59%	65%	50-150%
	13C3-HFPO-DA	42% [d]	53%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-018.0-20221219		
Lab Sample ID:	FC1492-3	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-025.0-20221219		
Lab Sample ID:	FC1492-4	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38675.D	1	01/05/23 02:40	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38743.D	5	01/05/23 23:56	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.043	0.021	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.011 U [b]	0.021	0.011	0.0053	ug/l	
307-24-4	Perfluorohexanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [b]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.021 U [b]	0.043	0.021	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0028-025.0-20221219
Lab Sample ID: FC1492-4 **Date Sampled:** 12/19/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00085 U	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0021 U	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [d]	60%	50-150%
	13C5-PFPeA	34% [d]	48% [d]	50-150%
	13C5-PFHxA	46% [d]	57%	50-150%
	13C4-PFHpA	52%	59%	50-150%
	13C8-PFOA	61%	64%	50-150%
	13C9-PFNA	63%	65%	50-150%
	13C6-PFDA	57%	68%	50-150%
	13C7-PFUnDA	54%	62%	50-150%
	13C2-PFDoDA	53%	56%	50-150%
	13C2-PFTeDA	50%	50%	50-150%
	13C3-PFBS	42% [d]	55%	50-150%
	13C3-PFHxS	56%	61%	50-150%
	13C8-PFOS	60%	62%	50-150%
	13C8-FOSA	60%	70%	50-150%
	d3-MeFOSA	11% [d]	23% [d]	50-150%
	d3-MeFOSAA	72%	77%	50-150%
	d5-EtFOSAA	62%	63%	50-150%
	13C2-4:2FTS	46% [d]	54%	50-150%
	13C2-6:2FTS	64%	62%	50-150%
	13C2-8:2FTS	61%	64%	50-150%
	13C3-HFPO-DA	44% [d]	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-025.0-20221219		
Lab Sample ID:	FC1492-4	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-042.0-20221219		
Lab Sample ID:	FC1492-5	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38676.D	1	01/05/23 02:56	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q39146.D	1	01/12/23 22:26	AL	01/09/23 09:40	OP94893	S4Q562
Run #3 [b]	4Q38744.D	5	01/06/23 00:12	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	225 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.022 U [d]	0.044	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.011 U [d]	0.022	0.011	0.0056	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.011 U [d]	0.022	0.011	0.0056	ug/l	
375-85-9	Perfluoroheptanoic acid	0.011 U [d]	0.022	0.011	0.0056	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.011 U [d]	0.022	0.011	0.0056	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.011 U [d]	0.022	0.011	0.0056	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.011 U [d]	0.022	0.011	0.0056	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.011 U [d]	0.022	0.011	0.0056	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0044	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [d]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-042.0-20221219		
Lab Sample ID:	FC1492-5	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.022 U [d]	0.044	0.022	0.011	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0044 U	0.0089	0.0044	0.0022	ug/l	
919005-14-4	ADONA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.022 U [d]	0.044	0.022	0.011	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00089 U	0.0018	0.00089	0.00044	ug/l	
	PFOS (Linear Isomer)	0.0022 U	0.0044	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	33% [e]	36% [e]	44% [e]	50-150%
	13C5-PFPeA	30% [e]	32% [e]	42% [e]	50-150%
	13C5-PFHxA	42% [e]	44% [e]	49% [e]	50-150%
	13C4-PFHpA	47% [e]	47% [e]	52%	50-150%
	13C8-PFOA	54%	51%	56%	50-150%
	13C9-PFNA	54%	53%	59%	50-150%
	13C6-PFDA	54%	52%	61%	50-150%
	13C7-PFUnDA	50%	53%	56%	50-150%
	13C2-PFDoDA	49% [e]	53%	53%	50-150%
	13C2-PFTeDA	53%	52%	44% [e]	50-150%
	13C3-PFBS	39% [e]	34% [e]	48% [e]	50-150%
	13C3-PFHxS	51%	51%	53%	50-150%
	13C8-PFOS	53%	56%	57%	50-150%
	13C8-FOSA	52%	42% [e]	62%	50-150%
	d3-MeFOSA	18% [e]	23% [e]	35% [e]	50-150%
	d3-MeFOSAA	69%	64%	75%	50-150%
	d5-EtFOSAA	60%	60%	63%	50-150%
	13C2-4:2FTS	41% [e]	45% [e]	47% [e]	50-150%
	13C2-6:2FTS	55%	55%	54%	50-150%
	13C2-8:2FTS	57%	54%	60%	50-150%
	13C3-HFPO-DA	43% [e]	40% [e]	47% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-042.0-20221219		
Lab Sample ID:	FC1492-5	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-057.0-20221219		
Lab Sample ID:	FC1492-6	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38677.D	1	01/05/23 03:11	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q39147.D	2.7	01/12/23 22:42	AL	01/09/23 09:40	OP94893	S4Q562
Run #3 [b]	4Q38745.D	5	01/06/23 00:27	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	190 ml	1.0 ml
Run #2	260 ml	1.0 ml
Run #3	190 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0060 [c]	0.021	0.010	0.0052	ug/l	JB
2706-90-3	Perfluoropentanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
307-24-4	Perfluorohexanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
335-76-2	Perfluorodecanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
307-55-1	Perfluorododecanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.0052 U [c]	0.010	0.0052	0.0026	ug/l	
31506-32-8	MeFOSA [d]	0.026 U [e]	0.053	0.026	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.010 U [c]	0.021	0.010	0.0052	ug/l	
2991-50-6	EtFOSAA	0.010 U [c]	0.021	0.010	0.0052	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-057.0-20221219		
Lab Sample ID:	FC1492-6	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U [c]	0.021	0.010	0.0052	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U [c]	0.021	0.010	0.0052	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U [c]	0.021	0.010	0.0052	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.0053 U	0.011	0.0053	0.0026	ug/l	
919005-14-4	ADONA	0.010 U [c]	0.021	0.010	0.0052	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U [c]	0.021	0.010	0.0052	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.010 U [c]	0.021	0.010	0.0052	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0011 U	0.0021	0.0011	0.00053	ug/l	
	PFOS (Linear Isomer)	0.0026 U	0.0053	0.0026	0.0013	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	32% [f]	66%	42% [f]	50-150%
	13C5-PFPeA	30% [f]	71%	43% [f]	50-150%
	13C5-PFHxA	46% [f]	91%	51%	50-150%
	13C4-PFHpA	49% [f]	94%	54%	50-150%
	13C8-PFOA	53%	99%	57%	50-150%
	13C9-PFNA	54%	103%	62%	50-150%
	13C6-PFDA	52%	95%	65%	50-150%
	13C7-PFUnDA	36% [f]	78%	61%	50-150%
	13C2-PFDoDA	17% [f]	59%	50%	50-150%
	13C2-PFTeDA	49% [f]	98%	53%	50-150%
	13C3-PFBS	40% [f]	73%	51%	50-150%
	13C3-PFHxS	55%	101%	56%	50-150%
	13C8-PFOS	58%	107%	61%	50-150%
	13C8-FOSA	14% [f]	38% [f]	32% [f]	50-150%
	d3-MeFOSA	3% [f]	9% [f]	15% [f]	50-150%
	d3-MeFOSAA	73%	108%	82%	50-150%
	d5-EtFOSAA	65%	99%	78%	50-150%
	13C2-4:2FTS	44% [f]	90%	48% [f]	50-150%
	13C2-6:2FTS	55%	106%	58%	50-150%
	13C2-8:2FTS	58%	99%	62%	50-150%
	13C3-HFPO-DA	43% [f]	78%	49% [f]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0028-057.0-20221219		
Lab Sample ID:	FC1492-6	**Date Sampled:**	12/19/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Result is from Run# 3
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-004.0-20221220
Lab Sample ID: FC1492-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38678.D	1	01/05/23 03:27	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38746.D	5	01/06/23 00:43	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0435 [b]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0043	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0040	0.0043	0.0022	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid [c]	0.0027	0.0043	0.0022	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0056	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0106	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0061	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0488	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0350	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.011 U [b]	0.022	0.011	0.0054	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.022 U [b]	0.043	0.022	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-004.0-20221220
Lab Sample ID: FC1492-7 **Date Sampled:** 12/20/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0146	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0183	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	58%	50-150%
	13C5-PFPeA	35% [d]	50%	50-150%
	13C5-PFHxA	44% [d]	55%	50-150%
	13C4-PFHpA	48% [d]	60%	50-150%
	13C8-PFOA	58%	66%	50-150%
	13C9-PFNA	61%	68%	50-150%
	13C6-PFDA	57%	70%	50-150%
	13C7-PFUnDA	54%	65%	50-150%
	13C2-PFDoDA	54%	62%	50-150%
	13C2-PFTeDA	52%	54%	50-150%
	13C3-PFBS	42% [d]	56%	50-150%
	13C3-PFHxS	56%	60%	50-150%
	13C8-PFOS	61%	66%	50-150%
	13C8-FOSA	34% [d]	46% [d]	50-150%
	d3-MeFOSA	4% [d]	15% [d]	50-150%
	d3-MeFOSAA	76%	87%	50-150%
	d5-EtFOSAA	66%	73%	50-150%
	13C2-4:2FTS	43% [d]	55%	50-150%
	13C2-6:2FTS	61%	64%	50-150%
	13C2-8:2FTS	62%	68%	50-150%
	13C3-HFPO-DA	41% [d]	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-004.0-20221220		
Lab Sample ID:	FC1492-7	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-010.0-20221220
Lab Sample ID: FC1492-8 **Date Sampled:** 12/20/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q38679.D	1	01/05/23 03:42	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [b]	4Q39148.D	1.3	01/12/23 22:57	AL	01/09/23 09:40	OP94893	S4Q562

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0073 [c]	0.0096	0.0048	0.0024	ug/l	JB
2706-90-3	Perfluoropentanoic acid [d]	0.0012 [c]	0.0048	0.0024	0.0012	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0019 [c]	0.0048	0.0024	0.0012	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0018 [c]	0.0048	0.0024	0.0012	ug/l	J
375-95-1	Perfluorononanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038 [c]	0.0048	0.0024	0.0012	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0034 [c]	0.0048	0.0024	0.0012	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0329 [c]	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0430 [c]	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U [c]	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [d]	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-010.0-20221220
Lab Sample ID: FC1492-8 **Date Sampled:** 12/20/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U [c]	0.0096	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0107 [c]	0.0019	0.00096	0.00048	ug/l	
	PFOS (Linear Isomer)	0.0328 [c]	0.0048	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	35% [e]	53%	50-150%
	13C5-PFPeA	27% [e]	48% [e]	50-150%
	13C5-PFHxA	36% [e]	64%	50-150%
	13C4-PFHpA	40% [e]	69%	50-150%
	13C8-PFOA	48% [e]	77%	50-150%
	13C9-PFNA	50%	78%	50-150%
	13C6-PFDA	51%	75%	50-150%
	13C7-PFUnDA	51%	72%	50-150%
	13C2-PFDoDA	51%	72%	50-150%
	13C2-PFTeDA	49% [e]	68%	50-150%
	13C3-PFBS	34% [e]	51%	50-150%
	13C3-PFHxS	45% [e]	76%	50-150%
	13C8-PFOS	52%	78%	50-150%
	13C8-FOSA	57%	57%	50-150%
	d3-MeFOSA	39% [e]	15% [e]	50-150%
	d3-MeFOSAA	69%	88%	50-150%
	d5-EtFOSAA	61%	79%	50-150%
	13C2-4:2FTS	35% [e]	64%	50-150%
	13C2-6:2FTS	49% [e]	83%	50-150%
	13C2-8:2FTS	53%	76%	50-150%
	13C3-HFPO-DA	35% [e]	56%	50-150%

(a) Confirmation run.
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-010.0-20221220		
Lab Sample ID:	FC1492-8	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-018.0-20221220
Lab Sample ID: FC1492-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38682.D	1	01/05/23 04:29	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38750.D	5	01/06/23 01:45	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
307-24-4	Perfluorohexanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.021 U [b]	0.042	0.021	0.010	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-018.0-20221220		
Lab Sample ID:	FC1492-9	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0042 U	0.0083	0.0042	0.0021	ug/l	
919005-14-4	ADONA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00083 U	0.0017	0.00083	0.00042	ug/l	
	PFOS (Linear Isomer)	0.0021 U	0.0042	0.0021	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [d]	56%	50-150%
	13C5-PFPeA	35% [d]	51%	50-150%
	13C5-PFHxA	47% [d]	60%	50-150%
	13C4-PFHpA	53%	63%	50-150%
	13C8-PFOA	64%	69%	50-150%
	13C9-PFNA	66%	73%	50-150%
	13C6-PFDA	65%	73%	50-150%
	13C7-PFUnDA	61%	68%	50-150%
	13C2-PFDoDA	57%	64%	50-150%
	13C2-PFTeDA	56%	59%	50-150%
	13C3-PFBS	43% [d]	57%	50-150%
	13C3-PFHxS	59%	71%	50-150%
	13C8-PFOS	63%	75%	50-150%
	13C8-FOSA	60%	78%	50-150%
	d3-MeFOSA	15% [d]	40% [d]	50-150%
	d3-MeFOSAA	93%	90%	50-150%
	d5-EtFOSAA	77%	82%	50-150%
	13C2-4:2FTS	45% [d]	59%	50-150%
	13C2-6:2FTS	68%	68%	50-150%
	13C2-8:2FTS	71%	74%	50-150%
	13C3-HFPO-DA	47% [d]	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits, Confirmed by batch QC.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-018.0-20221220		
Lab Sample ID:	FC1492-9	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-025.0-20221220		
Lab Sample ID:	FC1492-10	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38685.D	1	01/05/23 05:16	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38753.D	5	01/06/23 02:31	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	220 ml	1.0 ml
Run #2	220 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.023 U [b]	0.045	0.023	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.011 U [b]	0.023	0.011	0.0057	ug/l	
307-24-4	Perfluorohexanoic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.011 U [b]	0.023	0.011	0.0057	ug/l	
31506-32-8	MeFOSA [c]	0.023 U [b]	0.045	0.023	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.023 U [b]	0.045	0.023	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-025.0-20221220		
Lab Sample ID:	FC1492-10	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0045 U	0.0091	0.0045	0.0023	ug/l	
919005-14-4	ADONA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00091 U	0.0018	0.00091	0.00045	ug/l	
	PFOS (Linear Isomer)	0.0023 U	0.0045	0.0023	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [d]	54%	50-150%
	13C5-PFPeA	34% [d]	47% [d]	50-150%
	13C5-PFHxA	47% [d]	55%	50-150%
	13C4-PFHpA	53%	60%	50-150%
	13C8-PFOA	61%	65%	50-150%
	13C9-PFNA	64%	69%	50-150%
	13C6-PFDA	61%	70%	50-150%
	13C7-PFUnDA	56%	67%	50-150%
	13C2-PFDoDA	56%	67%	50-150%
	13C2-PFTeDA	52%	56%	50-150%
	13C3-PFBS	43% [d]	56%	50-150%
	13C3-PFHxS	59%	63%	50-150%
	13C8-PFOS	62%	69%	50-150%
	13C8-FOSA	37% [d]	47% [d]	50-150%
	d3-MeFOSA	5% [d]	15% [d]	50-150%
	d3-MeFOSAA	84%	86%	50-150%
	d5-EtFOSAA	71%	82%	50-150%
	13C2-4:2FTS	46% [d]	55%	50-150%
	13C2-6:2FTS	65%	64%	50-150%
	13C2-8:2FTS	64%	67%	50-150%
	13C3-HFPO-DA	46% [d]	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-025.0-20221220		
Lab Sample ID:	FC1492-10	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-042.0-20221220
Lab Sample ID: FC1492-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38686.D	1	01/05/23 05:31	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38754.D	5	01/06/23 02:47	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	205 ml	1.0 ml
Run #2	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0030	0.0098	0.0049	0.0024	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [c]	0.024	0.012	0.0061	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0031	0.0049	0.0024	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0073	0.0049	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
31506-32-8	MeFOSA [b]	0.024 U [c]	0.049	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0029-042.0-20221220
Lab Sample ID: FC1492-11 **Date Sampled:** 12/20/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
919005-14-4	ADONA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0019	0.0020	0.00098	0.00049	ug/l	J
	PFOS (Linear Isomer)	0.0045	0.0049	0.0024	0.0012	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% d	53%	50-150%
	13C5-PFPeA	33% d	49% d	50-150%
	13C5-PFHxA	55%	60%	50-150%
	13C4-PFHpA	58%	60%	50-150%
	13C8-PFOA	65%	66%	50-150%
	13C9-PFNA	64%	69%	50-150%
	13C6-PFDA	60%	66%	50-150%
	13C7-PFUnDA	53%	62%	50-150%
	13C2-PFDoDA	54%	61%	50-150%
	13C2-PFTeDA	54%	53%	50-150%
	13C3-PFBS	40% d	57%	50-150%
	13C3-PFHxS	62%	65%	50-150%
	13C8-PFOS	60%	64%	50-150%
	13C8-FOSA	31% d	39% d	50-150%
	d3-MeFOSA	5% d	13% d	50-150%
	d3-MeFOSAA	79%	88%	50-150%
	d5-EtFOSAA	68%	75%	50-150%
	13C2-4:2FTS	53%	58%	50-150%
	13C2-6:2FTS	66%	65%	50-150%
	13C2-8:2FTS	62%	66%	50-150%
	13C3-HFPO-DA	53%	60%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-042.0-20221220		
Lab Sample ID:	FC1492-11	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-057.0-20221220		
Lab Sample ID:	FC1492-12	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38687.D	1	01/05/23 05:47	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38755.D	5	01/06/23 03:03	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	220 ml	1.0 ml
Run #2	220 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.023 U [b]	0.045	0.023	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.011 U [b]	0.023	0.011	0.0057	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.011 U [b]	0.023	0.011	0.0057	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.011 U [b]	0.023	0.011	0.0057	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021	0.0045	0.0023	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042	0.0045	0.0023	0.0011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.011 U [b]	0.023	0.011	0.0057	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [b]	0.023	0.011	0.0057	ug/l	
31506-32-8	MeFOSA [c]	0.023 U [b]	0.045	0.023	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-057.0-20221220		
Lab Sample ID:	FC1492-12	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
919005-14-4	ADONA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.023 U [b]	0.045	0.023	0.011	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0011	0.0018	0.00091	0.00045	ug/l	J
	PFOS (Linear Isomer)	0.0028	0.0045	0.0023	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	58%	50-150%
	13C5-PFPeA	35% [d]	51%	50-150%
	13C5-PFHxA	56%	61%	50-150%
	13C4-PFHpA	60%	61%	50-150%
	13C8-PFOA	64%	67%	50-150%
	13C9-PFNA	63%	67%	50-150%
	13C6-PFDA	57%	61%	50-150%
	13C7-PFUnDA	44% [d]	53%	50-150%
	13C2-PFDoDA	39% [d]	45% [d]	50-150%
	13C2-PFTeDA	47% [d]	42% [d]	50-150%
	13C3-PFBS	44% [d]	59%	50-150%
	13C3-PFHxS	63%	69%	50-150%
	13C8-PFOS	60%	64%	50-150%
	13C8-FOSA	39% [d]	72%	50-150%
	d3-MeFOSA	11% [d]	31% [d]	50-150%
	d3-MeFOSAA	76%	76%	50-150%
	d5-EtFOSAA	63%	65%	50-150%
	13C2-4:2FTS	54%	61%	50-150%
	13C2-6:2FTS	67%	66%	50-150%
	13C2-8:2FTS	62%	64%	50-150%
	13C3-HFPO-DA	54%	62%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0029-057.0-20221220		
Lab Sample ID:	FC1492-12	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD-2022120-05
Lab Sample ID: FC1492-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38688.D	1	01/05/23 06:02	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38756.D	5	01/06/23 03:18	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	215 ml	1.0 ml
Run #2	215 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.023 U [b]	0.047	0.023	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.012 U [b]	0.023	0.012	0.0058	ug/l	
307-24-4	Perfluorohexanoic acid	0.012 U [b]	0.023	0.012	0.0058	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.012 U [b]	0.023	0.012	0.0058	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [b]	0.023	0.012	0.0058	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [b]	0.023	0.012	0.0058	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0014	0.0047	0.0023	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0023 U	0.0047	0.0023	0.0012	ug/l	
31506-32-8	MeFOSA [c]	0.023 U [b]	0.047	0.023	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.023 U [b]	0.047	0.023	0.012	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-2022120-05		
Lab Sample ID:	FC1492-13	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0047 U	0.0093	0.0047	0.0023	ug/l	
919005-14-4	ADONA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00093 U	0.0019	0.00093	0.00047	ug/l	
	PFOS (Linear Isomer)	0.0023 U	0.0047	0.0023	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	54%	50-150%
	13C5-PFPeA	32% [d]	45% [d]	50-150%
	13C5-PFHxA	45% [d]	52%	50-150%
	13C4-PFHpA	50%	53%	50-150%
	13C8-PFOA	58%	60%	50-150%
	13C9-PFNA	60%	64%	50-150%
	13C6-PFDA	57%	61%	50-150%
	13C7-PFUnDA	50%	53%	50-150%
	13C2-PFDoDA	50%	51%	50-150%
	13C2-PFTeDA	47% [d]	43% [d]	50-150%
	13C3-PFBS	41% [d]	51%	50-150%
	13C3-PFHxS	55%	57%	50-150%
	13C8-PFOS	57%	58%	50-150%
	13C8-FOSA	59%	69%	50-150%
	d3-MeFOSA	10% [d]	19% [d]	50-150%
	d3-MeFOSAA	72%	73%	50-150%
	d5-EtFOSAA	61%	69%	50-150%
	13C2-4:2FTS	44% [d]	51%	50-150%
	13C2-6:2FTS	61%	58%	50-150%
	13C2-8:2FTS	58%	62%	50-150%
	13C3-HFPO-DA	44% [d]	52%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-2022120-05		
Lab Sample ID:	FC1492-13	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0027-018.0-20221220
Lab Sample ID: FC1492-14
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38689.D	1	01/05/23 06:18	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38757.D	5	01/06/23 03:34	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0050	0.0085	0.0043	0.0021	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0065	0.0043	0.0021	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0193	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0050	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0078	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0292 [c]	0.021	0.011	0.0053	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0300 [c]	0.021	0.011	0.0053	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.285	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0069	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.107	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.021	0.011	0.0053	ug/l	
31506-32-8	MeFOSA [b]	0.021 U [c]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.021 U [c]	0.043	0.021	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0027-018.0-20221220
Lab Sample ID: FC1492-14 **Date Sampled:** 12/20/22
Matrix: AQ - Ground Water **Date Received:** 12/20/22
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.021 U [c]	0.043	0.021	0.011	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0248	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0860	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	54%	50-150%
	13C5-PFPeA	33% [d]	46% [d]	50-150%
	13C5-PFHxA	45% [d]	54%	50-150%
	13C4-PFHpA	51%	57%	50-150%
	13C8-PFOA	52%	64%	50-150%
	13C9-PFNA	52%	60%	50-150%
	13C6-PFDA	61%	61%	50-150%
	13C7-PFUnDA	58%	62%	50-150%
	13C2-PFDoDA	54%	61%	50-150%
	13C2-PFTeDA	53%	49% [d]	50-150%
	13C3-PFBS	41% [d]	54%	50-150%
	13C3-PFHxS	54%	60%	50-150%
	13C8-PFOS	52%	62%	50-150%
	13C8-FOSA	46% [d]	67%	50-150%
	d3-MeFOSA	17% [d]	29% [d]	50-150%
	d3-MeFOSAA	77%	85%	50-150%
	d5-EtFOSAA	74%	76%	50-150%
	13C2-4:2FTS	45% [d]	53%	50-150%
	13C2-6:2FTS	41% [d]	60%	50-150%
	13C2-8:2FTS	59%	61%	50-150%
	13C3-HFPO-DA	46% [d]	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-018.0-20221220		
Lab Sample ID:	FC1492-14	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0027-025.0-20221220
Lab Sample ID: FC1492-15
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38692.D	1	01/05/23 07:04	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38760.D	5	01/06/23 04:20	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	205 ml	1.0 ml
Run #2	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0045	0.0098	0.0049	0.0024	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0059	0.0049	0.0024	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0192	0.0049	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043	0.0049	0.0024	0.0012	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0097	0.0049	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0302 [c]	0.024	0.012	0.0061	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0358 [c]	0.024	0.012	0.0061	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.417	0.0049	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0136	0.0049	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.142	0.0049	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.012 U [c]	0.024	0.012	0.0061	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0049	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [b]	0.024 U [c]	0.049	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.024 U [c]	0.049	0.024	0.012	ug/l	
2991-50-6	EtFOSAA	0.024 U [c]	0.049	0.024	0.012	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-025.0-20221220		
Lab Sample ID:	FC1492-15	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
919005-14-4	ADONA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino	[b] 0.024 U [c]	0.049	0.024	0.012	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0849	0.0020	0.00098	0.00049	ug/l	
	PFOS (Linear Isomer)	0.0236	0.0049	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [d]	56%	50-150%
	13C5-PFPeA	33% [d]	47% [d]	50-150%
	13C5-PFHxA	50%	58%	50-150%
	13C4-PFHpA	53%	58%	50-150%
	13C8-PFOA	65%	64%	50-150%
	13C9-PFNA	71%	67%	50-150%
	13C6-PFDA	53%	61%	50-150%
	13C7-PFUnDA	5% [d]	43% [d]	50-150%
	13C2-PFDoDA	6% [d]	24% [d]	50-150%
	13C2-PFTeDA	51%	42% [d]	50-150%
	13C3-PFBS	40% [d]	57%	50-150%
	13C3-PFHxS	61%	65%	50-150%
	13C8-PFOS	70%	72%	50-150%
	13C8-FOSA	57%	85%	50-150%
	d3-MeFOSA	0% [d]	29% [d]	50-150%
	d3-MeFOSAA	1% [d]	89%	50-150%
	d5-EtFOSAA	3% [d]	65%	50-150%
	13C2-4:2FTS	50%	57%	50-150%
	13C2-6:2FTS	68%	64%	50-150%
	13C2-8:2FTS	57%	67%	50-150%
	13C3-HFPO-DA	50%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-025.0-20221220		
Lab Sample ID:	FC1492-15	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0027-057.0-20221220
Lab Sample ID: FC1492-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/20/22
Date Received: 12/20/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38693.D	1	01/05/23 07:20	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38761.D	5	01/06/23 04:36	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0012	0.0042	0.0021	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-057.0-20221220		
Lab Sample ID:	FC1492-16	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
919005-14-4	ADONA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00083 U	0.0017	0.00083	0.00042	ug/l	
	PFOS (Linear Isomer)	0.0021 U	0.0042	0.0021	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% d	54%	50-150%
	13C5-PFPeA	39% d	55%	50-150%
	13C5-PFHxA	55%	61%	50-150%
	13C4-PFHpA	60%	59%	50-150%
	13C8-PFOA	67%	66%	50-150%
	13C9-PFNA	66%	67%	50-150%
	13C6-PFDA	64%	62%	50-150%
	13C7-PFUnDA	58%	55%	50-150%
	13C2-PFDoDA	57%	57%	50-150%
	13C2-PFTeDA	47% d	43% d	50-150%
	13C3-PFBS	49% d	65%	50-150%
	13C3-PFHxS	65%	70%	50-150%
	13C8-PFOS	69%	76%	50-150%
	13C8-FOSA	61%	75%	50-150%
	d3-MeFOSA	9% d	29% d	50-150%
	d3-MeFOSAA	86%	89%	50-150%
	d5-EtFOSAA	75%	78%	50-150%
	13C2-4:2FTS	53%	58%	50-150%
	13C2-6:2FTS	70%	64%	50-150%
	13C2-8:2FTS	67%	65%	50-150%
	13C3-HFPO-DA	55%	62%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0027-057.0-20221220		
Lab Sample ID:	FC1492-16	**Date Sampled:**	12/20/22
Matrix:	AQ - Ground Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221220-04		
Lab Sample ID:	FC1492-17	**Date Sampled:**	12/20/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q38694.D	1	01/05/23 07:35	AL	12/27/22 12:18	OP94716	S4Q556
Run #2 [a]	4Q38762.D	5	01/06/23 04:51	AL	12/27/22 12:18	OP94716	S4Q557

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221220-04		
Lab Sample ID:	FC1492-17	**Date Sampled:**	12/20/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%	71%	50-150%
	13C5-PFPeA	69%	64%	50-150%
	13C5-PFHxA	68%	61%	50-150%
	13C4-PFHpA	66%	59%	50-150%
	13C8-PFOA	71%	64%	50-150%
	13C9-PFNA	71%	64%	50-150%
	13C6-PFDA	68%	63%	50-150%
	13C7-PFUnDA	65%	58%	50-150%
	13C2-PFDoDA	62%	54%	50-150%
	13C2-PFTeDA	49% [d]	41% [d]	50-150%
	13C3-PFBS	74%	76%	50-150%
	13C3-PFHxS	72%	71%	50-150%
	13C8-PFOS	72%	72%	50-150%
	13C8-FOSA	74%	83%	50-150%
	d3-MeFOSA	26% [d]	43% [d]	50-150%
	d3-MeFOSAA	80%	89%	50-150%
	d5-EtFOSAA	73%	78%	50-150%
	13C2-4:2FTS	64%	59%	50-150%
	13C2-6:2FTS	69%	64%	50-150%
	13C2-8:2FTS	68%	66%	50-150%
	13C3-HFPO-DA	68%	69%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20221220-04		
Lab Sample ID:	FC1492-17	**Date Sampled:**	12/20/22
Matrix:	AQ - Field Blank Water	**Date Received:**	12/20/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC1492

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 1 of	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name:	SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-DPT0028-004.0-20221219	A3RB-DPT0028	20221219	1340	WG	N	G	2	2	
2	A3RB-DPT0028-010.0-20221219	A3RB-DPT0028	20221219	1415	WG	N	G	2	2	
3	A3RB-DPT0028-018.0-20221219	A3RB-DPT0028	20221219	1455	WG	N	G	2	2	
4	A3RB-DPT0028-025.0-20221219	A3RB-DPT0028	20221219	1530	WG	N	G	2	2	
5	A3RB-DPT0028-042.0-20221219	A3RB-DPT0028	20221219	1600	WG	N	G	2	2	
6	A3RB-DPT0028-057.0-20221219	A3RB-DPT0028	20221219	1646	WG	N	G	2	2	
7	A3RB-DPT0029-004.0-20221220	A3RB-DPT0029	20221220	0825	WG	N	G	2	2	
8	A3RB-DPT0029-010.0-20221220	A3RB-DPT0029	20221220	0850	WG	N	G	2	2	
9	A3RB-DPT0029-018.0-20221220	A3RB-DPT0029	20221220	0912	WG	N	G	2	2	
10	A3RB-DPT0029-025.0-20221220	A3RB-DPT0029	20221220	1005	WG	N	G	2	2	
11	A3RB-DPT0029-042.0-20221220	A3RB-DPT0029	20221220	1050	WG	N	G	2	2	
12	A3RB-DPT0029-057.0-20221220	A3RB-DPT0029	20221220	1115	WG	N	G	2	2	3.4C, 2.2C TM

INITIAL ASSESSMENT SM

LABEL VERIFICATION SM

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	Brent Nunn / AECOM	12/20/22	1630	[signature]	12/20/22	1630
2						
3						

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC1492: Chain of Custody
Page 1 of 3

FC1492

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC	COC No.	Page: of	
Site Location: Site Assessment and Mitigation (SA&M)	PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537											Comments
9	A3RB-MS/MSD-20221220-03	A3RB-MS/MSD	20221220	0915	WG	N	G	2	2											DPT0027 018.0
13	A3RB-FD-20221220-05	A3RB-FD	20221220	1010	WQ	N	G	2	2											
14	A3RB-DPT0027-018.0-20221220	A3RB-DPT0027	20221220	1255	WG	N	G	2	2											
15	A3RB-DPT0027-025.0-20221220	A3RB-DPT0027	20221220	1330	WG	N	G	2	2											
OK	~~A3RB-DPT0027-042.0-20221220~~	~~A3RB-DPT0027~~	~~20221220~~		~~WG~~	~~N~~	~~G~~	~~2~~	~~2~~											OK
16	A3RB-DPT0027-057.0-20221220	A3RB-DPT0027	20221220	1449	WG	N	G	2	2											
17	A3RB-FB-20221220-04	A3RB-FB	20221220	1340	WQ	N	G	2	2											
			202212			N	G	2	2											
			202212			N	G	2	2											
			202212			N	G	2	2											
			202212			N	G	2	2											
			202212			N	G	2	2											

***Field* Comments:** Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD			***Lab* Comments:**			**Sample Shipment and Delivery Details** Number of coolers in shipment:
Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time	Samples Iced?(check) Yes_____ No_____
1 [signature] Ursel /AECOM	12/20/22	1630	1 [signature]	12/20/22	1630	Shipping Company:
2			2			Tracking No:
3			3			Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equlpment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H_2SO_4**=Hydrogen sulfate, **H_2SO_4 <2**=Adjust to pH < 2 with sulfuric acid, **H_3PO_4**=Phosphoric acid, **H_3PO_4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO_3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **$Na_2O_3S_2$**=Sodium thiosulfate, **$Na_2O_3S_2$ 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **$Na_2O_3S_2$ 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **$NaHSO_4$ <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2

5

FC1492: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FC1492 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 12/20/2022 4:30:00 PM **Delivery Method:** DROPOFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4); Cooler 2: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.6); Cooler 2: (2.4);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☐	☑
2. Trip Blank listed on COC	☐	☐	☑

	W	S	N/A
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☐	☑
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/20/2022 4:30:00 P Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94716	EPA 537M QSM5.3 B-15						
OP94716-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	105	%	73-129
OP94716-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	72-129
OP94716-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	100	%	72-129
OP94716-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	101	%	72-130
OP94716-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	71-133
OP94716-BS	375-95-1	Perfluorononanoic acid	BSP	REC	97	%	69-130
OP94716-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	100	%	71-129
OP94716-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP94716-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	103	%	72-134
OP94716-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	81	%	65-144
OP94716-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP94716-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	102	%	72-130
OP94716-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	90	%	71-127
OP94716-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	102	%	68-131
OP94716-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	99	%	69-134
OP94716-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	65-140
OP94716-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	103	%	69-127
OP94716-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	108	%	53-142
OP94716-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP94716-BS	31506-32-8	MeFOSA	BSP	REC	98	%	68-141
OP94716-BS	2355-31-9	MeFOSAA	BSP	REC	95	%	65-136
OP94716-BS	2991-50-6	EtFOSAA	BSP	REC	97	%	61-135
OP94716-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	99	%	63-143
OP94716-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	102	%	64-140
OP94716-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	102	%	67-138
OP94716-MS	375-22-4	Perfluorobutanoic acid	MS	REC	99	%	73-129
OP94716-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	72-129
OP94716-MS	307-24-4	Perfluorohexanoic acid	MS	REC	98	%	72-129
OP94716-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	102	%	72-130
OP94716-MS	335-67-1	Perfluorooctanoic acid	MS	REC	96	%	71-133
OP94716-MS	375-95-1	Perfluorononanoic acid	MS	REC	95	%	69-130
OP94716-MS	335-76-2	Perfluorodecanoic acid	MS	REC	102	%	71-129
OP94716-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	97	%	69-133
OP94716-MS	307-55-1	Perfluorododecanoic acid	MS	REC	103	%	72-134
OP94716-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	76	%	65-144
OP94716-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	105	%	71-132
OP94716-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	101	%	72-130
OP94716-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	101	%	71-127
OP94716-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	106	%	68-131
OP94716-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	103	%	69-134
OP94716-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	101	%	65-140
OP94716-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	103	%	69-127

* Sample used for QC is not from job FC1492

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94716-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	91	%	53-142
OP94716-MS	754-91-6	PFOSA	MS	REC	93	%	67-137
OP94716-MS	31506-32-8	MeFOSA	MS	REC	105	%	68-141
OP94716-MS	2355-31-9	MeFOSAA	MS	REC	92	%	65-136
OP94716-MS	2991-50-6	EtFOSAA	MS	REC	100	%	61-135
OP94716-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	98	%	63-143
OP94716-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	104	%	64-140
OP94716-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	104	%	67-138
OP94716-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	105	%	73-129
OP94716-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	7	%	30
OP94716-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	100	%	72-129
OP94716-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	2	%	30
OP94716-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	100	%	72-129
OP94716-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	4	%	30
OP94716-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	99	%	72-130
OP94716-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP94716-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	99	%	71-133
OP94716-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	5	%	30
OP94716-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	101	%	69-130
OP94716-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	8	%	30
OP94716-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	108	%	71-129
OP94716-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	7	%	30
OP94716-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	102	%	69-133
OP94716-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	7	%	30
OP94716-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	105	%	72-134
OP94716-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	4	%	30
OP94716-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	85	%	65-144
OP94716-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	12	%	30
OP94716-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	105	%	71-132
OP94716-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP94716-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	102	%	72-130
OP94716-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP94716-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	102	%	71-127
OP94716-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP94716-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	108	%	68-131
OP94716-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP94716-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	101	%	69-134
OP94716-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	0	%	30
OP94716-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	97	%	65-140
OP94716-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	3	%	30
OP94716-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	105	%	69-127
OP94716-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	3	%	30
OP94716-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	120	%	53-142
OP94716-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	29	%	30
OP94716-MSD	754-91-6	PFOSA	MSD	REC	95	%	67-137

* Sample used for QC is not from job FC1492

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/19/22 thru 12/20/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94716-MSD	754-91-6	PFOSA	MSD	RPD	4	%	30
OP94716-MSD	31506-32-8	MeFOSA	MSD	REC	122	%	68-141
OP94716-MSD	31506-32-8	MeFOSA	MSD	RPD	17	%	30
OP94716-MSD	2355-31-9	MeFOSAA	MSD	REC	97	%	65-136
OP94716-MSD	2355-31-9	MeFOSAA	MSD	RPD	7	%	30
OP94716-MSD	2991-50-6	EtFOSAA	MSD	REC	107	%	61-135
OP94716-MSD	2991-50-6	EtFOSAA	MSD	RPD	9	%	30
OP94716-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	102	%	63-143
OP94716-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP94716-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	111	%	64-140
OP94716-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	9	%	30
OP94716-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	108	%	67-138
OP94716-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP94893	EPA 537M QSM5.3 B-15						
OP94893-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	108	%	73-129
OP94893-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	72-129
OP94893-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	101	%	72-129
OP94893-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	102	%	72-130
OP94893-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	71-133
OP94893-BS	375-95-1	Perfluorononanoic acid	BSP	REC	98	%	69-130
OP94893-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	99	%	71-129
OP94893-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	69-133
OP94893-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP94893-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	92	%	65-144
OP94893-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP94893-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	103	%	72-130
OP94893-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	93	%	71-127
OP94893-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	103	%	68-131
OP94893-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP94893-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	103	%	65-140
OP94893-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	101	%	69-127
OP94893-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	108	%	53-142
OP94893-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP94893-BS	31506-32-8	MeFOSA	BSP	REC	97	%	68-141
OP94893-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	65-136
OP94893-BS	2991-50-6	EtFOSAA	BSP	REC	96	%	61-135
OP94893-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	99	%	63-143
OP94893-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	105	%	64-140
OP94893-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138

* Sample used for QC is not from job FC1492

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q556-IBLK	4Q38646.D	1	01/04/23	AL	n/a	n/a	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	99%	50-150%

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q556-IBLK	4Q38646.D	1	01/04/23	AL	n/a	n/a	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	99%	50-150%
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	111%	50-150%
	d3-MeFOSA	117%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	99%	50-150%

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	127%	50-150%
	13C5-PFPeA	129%	50-150%
	13C5-PFHxA	129%	50-150%
	13C4-PFHpA	132%	50-150%
	13C8-PFOA	132%	50-150%
	13C9-PFNA	130%	50-150%
	13C6-PFDA	143%	50-150%
	13C7-PFUnDA	145%	50-150%
	13C2-PFDoDA	148%	50-150%
	13C2-PFTeDA	139%	50-150%
	13C3-PFBS	126%	50-150%
	13C3-PFHxS	125%	50-150%
	13C8-PFOS	124%	50-150%
	13C8-FOSA	131%	50-150%

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q557-IBLK	4Q38701.D	1	01/05/23	AL	n/a	n/a	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	ID Standard Recoveries		Limits
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	139%	50-150%
	d5-EtFOSAA	138%	50-150%
	13C2-4:2FTS	117%	50-150%
	13C2-6:2FTS	124%	50-150%
	13C2-8:2FTS	126%	50-150%
	13C3-HFPO-DA	134%	50-150%

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q562-IBLK	4Q39127.D	1	01/12/23	AL	n/a	n/a	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%

Instrument Blank

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q562-IBLK	4Q39127.D	1	01/12/23	AL	n/a	n/a	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	90%	50-150%

Method Blank Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-MB	4Q38671.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	80%	50-150%

Method Blank Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-MB	4Q38671.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	79%	50-150%
	13C4-PFHpA	77%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	88%	50-150%
	13C7-PFUnDA	83%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	82%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSA	30%* [a]	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	74%	50-150%
	13C2-6:2FTS	81%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	77%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-MB	4Q39134.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	0.0024	0.0080	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%

Method Blank Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-MB	4Q39134.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	91%	50-150%
	d3-MeFOSA	52%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	84%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	81%	50-150%

Blank Spike Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-BS	4Q38670.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0836	105	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0767	96	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0798	100	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0810	101	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0788	99	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0778	97	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0797	100	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0769	96	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0824	103	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0650	81	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0798	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0815	102	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0723	90	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0817	102	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0788	99	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0795	99	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0827	103	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0864	108	53-142
754-91-6	PFOSA	0.08	0.0767	96	67-137
31506-32-8	MeFOSA	0.08	0.0787	98	68-141
2355-31-9	MeFOSAA	0.08	0.0756	95	65-136
2991-50-6	EtFOSAA	0.08	0.0776	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0790	99	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0819	102	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0814	102	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0802	100	60-140
919005-14-4	ADONA	0.08	0.0758	95	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0801	100	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0785	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-BS	4Q38670.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	78%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	81%	50-150%
	13C6-PFDA	80%	50-150%
	13C7-PFUnDA	76%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	81%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	82%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	25%* [a]	50-150%
	d3-MeFOSAA	90%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	80%	50-150%
	13C2-6:2FTS	85%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	77%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-BS	4Q39133.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0864	108	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0766	96	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0809	101	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0818	102	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0794	99	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0787	98	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0792	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0777	97	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0837	105	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0739	92	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0799	100	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0824	103	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0741	93	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0825	103	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0787	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0823	103	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0809	101	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0860	108	53-142
754-91-6	PFOSA	0.08	0.0765	96	67-137
31506-32-8	MeFOSA	0.08	0.0776	97	68-141
2355-31-9	MeFOSAA	0.08	0.0793	99	65-136
2991-50-6	EtFOSAA	0.08	0.0770	96	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0789	99	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0838	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0805	101	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0831	104	60-140
919005-14-4	ADONA	0.08	0.0813	102	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0805	101	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0784	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94893-BS	4Q39133.D	1	01/12/23	AL	01/09/23	OP94893	S4Q562

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-6, FC1492-8

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	93%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSA	65%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-MS	4Q38751.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557
OP94716-MSD	4Q38752.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557
FC1492-9	4Q38682.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556
FC1492-9 [a]	4Q38750.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	Compound	FC1492-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.042 U [b]		0.0741	0.0736	99	0.0755	0.0791	105	7	73-129/30
2706-90-3	Perfluoropentanoic acid	0.021 U [b]		0.0741	0.0740	100	0.0755	0.0754	100	2	72-129/30
307-24-4	Perfluorohexanoic acid	0.021 U [b]		0.0741	0.0725	98	0.0755	0.0752	100	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0042 U		0.0741	0.0756	102	0.0755	0.0750	99	1	72-130/30
335-67-1	Perfluorooctanoic acid	0.0042 U		0.0741	0.0713	96	0.0755	0.0750	99	5	71-133/30
375-95-1	Perfluorononanoic acid	0.0042 U		0.0741	0.0704	95	0.0755	0.0759	101	8	69-130/30
335-76-2	Perfluorodecanoic acid	0.0042 U		0.0741	0.0757	102	0.0755	0.0813	108	7	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0042 U		0.0741	0.0722	97	0.0755	0.0771	102	7	69-133/30
307-55-1	Perfluorododecanoic acid	0.0042 U		0.0741	0.0764	103	0.0755	0.0793	105	4	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0042 U		0.0741	0.0566	76	0.0755	0.0640	85	12	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0042 U		0.0741	0.0781	105	0.0755	0.0796	105	2	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.021 U [b]		0.0741	0.0751	101	0.0755	0.0773	102	3	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.021 U [b]		0.0741	0.0747	101	0.0755	0.0773	102	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0042 U		0.0741	0.0786	106	0.0755	0.0815	108	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U		0.0741	0.0765	103	0.0755	0.0764	101	0	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U		0.0741	0.0751	101	0.0755	0.0729	97	3	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0042 U		0.0741	0.0764	103	0.0755	0.0791	105	3	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0042 U		0.0741	0.0677	91	0.0755	0.0909	120	29	53-142/30
754-91-6	PFOSA	0.0042 U		0.0741	0.0686	93	0.0755	0.0717	95	4	67-137/30
31506-32-8	MeFOSA	0.042 U [b]		0.0741	0.0775	105	0.0755	0.0918	122	17	68-141/30
2355-31-9	MeFOSAA	0.0083 U		0.0741	0.0678	92	0.0755	0.0730	97	7	65-136/30
2991-50-6	EtFOSAA	0.0083 U		0.0741	0.0743	100	0.0755	0.0810	107	9	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U [b]		0.0741	0.0723	98	0.0755	0.0770	102	6	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0083 U		0.0741	0.0770	104	0.0755	0.0839	111	9	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0083 U		0.0741	0.0769	104	0.0755	0.0814	108	6	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0083 U		0.0741	0.0717	97	0.0755	0.0789	105	10	60-140/30
919005-14-4	ADONA	0.0083 U		0.0741	0.0734	99	0.0755	0.0756	100	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0083 U		0.0741	0.0747	101	0.0755	0.0754	100	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0083 U		0.0741	0.0765	103	0.0755	0.0831	110	8	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1492-9	FC1492-9	Limits
	13C4-PFBA	48%* [c]	40%* [c]	42%* [c]	56%	50-150%
	13C5-PFPeA	45%* [c]	46%* [c]	35%* [c]	51%	50-150%
	13C5-PFHxA	55%	55%	47%* [c]	60%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94716-MS	4Q38751.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557
OP94716-MSD	4Q38752.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557
FC1492-9	4Q38682.D	1	01/05/23	AL	12/27/22	OP94716	S4Q556
FC1492-9 [a]	4Q38750.D	5	01/06/23	AL	12/27/22	OP94716	S4Q557

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1492-1, FC1492-2, FC1492-3, FC1492-4, FC1492-5, FC1492-6, FC1492-7, FC1492-9, FC1492-10, FC1492-11, FC1492-12, FC1492-13, FC1492-14, FC1492-15, FC1492-16, FC1492-17

CAS No.	ID Standard Recoveries	MS	MSD	FC1492-9	FC1492-9	Limits
	13C4-PFHpA	57%	58%	53%	63%	50-150%
	13C8-PFOA	64%	64%	64%	69%	50-150%
	13C9-PFNA	63%	64%	66%	73%	50-150%
	13C6-PFDA	60%	64%	65%	73%	50-150%
	13C7-PFUnDA	51%	58%	61%	68%	50-150%
	13C2-PFDoDA	38%* [c]	55%	57%	64%	50-150%
	13C2-PFTeDA	34%* [c]	49%* [c]	56%	59%	50-150%
	13C3-PFBS	51%	53%	43%* [c]	57%	50-150%
	13C3-PFHxS	60%	60%	59%	71%	50-150%
	13C8-PFOS	59%	64%	63%	75%	50-150%
	13C8-FOSA	78%	64%	60%	78%	50-150%
	d3-MeFOSA			15%* [c]	40%* [c]	50-150%
	d3-MeFOSAA	75%	80%	93%	90%	50-150%
	d5-EtFOSAA	56%	68%	77%	82%	50-150%
	13C2-4:2FTS	56%	56%	45%* [c]	59%	50-150%
	13C2-6:2FTS	65%	65%	68%	68%	50-150%
	13C2-8:2FTS	61%	67%	71%	74%	50-150%
	13C3-HFPO-DA	56%	55%	47%* [c]	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FC1566

Sampling Date: 12/22/22

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: **123**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Table of Contents

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC1566

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1566-1	12/22/22	09:00	DS	12/22/22	SO	Soil	A3RB-SB0049-000.5-20221222
FC1566-2	12/22/22	09:05	DS	12/22/22	SO	Soil	A3RB-SB0049-002.0-20221222
FC1566-3	12/22/22	09:20	DS	12/22/22	SO	Soil	A3RB-SB0050-000.5-20221222
FC1566-4	12/22/22	09:25	DS	12/22/22	SO	Soil	A3RB-SB0050-002.0-20221222
FC1566-5	12/22/22	08:00	DS	12/22/22	SO	Soil	A3RB-FD01-20221222
FC1566-6	12/22/22	09:40	DS	12/22/22	SO	Soil	A3RB-SB0051-000.5-20221222
FC1566-7	12/22/22	09:45	DS	12/22/22	SO	Soil	A3RB-SB0051-002.0-20221222
FC1566-8	12/22/22	10:00	DS	12/22/22	SO	Soil	A3RB-SB0052-000.5-20221222
FC1566-9	12/22/22	10:05	DS	12/22/22	SO	Soil	A3RB-SB0052-002.0-20221222
FC1566-9D	12/22/22	10:05	DS	12/22/22	SO	Soil Dup/MSD	A3RB-SB0052-002.0-20221222
FC1566-9S	12/22/22	10:05	DS	12/22/22	SO	Soil Matrix Spike	A3RB-SB0052-002.0-20221222
FC1566-10	12/22/22	10:20	DS	12/22/22	SO	Soil	A3RB-SB0053-000.5-20221222
FC1566-11	12/22/22	10:25	DS	12/22/22	SO	Soil	A3RB-SB0053-002.0-20221222

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

AECOM, Inc

Job No: FC1566

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1566-12	12/22/22	10:32	DS	12/22/22	SO	Soil	A3RB-SB0054-000.5-20221222
FC1566-13	12/22/22	10:37	DS	12/22/22	SO	Soil	A3RB-SB0054-002.0-20221222
FC1566-14	12/22/22	10:42	DS	12/22/22	SO	Soil	A3RB-SB0055-000.5-20221222
FC1566-15	12/22/22	10:45	DS	12/22/22	SO	Soil	A3RB-SB0055-002.0-20221222
FC1566-16	12/22/22	10:52	DS	12/22/22	SO	Soil	A3RB-SB0056-000.5-20221222
FC1566-17	12/22/22	10:55	DS	12/22/22	SO	Soil	A3RB-SB0056-002.0-20221222
FC1566-18	12/22/22	11:05	DS	12/22/22	SO	Soil	A3RB-SB0057-000.5-20221222
FC1566-19	12/22/22	11:08	DS	12/22/22	SO	Soil	A3RB-SB0057-002.0-20221222
FC1566-20	12/22/22	11:15	DS	12/22/22	SO	Soil	A3RB-SB0058-000.5-20221222
FC1566-21	12/22/22	11:20	DS	12/22/22	SO	Soil	A3RB-SB0058-002.0-20221222
FC1566-22	12/22/22	11:27	DS	12/22/22	SO	Soil	A3RB-SB0059-000.5-20221222
FC1566-23	12/22/22	11:30	DS	12/22/22	SO	Soil	A3RB-SB0059-002.0-20221222
FC1566-24	12/22/22	11:45	DS	12/22/22	SO	Soil	A3RB-SB0060-000.5-20221222

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

AECOM, Inc

Job No: FC1566

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC1566-25	12/22/22	11:50	DS	12/22/22	SO	Soil	A3RB-SB0060-002.0-20221222
FC1566-26	12/22/22	08:15	DS	12/22/22	SO	Soil	A3RB-FD02-20221222
FC1566-27	12/22/22	10:40	DS	12/22/22	AQ	Equipment Blank	A3RB-EB01-20221222
FC1566-28	12/22/22	12:00	DS	12/22/22	AQ	Equipment Blank	A3RB-EB02-20221222
FC1566-29	12/22/22	12:05	DS	12/22/22	AQ	Field Blank Soil	A3RB-FB01-20221222

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC1566

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 1/31/2023 3:56:02 PM

On 12/22/2022, 28 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC1566 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP94731

Sample(s) FC1532-1MS, FC1532-3DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoroheptanoic acid are outside control limits for sample OP94731-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC1566-27, FC1566-29 have surrogates outside control limits.

FC1566-27 for d3-MeFOSA: Outside control limits.

FC1566-27 for MeFOSA: Associated ID Standard outside control limits.

FC1566-27: Confirmation run.

FC1566-29 for d3-MeFOSA: Outside control limits.

FC1566-29 for MeFOSA: Associated ID Standard outside control limits.

FC1566-29: Dilution required (ID recovery standard failure).

Matrix: SO **Batch ID:** OP94850

Sample(s) FC1566-9MS, FC1566-9MSD were used as the QC samples indicated.

Sample(s) FC1566-1, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-3, FC1566-4, FC1566-5, FC1566-6 have surrogates outside control limits.

FC1566-1 for 13C2-PFDoDA: Outside control limits.

FC1566-1 for 13C7-PFUnDA: Outside control limits.

FC1566-1 for 13C8-FOSA: Outside control limits.

FC1566-1 for d3-MeFOSA: Outside control limits.

FC1566-1 for d3-MeFOSA: Outside control limits.

FC1566-1 for MeFOSA: Associated ID Standard outside control limits.

FC1566-3 for 13C8-FOSA: Outside control limits.

FC1566-3 for d3-MeFOSA: Outside control limits.

FC1566-3 for MeFOSA: Associated ID Standard outside control limits.

FC1566-3 for PFOSA: Associated ID Standard outside control limits.

FC1566-3: Confirmation run.

FC1566-4 for 13C8-FOSA: Outside control limits.

FC1566-4 for d3-MeFOSA: Outside control limits.

FC1566-4 for MeFOSA: Associated ID Standard outside control limits.

FC1566-4 for PFOSA: Associated ID Standard outside control limits.

FC1566-4: Confirmation run.

FC1566-5 for 13C8-FOSA: Outside control limits.

FC1566-5 for d3-MeFOSA: Outside control limits.

FC1566-5 for MeFOSA: Associated ID Standard outside control limits.

FC1566-5 for PFOSA: Associated ID Standard outside control limits.

FC1566-5: Confirmation run.

FC1566-6 for 13C8-FOSA: Outside control limits.

FC1566-6 for d3-MeFOSA: Outside control limits.

FC1566-6 for d3-MeFOSA: Outside control limits.

FC1566-6 for MeFOSA: Associated ID Standard outside control limits.

FC1566-10 for d3-MeFOSA: Outside control limits.

FC1566-10 for MeFOSA: Associated ID Standard outside control limits.

FC1566-11 for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: SO **Batch ID:** OP94850

FC1566-11 for MeFOSA: Associated ID Standard outside control limits.
FC1566-12 for 13C8-FOSA: Outside control limits.
FC1566-12 for d3-MeFOSA: Outside control limits.
FC1566-12 for MeFOSA: Associated ID Standard outside control limits.
FC1566-12 for PFOSA: Associated ID Standard outside control limits.
FC1566-12: Confirmation run.
FC1566-13 for d3-MeFOSA: Outside control limits.
FC1566-13 for MeFOSA: Associated ID Standard outside control limits.
FC1566-13: Confirmation run.
FC1566-14 for 13C2-PFDoDA: Outside control limits.
FC1566-15 for 13C8-FOSA: Outside control limits.
FC1566-15 for d3-MeFOSA: Outside control limits.
FC1566-15 for MeFOSA: Associated ID Standard outside control limits.
FC1566-15 for PFOSA: Associated ID Standard outside control limits.
FC1566-15: Confirmation run.
FC1566-16 for 13C2-PFDoDA: Outside control limits.
FC1566-16 for 13C8-FOSA: Outside control limits.
FC1566-16 for d3-MeFOSA: Outside control limits.
FC1566-16 for d3-MeFOSA: Outside control limits.
FC1566-16 for MeFOSA: Associated ID Standard outside control limits.
FC1566-17 for 13C2-PFDoDA: Outside control limits.
FC1566-17 for 13C8-FOSA: Outside control limits.
FC1566-17 for d3-MeFOSA: Outside control limits.
FC1566-17 for d3-MeFOSA: Outside control limits.
FC1566-17 for MeFOSA: Associated ID Standard outside control limits.
FC1566-18 for d3-MeFOSA: Outside control limits.
FC1566-18 for MeFOSA: Associated ID Standard outside control limits.

Matrix: SO **Batch ID:** OP94851

Sample(s) FC1566-21MS, FC1566-21MSD were used as the QC samples indicated.
Sample(s) FC1566-21, FC1566-22, FC1566-24, FC1566-25, FC1566-26 have surrogates outside control limits.
FC1566-21 for d3-MeFOSA: Outside control limits.
FC1566-21 for MeFOSA: Associated ID Standard outside control limits.
FC1566-21: Confirmation run.
FC1566-22 for d3-MeFOSA: Outside control limits.
FC1566-22 for MeFOSA: Associated ID Standard outside control limits.
FC1566-22: Confirmation run.
FC1566-24: Confirmation run.
FC1566-25: Confirmation run.
FC1566-26 for 13C2-PFDoDA: Outside control limits.
FC1566-26 for 13C7-PFUnDA: Outside control limits.
FC1566-26 for 13C8-FOSA: Outside control limits.
FC1566-26 for 13C8-FOSA: Outside control limits.
FC1566-26 for d3-MeFOSA: Outside control limits.
FC1566-26 for d3-MeFOSA: Outside control limits.
FC1566-26 for MeFOSA: Associated ID Standard outside control limits.
FC1566-26 for PFOSA: Associated ID Standard outside control limits.

Matrix: SO **Batch ID:** OP95033

Sample(s) FC1566-24MS, FC1566-24MSD were used as the QC samples indicated.
Sample(s) FC1566-24, FC1566-25 have surrogates outside control limits.
FC1566-24 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC1566-24 for 13C2-PFDoDA: Outside control limits.
FC1566-24 for 13C8-FOSA: Outside control limits.
FC1566-24 for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: SO **Batch ID:** OP95033

FC1566-24 for MeFOSA: Associated ID Standard outside control limits.

FC1566-24 for Perfluorododecanoic acid: Associated ID Standard outside control limits.

FC1566-24 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FC1566-24 for PFOSA: Associated ID Standard outside control limits.

FC1566-25 for 13C8-FOSA: Outside control limits.

FC1566-25 for d3-MeFOSA: Outside control limits.

FC1566-25 for MeFOSA: Associated ID Standard outside control limits.

FC1566-25 for PFOSA: Associated ID Standard outside control limits.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN93155

Sample(s) FC1566-9DUP were used as the QC samples for Solids, Percent.

Matrix: SO **Batch ID:** GN93163

Sample(s) FC1497-1DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1566-1	**A3RB-SB0049-000.5-20221222**					
Perfluorobutanoic acid		0.00070 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.00057 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.00053 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0020	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0015	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
FC1566-2	**A3RB-SB0049-002.0-20221222**					
Perfluorobutanoic acid		0.00055 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.00038 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0064	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0013 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
FC1566-3	**A3RB-SB0050-000.5-20221222**					
No hits reported in this sample.						
FC1566-4	**A3RB-SB0050-002.0-20221222**					
No hits reported in this sample.						
FC1566-5	**A3RB-FD01-20221222**					
No hits reported in this sample.						
FC1566-6	**A3RB-SB0051-000.5-20221222**					
Perfluorohexanesulfonic acid		0.00080 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0012 J	0.0014	0.00070	mg/kg	EPA 537M QSM5.3 B-15
FC1566-7	**A3RB-SB0051-002.0-20221222**					
Perfluorohexanesulfonic acid		0.00057 J	0.0014	0.00068	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.00061 J	0.0014	0.00068	mg/kg	EPA 537M QSM5.3 B-15
FC1566-8	**A3RB-SB0052-000.5-20221222**					
Perfluorooctanesulfonic acid		0.0031	0.0012	0.00061	mg/kg	EPA 537M QSM5.3 B-15
FC1566-9	**A3RB-SB0052-002.0-20221222**					
Perfluorooctanesulfonic acid		0.0018	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1566-10	**A3RB-SB0053-000.5-20221222**					
Perfluorohexanesulfonic acid		0.0038	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0050	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
FC1566-11	**A3RB-SB0053-002.0-20221222**					
Perfluorohexanesulfonic acid		0.00069 J	0.0012	0.00061	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0033	0.0012	0.00061	mg/kg	EPA 537M QSM5.3 B-15
FC1566-12	**A3RB-SB0054-000.5-20221222**					
Perfluorohexanesulfonic acid		0.00053 J	0.0010	0.00052	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0015	0.0010	0.00052	mg/kg	EPA 537M QSM5.3 B-15
FC1566-13	**A3RB-SB0054-002.0-20221222**					
Perfluorohexanesulfonic acid		0.00035 J	0.0011	0.00057	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0012	0.0011	0.00057	mg/kg	EPA 537M QSM5.3 B-15
FC1566-14	**A3RB-SB0055-000.5-20221222**					
Perfluorooctanesulfonic acid		0.00044 J	0.0011	0.00057	mg/kg	EPA 537M QSM5.3 B-15
FC1566-15	**A3RB-SB0055-002.0-20221222**					
Perfluorooctanesulfonic acid		0.00040 J	0.0010	0.00052	mg/kg	EPA 537M QSM5.3 B-15
FC1566-16	**A3RB-SB0056-000.5-20221222**					
Perfluorooctanesulfonic acid		0.00047 J	0.0010	0.00051	mg/kg	EPA 537M QSM5.3 B-15
Perfluorodecanesulfonic acid		0.00034 J	0.0010	0.00051	mg/kg	EPA 537M QSM5.3 B-15
FC1566-17	**A3RB-SB0056-002.0-20221222**					
Perfluorooctanesulfonic acid		0.00043 J	0.0010	0.00052	mg/kg	EPA 537M QSM5.3 B-15
FC1566-18	**A3RB-SB0057-000.5-20221222**					
Perfluorohexanoic acid		0.00060 J	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0012	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0027	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0274	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0144	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.00045 J	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC1566-19	**A3RB-SB0057-002.0-20221222**					
Perfluorohexanoic acid		0.00050 J	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.00031 J	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.00057 J	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0091	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0061	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
Perfluorononanesulfonic acid		0.00041 J	0.0012	0.00060	mg/kg	EPA 537M QSM5.3 B-15
FC1566-20	**A3RB-SB0058-000.5-20221222**					
Perfluorooctanesulfonic acid		0.0011	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
FC1566-21	**A3RB-SB0058-002.0-20221222**					
Perfluorooctanesulfonic acid		0.0014	0.0011	0.00056	mg/kg	EPA 537M QSM5.3 B-15
FC1566-22	**A3RB-SB0059-000.5-20221222**					
Perfluorooctanesulfonic acid		0.00049 J	0.0011	0.00057	mg/kg	EPA 537M QSM5.3 B-15
Perfluorodecanesulfonic acid		0.00047 J	0.0011	0.00057	mg/kg	EPA 537M QSM5.3 B-15
FC1566-23	**A3RB-SB0059-002.0-20221222**					
Perfluorooctanesulfonic acid		0.0020	0.0011	0.00055	mg/kg	EPA 537M QSM5.3 B-15
FC1566-24	**A3RB-SB0060-000.5-20221222**					
No hits reported in this sample.						
FC1566-25	**A3RB-SB0060-002.0-20221222**					
No hits reported in this sample.						
FC1566-26	**A3RB-FD02-20221222**					
No hits reported in this sample.						
FC1566-27	**A3RB-EB01-20221222**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FC1566-28 **A3RB-EB02-20221222**

No hits reported in this sample.

FC1566-29 **A3RB-FB01-20221222**

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-SB0049-000.5-20221222		
Lab Sample ID:	FC1566-1	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	72.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9630.D	1	01/13/23 16:57	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105500.D	5	01/16/23 18:12	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	1.98 g	1.0 ml
Run #2	1.98 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00070	0.0014	0.00070	0.00053	mg/kg	J
2706-90-3	Perfluoropentanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057	0.0014	0.00070	0.00035	mg/kg	J
375-95-1	Perfluorononanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.0035 U [a]	0.0070	0.0035	0.0017	mg/kg	
307-55-1	Perfluorododecanoic acid	0.0035 U [a]	0.0070	0.0035	0.0017	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.0035 U [a]	0.0070	0.0035	0.0018	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00053	0.0014	0.00070	0.00035	mg/kg	J
355-46-4	Perfluorohexanesulfonic acid	0.0020	0.0014	0.00070	0.00035	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0015	0.0014	0.00070	0.00035	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.0035 U [a]	0.0070	0.0035	0.0017	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0035 U [a]	0.0070	0.0035	0.0017	mg/kg	
31506-32-8	MeFOSA [b]	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2991-50-6	EtFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0049-000.5-20221222		
Lab Sample ID:	FC1566-1	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	72.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
919005-14-4	ADONA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00070 U	0.0014	0.00070	0.00040	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0035 U [a]	0.0070	0.0035	0.0018	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	55%	50-150%
	13C5-PFPeA	59%	55%	50-150%
	13C5-PFHxA	66%	55%	50-150%
	13C4-PFHpA	64%	56%	50-150%
	13C8-PFOA	62%	53%	50-150%
	13C9-PFNA	62%	53%	50-150%
	13C6-PFDA	60%	54%	50-150%
	13C7-PFUnDA	48% [c]	50%	50-150%
	13C2-PFDoDA	32% [c]	52%	50-150%
	13C2-PFTeDA	51%	55%	50-150%
	13C3-PFBS	62%	56%	50-150%
	13C3-PFHxS	65%	54%	50-150%
	13C8-PFOS	63%	55%	50-150%
	13C8-FOSA	46% [c]	50%	50-150%
	d3-MeFOSA	37% [c]	47% [c]	50-150%
	d3-MeFOSAA	66%	55%	50-150%
	d5-EtFOSAA	85%	64%	50-150%
	13C2-4:2FTS	62%	53%	50-150%
	13C2-6:2FTS	66%	53%	50-150%
	13C2-8:2FTS	56%	51%	50-150%
	13C3-HFPO-DA	66%	56%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0049-002.0-20221222		
Lab Sample ID:	FC1566-2	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	73.1
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9631.D	1	01/13/23 17:14	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	1.95 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00055	0.0014	0.00070	0.00053	mg/kg	J
2706-90-3	Perfluoropentanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-95-1	Perfluorononanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00070 U	0.0014	0.00070	0.00037	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00038	0.0014	0.00070	0.00035	mg/kg	J
355-46-4	Perfluorohexanesulfonic acid	0.0064	0.0014	0.00070	0.00035	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0013	0.0014	0.00070	0.00035	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
31506-32-8	MeFOSA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2991-50-6	EtFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0049-002.0-20221222
Lab Sample ID: FC1566-2 **Date Sampled:** 12/22/22
Matrix: SO - Soil **Date Received:** 12/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 73.1
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
919005-14-4	ADONA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00070 U	0.0014	0.00070	0.00041	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00070 U	0.0014	0.00070	0.00036	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	75%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	76%		50-150%
	13C6-PFDA	77%		50-150%
	13C7-PFUnDA	73%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	68%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	75%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSA	60%		50-150%
	d3-MeFOSAA	82%		50-150%
	d5-EtFOSAA	106%		50-150%
	13C2-4:2FTS	72%		50-150%
	13C2-6:2FTS	78%		50-150%
	13C2-8:2FTS	79%		50-150%
	13C3-HFPO-DA	75%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0050-000.5-20221222		
Lab Sample ID:	FC1566-3	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	94.3
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9632.D	1	01/13/23 17:30	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105501.D	5	01/16/23 18:29	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	1.95 g	1.0 ml
Run #2	1.95 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00054 U	0.0011	0.00054	0.00041	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
375-95-1	Perfluorononanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00054 U	0.0011	0.00054	0.00029	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
31506-32-8	MeFOSA [b]	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
2991-50-6	EtFOSAA	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00054 U	0.0011	0.00054	0.00027	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0050-000.5-20221222		
Lab Sample ID:	FC1566-3	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	94.3
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
919005-14-4	ADONA	0.00054 U	0.0011	0.00054	0.00027	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00054 U	0.0011	0.00054	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00054 U	0.0011	0.00054	0.00028	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	48% [c]	50-150%
	13C5-PFPeA	58%	49% [c]	50-150%
	13C5-PFHxA	61%	51%	50-150%
	13C4-PFHpA	63%	51%	50-150%
	13C8-PFOA	65%	53%	50-150%
	13C9-PFNA	65%	57%	50-150%
	13C6-PFDA	69%	58%	50-150%
	13C7-PFUnDA	66%	59%	50-150%
	13C2-PFDoDA	64%	63%	50-150%
	13C2-PFTeDA	75%	67%	50-150%
	13C3-PFBS	84%	72%	50-150%
	13C3-PFHxS	87%	71%	50-150%
	13C8-PFOS	86%	72%	50-150%
	13C8-FOSA	42% [c]	40% [c]	50-150%
	d3-MeFOSA	32% [c]	34% [c]	50-150%
	d3-MeFOSAA	66%	49% [c]	50-150%
	d5-EtFOSAA	67%	51%	50-150%
	13C2-4:2FTS	79%	68%	50-150%
	13C2-6:2FTS	88%	69%	50-150%
	13C2-8:2FTS	85%	69%	50-150%
	13C3-HFPO-DA	58%	46% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0050-002.0-20221222		
Lab Sample ID:	FC1566-4	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	95.6
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9633.D	1	01/13/23 17:47	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105502.D	5	01/16/23 18:45	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.02 g	1.0 ml
Run #2	2.02 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00052 U	0.0010	0.00052	0.00039	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-95-1	Perfluorononanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00052 U	0.0010	0.00052	0.00027	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
31506-32-8	MeFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2991-50-6	EtFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0050-002.0-20221222
Lab Sample ID: FC1566-4 **Date Sampled:** 12/22/22
Matrix: SO - Soil **Date Received:** 12/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 95.6
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
919005-14-4	ADONA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00052 U	0.0010	0.00052	0.00030	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00052 U	0.0010	0.00052	0.00027	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	63%	55%	50-150%
	13C5-PFPeA	65%	56%	50-150%
	13C5-PFHxA	69%	59%	50-150%
	13C4-PFHpA	73%	62%	50-150%
	13C8-PFOA	77%	65%	50-150%
	13C9-PFNA	80%	68%	50-150%
	13C6-PFDA	83%	71%	50-150%
	13C7-PFUnDA	82%	73%	50-150%
	13C2-PFDoDA	78%	74%	50-150%
	13C2-PFTeDA	84%	76%	50-150%
	13C3-PFBS	85%	74%	50-150%
	13C3-PFHxS	86%	75%	50-150%
	13C8-PFOS	86%	76%	50-150%
	13C8-FOSA	32% [c]	30% [c]	50-150%
	d3-MeFOSA	28% [c]	27% [c]	50-150%
	d3-MeFOSAA	82%	69%	50-150%
	d5-EtFOSAA	82%	68%	50-150%
	13C2-4:2FTS	80%	70%	50-150%
	13C2-6:2FTS	84%	69%	50-150%
	13C2-8:2FTS	84%	73%	50-150%
	13C3-HFPO-DA	61%	48% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20221222		
Lab Sample ID:	FC1566-5	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	95.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9634.D	1	01/13/23 18:03	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105503.D	5	01/16/23 19:02	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2	1.96 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00053 U	0.0011	0.00053	0.00041	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-95-1	Perfluorononanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00053 U	0.0011	0.00053	0.00028	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
31506-32-8	MeFOSA [b]	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2991-50-6	EtFOSAA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20221222		
Lab Sample ID:	FC1566-5	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	95.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
919005-14-4	ADONA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00053 U	0.0011	0.00053	0.00031	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00053 U	0.0011	0.00053	0.00028	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%	55%	50-150%
	13C5-PFPeA	61%	55%	50-150%
	13C5-PFHxA	67%	58%	50-150%
	13C4-PFHpA	71%	60%	50-150%
	13C8-PFOA	72%	64%	50-150%
	13C9-PFNA	74%	67%	50-150%
	13C6-PFDA	76%	70%	50-150%
	13C7-PFUnDA	76%	69%	50-150%
	13C2-PFDoDA	73%	71%	50-150%
	13C2-PFTeDA	80%	74%	50-150%
	13C3-PFBS	76%	71%	50-150%
	13C3-PFHxS	81%	70%	50-150%
	13C8-PFOS	80%	76%	50-150%
	13C8-FOSA	28% [c]	32% [c]	50-150%
	d3-MeFOSA	25% [c]	25% [c]	50-150%
	d3-MeFOSAA	76%	66%	50-150%
	d5-EtFOSAA	77%	64%	50-150%
	13C2-4:2FTS	73%	66%	50-150%
	13C2-6:2FTS	76%	67%	50-150%
	13C2-8:2FTS	77%	69%	50-150%
	13C3-HFPO-DA	61%	50%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0051-000.5-20221222		
Lab Sample ID:	FC1566-6	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	71.1
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9635.D	1	01/13/23 18:20	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105504.D	5	01/16/23 19:19	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.01 g	1.0 ml
Run #2	2.01 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00070 U	0.0014	0.00070	0.00053	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-95-1	Perfluorononanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00070 U	0.0014	0.00070	0.00037	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00080	0.0014	0.00070	0.00035	mg/kg	J
375-92-8	Perfluoroheptanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0012	0.0014	0.00070	0.00035	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0035 U [a]	0.0070	0.0035	0.0017	mg/kg	
31506-32-8	MeFOSA [b]	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2991-50-6	EtFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0051-000.5-20221222		
Lab Sample ID:	FC1566-6	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	71.1
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
919005-14-4	ADONA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00070 U	0.0014	0.00070	0.00041	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00070 U	0.0014	0.00070	0.00036	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%	62%	50-150%
	13C5-PFPeA	67%	60%	50-150%
	13C5-PFHxA	68%	61%	50-150%
	13C4-PFHpA	67%	60%	50-150%
	13C8-PFOA	67%	58%	50-150%
	13C9-PFNA	64%	59%	50-150%
	13C6-PFDA	65%	61%	50-150%
	13C7-PFUnDA	62%	62%	50-150%
	13C2-PFDoDA	58%	64%	50-150%
	13C2-PFTeDA	71%	68%	50-150%
	13C3-PFBS	75%	68%	50-150%
	13C3-PFHxS	74%	66%	50-150%
	13C8-PFOS	72%	65%	50-150%
	13C8-FOSA	45% [c]	54%	50-150%
	d3-MeFOSA	34% [c]	45% [c]	50-150%
	d3-MeFOSAA	72%	65%	50-150%
	d5-EtFOSAA	68%	63%	50-150%
	13C2-4:2FTS	71%	63%	50-150%
	13C2-6:2FTS	75%	63%	50-150%
	13C2-8:2FTS	71%	65%	50-150%
	13C3-HFPO-DA	67%	57%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0051-002.0-20221222		
Lab Sample ID:	FC1566-7	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	73.0
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9636.D	1	01/13/23 18:36	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	2.01 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00068 U	0.0014	0.00068	0.00052	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
375-95-1	Perfluorononanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00068 U	0.0014	0.00068	0.00036	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00057	0.0014	0.00068	0.00034	mg/kg	J
375-92-8	Perfluoroheptanesulfonic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00061	0.0014	0.00068	0.00034	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
31506-32-8	MeFOSA	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
2991-50-6	EtFOSAA	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00068 U	0.0014	0.00068	0.00034	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0051-002.0-20221222		
Lab Sample ID:	FC1566-7	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	73.0
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
919005-14-4	ADONA	0.00068 U	0.0014	0.00068	0.00034	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00068 U	0.0014	0.00068	0.00040	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00068 U	0.0014	0.00068	0.00035	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	67%		50-150%
	13C8-PFOA	67%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	67%		50-150%
	13C7-PFUnDA	63%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	70%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	75%		50-150%
	13C8-PFOS	75%		50-150%
	13C8-FOSA	56%		50-150%
	d3-MeFOSA	51%		50-150%
	d3-MeFOSAA	77%		50-150%
	d5-EtFOSAA	72%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	75%		50-150%
	13C2-8:2FTS	71%		50-150%
	13C3-HFPO-DA	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0052-000.5-20221222		
Lab Sample ID:	FC1566-8	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	83.3
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9637.D	1	01/13/23 18:53	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00061 U	0.0012	0.00061	0.00047	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
375-95-1	Perfluorononanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00061 U	0.0012	0.00061	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0031	0.0012	0.00061	0.00031	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
31506-32-8	MeFOSA	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
2991-50-6	EtFOSAA	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00031	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0052-000.5-20221222		
Lab Sample ID:	FC1566-8	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	83.3
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
919005-14-4	ADONA	0.00061 U	0.0012	0.00061	0.00031	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00061 U	0.0012	0.00061	0.00036	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00061 U	0.0012	0.00061	0.00032	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	68%		50-150%
	13C4-PFHpA	69%		50-150%
	13C8-PFOA	69%		50-150%
	13C9-PFNA	70%		50-150%
	13C6-PFDA	73%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	63%		50-150%
	13C2-PFTeDA	71%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	83%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSA	61%		50-150%
	d3-MeFOSAA	75%		50-150%
	d5-EtFOSAA	77%		50-150%
	13C2-4:2FTS	77%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	81%		50-150%
	13C3-HFPO-DA	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0052-002.0-20221222		
Lab Sample ID:	FC1566-9	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	85.3
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9640.D	1	01/13/23 19:43	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	1.97 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00060 U	0.0012	0.00060	0.00045	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-95-1	Perfluorononanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00060 U	0.0012	0.00060	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0018	0.0012	0.00060	0.00030	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
31506-32-8	MeFOSA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2991-50-6	EtFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0052-002.0-20221222
Lab Sample ID: FC1566-9 **Date Sampled:** 12/22/22
Matrix: SO - Soil **Date Received:** 12/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 85.3
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
919005-14-4	ADONA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00060 U	0.0012	0.00060	0.00035	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00060 U	0.0012	0.00060	0.00031	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	76%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	80%		50-150%
	13C4-PFHpA	82%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	84%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	84%		50-150%
	13C2-PFDoDA	77%		50-150%
	13C2-PFTeDA	81%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	85%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSA	60%		50-150%
	d3-MeFOSAA	85%		50-150%
	d5-EtFOSAA	86%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	86%		50-150%
	13C2-8:2FTS	87%		50-150%
	13C3-HFPO-DA	75%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0053-000.5-20221222		
Lab Sample ID:	FC1566-10	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	81.6
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9643.D	1	01/13/23 20:32	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105505.D	5	01/16/23 19:35	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.05 g	1.0 ml
Run #2	2.05 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00060 U	0.0012	0.00060	0.00045	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-95-1	Perfluorononanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00060 U	0.0012	0.00060	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.0038	0.0012	0.00060	0.00030	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0050	0.0012	0.00060	0.00030	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
31506-32-8	MeFOSA [a]	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2991-50-6	EtFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0053-000.5-20221222
Lab Sample ID: FC1566-10
Matrix: SO - Soil
Method: EPA 537M QSM5.3 B-15 IN HOUSE
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/22/22
Date Received: 12/22/22
Percent Solids: 81.6

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
919005-14-4	ADONA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00060 U	0.0012	0.00060	0.00035	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00060 U	0.0012	0.00060	0.00031	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%	58%	50-150%
	13C5-PFPeA	68%	57%	50-150%
	13C5-PFHxA	69%	59%	50-150%
	13C4-PFHpA	70%	60%	50-150%
	13C8-PFOA	71%	60%	50-150%
	13C9-PFNA	71%	61%	50-150%
	13C6-PFDA	72%	62%	50-150%
	13C7-PFUnDA	66%	61%	50-150%
	13C2-PFDoDA	56%	63%	50-150%
	13C2-PFTeDA	67%	70%	50-150%
	13C3-PFBS	82%	74%	50-150%
	13C3-PFHxS	82%	72%	50-150%
	13C8-PFOS	83%	76%	50-150%
	13C8-FOSA	55%	55%	50-150%
	d3-MeFOSA	49% [b]	56%	50-150%
	d3-MeFOSAA	75%	61%	50-150%
	d5-EtFOSAA	78%	60%	50-150%
	13C2-4:2FTS	78%	65%	50-150%
	13C2-6:2FTS	83%	65%	50-150%
	13C2-8:2FTS	81%	71%	50-150%
	13C3-HFPO-DA	67%	57%	50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0053-002.0-20221222		
Lab Sample ID:	FC1566-11	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	82.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9644.D	1	01/13/23 20:49	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105506.D	5	01/16/23 19:52	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.00 g	1.0 ml
Run #2	2.00 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00061 U	0.0012	0.00061	0.00046	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
375-95-1	Perfluorononanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00061 U	0.0012	0.00061	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00069	0.0012	0.00061	0.00030	mg/kg	J
375-92-8	Perfluoroheptanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0033	0.0012	0.00061	0.00030	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
31506-32-8	MeFOSA [a]	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
2991-50-6	EtFOSAA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0053-002.0-20221222		
Lab Sample ID:	FC1566-11	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	82.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
919005-14-4	ADONA	0.00061 U	0.0012	0.00061	0.00030	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00061 U	0.0012	0.00061	0.00035	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00061 U	0.0012	0.00061	0.00032	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	57%	50-150%
	13C5-PFPeA	65%	57%	50-150%
	13C5-PFHxA	65%	57%	50-150%
	13C4-PFHpA	65%	59%	50-150%
	13C8-PFOA	65%	58%	50-150%
	13C9-PFNA	65%	59%	50-150%
	13C6-PFDA	67%	59%	50-150%
	13C7-PFUnDA	65%	61%	50-150%
	13C2-PFDoDA	61%	64%	50-150%
	13C2-PFTeDA	73%	71%	50-150%
	13C3-PFBS	83%	73%	50-150%
	13C3-PFHxS	82%	74%	50-150%
	13C8-PFOS	82%	78%	50-150%
	13C8-FOSA	52%	54%	50-150%
	d3-MeFOSA	45% [b]	50%	50-150%
	d3-MeFOSAA	64%	58%	50-150%
	d5-EtFOSAA	66%	57%	50-150%
	13C2-4:2FTS	79%	69%	50-150%
	13C2-6:2FTS	83%	68%	50-150%
	13C2-8:2FTS	83%	70%	50-150%
	13C3-HFPO-DA	63%	54%	50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0054-000.5-20221222		
Lab Sample ID:	FC1566-12	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	93.2
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9645.D	1	01/13/23 21:05	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105507.D	5	01/16/23 20:08	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.05 g	1.0 ml
Run #2	2.05 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00052 U	0.0010	0.00052	0.00040	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-95-1	Perfluorononanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00052 U	0.0010	0.00052	0.00028	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00053	0.0010	0.00052	0.00026	mg/kg	J
375-92-8	Perfluoroheptanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0015	0.0010	0.00052	0.00026	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
31506-32-8	MeFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2991-50-6	EtFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0054-000.5-20221222		
Lab Sample ID:	FC1566-12	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	93.2
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
919005-14-4	ADONA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00052 U	0.0010	0.00052	0.00030	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00052 U	0.0010	0.00052	0.00027	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	47% [c]	50-150%
	13C5-PFPeA	55%	47% [c]	50-150%
	13C5-PFHxA	57%	48% [c]	50-150%
	13C4-PFHpA	60%	51%	50-150%
	13C8-PFOA	61%	52%	50-150%
	13C9-PFNA	62%	53%	50-150%
	13C6-PFDA	64%	56%	50-150%
	13C7-PFUnDA	62%	56%	50-150%
	13C2-PFDoDA	55%	61%	50-150%
	13C2-PFTeDA	67%	67%	50-150%
	13C3-PFBS	76%	66%	50-150%
	13C3-PFHxS	77%	68%	50-150%
	13C8-PFOS	79%	66%	50-150%
	13C8-FOSA	42% [c]	41% [c]	50-150%
	d3-MeFOSA	30% [c]	32% [c]	50-150%
	d3-MeFOSAA	60%	48% [c]	50-150%
	d5-EtFOSAA	63%	51%	50-150%
	13C2-4:2FTS	73%	64%	50-150%
	13C2-6:2FTS	79%	63%	50-150%
	13C2-8:2FTS	78%	64%	50-150%
	13C3-HFPO-DA	54%	44% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0054-002.0-20221222		
Lab Sample ID:	FC1566-13	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	87.0
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9646.D	1	01/13/23 21:22	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105508.D	5	01/16/23 20:25	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.00 g	1.0 ml
Run #2	2.00 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00057 U	0.0011	0.00057	0.00044	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
375-95-1	Perfluorononanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00057 U	0.0011	0.00057	0.00030	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00035	0.0011	0.00057	0.00029	mg/kg	J
375-92-8	Perfluoroheptanesulfonic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0012	0.0011	0.00057	0.00029	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
31506-32-8	MeFOSA [b]	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
2991-50-6	EtFOSAA	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00029	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0054-002.0-20221222		
Lab Sample ID:	FC1566-13	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	87.0
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
919005-14-4	ADONA	0.00057 U	0.0011	0.00057	0.00029	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00057 U	0.0011	0.00057	0.00033	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00057 U	0.0011	0.00057	0.00030	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%	59%	50-150%
	13C5-PFPeA	68%	60%	50-150%
	13C5-PFHxA	70%	61%	50-150%
	13C4-PFHpA	70%	62%	50-150%
	13C8-PFOA	71%	62%	50-150%
	13C9-PFNA	70%	64%	50-150%
	13C6-PFDA	70%	65%	50-150%
	13C7-PFUnDA	67%	65%	50-150%
	13C2-PFDoDA	57%	68%	50-150%
	13C2-PFTeDA	71%	75%	50-150%
	13C3-PFBS	84%	76%	50-150%
	13C3-PFHxS	84%	73%	50-150%
	13C8-PFOS	84%	79%	50-150%
	13C8-FOSA	50%	56%	50-150%
	d3-MeFOSA	39% [c]	47% [c]	50-150%
	d3-MeFOSAA	71%	63%	50-150%
	d5-EtFOSAA	68%	61%	50-150%
	13C2-4:2FTS	79%	69%	50-150%
	13C2-6:2FTS	86%	73%	50-150%
	13C2-8:2FTS	83%	71%	50-150%
	13C3-HFPO-DA	66%	58%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0055-000.5-20221222		
Lab Sample ID:	FC1566-14	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	89.7
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9647.D	1	01/13/23 21:38	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105509.D	5	01/16/23 20:41	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2	1.96 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00057 U	0.0011	0.00057	0.00043	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.0028 U [a]	0.0057	0.0028	0.0014	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.0028 U [a]	0.0057	0.0028	0.0015	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00044	0.0011	0.00057	0.00028	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
31506-32-8	MeFOSA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0055-000.5-20221222		
Lab Sample ID:	FC1566-14	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	89.7
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
919005-14-4	ADONA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00057 U	0.0011	0.00057	0.00033	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0028 U [a]	0.0057	0.0028	0.0015	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	60%	50-150%
	13C5-PFPeA	63%	59%	50-150%
	13C5-PFHxA	64%	59%	50-150%
	13C4-PFHpA	66%	61%	50-150%
	13C8-PFOA	67%	61%	50-150%
	13C9-PFNA	66%	62%	50-150%
	13C6-PFDA	67%	61%	50-150%
	13C7-PFUnDA	63%	61%	50-150%
	13C2-PFDoDA	49% [b]	62%	50-150%
	13C2-PFTeDA	61%	68%	50-150%
	13C3-PFBS	70%	70%	50-150%
	13C3-PFHxS	73%	65%	50-150%
	13C8-PFOS	74%	78%	50-150%
	13C8-FOSA	54%	59%	50-150%
	d3-MeFOSA	52%	57%	50-150%
	d3-MeFOSAA	75%	63%	50-150%
	d5-EtFOSAA	76%	62%	50-150%
	13C2-4:2FTS	68%	64%	50-150%
	13C2-6:2FTS	73%	66%	50-150%
	13C2-8:2FTS	72%	65%	50-150%
	13C3-HFPO-DA	62%	57%	50-150%

(a) Result is from Run# 2
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0055-002.0-20221222		
Lab Sample ID:	FC1566-15	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	93.6
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9648.D	1	01/13/23 21:55	LR	01/04/23 11:00	OP94850	S5Q144
Run #2 [a]	2Q105512.D	5	01/16/23 21:31	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.05 g	1.0 ml
Run #2	2.05 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00052 U	0.0010	0.00052	0.00040	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-95-1	Perfluorononanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00052 U	0.0010	0.00052	0.00028	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00040	0.0010	0.00052	0.00026	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
31506-32-8	MeFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2991-50-6	EtFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0055-002.0-20221222
Lab Sample ID: FC1566-15 **Date Sampled:** 12/22/22
Matrix: SO - Soil **Date Received:** 12/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 93.6
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
919005-14-4	ADONA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00052 U	0.0010	0.00052	0.00030	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00052 U	0.0010	0.00052	0.00027	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	51%	50-150%
	13C5-PFPeA	57%	51%	50-150%
	13C5-PFHxA	59%	54%	50-150%
	13C4-PFHpA	61%	56%	50-150%
	13C8-PFOA	63%	57%	50-150%
	13C9-PFNA	64%	59%	50-150%
	13C6-PFDA	67%	62%	50-150%
	13C7-PFUnDA	67%	65%	50-150%
	13C2-PFDoDA	58%	70%	50-150%
	13C2-PFTeDA	71%	77%	50-150%
	13C3-PFBS	81%	75%	50-150%
	13C3-PFHxS	82%	75%	50-150%
	13C8-PFOS	80%	79%	50-150%
	13C8-FOSA	42% [c]	44% [c]	50-150%
	d3-MeFOSA	31% [c]	37% [c]	50-150%
	d3-MeFOSAA	73%	63%	50-150%
	d5-EtFOSAA	76%	61%	50-150%
	13C2-4:2FTS	76%	72%	50-150%
	13C2-6:2FTS	84%	72%	50-150%
	13C2-8:2FTS	82%	73%	50-150%
	13C3-HFPO-DA	56%	48% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0056-000.5-20221222		
Lab Sample ID:	FC1566-16	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	96.2
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9649.D	1	01/13/23 22:11	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105513.D	5	01/16/23 21:48	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.05 g	1.0 ml
Run #2	2.05 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00051 U	0.0010	0.00051	0.00039	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
375-95-1	Perfluorononanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
307-55-1	Perfluorododecanoic acid	0.0025 U [a]	0.0051	0.0025	0.0013	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.0025 U [a]	0.0051	0.0025	0.0013	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00047	0.0010	0.00051	0.00025	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00034	0.0010	0.00051	0.00025	mg/kg	J
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0025 U [a]	0.0051	0.0025	0.0013	mg/kg	
31506-32-8	MeFOSA [b]	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
2991-50-6	EtFOSAA	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00051 U	0.0010	0.00051	0.00025	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0056-000.5-20221222		
Lab Sample ID:	FC1566-16	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	96.2
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
919005-14-4	ADONA	0.00051 U	0.0010	0.00051	0.00025	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00051 U	0.0010	0.00051	0.00029	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0025 U [a]	0.0051	0.0025	0.0013	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%	60%	50-150%
	13C5-PFPeA	67%	59%	50-150%
	13C5-PFHxA	69%	61%	50-150%
	13C4-PFHpA	69%	61%	50-150%
	13C8-PFOA	70%	61%	50-150%
	13C9-PFNA	67%	62%	50-150%
	13C6-PFDA	66%	63%	50-150%
	13C7-PFUnDA	61%	62%	50-150%
	13C2-PFDoDA	43% [c]	62%	50-150%
	13C2-PFTeDA	58%	69%	50-150%
	13C3-PFBS	80%	72%	50-150%
	13C3-PFHxS	79%	72%	50-150%
	13C8-PFOS	80%	74%	50-150%
	13C8-FOSA	44% [c]	53%	50-150%
	d3-MeFOSA	37% [c]	49% [c]	50-150%
	d3-MeFOSAA	70%	66%	50-150%
	d5-EtFOSAA	68%	63%	50-150%
	13C2-4:2FTS	77%	68%	50-150%
	13C2-6:2FTS	83%	70%	50-150%
	13C2-8:2FTS	74%	64%	50-150%
	13C3-HFPO-DA	67%	57%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0056-002.0-20221222		
Lab Sample ID:	FC1566-17	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	94.8
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9652.D	1	01/13/23 23:01	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105514.D	5	01/16/23 22:04	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.04 g	1.0 ml
Run #2	2.04 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00052 U	0.0010	0.00052	0.00039	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-95-1	Perfluorononanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
307-55-1	Perfluorododecanoic acid	0.0026 U [a]	0.0052	0.0026	0.0013	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.0026 U [a]	0.0052	0.0026	0.0014	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00043	0.0010	0.00052	0.00026	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0026 U [a]	0.0052	0.0026	0.0013	mg/kg	
31506-32-8	MeFOSA [b]	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
2991-50-6	EtFOSAA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0056-002.0-20221222		
Lab Sample ID:	FC1566-17	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	94.8
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
919005-14-4	ADONA	0.00052 U	0.0010	0.00052	0.00026	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00052 U	0.0010	0.00052	0.00030	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0026 U [a]	0.0052	0.0026	0.0013	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	69%	56%	50-150%
	13C5-PFPeA	69%	56%	50-150%
	13C5-PFHxA	71%	58%	50-150%
	13C4-PFHpA	73%	60%	50-150%
	13C8-PFOA	71%	58%	50-150%
	13C9-PFNA	68%	59%	50-150%
	13C6-PFDA	66%	58%	50-150%
	13C7-PFUnDA	59%	58%	50-150%
	13C2-PFDoDA	47% [c]	60%	50-150%
	13C2-PFTeDA	65%	66%	50-150%
	13C3-PFBS	78%	65%	50-150%
	13C3-PFHxS	77%	66%	50-150%
	13C8-PFOS	78%	66%	50-150%
	13C8-FOSA	46% [c]	50%	50-150%
	d3-MeFOSA	31% [c]	32% [c]	50-150%
	d3-MeFOSAA	58%	51%	50-150%
	d5-EtFOSAA	58%	53%	50-150%
	13C2-4:2FTS	74%	61%	50-150%
	13C2-6:2FTS	80%	62%	50-150%
	13C2-8:2FTS	70%	61%	50-150%
	13C3-HFPO-DA	71%	56%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0057-000.5-20221222		
Lab Sample ID:	FC1566-18	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	88.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9653.D	1	01/13/23 23:18	LR	01/04/23 11:00	OP94850	S5Q144
Run #2	2Q105515.D	5	01/16/23 22:21	LR	01/04/23 11:00	OP94850	S2Q1465

	Initial Weight	Final Volume
Run #1	2.04 g	1.0 ml
Run #2	2.04 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00055 U	0.0011	0.00055	0.00042	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00060	0.0011	0.00055	0.00028	mg/kg	J
375-85-9	Perfluoroheptanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00055 U	0.0011	0.00055	0.00029	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0012	0.0011	0.00055	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.0027	0.0011	0.00055	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.0274	0.0011	0.00055	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0144	0.0011	0.00055	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00045	0.0011	0.00055	0.00028	mg/kg	J
335-77-3	Perfluorodecanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
31506-32-8	MeFOSA [a]	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0057-000.5-20221222		
Lab Sample ID:	FC1566-18	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	88.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
919005-14-4	ADONA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00055 U	0.0011	0.00055	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00055 U	0.0011	0.00055	0.00029	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%	59%	50-150%
	13C5-PFPeA	65%	59%	50-150%
	13C5-PFHxA	66%	60%	50-150%
	13C4-PFHpA	66%	61%	50-150%
	13C8-PFOA	68%	61%	50-150%
	13C9-PFNA	67%	63%	50-150%
	13C6-PFDA	67%	62%	50-150%
	13C7-PFUnDA	61%	63%	50-150%
	13C2-PFDoDA	51%	63%	50-150%
	13C2-PFTeDA	64%	70%	50-150%
	13C3-PFBS	75%	71%	50-150%
	13C3-PFHxS	72%	68%	50-150%
	13C8-PFOS	75%	73%	50-150%
	13C8-FOSA	52%	62%	50-150%
	d3-MeFOSA	43% [b]	53%	50-150%
	d3-MeFOSAA	71%	66%	50-150%
	d5-EtFOSAA	71%	64%	50-150%
	13C2-4:2FTS	71%	65%	50-150%
	13C2-6:2FTS	77%	66%	50-150%
	13C2-8:2FTS	72%	66%	50-150%
	13C3-HFPO-DA	64%	57%	50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0057-002.0-20221222
Lab Sample ID: FC1566-19
Matrix: SO - Soil
Method: EPA 537M QSM5.3 B-15 IN HOUSE
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/22/22
Date Received: 12/22/22
Percent Solids: 84.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9654.D	1	01/13/23 23:34	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00060 U	0.0012	0.00060	0.00046	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00050	0.0012	0.00060	0.00030	mg/kg	J
375-85-9	Perfluoroheptanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
375-95-1	Perfluorononanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00060 U	0.0012	0.00060	0.00032	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00031	0.0012	0.00060	0.00030	mg/kg	J
2706-91-4	Perfluoropentanesulfonic acid	0.00057	0.0012	0.00060	0.00030	mg/kg	J
355-46-4	Perfluorohexanesulfonic acid	0.0091	0.0012	0.00060	0.00030	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0061	0.0012	0.00060	0.00030	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00041	0.0012	0.00060	0.00030	mg/kg	J
335-77-3	Perfluorodecanesulfonic acid	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
31506-32-8	MeFOSA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
2991-50-6	EtFOSAA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0057-002.0-20221222		
Lab Sample ID:	FC1566-19	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	84.7
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
919005-14-4	ADONA	0.00060 U	0.0012	0.00060	0.00030	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00060 U	0.0012	0.00060	0.00035	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00060 U	0.0012	0.00060	0.00031	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	70%		50-150%
	13C5-PFPeA	69%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	72%		50-150%
	13C8-PFOA	73%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	69%		50-150%
	13C2-PFDoDA	60%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	86%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	59%		50-150%
	d3-MeFOSA	52%		50-150%
	d3-MeFOSAA	74%		50-150%
	d5-EtFOSAA	74%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	86%		50-150%
	13C3-HFPO-DA	68%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0058-000.5-20221222		
Lab Sample ID:	FC1566-20	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	90.2
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9655.D	1	01/13/23 23:51	LR	01/04/23 11:00	OP94850	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	2.00 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00055 U	0.0011	0.00055	0.00042	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00055 U	0.0011	0.00055	0.00029	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0011	0.0011	0.00055	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
31506-32-8	MeFOSA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0058-000.5-20221222
Lab Sample ID: FC1566-20
Matrix: SO - Soil
Method: EPA 537M QSM5.3 B-15 IN HOUSE
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/22/22
Date Received: 12/22/22
Percent Solids: 90.2

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
919005-14-4	ADONA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00055 U	0.0011	0.00055	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00055 U	0.0011	0.00055	0.00029	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	64%		50-150%
	13C4-PFHpA	66%		50-150%
	13C8-PFOA	66%		50-150%
	13C9-PFNA	66%		50-150%
	13C6-PFDA	69%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	54%		50-150%
	13C2-PFTeDA	63%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	79%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	57%		50-150%
	d3-MeFOSA	51%		50-150%
	d3-MeFOSAA	71%		50-150%
	d5-EtFOSAA	73%		50-150%
	13C2-4:2FTS	74%		50-150%
	13C2-6:2FTS	82%		50-150%
	13C2-8:2FTS	81%		50-150%
	13C3-HFPO-DA	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0058-002.0-20221222		
Lab Sample ID:	FC1566-21	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	88.1
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9680.D	1	01/14/23 06:44	LR	01/04/23 11:00	OP94851	S5Q144
Run #2 [a]	2Q105516.D	5	01/16/23 22:37	LR	01/04/23 11:00	OP94851	S2Q1465

	Initial Weight	Final Volume
Run #1	2.03 g	1.0 ml
Run #2	2.03 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00056 U	0.0011	0.00056	0.00042	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00056 U	0.0011	0.00056	0.00030	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0014	0.0011	0.00056	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
31506-32-8	MeFOSA [b]	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00056 U	0.0011	0.00056	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0058-002.0-20221222
Lab Sample ID: FC1566-21 **Date Sampled:** 12/22/22
Matrix: SO - Soil **Date Received:** 12/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 88.1
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
919005-14-4	ADONA	0.00056 U	0.0011	0.00056	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00056 U	0.0011	0.00056	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00056 U	0.0011	0.00056	0.00029	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%	63%	50-150%
	13C5-PFPeA	77%	64%	50-150%
	13C5-PFHxA	80%	68%	50-150%
	13C4-PFHpA	85%	71%	50-150%
	13C8-PFOA	90%	73%	50-150%
	13C9-PFNA	92%	76%	50-150%
	13C6-PFDA	94%	80%	50-150%
	13C7-PFUnDA	95%	79%	50-150%
	13C2-PFDoDA	87%	80%	50-150%
	13C2-PFTeDA	91%	83%	50-150%
	13C3-PFBS	92%	79%	50-150%
	13C3-PFHxS	95%	79%	50-150%
	13C8-PFOS	96%	83%	50-150%
	13C8-FOSA	54%	47% [c]	50-150%
	d3-MeFOSA	42% [c]	40% [c]	50-150%
	d3-MeFOSAA	68%	56%	50-150%
	d5-EtFOSAA	74%	60%	50-150%
	13C2-4:2FTS	83%	73%	50-150%
	13C2-6:2FTS	92%	74%	50-150%
	13C2-8:2FTS	93%	74%	50-150%
	13C3-HFPO-DA	73%	61%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0059-000.5-20221222		
Lab Sample ID:	FC1566-22	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	90.3
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9683.D	1	01/14/23 07:34	LR	01/04/23 11:00	OP94851	S5Q144
Run #2 [a]	2Q105517.D	5	01/16/23 22:54	LR	01/04/23 11:00	OP94851	S2Q1465

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2	1.96 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00057 U	0.0011	0.00057	0.00043	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00057 U	0.0011	0.00057	0.00030	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00049	0.0011	0.00057	0.00028	mg/kg	J
68259-12-1	Perfluorononanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00047	0.0011	0.00057	0.00028	mg/kg	J
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
31506-32-8	MeFOSA [b]	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SB0059-000.5-20221222
Lab Sample ID: FC1566-22
Matrix: SO - Soil
Method: EPA 537M QSM5.3 B-15 IN HOUSE
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/22/22
Date Received: 12/22/22
Percent Solids: 90.3

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
919005-14-4	ADONA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00057 U	0.0011	0.00057	0.00033	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00057 U	0.0011	0.00057	0.00029	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%	68%	50-150%
	13C5-PFPeA	82%	68%	50-150%
	13C5-PFHxA	84%	72%	50-150%
	13C4-PFHpA	88%	75%	50-150%
	13C8-PFOA	90%	77%	50-150%
	13C9-PFNA	93%	75%	50-150%
	13C6-PFDA	94%	79%	50-150%
	13C7-PFUnDA	92%	77%	50-150%
	13C2-PFDoDA	83%	78%	50-150%
	13C2-PFTeDA	81%	81%	50-150%
	13C3-PFBS	87%	79%	50-150%
	13C3-PFHxS	87%	75%	50-150%
	13C8-PFOS	91%	80%	50-150%
	13C8-FOSA	55%	45% [c]	50-150%
	d3-MeFOSA	47% [c]	40% [c]	50-150%
	d3-MeFOSAA	92%	75%	50-150%
	d5-EtFOSAA	94%	73%	50-150%
	13C2-4:2FTS	82%	73%	50-150%
	13C2-6:2FTS	88%	74%	50-150%
	13C2-8:2FTS	90%	75%	50-150%
	13C3-HFPO-DA	76%	65%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0059-002.0-20221222		
Lab Sample ID:	FC1566-23	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	93.0
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9684.D	1	01/14/23 07:50	LR	01/04/23 11:00	OP94851	S5Q144
Run #2							

	Initial Weight	Final Volume
Run #1	1.97 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00055 U	0.0011	0.00055	0.00041	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
375-95-1	Perfluorononanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00055 U	0.0011	0.00055	0.00029	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.0020	0.0011	0.00055	0.00027	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
31506-32-8	MeFOSA	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
2991-50-6	EtFOSAA	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00027	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0059-002.0-20221222		
Lab Sample ID:	FC1566-23	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	93.0
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
919005-14-4	ADONA	0.00055 U	0.0011	0.00055	0.00027	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00055 U	0.0011	0.00055	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00055 U	0.0011	0.00055	0.00028	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%		50-150%
	13C5-PFPeA	84%		50-150%
	13C5-PFHxA	87%		50-150%
	13C4-PFHpA	92%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	97%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDoDA	89%		50-150%
	13C2-PFTeDA	92%		50-150%
	13C3-PFBS	96%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	99%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSA	56%		50-150%
	d3-MeFOSAA	77%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	88%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	97%		50-150%
	13C3-HFPO-DA	81%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0060-000.5-20221222		
Lab Sample ID:	FC1566-24	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	92.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39559.D	1	01/21/23 06:55	AL	01/18/23 10:45	OP95033	S4Q569
Run #2 [a]	5Q9685.D	1	01/14/23 08:07	LR	01/04/23 11:00	OP94851	S5Q144

	Initial Weight	Final Volume
Run #1	1.95 g	1.0 ml
Run #2	2.04 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00055 U	0.0011	0.00055	0.00042	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
307-55-1	Perfluorododecanoic acid [b]	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
72629-94-8	Perfluorotridecanoic acid [b]	0.00055 U	0.0011	0.00055	0.00029	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
31506-32-8	MeFOSA [b]	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0060-000.5-20221222		
Lab Sample ID:	FC1566-24	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	92.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
919005-14-4	ADONA	0.00055 U	0.0011	0.00055	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00055 U	0.0011	0.00055	0.00032	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.00055 U	0.0011	0.00055	0.00029	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%	42% [c]	50-150%
	13C5-PFPeA	64%	42% [c]	50-150%
	13C5-PFHxA	61%	44% [c]	50-150%
	13C4-PFHpA	59%	46% [c]	50-150%
	13C8-PFOA	65%	47% [c]	50-150%
	13C9-PFNA	62%	49% [c]	50-150%
	13C6-PFDA	57%	50%	50-150%
	13C7-PFUnDA	51%	46% [c]	50-150%
	13C2-PFDoDA	49% [c]	40% [c]	50-150%
	13C2-PFTeDA	53%	58%	50-150%
	13C3-PFBS	70%	78%	50-150%
	13C3-PFHxS	69%	84%	50-150%
	13C8-PFOS	64%	84%	50-150%
	13C8-FOSA	36% [c]	34% [c]	50-150%
	d3-MeFOSA	22% [c]	21% [c]	50-150%
	d3-MeFOSAA	89%	66%	50-150%
	d5-EtFOSAA	80%	62%	50-150%
	13C2-4:2FTS	65%	79%	50-150%
	13C2-6:2FTS	77%	87%	50-150%
	13C2-8:2FTS	68%	83%	50-150%
	13C3-HFPO-DA	55%	38% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0060-002.0-20221222		
Lab Sample ID:	FC1566-25	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	95.4
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q39562.D	1	01/21/23 07:42	AL	01/18/23 10:45	OP95033	S4Q569
Run #2 [a]	5Q9688.D	1	01/14/23 08:56	LR	01/04/23 11:00	OP94851	S5Q144

	Initial Weight	Final Volume
Run #1	1.96 g	1.0 ml
Run #2	2.05 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00053 U	0.0011	0.00053	0.00041	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-95-1	Perfluorononanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00053 U	0.0011	0.00053	0.00028	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
31506-32-8	MeFOSA [b]	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
2991-50-6	EtFOSAA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0060-002.0-20221222		
Lab Sample ID:	FC1566-25	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	95.4
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
919005-14-4	ADONA	0.00053 U	0.0011	0.00053	0.00027	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00053 U	0.0011	0.00053	0.00031	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00053 U	0.0011	0.00053	0.00028	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	40% [c]	50-150%
	13C5-PFPeA	60%	41% [c]	50-150%
	13C5-PFHxA	58%	41% [c]	50-150%
	13C4-PFHpA	55%	44% [c]	50-150%
	13C8-PFOA	64%	46% [c]	50-150%
	13C9-PFNA	63%	49% [c]	50-150%
	13C6-PFDA	56%	50%	50-150%
	13C7-PFUnDA	51%	51%	50-150%
	13C2-PFDoDA	52%	45% [c]	50-150%
	13C2-PFTeDA	59%	65%	50-150%
	13C3-PFBS	76%	84%	50-150%
	13C3-PFHxS	71%	85%	50-150%
	13C8-PFOS	69%	83%	50-150%
	13C8-FOSA	46% [c]	48% [c]	50-150%
	d3-MeFOSA	21% [c]	31% [c]	50-150%
	d3-MeFOSAA	83%	69%	50-150%
	d5-EtFOSAA	76%	63%	50-150%
	13C2-4:2FTS	66%	80%	50-150%
	13C2-6:2FTS	77%	86%	50-150%
	13C2-8:2FTS	71%	84%	50-150%
	13C3-HFPO-DA	53%	39% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD02-20221222		
Lab Sample ID:	FC1566-26	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	89.4
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q9689.D	1	01/14/23 09:13	LR	01/04/23 11:00	OP94851	S5Q144
Run #2	2Q105520.D	5	01/16/23 23:44	LR	01/04/23 11:00	OP94851	S2Q1465

	Initial Weight	Final Volume
Run #1	1.97 g	1.0 ml
Run #2	1.97 g	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00057 U	0.0011	0.00057	0.00043	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-95-1	Perfluorononanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.0028 U [a]	0.0057	0.0028	0.0014	mg/kg	
307-55-1	Perfluorododecanoic acid	0.0028 U [a]	0.0057	0.0028	0.0014	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.0028 U [a]	0.0057	0.0028	0.0015	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.0028 U [a]	0.0057	0.0028	0.0014	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
31506-32-8	MeFOSA [b]	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
2991-50-6	EtFOSAA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD02-20221222		
Lab Sample ID:	FC1566-26	**Date Sampled:**	12/22/22
Matrix:	SO - Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	89.4
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
919005-14-4	ADONA	0.00057 U	0.0011	0.00057	0.00028	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00057 U	0.0011	0.00057	0.00033	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0028 U [a]	0.0057	0.0028	0.0015	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	53%	50-150%
	13C5-PFPeA	57%	51%	50-150%
	13C5-PFHxA	57%	54%	50-150%
	13C4-PFHpA	59%	54%	50-150%
	13C8-PFOA	60%	53%	50-150%
	13C9-PFNA	59%	53%	50-150%
	13C6-PFDA	57%	57%	50-150%
	13C7-PFUnDA	49% [c]	57%	50-150%
	13C2-PFDoDA	41% [c]	59%	50-150%
	13C2-PFTeDA	61%	70%	50-150%
	13C3-PFBS	81%	79%	50-150%
	13C3-PFHxS	82%	76%	50-150%
	13C8-PFOS	84%	78%	50-150%
	13C8-FOSA	35% [c]	47% [c]	50-150%
	d3-MeFOSA	25% [c]	39% [c]	50-150%
	d3-MeFOSAA	64%	64%	50-150%
	d5-EtFOSAA	58%	62%	50-150%
	13C2-4:2FTS	76%	72%	50-150%
	13C2-6:2FTS	85%	73%	50-150%
	13C2-8:2FTS	77%	70%	50-150%
	13C3-HFPO-DA	53%	50%	50-150%

(a) Result is from Run# 2

(b) Associated ID Standard outside control limits.

(c) Outside control limits.

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20221222		
Lab Sample ID:	FC1566-27	**Date Sampled:**	12/22/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98704.D	1	01/01/23 04:59	AL	12/28/22 09:10	OP94731	SQ2107
Run #2 [a]	Q98785.D	5	01/04/23 17:27	AL	12/28/22 09:10	OP94731	SQ2110

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20221222		
Lab Sample ID:	FC1566-27	**Date Sampled:**	12/22/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	82%	65%	50-150%
	13C5-PFPeA	84%	66%	50-150%
	13C5-PFHxA	86%	71%	50-150%
	13C4-PFHpA	88%	71%	50-150%
	13C8-PFOA	86%	74%	50-150%
	13C9-PFNA	84%	77%	50-150%
	13C6-PFDA	81%	71%	50-150%
	13C7-PFUnDA	78%	73%	50-150%
	13C2-PFDoDA	66%	69%	50-150%
	13C2-PFTeDA	69%	63%	50-150%
	13C3-PFBS	87%	75%	50-150%
	13C3-PFHxS	87%	76%	50-150%
	13C8-PFOS	80%	76%	50-150%
	13C8-FOSA	81%	73%	50-150%
	d3-MeFOSA	36% [c]	33% [c]	50-150%
	d3-MeFOSAA	84%	74%	50-150%
	d5-EtFOSAA	79%	76%	50-150%
	13C2-4:2FTS	80%	62%	50-150%
	13C2-6:2FTS	70%	70%	50-150%
	13C2-8:2FTS	77%	69%	50-150%
	13C3-HFPO-DA	86%	80%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB02-20221222		
Lab Sample ID:	FC1566-28	**Date Sampled:**	12/22/22
Matrix:	AQ - Equipment Blank	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98705.D	1	01/01/23 05:14	AL	12/28/22 09:10	OP94731	SQ2107
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB02-20221222
Lab Sample ID: FC1566-28
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 12/22/22
Date Received: 12/22/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	75%		50-150%
	13C5-PFHxA	78%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	75%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	59%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	80%		50-150%
	13C3-PFHxS	77%		50-150%
	13C8-PFOS	71%		50-150%
	13C8-FOSA	79%		50-150%
	d3-MeFOSA	60%		50-150%
	d3-MeFOSAA	76%		50-150%
	d5-EtFOSAA	74%		50-150%
	13C2-4:2FTS	73%		50-150%
	13C2-6:2FTS	70%		50-150%
	13C2-8:2FTS	69%		50-150%
	13C3-HFPO-DA	74%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20221222		
Lab Sample ID:	FC1566-29	**Date Sampled:**	12/22/22
Matrix:	AQ - Field Blank Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q98706.D	1	01/01/23 05:29	AL	12/28/22 09:10	OP94731	SQ2107
Run #2 [a]	Q98870.D	5	01/05/23 23:58	LR	12/28/22 09:10	OP94731	SQ2111

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
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335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20221222		
Lab Sample ID:	FC1566-29	**Date Sampled:**	12/22/22
Matrix:	AQ - Field Blank Soil	**Date Received:**	12/22/22
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%	27% [d]	50-150%
	13C5-PFPeA	86%	68%	50-150%
	13C5-PFHxA	87%	71%	50-150%
	13C4-PFHpA	87%	69%	50-150%
	13C8-PFOA	86%	72%	50-150%
	13C9-PFNA	84%	75%	50-150%
	13C6-PFDA	81%	68%	50-150%
	13C7-PFUnDA	78%	69%	50-150%
	13C2-PFDoDA	63%	62%	50-150%
	13C2-PFTeDA	69%	60%	50-150%
	13C3-PFBS	88%	73%	50-150%
	13C3-PFHxS	83%	73%	50-150%
	13C8-PFOS	82%	74%	50-150%
	13C8-FOSA	83%	74%	50-150%
	d3-MeFOSA	38% [d]	42% [d]	50-150%
	d3-MeFOSAA	80%	72%	50-150%
	d5-EtFOSAA	76%	66%	50-150%
	13C2-4:2FTS	82%	64%	50-150%
	13C2-6:2FTS	79%	67%	50-150%
	13C2-8:2FTS	76%	67%	50-150%
	13C3-HFPO-DA	88%	76%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	SO	SGS is not certified for this parameter.

FC1566

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 1 of 3
Site Location: PFAS Site Assessment and Mitigation (SA&M) - Soil		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
1	A3RB-SB0049-000.5-20221222	A3RB-SB0049	20221222	0900	SO	N	G	1	1	
2	A3RB-SB0049-002.0-20221222	A3RB-SB0049	20221222	0905	SO	N	G	1	1	
3	A3RB-SB0050-000.5-20221222	A3RB-SB0050	20221222	0920	SO	N	G	1	1	
4	A3RB-SB0050-002.0-20221222	A3RB-SB0050	20221222	0925	SO	N	G	1	1	
5	A3RB-FD01-20221222	A3RB-FD01	20221222	0800	SO	FD	G	1	1	
6	A3RB-SB0051-000.5-20221222	A3RB-SB0051	20221222	0940	SO	N	G	1	1	
7	A3RB-SB0051-002.0-20221222	A3RB-SB0051	20221222	0945	SO	N	G	1	1	
8	A3RB-SB0052-000.5-20221222	A3RB-SB0052	20221222	1000	SO	N	G	1	1	
9	A3RB-SB0052-002.0-20221222	A3RB-SB0052	20221222	1005	SO	N	G	1	1	MS/MSD
10	A3RB-SB0053-000.5-20221222	A3RB-SB0053	20221222	1020	SO	N	G	1	1	
11	A3RB-SB0053-002.0-20221222	A3RB-SB0053	20221222	1025	SO	N	G	1	1	
12	A3RB-SB0054-000.5-20221222	A3RB-SB0054	20221222	1032	SO	N	G	1	1	

INITIAL ASSESSMENT PF

LABEL VERIFICATION ZB

1106-INI

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/22/22	1310	1	12/22/22	1310
2			2		
3			3		

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes____ No____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FC1566: Chain of Custody
Page 1 of 4

FC1566

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 2 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) Soil | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested (*Enter number of containers for each test*)**

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) 4 DEG Total No. of Containers	Select PFAS by 537	Comments
13	A3RB-SB0054-002.0-20221222	A3RB-SB0054	20221222	1037	SO	N	G	1	1	
14	A3RB-SB0055-000.5-20221222	A3RB-SB0055	20221222	1042	SO	N	G	1	1	
15	A3RB-SB0055-002.0-20221222	A3RB-SB0055	20221222	1045	SO	N	G	1	1	
16	A3RB-SB0056-000.5-20221222	A3RB-SB0056	20221222	1052	SO	N	G	1	1	
17	A3RB-SB0056-002.0-20221222	A3RB-SB0056	20221222	1055	SO	N	G	1	1	
18	A3RB-SB0057-000.5-20221222	A3RB-SB0057	20221222	1105	SO	N	G	1	1	
19	A3RB-SB0057-002.0-20221222	A3RB-SB0057	20221222	1108	SO	N	G	1	1	
20	A3RB-SB0058-000.5-20221222	A3RB-SB0058	20221222	1115	SO	N	G	1	1	
21	A3RB-SB0058-002.0-20221222	A3RB-SB0058	20221222	1120	SO	N	G	1	1	
22	A3RB-SB0059-000.5-20221222	A3RB-SB0059	20221222	1127	SO	N	G	1	1	
23	A3RB-SB0059-002.0-20221222	A3RB-SB0059	20221222	1130	SO	N	G	1	1	
24	A3RB-SB0060-000.5-20221222	A3RB-SB0060	20221222	1145	SO	N	G	1	1	

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/22/22	1310	1	12/22/22	1310
2			2		
3			3		

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FC1566: Chain of Custody
Page 2 of 4

FC1566

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: 3 of 3	
Site Location: Site Assessment and Mitigation (SA&M) Soil			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	**Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747			Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando		Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537										Comments
25	A3RB-SB0060-002.0-20221222	A3RB-SB0060	20221222	1150	SO	N	G	1	1										
26	A3RB-FD02-20221222	A3RB-FD02	20221222	0815	SO	FD	G	1	1										
27	A3RB-EB01-20221222	A3RB-EB01	20221222	1040	WQ	EB	G	2	2										
28	A3RB-EB02-20221222	A3RB-EB02	20221222	1200	WQ	EB	G	2	2										
29	A3RB-FB01-20221222	A3RB-FB01	20221222	1205	WQ	FB	G	2	2										
9	A3RB-SB0052-002.0-MS-20221222	A3RB-MS	20221222	1010	SO	N	G	1	1										
9	A3RB-SB0052-002.0-MSD-20221222	A3RB-MSD	20221222	1012	SO	N	G	1	1										

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	12/22/22	1310	1	12/22/22	1310
2			2		
3			3		

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2
5

FC1566: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC1566 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 12/22/2022 1:10:00 PM **Delivery Method:** DROPOFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.6);

Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 12/22/2022 1:10:00 P Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94731	EPA 537M QSM5.3 B-15						
OP94731-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	97	%	73-129
OP94731-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	89	%	72-129
OP94731-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	95	%	72-129
OP94731-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	92	%	72-130
OP94731-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	71-133
OP94731-BS	375-95-1	Perfluorononanoic acid	BSP	REC	95	%	69-130
OP94731-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	99	%	71-129
OP94731-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	94	%	69-133
OP94731-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	98	%	72-134
OP94731-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	98	%	65-144
OP94731-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	89	%	71-132
OP94731-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	95	%	72-130
OP94731-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP94731-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	97	%	68-131
OP94731-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	96	%	69-134
OP94731-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	98	%	65-140
OP94731-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	86	%	69-127
OP94731-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	84	%	53-142
OP94731-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP94731-BS	31506-32-8	MeFOSA	BSP	REC	96	%	68-141
OP94731-BS	2355-31-9	MeFOSAA	BSP	REC	96	%	65-136
OP94731-BS	2991-50-6	EtFOSAA	BSP	REC	89	%	61-135
OP94731-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	98	%	63-143
OP94731-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	101	%	64-140
OP94731-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	97	%	67-138
OP94731-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	124	%	73-129
OP94731-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	89	%	72-129
OP94731-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	95	%	72-129
OP94731-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	94	%	72-130
OP94731-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	97	%	71-133
OP94731-MS*	375-95-1	Perfluorononanoic acid	MS	REC	93	%	69-130
OP94731-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	101	%	71-129
OP94731-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	97	%	69-133
OP94731-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	101	%	72-134
OP94731-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	104	%	65-144
OP94731-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	94	%	71-132
OP94731-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	96	%	72-130
OP94731-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	91	%	71-127
OP94731-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	99	%	68-131
OP94731-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	104	%	69-134
OP94731-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	105	%	65-140
OP94731-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	94	%	69-127

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94731-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	94	%	53-142
OP94731-MS*	754-91-6	PFOSA	MS	REC	94	%	67-137
OP94731-MS*	31506-32-8	MeFOSA	MS	REC	123	%	68-141
OP94731-MS*	2355-31-9	MeFOSAA	MS	REC	96	%	65-136
OP94731-MS*	2991-50-6	EtFOSAA	MS	REC	98	%	61-135
OP94731-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	101	%	63-143
OP94731-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	104	%	64-140
OP94731-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	105	%	67-138
OP94731-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	3	%	30
OP94731-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	3	%	30
OP94731-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	7	%	30
OP94731-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	60	%	30
OP94731-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	1	%	30
OP94731-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP94731-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	2	%	30
OP94731-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP94731-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP94731-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP94731-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP94731-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP94731-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP94731-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP94731-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP94850	EPA 537M QSM5.3 B-15						
OP94850-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	105	%	71-135
OP94850-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	69-132
OP94850-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	99	%	70-132
OP94850-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	99	%	71-131
OP94850-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	69-133
OP94850-BS	375-95-1	Perfluorononanoic acid	BSP	REC	99	%	72-129
OP94850-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	100	%	69-133
OP94850-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	64-136
OP94850-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	69-135

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94850-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	103	%	66-139
OP94850-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	98	%	69-133
OP94850-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	102	%	72-128
OP94850-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	96	%	73-123
OP94850-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	104	%	67-130
OP94850-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	101	%	70-132
OP94850-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	104	%	68-136
OP94850-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	101	%	69-125
OP94850-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	98	%	59-134
OP94850-BS	754-91-6	PFOSA	BSP	REC	96	%	67-137
OP94850-BS	2355-31-9	MeFOSAA	BSP	REC	100	%	63-144
OP94850-BS	2991-50-6	EtFOSAA	BSP	REC	99	%	61-139
OP94850-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	101	%	62-145
OP94850-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	105	%	64-140
OP94850-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	104	%	65-137
OP94850-MS	375-22-4	Perfluorobutanoic acid	MS	REC	111	%	71-135
OP94850-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	102	%	69-132
OP94850-MS	307-24-4	Perfluorohexanoic acid	MS	REC	107	%	70-132
OP94850-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	106	%	71-131
OP94850-MS	335-67-1	Perfluorooctanoic acid	MS	REC	104	%	69-133
OP94850-MS	375-95-1	Perfluorononanoic acid	MS	REC	105	%	72-129
OP94850-MS	335-76-2	Perfluorodecanoic acid	MS	REC	104	%	69-133
OP94850-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	105	%	64-136
OP94850-MS	307-55-1	Perfluorododecanoic acid	MS	REC	110	%	69-135
OP94850-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	116	%	66-139
OP94850-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	102	%	69-133
OP94850-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	110	%	72-128
OP94850-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	104	%	73-123
OP94850-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	112	%	67-130
OP94850-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	105	%	70-132
OP94850-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	108	%	68-136
OP94850-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	105	%	69-125
OP94850-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	107	%	59-134
OP94850-MS	754-91-6	PFOSA	MS	REC	101	%	67-137
OP94850-MS	2355-31-9	MeFOSAA	MS	REC	107	%	63-144
OP94850-MS	2991-50-6	EtFOSAA	MS	REC	107	%	61-139
OP94850-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	106	%	62-145
OP94850-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140
OP94850-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	110	%	65-137
OP94850-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	112	%	71-135
OP94850-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP94850-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	103	%	69-132
OP94850-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP94850-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	108	%	70-132
OP94850-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	3	%	30

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94850-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	106	%	71-131
OP94850-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP94850-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	106	%	69-133
OP94850-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	4	%	30
OP94850-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	106	%	72-129
OP94850-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	3	%	30
OP94850-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	106	%	69-133
OP94850-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	4	%	30
OP94850-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	105	%	64-136
OP94850-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP94850-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	110	%	69-135
OP94850-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP94850-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	117	%	66-139
OP94850-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	3	%	30
OP94850-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	104	%	69-133
OP94850-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	4	%	30
OP94850-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	111	%	72-128
OP94850-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP94850-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	106	%	73-123
OP94850-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	4	%	30
OP94850-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	111	%	67-130
OP94850-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP94850-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	107	%	70-132
OP94850-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP94850-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	109	%	68-136
OP94850-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	2	%	30
OP94850-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	104	%	69-125
OP94850-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	1	%	30
OP94850-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	107	%	59-134
OP94850-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP94850-MSD	754-91-6	PFOSA	MSD	REC	103	%	67-137
OP94850-MSD	754-91-6	PFOSA	MSD	RPD	4	%	30
OP94850-MSD	31506-32-8	MeFOSA	MSD	RPD	8	%	30
OP94850-MSD	2355-31-9	MeFOSAA	MSD	REC	106	%	63-144
OP94850-MSD	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP94850-MSD	2991-50-6	EtFOSAA	MSD	REC	104	%	61-139
OP94850-MSD	2991-50-6	EtFOSAA	MSD	RPD	0	%	30
OP94850-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	106	%	62-145
OP94850-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP94850-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	115	%	64-140
OP94850-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP94850-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	108	%	65-137
OP94850-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94851	EPA 537M QSM5.3 B-15						
OP94851-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	99	%	71-135
OP94851-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	91	%	69-132
OP94851-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	95	%	70-132
OP94851-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	93	%	71-131
OP94851-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	95	%	69-133
OP94851-BS	375-95-1	Perfluorononanoic acid	BSP	REC	95	%	72-129
OP94851-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	69-133
OP94851-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	64-136
OP94851-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	99	%	69-135
OP94851-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	97	%	66-139
OP94851-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	92	%	69-133
OP94851-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-128
OP94851-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	94	%	73-123
OP94851-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	98	%	67-130
OP94851-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	95	%	70-132
OP94851-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	97	%	68-136
OP94851-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	95	%	69-125
OP94851-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	90	%	59-134
OP94851-BS	754-91-6	PFOSA	BSP	REC	92	%	67-137
OP94851-BS	2355-31-9	MeFOSAA	BSP	REC	95	%	63-144
OP94851-BS	2991-50-6	EtFOSAA	BSP	REC	92	%	61-139
OP94851-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	95	%	62-145
OP94851-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	101	%	64-140
OP94851-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	98	%	65-137
OP94851-MS	375-22-4	Perfluorobutanoic acid	MS	REC	100	%	71-135
OP94851-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	92	%	69-132
OP94851-MS	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	70-132
OP94851-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	96	%	71-131
OP94851-MS	335-67-1	Perfluorooctanoic acid	MS	REC	96	%	69-133
OP94851-MS	375-95-1	Perfluorononanoic acid	MS	REC	95	%	72-129
OP94851-MS	335-76-2	Perfluorodecanoic acid	MS	REC	96	%	69-133
OP94851-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	94	%	64-136
OP94851-MS	307-55-1	Perfluorododecanoic acid	MS	REC	98	%	69-135
OP94851-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	101	%	66-139
OP94851-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	92	%	69-133
OP94851-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	98	%	72-128
OP94851-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	94	%	73-123
OP94851-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	98	%	67-130
OP94851-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	96	%	70-132
OP94851-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	101	%	68-136
OP94851-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	96	%	69-125
OP94851-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	90	%	59-134

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94851-MS	754-91-6	PFOSA	MS	REC	92	%	67-137
OP94851-MS	2355-31-9	MeFOSAA	MS	REC	96	%	63-144
OP94851-MS	2991-50-6	EtFOSAA	MS	REC	93	%	61-139
OP94851-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	96	%	62-145
OP94851-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	101	%	64-140
OP94851-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	99	%	65-137
OP94851-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	101	%	71-135
OP94851-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP94851-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	92	%	69-132
OP94851-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	0	%	30
OP94851-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	97	%	70-132
OP94851-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP94851-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	95	%	71-131
OP94851-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP94851-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	96	%	69-133
OP94851-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	0	%	30
OP94851-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	97	%	72-129
OP94851-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	3	%	30
OP94851-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	97	%	69-133
OP94851-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	2	%	30
OP94851-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	96	%	64-136
OP94851-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP94851-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	100	%	69-135
OP94851-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP94851-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	103	%	66-139
OP94851-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP94851-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	95	%	69-133
OP94851-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	3	%	30
OP94851-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	99	%	72-128
OP94851-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP94851-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	96	%	73-123
OP94851-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP94851-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	99	%	67-130
OP94851-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	1	%	30
OP94851-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	98	%	70-132
OP94851-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	2	%	30
OP94851-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	103	%	68-136
OP94851-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	2	%	30
OP94851-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	96	%	69-125
OP94851-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	1	%	30
OP94851-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	93	%	59-134
OP94851-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP94851-MSD	754-91-6	PFOSA	MSD	REC	94	%	67-137
OP94851-MSD	754-91-6	PFOSA	MSD	RPD	2	%	30
OP94851-MSD	31506-32-8	MeFOSA	MSD	RPD	1	%	30

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP94851-MSD	2355-31-9	MeFOSAA	MSD	REC	92	%	63-144
OP94851-MSD	2355-31-9	MeFOSAA	MSD	RPD	5	%	30
OP94851-MSD	2991-50-6	EtFOSAA	MSD	REC	92	%	61-139
OP94851-MSD	2991-50-6	EtFOSAA	MSD	RPD	1	%	30
OP94851-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	96	%	62-145
OP94851-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP94851-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	101	%	64-140
OP94851-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30
OP94851-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	98	%	65-137
OP94851-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95033	EPA 537M QSM5.3 B-15						
OP95033-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	113	%	71-135
OP95033-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	102	%	69-132
OP95033-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	107	%	70-132
OP95033-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	109	%	71-131
OP95033-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	105	%	69-133
OP95033-BS	375-95-1	Perfluorononanoic acid	BSP	REC	108	%	72-129
OP95033-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	107	%	69-133
OP95033-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	108	%	64-136
OP95033-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	112	%	69-135
OP95033-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	108	%	66-139
OP95033-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	104	%	69-133
OP95033-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	111	%	72-128
OP95033-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	95	%	73-123
OP95033-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	115	%	67-130
OP95033-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	114	%	70-132
OP95033-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	114	%	68-136
OP95033-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	111	%	69-125
OP95033-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	107	%	59-134
OP95033-BS	754-91-6	PFOSA	BSP	REC	107	%	67-137
OP95033-BS	2355-31-9	MeFOSAA	BSP	REC	108	%	63-144
OP95033-BS	2991-50-6	EtFOSAA	BSP	REC	108	%	61-139
OP95033-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	108	%	62-145
OP95033-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	110	%	64-140
OP95033-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	111	%	65-137
OP95033-MS	375-22-4	Perfluorobutanoic acid	MS	REC	111	%	71-135
OP95033-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	100	%	69-132
OP95033-MS	307-24-4	Perfluorohexanoic acid	MS	REC	104	%	70-132
OP95033-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	107	%	71-131
OP95033-MS	335-67-1	Perfluorooctanoic acid	MS	REC	101	%	69-133
OP95033-MS	375-95-1	Perfluorononanoic acid	MS	REC	103	%	72-129
OP95033-MS	335-76-2	Perfluorodecanoic acid	MS	REC	105	%	69-133
OP95033-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	104	%	64-136

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95033-MS	307-55-1	Perfluorododecanoic acid	MS	REC	107	%	69-135
OP95033-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	87	%	66-139
OP95033-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	102	%	69-133
OP95033-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	108	%	72-128
OP95033-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	90	%	73-123
OP95033-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	108	%	67-130
OP95033-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	115	%	70-132
OP95033-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	112	%	68-136
OP95033-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	98	%	69-125
OP95033-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	120	%	59-134
OP95033-MS	754-91-6	PFOSA	MS	REC	105	%	67-137
OP95033-MS	2355-31-9	MeFOSAA	MS	REC	102	%	63-144
OP95033-MS	2991-50-6	EtFOSAA	MS	REC	108	%	61-139
OP95033-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	103	%	62-145
OP95033-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	108	%	64-140
OP95033-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	105	%	65-137
OP95033-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	117	%	71-135
OP95033-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	6	%	30
OP95033-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	99	%	69-132
OP95033-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	0	%	30
OP95033-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	102	%	70-132
OP95033-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP95033-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	105	%	71-131
OP95033-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP95033-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	101	%	69-133
OP95033-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP95033-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	104	%	72-129
OP95033-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP95033-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	103	%	69-133
OP95033-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	2	%	30
OP95033-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	102	%	64-136
OP95033-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP95033-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	108	%	69-135
OP95033-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP95033-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	87	%	66-139
OP95033-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	0	%	30
OP95033-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	99	%	69-133
OP95033-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP95033-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	107	%	72-128
OP95033-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP95033-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	92	%	73-123
OP95033-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP95033-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	109	%	67-130
OP95033-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP95033-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	111	%	70-132

* Sample used for QC is not from job FC1566

QC Evaluation: DOD QSM5.x Limits

Job Number: FC1566
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 12/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95033-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	3	%	30
OP95033-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	110	%	68-136
OP95033-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	2	%	30
OP95033-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	91	%	69-125
OP95033-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	7	%	30
OP95033-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	118	%	59-134
OP95033-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	1	%	30
OP95033-MSD	754-91-6	PFOSA	MSD	REC	105	%	67-137
OP95033-MSD	754-91-6	PFOSA	MSD	RPD	0	%	30
OP95033-MSD	31506-32-8	MeFOSA	MSD	RPD	5	%	30
OP95033-MSD	2355-31-9	MeFOSAA	MSD	REC	103	%	63-144
OP95033-MSD	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP95033-MSD	2991-50-6	EtFOSAA	MSD	REC	106	%	61-139
OP95033-MSD	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP95033-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	103	%	62-145
OP95033-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30
OP95033-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	108	%	64-140
OP95033-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95033-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	106	%	65-137
OP95033-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30

* Sample used for QC is not from job FC1566

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	100%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2107-IBLK	Q98660.D	1	12/31/22	AL	n/a	n/a	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	103%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSA	103%	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	92%	50-150%
	13C3-HFPO-DA	97%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2110-IBLK	Q98779.D	1	01/04/23	AL	n/a	n/a	SQ2110

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27

CAS No.	Compound	Result	RL	MDL	Units	Q

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSA	102%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	93%	50-150%
	13C3-HFPO-DA	96%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2111-IBLK	Q98821.D	1	01/05/23	LR	n/a	n/a	SQ2111

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-29

CAS No.	Compound	Result	RL	MDL	Units	Q
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	111%	50-150%
	d3-MeFOSA	108%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	106%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q144-IBLK	5Q9622.D	1	01/13/23	LR	n/a	n/a	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20, FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	94%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q144-IBLK	5Q9622.D	1	01/13/23	LR	n/a	n/a	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20, FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	91%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1465-IBLK	2Q105494.D	1	01/16/23	LR	n/a	n/a	S2Q1465

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-6, FC1566-10, FC1566-11, FC1566-14, FC1566-16, FC1566-17, FC1566-18, FC1566-26

CAS No.	Compound	Result	RL	MDL	Units	Q
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	104%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	101%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	97%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q569-IBLK	4Q39485.D	1	01/20/23	AL	n/a	n/a	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%

Instrument Blank

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q569-IBLK	4Q39485.D	1	01/20/23	AL	n/a	n/a	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSAA	122%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	94%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MB	Q98693.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	121%	50-150%
	13C5-PFPeA	117%	50-150%
	13C5-PFHxA	117%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MB	Q98693.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	115%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	116%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	105%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	59%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	112%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	113%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-MB	5Q9629.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	79%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	78%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-MB	5Q9629.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	79%	50-150%
	13C8-PFOA	80%	50-150%
	13C9-PFNA	80%	50-150%
	13C6-PFDA	82%	50-150%
	13C7-PFUnDA	80%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	85%	50-150%
	d3-MeFOSAA	64%	50-150%
	d5-EtFOSAA	66%	50-150%
	13C2-4:2FTS	74%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	79%	50-150%
	13C3-HFPO-DA	83%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-MB	5Q9679.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	75%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	78%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-MB	5Q9679.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	101%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	88%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	74%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-MB	4Q39558.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	78%	50-150%
	13C5-PFPeA	78%	50-150%
	13C5-PFHxA	77%	50-150%

Method Blank Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-MB	4Q39558.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	76%	50-150%
	13C8-PFOA	82%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	82%	50-150%
	13C7-PFUnDA	79%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	79%	50-150%
	13C8-PFOS	79%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	100%	50-150%
	d3-MeFOSAA	95%	50-150%
	d5-EtFOSAA	94%	50-150%
	13C2-4:2FTS	71%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	78%	50-150%
	13C3-HFPO-DA	73%	50-150%

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-BS	Q98692.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0772	97	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0708	89	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0756	95	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0739	92	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0742	93	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0760	95	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0792	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0752	94	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0781	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0784	98	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0714	89	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0759	95	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0703	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0773	97	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0765	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0781	98	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0685	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0675	84	53-142
754-91-6	PFOSA	0.08	0.0743	93	67-137
31506-32-8	MeFOSA	0.08	0.0767	96	68-141
2355-31-9	MeFOSAA	0.08	0.0771	96	65-136
2991-50-6	EtFOSAA	0.08	0.0713	89	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0780	98	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0807	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0778	97	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0825	103	60-140
919005-14-4	ADONA	0.08	0.0724	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0687	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0671	84	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	130%	50-150%
	13C5-PFPeA	125%	50-150%
	13C5-PFHxA	123%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-BS	Q98692.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	122%	50-150%
	13C8-PFOA	115%	50-150%
	13C9-PFNA	110%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	125%	50-150%
	13C3-PFHxS	117%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	51%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	107%	50-150%
	13C2-4:2FTS	126%	50-150%
	13C2-6:2FTS	116%	50-150%
	13C2-8:2FTS	113%	50-150%
	13C3-HFPO-DA	121%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-BS	5Q9628.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.5	105	71-135
2706-90-3	Perfluoropentanoic acid	10	9.6	96	69-132
307-24-4	Perfluorohexanoic acid	10	9.9	99	70-132
375-85-9	Perfluoroheptanoic acid	10	9.9	99	71-131
335-67-1	Perfluorooctanoic acid	10	9.9	99	69-133
375-95-1	Perfluorononanoic acid	10	9.9	99	72-129
335-76-2	Perfluorodecanoic acid	10	10.0	100	69-133
2058-94-8	Perfluoroundecanoic acid	10	9.7	97	64-136
307-55-1	Perfluorododecanoic acid	10	10.4	104	69-135
72629-94-8	Perfluorotridecanoic acid	10	10.3	103	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.8	98	69-133
375-73-5	Perfluorobutanesulfonic acid	10	10.2	102	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	9.6	96	73-123
355-46-4	Perfluorohexanesulfonic acid	10	10.4	104	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	10.1	101	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	10.4	104	68-136
68259-12-1	Perfluorononanesulfonic acid	10	10.1	101	69-125
335-77-3	Perfluorodecanesulfonic acid	10	9.8	98	59-134
754-91-6	PFOSA	10	9.6	96	67-137
31506-32-8	MeFOSA	10	10.2	102	60-140
2355-31-9	MeFOSAA	10	10.0	100	63-144
2991-50-6	EtFOSAA	10	9.9	99	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.1	101	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	10.5	105	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	10.4	104	65-137
13252-13-6	HFPO-DA (GenX)	10	9.6	96	60-140
919005-14-4	ADONA	10	9.4	94	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	10	100	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	10.1	101	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	88%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	89%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-BS	5Q9628.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	92%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	91%	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	95%	50-150%
	13C3-HFPO-DA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-BS	5Q9678.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.9	99	71-135
2706-90-3	Perfluoropentanoic acid	10	9.1	91	69-132
307-24-4	Perfluorohexanoic acid	10	9.5	95	70-132
375-85-9	Perfluoroheptanoic acid	10	9.3	93	71-131
335-67-1	Perfluorooctanoic acid	10	9.5	95	69-133
375-95-1	Perfluorononanoic acid	10	9.5	95	72-129
335-76-2	Perfluorodecanoic acid	10	9.4	94	69-133
2058-94-8	Perfluoroundecanoic acid	10	9.3	93	64-136
307-55-1	Perfluorododecanoic acid	10	9.9	99	69-135
72629-94-8	Perfluorotridecanoic acid	10	9.7	97	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.2	92	69-133
375-73-5	Perfluorobutanesulfonic acid	10	9.8	98	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	9.4	94	73-123
355-46-4	Perfluorohexanesulfonic acid	10	9.8	98	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	9.5	95	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	9.7	97	68-136
68259-12-1	Perfluorononanesulfonic acid	10	9.5	95	69-125
335-77-3	Perfluorodecanesulfonic acid	10	9.0	90	59-134
754-91-6	PFOSA	10	9.2	92	67-137
31506-32-8	MeFOSA	10	9.8	98	60-140
2355-31-9	MeFOSAA	10	9.5	95	63-144
2991-50-6	EtFOSAA	10	9.2	92	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	9.5	95	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	10.1	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	9.8	98	65-137
13252-13-6	HFPO-DA (GenX)	10	8.8	88	60-140
919005-14-4	ADONA	10	8.6	86	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	8.8	88	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	9.1	91	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	80%	50-150%
	13C5-PFPeA	80%	50-150%
	13C5-PFHxA	83%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-BS	5Q9678.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	86%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSAA	90%	50-150%
	d5-EtFOSAA	92%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	79%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-BS	4Q39557.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	11.3	113	71-135
2706-90-3	Perfluoropentanoic acid	10	10.2	102	69-132
307-24-4	Perfluorohexanoic acid	10	10.7	107	70-132
375-85-9	Perfluoroheptanoic acid	10	10.9	109	71-131
335-67-1	Perfluorooctanoic acid	10	10.5	105	69-133
375-95-1	Perfluorononanoic acid	10	10.8	108	72-129
335-76-2	Perfluorodecanoic acid	10	10.7	107	69-133
2058-94-8	Perfluoroundecanoic acid	10	10.8	108	64-136
307-55-1	Perfluorododecanoic acid	10	11.2	112	69-135
72629-94-8	Perfluorotridecanoic acid	10	10.8	108	66-139
376-06-7	Perfluorotetradecanoic acid	10	10.4	104	69-133
375-73-5	Perfluorobutanesulfonic acid	10	11.1	111	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	9.5	95	73-123
355-46-4	Perfluorohexanesulfonic acid	10	11.5	115	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	11.4	114	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	11.4	114	68-136
68259-12-1	Perfluorononanesulfonic acid	10	11.1	111	69-125
335-77-3	Perfluorodecanesulfonic acid	10	10.7	107	59-134
754-91-6	PFOSA	10	10.7	107	67-137
31506-32-8	MeFOSA	10	11.2	112	60-140
2355-31-9	MeFOSAA	10	10.8	108	63-144
2991-50-6	EtFOSAA	10	10.8	108	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.8	108	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	11.0	110	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	11.1	111	65-137
13252-13-6	HFPO-DA (GenX)	10	10.9	109	60-140
919005-14-4	ADONA	10	10.4	104	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	10.2	102	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	11.0	110	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	76%	50-150%
	13C5-PFPeA	77%	50-150%
	13C5-PFHxA	76%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-BS	4Q39557.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	74%	50-150%
	13C8-PFOA	75%	50-150%
	13C9-PFNA	77%	50-150%
	13C6-PFDA	77%	50-150%
	13C7-PFUnDA	75%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	79%	50-150%
	13C3-PFHxS	76%	50-150%
	13C8-PFOS	76%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSA	88%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	74%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	77%	50-150%
	13C3-HFPO-DA	72%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MS	Q98695.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-1	Q98694.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	Compound	FC1532-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.680		0.16	0.878	124	73-129
2706-90-3	Perfluoropentanoic acid	0.0040	I	0.16	0.147	89	72-129
307-24-4	Perfluorohexanoic acid	0.0041	I	0.16	0.156	95	72-129
375-85-9	Perfluoroheptanoic acid	0.0024	I	0.16	0.153	94	72-130
335-67-1	Perfluorooctanoic acid	0.0085		0.16	0.163	97	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.16	0.149	93	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.16	0.162	101	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.16	0.155	97	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.16	0.161	101	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.16	0.166	104	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.16	0.150	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	0.16	0.153	96	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	0.16	0.145	91	71-127
355-46-4	Perfluorohexanesulfonic acid	0.0083	U	0.16	0.159	99	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	0.16	0.167	104	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0036	I	0.16	0.171	105	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	0.16	0.150	94	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	0.16	0.151	94	53-142
754-91-6	PFOSA	0.0083	U	0.16	0.151	94	67-137
31506-32-8	MeFOSA	0.017	U	0.16	0.196	123	68-141
2355-31-9	MeFOSAA	0.017	U	0.16	0.153	96	65-136
2991-50-6	EtFOSAA	0.017	U	0.16	0.156	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.16	0.161	101	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	0.16	0.166	104	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.16	0.168	105	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.16	0.156	98	60-140
919005-14-4	ADONA	0.017	U	0.16	0.147	92	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.16	0.138	86	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.16	0.136	85	60-140

CAS No.	ID Standard Recoveries	MS	FC1532-1	Limits
	13C4-PFBA	84%	60%	50-150%
	13C5-PFPeA	82%	63%	50-150%
	13C5-PFHxA	84%	66%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-MS	Q98695.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-1	Q98694.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	ID Standard Recoveries	MS	FC1532-1	Limits
	13C4-PFHpA	86%	68%	50-150%
	13C8-PFOA	87%	70%	50-150%
	13C9-PFNA	85%	68%	50-150%
	13C6-PFDA	78%	66%	50-150%
	13C7-PFUnDA	77%	64%	50-150%
	13C2-PFDoDA	67%	57%	50-150%
	13C2-PFTeDA	69%	59%	50-150%
	13C3-PFBS	87%	66%	50-150%
	13C3-PFHxS	84%	64%	50-150%
	13C8-PFOS	79%	69%	50-150%
	13C8-FOSA	68%	67%	50-150%
	d3-MeFOSAA	87%	71%	50-150%
	d5-EtFOSAA	82%	67%	50-150%
	13C2-4:2FTS	95%	66%	50-150%
	13C2-6:2FTS	92%	68%	50-150%
	13C2-8:2FTS	89%	64%	50-150%
	13C3-HFPO-DA	89%	61%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-MS	5Q9641.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144
OP94850-MSD	5Q9642.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144
FC1566-9	5Q9640.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	Compound	FC1566-9 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.2 U		11.7	13.0	111	12	13.4	112	3	71-135/30
2706-90-3	Perfluoropentanoic acid	1.2 U		11.7	11.9	102	12	12.3	103	3	69-132/30
307-24-4	Perfluorohexanoic acid	1.2 U		11.7	12.5	107	12	12.9	108	3	70-132/30
375-85-9	Perfluoroheptanoic acid	1.2 U		11.7	12.4	106	12	12.7	106	2	71-131/30
335-67-1	Perfluorooctanoic acid	1.2 U		11.7	12.2	104	12	12.7	106	4	69-133/30
375-95-1	Perfluorononanoic acid	1.2 U		11.7	12.3	105	12	12.7	106	3	72-129/30
335-76-2	Perfluorodecanoic acid	1.2 U		11.7	12.2	104	12	12.7	106	4	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.2 U		11.7	12.3	105	12	12.6	105	2	64-136/30
307-55-1	Perfluorododecanoic acid	1.2 U		11.7	12.9	110	12	13.2	110	2	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.2 U		11.7	13.6	116	12	14.0	117	3	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.2 U		11.7	12.0	102	12	12.5	104	4	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.2 U		11.7	12.9	110	12	13.3	111	3	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.2 U		11.7	12.2	104	12	12.7	106	4	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.2 U		11.7	13.1	112	12	13.3	111	2	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.2 U		11.7	12.3	105	12	12.8	107	4	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.8		11.7	14.5	108	12	14.8	109	2	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.2 U		11.7	12.3	105	12	12.4	104	1	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.2 U		11.7	12.5	107	12	12.8	107	2	59-134/30
754-91-6	PFOSA	1.2 U		11.7	11.8	101	12	12.3	103	4	67-137/30
31506-32-8	MeFOSA	1.2 U		11.7	12.3	105	12	13.3	111	8	60-140/30
2355-31-9	MeFOSAA	1.2 U		11.7	12.6	107	12	12.7	106	1	63-144/30
2991-50-6	EtFOSAA	1.2 U		11.7	12.5	107	12	12.5	104	0	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.2 U		11.7	12.4	106	12	12.7	106	2	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.2 U		11.7	13.2	113	12	13.7	115	4	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.2 U		11.7	12.9	110	12	12.9	108	0	65-137/30
13252-13-6	HFPO-DA (GenX)	1.2 U		11.7	12.0	102	12	11.7	98	3	60-140/30
919005-14-4	ADONA	1.2 U		11.7	12.3	105	12	12.6	105	2	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.2 U		11.7	11.9	102	12	12.2	102	2	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.2 U		11.7	13.6	116	12	14.1	118	4	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-9	Limits
	13C4-PFBA	76%	86%	76%	50-150%
	13C5-PFPeA	76%	86%	78%	50-150%
	13C5-PFHxA	78%	88%	80%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94850-MS	5Q9641.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144
OP94850-MSD	5Q9642.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144
FC1566-9	5Q9640.D	1	01/13/23	LR	01/04/23	OP94850	S5Q144

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-1, FC1566-2, FC1566-3, FC1566-4, FC1566-5, FC1566-6, FC1566-7, FC1566-8, FC1566-9, FC1566-10, FC1566-11, FC1566-12, FC1566-13, FC1566-14, FC1566-15, FC1566-16, FC1566-17, FC1566-18, FC1566-19, FC1566-20

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-9	Limits
	13C4-PFHpA	77%	88%	82%	50-150%
	13C8-PFOA	78%	89%	84%	50-150%
	13C9-PFNA	77%	88%	84%	50-150%
	13C6-PFDA	79%	90%	87%	50-150%
	13C7-PFUnDA	75%	85%	84%	50-150%
	13C2-PFDoDA	69%	77%	77%	50-150%
	13C2-PFTeDA	74%	83%	81%	50-150%
	13C3-PFBS	78%	88%	86%	50-150%
	13C3-PFHxS	79%	90%	85%	50-150%
	13C8-PFOS	79%	91%	88%	50-150%
	13C8-FOSA	57%	64%	68%	50-150%
	d3-MeFOSA	54%	57%	60%	50-150%
	d3-MeFOSAA	77%	89%	85%	50-150%
	d5-EtFOSAA	79%	93%	86%	50-150%
	13C2-4:2FTS	76%	88%	81%	50-150%
	13C2-6:2FTS	81%	93%	86%	50-150%
	13C2-8:2FTS	81%	94%	87%	50-150%
	13C3-HFPO-DA	74%	88%	75%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-MS	5Q9681.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
OP94851-MSD	5Q9682.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
FC1566-21	5Q9680.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
FC1566-21 [a]	2Q105516.D	5	01/16/23	LR	01/04/23	OP94851	S2Q1465

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	Compound	FC1566-21 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.1	U	11.4	11.4	100	11.4	11.5	101	1	71-135/30
2706-90-3	Perfluoropentanoic acid	1.1	U	11.4	10.5	92	11.4	10.5	92	0	69-132/30
307-24-4	Perfluorohexanoic acid	1.1	U	11.4	10.9	96	11.4	11.1	97	2	70-132/30
375-85-9	Perfluoroheptanoic acid	1.1	U	11.4	10.9	96	11.4	10.8	95	1	71-131/30
335-67-1	Perfluorooctanoic acid	1.1	U	11.4	10.9	96	11.4	10.9	96	0	69-133/30
375-95-1	Perfluorononanoic acid	1.1	U	11.4	10.8	95	11.4	11.1	97	3	72-129/30
335-76-2	Perfluorodecanoic acid	1.1	U	11.4	10.9	96	11.4	11.1	97	2	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.1	U	11.4	10.7	94	11.4	10.9	96	2	64-136/30
307-55-1	Perfluorododecanoic acid	1.1	U	11.4	11.2	98	11.4	11.4	100	2	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.1	U	11.4	11.5	101	11.4	11.7	103	2	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.1	U	11.4	10.5	92	11.4	10.8	95	3	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.1	U	11.4	11.2	98	11.4	11.3	99	1	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.1	U	11.4	10.7	94	11.4	10.9	96	2	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.1	U	11.4	11.2	98	11.4	11.3	99	1	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.1	U	11.4	11.0	96	11.4	11.2	98	2	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.4		11.4	12.9	101	11.4	13.1	103	2	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.1	U	11.4	11.0	96	11.4	10.9	96	1	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.1	U	11.4	10.3	90	11.4	10.6	93	3	59-134/30
754-91-6	PFOSA	1.1	U	11.4	10.5	92	11.4	10.7	94	2	67-137/30
31506-32-8	MeFOSA	1.1	U	11.4	10.8	95	11.4	10.9	96	1	60-140/30
2355-31-9	MeFOSAA	1.1	U	11.4	11.0	96	11.4	10.5	92	5	63-144/30
2991-50-6	EtFOSAA	1.1	U	11.4	10.6	93	11.4	10.5	92	1	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.1	U	11.4	10.9	96	11.4	11.0	96	1	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.1	U	11.4	11.5	101	11.4	11.5	101	0	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.1	U	11.4	11.3	99	11.4	11.2	98	1	65-137/30
13252-13-6	HFPO-DA (GenX)	1.1	U	11.4	9.9	87	11.4	10.2	89	3	60-140/30
919005-14-4	ADONA	1.1	U	11.4	10.5	92	11.4	10.7	94	2	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.1	U	11.4	10.3	90	11.4	10.7	94	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.1	U	11.4	11.2	98	11.4	11.7	103	4	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-21	FC1566-21	Limits
	13C4-PFBA	90%	91%	75%	63%	50-150%
	13C5-PFPeA	90%	90%	77%	64%	50-150%
	13C5-PFHxA	91%	92%	80%	68%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94851-MS	5Q9681.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
OP94851-MSD	5Q9682.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
FC1566-21	5Q9680.D	1	01/14/23	LR	01/04/23	OP94851	S5Q144
FC1566-21 [a]	2Q105516.D	5	01/16/23	LR	01/04/23	OP94851	S2Q1465

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-21, FC1566-22, FC1566-23, FC1566-26

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-21	FC1566-21	Limits
	13C4-PFHpA	94%	95%	85%	71%	50-150%
	13C8-PFOA	96%	95%	90%	73%	50-150%
	13C9-PFNA	97%	96%	92%	76%	50-150%
	13C6-PFDA	97%	97%	94%	80%	50-150%
	13C7-PFUnDA	97%	96%	95%	79%	50-150%
	13C2-PFDoDA	90%	89%	87%	80%	50-150%
	13C2-PFTeDA	93%	91%	91%	83%	50-150%
	13C3-PFBS	93%	94%	92%	79%	50-150%
	13C3-PFHxS	96%	96%	95%	79%	50-150%
	13C8-PFOS	96%	96%	96%	83%	50-150%
	13C8-FOSA	71%	67%	54%	47%* [b]	50-150%
	d3-MeFOSA			42%* [b]	40%* [b]	50-150%
	d3-MeFOSAA	86%	87%	68%	56%	50-150%
	d5-EtFOSAA	92%	92%	74%	60%	50-150%
	13C2-4:2FTS	91%	93%	83%	73%	50-150%
	13C2-6:2FTS	97%	99%	92%	74%	50-150%
	13C2-8:2FTS	100%	103%	93%	74%	50-150%
	13C3-HFPO-DA	90%	91%	73%	61%	50-150%

(a) Confirmation run.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-MS	4Q39560.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569
OP95033-MSD	4Q39561.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569
FC1566-24	4Q39559.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	Compound	FC1566-24 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.1	U	11	12.3	111	11.1	13.0	117	6	71-135/30
2706-90-3	Perfluoropentanoic acid	1.1	U	11	11.0	100	11.1	11.0	99	0	69-132/30
307-24-4	Perfluorohexanoic acid	1.1	U	11	11.5	104	11.1	11.3	102	2	70-132/30
375-85-9	Perfluoroheptanoic acid	1.1	U	11	11.8	107	11.1	11.6	105	2	71-131/30
335-67-1	Perfluorooctanoic acid	1.1	U	11	11.1	101	11.1	11.2	101	1	69-133/30
375-95-1	Perfluorononanoic acid	1.1	U	11	11.4	103	11.1	11.5	104	1	72-129/30
335-76-2	Perfluorodecanoic acid	1.1	U	11	11.6	105	11.1	11.4	103	2	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.1	U	11	11.5	104	11.1	11.3	102	2	64-136/30
307-55-1	Perfluorododecanoic acid	1.1	U	11	11.8	107	11.1	12.0	108	2	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.1	U	11	9.6	87	11.1	9.6	87	0	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.1	U	11	11.2	102	11.1	11.0	99	2	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.1	U	11	11.9	108	11.1	11.9	107	0	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.1	U	11	9.9	90	11.1	10.2	92	3	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.1	U	11	11.9	108	11.1	12.1	109	2	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.1	U	11	12.7	115	11.1	12.3	111	3	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.1	U	11	12.4	112	11.1	12.2	110	2	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.1	U	11	10.8	98	11.1	10.1	91	7	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.1	U	11	13.2	120	11.1	13.1	118	1	59-134/30
754-91-6	PFOSA	1.1	U	11	11.6	105	11.1	11.6	105	0	67-137/30
31506-32-8	MeFOSA	1.1	U	11	12.1	110	11.1	11.5	104	5	60-140/30
2355-31-9	MeFOSAA	1.1	U	11	11.3	102	11.1	11.4	103	1	63-144/30
2991-50-6	EtFOSAA	1.1	U	11	11.9	108	11.1	11.7	106	2	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.1	U	11	11.4	103	11.1	11.4	103	0	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.1	U	11	11.9	108	11.1	12.0	108	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.1	U	11	11.6	105	11.1	11.7	106	1	65-137/30
13252-13-6	HFPO-DA (GenX)	1.1	U	11	12.1	110	11.1	11.4	103	6	60-140/30
919005-14-4	ADONA	1.1	U	11	9.7	88	11.1	9.7	87	0	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.1	U	11	11.9	108	11.1	11.8	106	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.1	U	11	13.9	126	11.1	13.7	124	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-24	Limits
	13C4-PFBA	65%	59%	64%	50-150%
	13C5-PFPeA	65%	59%	64%	50-150%
	13C5-PFHxA	61%	55%	61%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95033-MS	4Q39560.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569
OP95033-MSD	4Q39561.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569
FC1566-24	4Q39559.D	1	01/21/23	AL	01/18/23	OP95033	S4Q569

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-24, FC1566-25

CAS No.	ID Standard Recoveries	MS	MSD	FC1566-24	Limits
	13C4-PFHpA	58%	54%	59%	50-150%
	13C8-PFOA	60%	56%	65%	50-150%
	13C9-PFNA	60%	56%	62%	50-150%
	13C6-PFDA	54%	50%	57%	50-150%
	13C7-PFUnDA	50%	47%* [a]	51%	50-150%
	13C2-PFDoDA	47%* [a]	44%* [a]	49%* [a]	50-150%
	13C2-PFTeDA	51%	48%* [a]	53%	50-150%
	13C3-PFBS	70%	63%	70%	50-150%
	13C3-PFHxS	69%	63%	69%	50-150%
	13C8-PFOS	63%	60%	64%	50-150%
	13C8-FOSA	36%* [a]	33%* [a]	36%* [a]	50-150%
	d3-MeFOSA	20%* [a]	19%* [a]	22%* [a]	50-150%
	d3-MeFOSAA	86%	80%	89%	50-150%
	d5-EtFOSAA	82%	75%	80%	50-150%
	13C2-4:2FTS	70%	64%	65%	50-150%
	13C2-6:2FTS	78%	71%	77%	50-150%
	13C2-8:2FTS	72%	65%	68%	50-150%
	13C3-HFPO-DA	55%	51%	55%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-DUP	Q98697.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-3	Q98696.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	Compound	FC1532-3 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.590		0.570		3	30
2706-90-3	Perfluoropentanoic acid	0.0034	I	0.0035	J	3	30
307-24-4	Perfluorohexanoic acid	0.0046	I	0.0043	J	7	30
375-85-9	Perfluoroheptanoic acid	0.0041	I	0.0022	J	60*	30
335-67-1	Perfluorooctanoic acid	0.0091		0.0092		1	30
375-95-1	Perfluorononanoic acid	0.0083	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0083	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0083	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0083	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0083	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0083	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0083	U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0083	U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0083	U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0083	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0041	I	0.0042	J	2	30
68259-12-1	Perfluorononanesulfonic acid	0.0083	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0083	U	ND		nc	30
754-91-6	PFOSA	0.0083	U	ND		nc	30
31506-32-8	MeFOSA	0.017	U	ND		nc	30
2355-31-9	MeFOSAA	0.017	U	ND		nc	30
2991-50-6	EtFOSAA	0.017	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.017	U	ND		nc	30
919005-14-4	ADONA	0.017	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC1532-3	Limits
	13C4-PFBA	61%	64%	50-150%
	13C5-PFPeA	60%	62%	50-150%
	13C5-PFHxA	61%	64%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC1566
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP94731-DUP	Q98697.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107
FC1532-3	Q98696.D	1	01/01/23	AL	12/28/22	OP94731	SQ2107

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC1566-27, FC1566-28, FC1566-29

CAS No.	ID Standard Recoveries	DUP	FC1532-3	Limits
	13C4-PFHpA	63%	66%	50-150%
	13C8-PFOA	64%	67%	50-150%
	13C9-PFNA	63%	67%	50-150%
	13C6-PFDA	63%	66%	50-150%
	13C7-PFUnDA	63%	66%	50-150%
	13C2-PFDoDA	58%	58%	50-150%
	13C2-PFTeDA	63%	60%	50-150%
	13C3-PFBS	61%	63%	50-150%
	13C3-PFHxS	61%	62%	50-150%
	13C8-PFOS	64%	65%	50-150%
	13C8-FOSA	66%	64%	50-150%
	d3-MeFOSA	38%* [a]		50-150%
	d3-MeFOSAA	72%	75%	50-150%
	d5-EtFOSAA	70%	73%	50-150%
	13C2-4:2FTS	63%	66%	50-150%
	13C2-6:2FTS	63%	69%	50-150%
	13C2-8:2FTS	63%	66%	50-150%
	13C3-HFPO-DA	61%	62%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3265

Sampling Dates: 03/06/23 - 03/07/23

Report to:

AECOM
150 N Orange Ave Suite 200
Orlando, FL 32801
gloria.richie@aecom.com; linnea.king@aecom.com;
megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: **116**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FC3265

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3265-1	03/06/23	08:35	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-004.0-20230306
FC3265-2	03/06/23	09:00	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-010.0-20230306
FC3265-3	03/06/23	09:25	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-018.0-20230306
FC3265-4	03/06/23	09:50	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-025.0-20230306
FC3265-5	03/06/23	10:30	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-042.0-20230306
FC3265-6	03/06/23	11:10	DS	03/07/23	AQ	Ground Water	A3RB-DPT0030-057.0-20230306
FC3265-7	03/06/23	13:05	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-004.0-20230306
FC3265-8	03/06/23	13:25	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-010.0-20230306
FC3265-9	03/06/23	13:45	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-018.0-20230306
FC3265-10	03/06/23	14:20	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-025.0-20230306
FC3265-11	03/06/23	14:45	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-042.0-20230306
FC3265-12	03/06/23	15:30	DS	03/07/23	AQ	Ground Water	A3RB-DPT0031-057.0-20230306
FC3265-13	03/07/23	08:00	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-004.0-20230307

Sample Summary
(continued)

AECOM, Inc

Job No: FC3265

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3265-14	03/07/23	08:20	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-010.0-20230307
FC3265-15	03/07/23	08:50	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-018.0-20230307
FC3265-16	03/07/23	09:10	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-025.0-20230307
FC3265-17	03/07/23	09:45	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-042.0-20230307
FC3265-18	03/07/23	10:15	DS	03/07/23	AQ	Ground Water	A3RB-DPT0032-057.0-20230307
FC3265-19	03/07/23	14:50	DS	03/07/23	AQ	Ground Water	A3RB-DPT0017-042.0-20230307
FC3265-20	03/07/23	15:20	DS	03/07/23	AQ	Ground Water	A3RB-DPT0017-057.0-20230307
FC3265-21	03/06/23	08:15	DS	03/07/23	AQ	Ground Water	A3RB-FD01-20230306
FC3265-22	03/06/23	16:30	DS	03/07/23	AQ	Field Blank Water	A3RB-FB01-20230306
FC3265-23	03/06/23	16:20	DS	03/07/23	AQ	Equipment Blank	A3RB-EB01-20230306
FC3265-24	03/07/23	15:30	DS	03/07/23	AQ	Field Blank Water	A3RB-FB02-20230307
FC3265-25	03/07/23	15:40	DS	03/07/23	AQ	Equipment Blank	A3RB-EB02-20230307

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3265

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 3/28/2023 11:36:29 AM

On 03/07/2023, 23 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3265 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95812

Sample(s) FC3265-1MS, FC3265-2DUP were used as the QC samples indicated.

Sample(s) FC3265-2 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

Sample(s) FC3265-1, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-2, FC3265-20, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9 have surrogates outside control limits.

OP95812-BS for d3-MeFOSA: Outside control limits.

OP95812-MB for d3-MeFOSA: Outside control limits.

FC3265-1 for d3-MeFOSA: Outside control limits.

FC3265-1 for MeFOSA: Associated ID Standard outside control limits, Confirmed by batch QC.

FC3265-2: Dilution required (ID recovery standard failure).

FC3265-2: Insufficient sample for re-extraction.

FC3265-3 for 13C3-PFBS: Outside control limits.

FC3265-3 for 13C4-PFBA: Outside control limits.

FC3265-3 for 13C5-PFPeA: Outside control limits.

FC3265-3 for d3-MeFOSA: Outside control limits.

FC3265-3 for MeFOSA: Associated ID Standard outside control limits.

FC3265-3 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC3265-3 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC3265-3 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3265-3 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC3265-4 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC3265-4 for 13C2-PFDoDA: Outside control limits.

FC3265-4 for 13C3-PFBS: Outside control limits.

FC3265-4 for 13C4-PFBA: Outside control limits.

FC3265-4 for 13C5-PFPeA: Outside control limits.

FC3265-4 for 13C8-FOSA: Outside control limits.

FC3265-4 for d3-MeFOSA: Outside control limits.

FC3265-4 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC3265-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC3265-4 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3265-4 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC3265-4 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FC3265-4 for PFOSA: Associated ID Standard outside control limits.

FC3265-5 for 13C3-PFBS: Outside control limits.

FC3265-5 for d3-MeFOSA: Outside control limits.

FC3265-5 for MeFOSA: Associated ID Standard outside control limits.

FC3265-5 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC3265-5 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3265-6 for 13C3-PFBS: Outside control limits.

FC3265-6 for 13C8-FOSA: Outside control limits.

FC3265-6 for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95812

FC3265-6 for MeFOSA: Associated ID Standard outside control limits.
FC3265-6 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-6 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-6 for PFOSA: Associated ID Standard outside control limits.
FC3265-7 for 13C2-PFTeDA: Outside control limits.
FC3265-7 for 13C3-PFBS: Outside control limits.
FC3265-7 for 13C5-PFPeA: Outside control limits.
FC3265-7 for d3-MeFOSA: Outside control limits.
FC3265-7 for MeFOSA: Associated ID Standard outside control limits.
FC3265-7 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3265-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3265-7: Dilution required (ID recovery standard failure).
FC3265-8 for 13C3-PFBS: Outside control limits.
FC3265-8 for 13C4-PFBA: Outside control limits.
FC3265-8 for 13C5-PFPeA: Outside control limits.
FC3265-8 for d3-MeFOSA: Outside control limits.
FC3265-8 for MeFOSA: Associated ID Standard outside control limits.
FC3265-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC3265-8 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3265-8: Dilution required (ID recovery standard failure).
FC3265-9 for d3-MeFOSA: Outside control limits.
FC3265-9 for MeFOSA: Associated ID Standard outside control limits.
FC3265-10 for 13C3-PFBS: Outside control limits.
FC3265-10 for 13C4-PFBA: Outside control limits.
FC3265-10 for 13C5-PFPeA: Outside control limits.
FC3265-10 for 13C8-FOSA: Outside control limits.
FC3265-10 for d3-MeFOSA: Outside control limits.
FC3265-10 for MeFOSA: Associated ID Standard outside control limits.
FC3265-10 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-10: Dilution required (ID recovery standard failure).
FC3265-11 for 13C2-PFDoDA: Outside control limits.
FC3265-11 for 13C3-PFBS: Outside control limits.
FC3265-11 for 13C4-PFBA: Outside control limits.
FC3265-11 for 13C5-PFPeA: Outside control limits.
FC3265-11 for 13C7-PFUnDA: Outside control limits.
FC3265-11 for 13C8-FOSA: Outside control limits.
FC3265-11 for d3-MeFOSA: Outside control limits.
FC3265-11 for d5-EtFOSAA: Outside control limits.
FC3265-11 for MeFOSA: Associated ID Standard outside control limits.
FC3265-11 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-11: Dilution required (ID recovery standard failure).
FC3265-12 for 13C3-PFBS: Outside control limits.
FC3265-12 for d3-MeFOSA: Outside control limits.
FC3265-12 for MeFOSA: Associated ID Standard outside control limits.
FC3265-12 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-12 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-13 for 13C2-PFTeDA: Outside control limits.
FC3265-13 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3265-13: Confirmation run.
FC3265-14 for 13C3-PFBS: Outside control limits.
FC3265-14 for d3-MeFOSA: Outside control limits.
FC3265-14 for MeFOSA: Associated ID Standard outside control limits.
FC3265-14 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95812

FC3265-14: Dilution required (ID recovery standard failure).
FC3265-15 for 13C3-PFBS: Outside control limits.
FC3265-15 for 13C5-PFPeA: Outside control limits.
FC3265-15 for d3-MeFOSA: Outside control limits.
FC3265-15 for MeFOSA: Associated ID Standard outside control limits.
FC3265-15 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-15 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-15 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3265-16 for d3-MeFOSA: Outside control limits.
FC3265-17 for 13C3-PFBS: Outside control limits.
FC3265-17 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-17 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-18 for 13C3-PFBS: Outside control limits.
FC3265-18 for d3-MeFOSA: Outside control limits.
FC3265-18 for MeFOSA: Associated ID Standard outside control limits.
FC3265-18 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-18 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-19 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC3265-19 for 13C2-PFDoDA: Outside control limits.
FC3265-19 for 13C3-PFBS: Outside control limits.
FC3265-19 for 13C4-PFBA: Outside control limits.
FC3265-19 for 13C5-PFPeA: Outside control limits.
FC3265-19 for d3-MeFOSA: Outside control limits.
FC3265-19 for MeFOSA: Associated ID Standard outside control limits.
FC3265-19 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-19 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC3265-19 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC3265-19 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3265-19 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3265-19 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC3265-2 for MeFOSA: Associated ID Standard outside control limits.
FC3265-20 for 13C3-PFBS: Outside control limits.
FC3265-20 for d3-MeFOSA: Outside control limits.
FC3265-20 for MeFOSA: Associated ID Standard outside control limits.
FC3265-20 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3265-20 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP95817

Sample(s) FC3245-1MS, FC3245-2DUP were used as the QC samples indicated.
Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid are outside control limits. Probable cause is due to matrix interference.
Sample(s) FC3265-21, FC3265-24, FC3265-25 have surrogates outside control limits.
FC3265-21 for 13C2-PFDoDA: Outside control limits.
FC3265-21 for 13C3-PFBS: Outside control limits.
FC3265-21 for 13C4-PFBA: Outside control limits.
FC3265-21 for 13C5-PFPeA: Outside control limits.
FC3265-21 for 13C7-PFUnDA: Outside control limits.
FC3265-21 for 13C8-FOSA: Outside control limits.
FC3265-21 for d3-MeFOSA: Outside control limits.
FC3265-21 for d5-EtFOSAA: Outside control limits.
FC3265-21 for MeFOSA: Associated ID Standard outside control limits.
FC3265-21: Dilution required (ID recovery standard failure).
FC3265-24: Confirmation run.
FC3265-25: Confirmation run.
OP95817-BS for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95992

OP95992-BS: Insufficient sample for MS/MSD.

Blank Spike Recovery(s) for MeFOSA are outside control limits.

Sample(s) FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9 have surrogates outside control limits.

OP95992-BS for d3-MeFOSA: Outside control limits.

OP95992-BS for MeFOSA: Outside control limits.

OP95992-MB for d3-MeFOSA: Outside control limits.

FC3265-3 for 13C3-HFPO-DA: Outside control limits.

FC3265-3 for 13C3-PFBS: Outside control limits.

FC3265-3 for 13C4-PFBA: Outside control limits.

FC3265-3 for 13C5-PFHxA: Outside control limits.

FC3265-3 for 13C5-PFPeA: Outside control limits.

FC3265-3 for d3-MeFOSA: Outside control limits.

FC3265-4 for 13C2-4:2FTS: Outside control limits.

FC3265-4 for 13C2-PFTeDA: Outside control limits.

FC3265-4 for 13C3-HFPO-DA: Outside control limits.

FC3265-4 for 13C3-PFBS: Outside control limits.

FC3265-4 for 13C4-PFBA: Outside control limits.

FC3265-4 for 13C5-PFHxA: Outside control limits.

FC3265-4 for 13C5-PFPeA: Outside control limits.

FC3265-4 for 13C8-FOSA: Outside control limits.

FC3265-4 for d3-MeFOSA: Outside control limits.

FC3265-4 for MeFOSA: Associated ID Standard outside control limits.

FC3265-5 for 13C3-PFBS: Outside control limits.

FC3265-5 for 13C4-PFBA: Outside control limits.

FC3265-5 for 13C5-PFPeA: Outside control limits.

FC3265-5 for 13C8-FOSA: Outside control limits.

FC3265-5 for d3-MeFOSA: Outside control limits.

FC3265-6 for 13C3-PFBS: Outside control limits.

FC3265-6 for 13C4-PFBA: Outside control limits.

FC3265-6 for 13C5-PFPeA: Outside control limits.

FC3265-6 for 13C8-FOSA: Outside control limits.

FC3265-6 for d3-MeFOSA: Outside control limits.

FC3265-9 for 13C3-PFBS: Outside control limits.

FC3265-9 for 13C4-PFBA: Outside control limits.

FC3265-9 for 13C5-PFPeA: Outside control limits.

FC3265-9 for 13C8-FOSA: Outside control limits.

FC3265-9 for d3-MeFOSA: Outside control limits.

FC3265-12 for 13C3-HFPO-DA: Outside control limits.

FC3265-12 for 13C3-PFBS: Outside control limits.

FC3265-12 for 13C4-PFBA: Outside control limits.

FC3265-12 for 13C5-PFPeA: Outside control limits.

FC3265-12 for 13C8-FOSA: Outside control limits.

FC3265-12 for d3-MeFOSA: Outside control limits.

FC3265-15 for 13C3-PFBS: Outside control limits.

FC3265-15 for 13C4-PFBA: Outside control limits.

FC3265-15 for 13C5-PFPeA: Outside control limits.

FC3265-15 for 13C8-FOSA: Outside control limits.

FC3265-15 for d3-MeFOSA: Outside control limits.

FC3265-16 for 13C3-HFPO-DA: Outside control limits.

FC3265-16 for 13C3-PFBS: Outside control limits.

FC3265-16 for 13C4-PFBA: Outside control limits.

FC3265-16 for 13C5-PFPeA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95992

FC3265-16 for d3-MeFOSA: Outside control limits.
FC3265-16 for MeFOSA: Associated ID Standard outside control limits.
FC3265-17 for 13C3-PFBS: Outside control limits.
FC3265-17 for 13C4-PFBA: Outside control limits.
FC3265-17 for 13C5-PFPeA: Outside control limits.
FC3265-17 for d3-MeFOSA: Outside control limits.
FC3265-18 for 13C3-HFPO-DA: Outside control limits.
FC3265-18 for 13C3-PFBS: Outside control limits.
FC3265-18 for 13C4-PFBA: Outside control limits.
FC3265-18 for 13C5-PFPeA: Outside control limits.
FC3265-18 for 13C8-FOSA: Outside control limits.
FC3265-18 for d3-MeFOSA: Outside control limits.
FC3265-19 for 13C2-PFDoDA: Outside control limits.
FC3265-19 for 13C3-HFPO-DA: Outside control limits.
FC3265-19 for 13C3-PFBS: Outside control limits.
FC3265-19 for 13C4-PFBA: Outside control limits.
FC3265-19 for 13C5-PFPeA: Outside control limits.
FC3265-19 for 13C8-FOSA: Outside control limits.
FC3265-19 for d3-MeFOSA: Outside control limits.
FC3265-20 for 13C3-PFBS: Outside control limits.
FC3265-20 for 13C4-PFBA: Outside control limits.
FC3265-20 for 13C5-PFPeA: Outside control limits.
FC3265-20 for 13C8-FOSA: Outside control limits.
FC3265-20 for d3-MeFOSA: Outside control limits.

Matrix: AQ **Batch ID:** OP95997

OP95997-BS: Insufficient sample for MS/MSD.
Sample(s) FC3265-13, FC3265-14, FC3265-22, FC3265-23, FC3265-24, FC3265-25 have surrogates outside control limits.
OP95997-MB for d3-MeFOSA: Outside control limits.
OP95997-BS for d3-MeFOSA: Outside control limits.
FC3265-13: Confirmation run.
FC3265-14: Confirmation run.
FC3265-22 for d3-MeFOSA: Outside control limits.
FC3265-22 for MeFOSA: Associated ID Standard outside control limits.
FC3265-23 for 13C2-PFTeDA: Outside control limits.
FC3265-23 for 13C3-HFPO-DA: Outside control limits.
FC3265-23 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3265-23 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3265-24 for 13C2-PFTeDA: Outside control limits.
FC3265-24 for 13C3-HFPO-DA: Outside control limits.
FC3265-24 for d3-MeFOSA: Outside control limits.
FC3265-24 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3265-24 for MeFOSA: Associated ID Standard outside control limits.
FC3265-24 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3265-25 for 13C2-4:2FTS: Outside control limits.
FC3265-25 for 13C2-PFTeDA: Outside control limits.
FC3265-25 for 13C3-HFPO-DA: Outside control limits.
FC3265-25 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC3265-25 for d3-MeFOSA: Outside control limits.
FC3265-25 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3265-25 for MeFOSA: Associated ID Standard outside control limits.
FC3265-25 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3265-1	**A3RB-DPT0030-004.0-20230306**					
Perfluorobutanoic acid		0.0050 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0021 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0075 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0050 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0077 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.112	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0032 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0822	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0360	0.0032	0.0016	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0429	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC3265-2	**A3RB-DPT0030-010.0-20230306**					
Perfluorohexanesulfonic acid [a]		0.0089	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.0090 B	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [a]		0.0040	0.0015	0.00075	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [a]		0.0049	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3265-3	**A3RB-DPT0030-018.0-20230306**					
Perfluorohexanesulfonic acid		0.0013 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00085 J	0.0015	0.00075	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0016 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3265-4	**A3RB-DPT0030-025.0-20230306**					
Perfluorobutanoic acid [b]		0.0072 J	0.0085	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0015 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0011 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0092	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0421	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0079	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0122	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3265-5	**A3RB-DPT0030-042.0-20230306**					
PFOS (Branched Isomers)		0.00061 J	0.0016	0.00078	ug/l	EPA 537M QSM5.3 B-15
FC3265-6	**A3RB-DPT0030-057.0-20230306**					
Perfluorohexanesulfonic acid		0.0016 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0017 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
PFOS (Branched Isomers)		0.0015 J	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0022 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3265-7	**A3RB-DPT0031-004.0-20230306**					
Perfluorobutanoic acid		0.0133 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0087	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0375	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0062 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0128	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0679	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0899	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.735	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0237	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [c]		0.635	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [c]		0.198	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [c]		0.388	0.040	0.020	ug/l	EPA 537M QSM5.3 B-15
FC3265-8	**A3RB-DPT0031-010.0-20230306**					
Perfluorobutanoic acid [b]		0.0048 J	0.0078	0.0039	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0019 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0070	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0013 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0023 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0098 J	0.020	0.0098	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0163 J	0.020	0.0098	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.105	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0046	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.116	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0450	0.0016	0.00078	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0642	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC3265-9	**A3RB-DPT0031-018.0-20230306**					
Perfluorohexanesulfonic acid		0.0046	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0059	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0037	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0056	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3265-10	**A3RB-DPT0031-025.0-20230306**					
Perfluorohexanoic acid		0.0019 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0012 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0024 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanesulfonic acid [c]		0.0050 J	0.020	0.0098	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0424	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0014 J	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0625	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0220	0.0016	0.00078	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0404	0.0039	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC3265-11	**A3RB-DPT0031-042.0-20230306**					
Perfluorohexanoic acid		0.0022 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0012 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0042 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0060 J	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0471	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0021 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.136	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0413	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0955	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3265-12	**A3RB-DPT0031-057.0-20230306**					
Perfluorohexanesulfonic acid		0.0045	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0101	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0043	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.010	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3265-13	**A3RB-DPT0032-004.0-20230307**					
Perfluorohexanoic acid		0.0024 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0281	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0502	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0178	0.0032	0.0016	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0333	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC3265-14	**A3RB-DPT0032-010.0-20230307**					
Perfluorobutanoic acid		0.0062 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0027 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0271	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0379	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0169	0.0032	0.0016	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0199	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3265-15	**A3RB-DPT0032-018.0-20230307**					
Perfluoropentanoic acid [b]		0.0027 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00070 J	0.0016	0.00080	ug/l	EPA 537M QSM5.3 B-15
FC3265-16	**A3RB-DPT0032-025.0-20230307**					
Perfluorobutanoic acid		0.0041 J	0.016	0.0080	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0068 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0035 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0036	0.0032	0.0016	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC3265-17	**A3RB-DPT0032-042.0-20230307**					
Perfluorohexanesulfonic acid		0.0041 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0102	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0041	0.0032	0.0016	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0090	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC3265-18	**A3RB-DPT0032-057.0-20230307**					
Perfluorohexanesulfonic acid		0.0016 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0047	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0031	0.0017	0.00087	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0074	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC3265-19	**A3RB-DPT0017-042.0-20230307**					
Perfluorobutanoic acid [b]		0.0053 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0033 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0027 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0109	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0107	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0064	0.0017	0.00087	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0096	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC3265-20	**A3RB-DPT0017-057.0-20230307**					
PFOS (Branched Isomers)		0.00092 J	0.0015	0.00075	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0014 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3265-21	**A3RB-FD01-20230306**					
Perfluorohexanoic acid		0.0022 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanoic acid		0.0011 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0052 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0512	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0024 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.148	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0452	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.101	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

FC3265-22 A3RB-FB01-20230306

No hits reported in this sample.

FC3265-23 A3RB-EB01-20230306

No hits reported in this sample.

FC3265-24 A3RB-FB02-20230307

No hits reported in this sample.

FC3265-25 A3RB-EB02-20230307

No hits reported in this sample.

(a) Insufficient sample for re-extraction.
(b) Associated ID Standard outside control limits.
(c) Dilution required (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0030-004.0-20230306
Lab Sample ID: FC3265-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41869.D	1	03/16/23 16:25	AL	03/09/23 15:15	OP95812	S4Q601
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0050	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0021	0.0080	0.0040	0.0020	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0075	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0050	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0077	0.0080	0.0040	0.0020	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.112	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0032	0.0080	0.0040	0.0020	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0822	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [a]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-004.0-20230306		
Lab Sample ID:	FC3265-1	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0360	0.0032	0.0016	0.00080	ug/l	
	PFOS (Linear Isomer)	0.0429	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%		50-150%
	13C5-PFPeA	53%		50-150%
	13C5-PFHxA	70%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	91%		50-150%
	13C9-PFNA	90%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	91%		50-150%
	13C2-PFDoDA	90%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	52%		50-150%
	13C3-PFHxS	82%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSA	11% [b]		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	95%		50-150%
	13C2-4:2FTS	72%		50-150%
	13C2-6:2FTS	108%		50-150%
	13C2-8:2FTS	101%		50-150%
	13C3-HFPO-DA	69%		50-150%

(a) Associated ID Standard outside control limits, Confirmed by batch QC.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0030-010.0-20230306
Lab Sample ID: FC3265-2 **Date Sampled:** 03/06/23
Matrix: AQ - Ground Water **Date Received:** 03/07/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41872.D	1	03/16/23 17:11	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [b]	4Q42004.D	5	03/20/23 17:10	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [c]	0.038	0.019	0.0094	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0094 U [c]	0.019	0.0094	0.0047	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0094 U [c]	0.019	0.0094	0.0047	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0094 U [c]	0.019	0.0094	0.0047	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0089	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0090	0.0038	0.0019	0.00094	ug/l	B
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.038	0.019	0.0094	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-010.0-20230306		
Lab Sample ID:	FC3265-2	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0040	0.0015	0.00075	0.00038	ug/l	
	PFOS (Linear Isomer)	0.0049	0.0038	0.0019	0.00094	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	37% [e]	51%	50-150%
	13C5-PFPeA	49% [e]	66%	50-150%
	13C5-PFHxA	65%	81%	50-150%
	13C4-PFHpA	74%	87%	50-150%
	13C8-PFOA	85%	96%	50-150%
	13C9-PFNA	84%	95%	50-150%
	13C6-PFDA	95%	93%	50-150%
	13C7-PFUnDA	84%	79%	50-150%
	13C2-PFDoDA	80%	82%	50-150%
	13C2-PFTeDA	67%	64%	50-150%
	13C3-PFBS	48% [e]	63%	50-150%
	13C3-PFHxS	78%	87%	50-150%
	13C8-PFOS	77%	85%	50-150%
	13C8-FOSA	63%	75%	50-150%
	d3-MeFOSA	10% [e]	21% [e]	50-150%
	d3-MeFOSAA	102%	96%	50-150%
	d5-EtFOSAA	85%	76%	50-150%
	13C2-4:2FTS	66%	77%	50-150%
	13C2-6:2FTS	100%	97%	50-150%
	13C2-8:2FTS	94%	81%	50-150%
	13C3-HFPO-DA	62%	83%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-010.0-20230306		
Lab Sample ID:	FC3265-2	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-018.0-20230306		
Lab Sample ID:	FC3265-3	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41873.D	1	03/16/23 17:27	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42246.D	1	03/24/23 13:33	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0013	0.0038	0.0019	0.00094	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021 U [b]	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA [a]	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0030-018.0-20230306
Lab Sample ID: FC3265-3 **Date Sampled:** 03/06/23
Matrix: AQ - Ground Water **Date Received:** 03/07/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00085	0.0015	0.00075	0.00038	ug/l	J
	PFOS (Linear Isomer)	0.0016	0.0038	0.0019	0.00094	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [c]	34% [c]	50-150%
	13C5-PFPeA	47% [c]	33% [c]	50-150%
	13C5-PFHxA	64%	45% [c]	50-150%
	13C4-PFHpA	71%	51%	50-150%
	13C8-PFOA	82%	61%	50-150%
	13C9-PFNA	78%	59%	50-150%
	13C6-PFDA	92%	68%	50-150%
	13C7-PFUnDA	82%	63%	50-150%
	13C2-PFDoDA	81%	59%	50-150%
	13C2-PFTeDA	72%	51%	50-150%
	13C3-PFBS	47% [c]	33% [c]	50-150%
	13C3-PFHxS	76%	54%	50-150%
	13C8-PFOS	77%	60%	50-150%
	13C8-FOSA	68%	52%	50-150%
	d3-MeFOSA	24% [c]	17% [c]	50-150%
	d3-MeFOSAA	98%	73%	50-150%
	d5-EtFOSAA	84%	65%	50-150%
	13C2-4:2FTS	64%	50%	50-150%
	13C2-6:2FTS	92%	64%	50-150%
	13C2-8:2FTS	90%	63%	50-150%
	13C3-HFPO-DA	58%	42% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-025.0-20230306		
Lab Sample ID:	FC3265-4	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41874.D	1	03/16/23 17:42	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42247.D	1	03/24/23 13:48	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0072	0.0085	0.0043	0.0021	ug/l	J
2706-90-3	Perfluoropentanoic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0015	0.0043	0.0021	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0011	0.0043	0.0021	0.0011	ug/l	J
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U [b]	0.0049	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0092	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0421 [b]	0.0049	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.0049 U [b]	0.0098	0.0049	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-025.0-20230306		
Lab Sample ID:	FC3265-4	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [a]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0079	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0122	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [c]	26% [c]	50-150%
	13C5-PFPeA	39% [c]	26% [c]	50-150%
	13C5-PFHxA	61%	43% [c]	50-150%
	13C4-PFHpA	70%	50%	50-150%
	13C8-PFOA	78%	59%	50-150%
	13C9-PFNA	75%	59%	50-150%
	13C6-PFDA	84%	68%	50-150%
	13C7-PFUnDA	52%	52%	50-150%
	13C2-PFDoDA	36% [c]	50%	50-150%
	13C2-PFTeDA	66%	41% [c]	50-150%
	13C3-PFBS	35% [c]	22% [c]	50-150%
	13C3-PFHxS	76%	57%	50-150%
	13C8-PFOS	72%	58%	50-150%
	13C8-FOSA	41% [c]	29% [c]	50-150%
	d3-MeFOSA	7% [c]	12% [c]	50-150%
	d3-MeFOSAA	101%	90%	50-150%
	d5-EtFOSAA	59%	78%	50-150%
	13C2-4:2FTS	61%	48% [c]	50-150%
	13C2-6:2FTS	91%	69%	50-150%
	13C2-8:2FTS	89%	74%	50-150%
	13C3-HFPO-DA	55%	41% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-042.0-20230306		
Lab Sample ID:	FC3265-5	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41875.D	1	03/16/23 17:58	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42248.D	1	03/24/23 14:04	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	245 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0020 U	0.0039	0.0020	0.00098	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U [b]	0.0041	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0039	0.0020	0.00098	ug/l	
31506-32-8	MeFOSA [a]	0.0039 U	0.0078	0.0039	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0030-042.0-20230306
Lab Sample ID: FC3265-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
919005-14-4	ADONA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00061	0.0016	0.00078	0.00039	ug/l	J
	PFOS (Linear Isomer)	0.0020 U	0.0039	0.0020	0.00098	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	52%	43% [c]	50-150%
	13C5-PFPeA	50%	42% [c]	50-150%
	13C5-PFHxA	69%	57%	50-150%
	13C4-PFHpA	75%	62%	50-150%
	13C8-PFOA	83%	73%	50-150%
	13C9-PFNA	79%	69%	50-150%
	13C6-PFDA	92%	80%	50-150%
	13C7-PFUnDA	84%	78%	50-150%
	13C2-PFDoDA	83%	73%	50-150%
	13C2-PFTeDA	74%	61%	50-150%
	13C3-PFBS	48% [c]	41% [c]	50-150%
	13C3-PFHxS	76%	66%	50-150%
	13C8-PFOS	74%	69%	50-150%
	13C8-FOSA	54%	41% [c]	50-150%
	d3-MeFOSA	16% [c]	9% [c]	50-150%
	d3-MeFOSAA	102%	92%	50-150%
	d5-EtFOSAA	92%	84%	50-150%
	13C2-4:2FTS	68%	63%	50-150%
	13C2-6:2FTS	96%	82%	50-150%
	13C2-8:2FTS	91%	79%	50-150%
	13C3-HFPO-DA	61%	51%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0030-057.0-20230306		
Lab Sample ID:	FC3265-6	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41876.D	1	03/16/23 18:13	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42249.D	1	03/24/23 14:20	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016	0.0043	0.0021	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0017 [b]	0.0042	0.0021	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0030-057.0-20230306
Lab Sample ID: FC3265-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0015	0.0017	0.00085	0.00043	ug/l	J
	PFOS (Linear Isomer)	0.0022	0.0043	0.0021	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	41% [c]	50-150%
	13C5-PFPeA	51%	44% [c]	50-150%
	13C5-PFHxA	72%	63%	50-150%
	13C4-PFHpA	78%	67%	50-150%
	13C8-PFOA	85%	77%	50-150%
	13C9-PFNA	81%	73%	50-150%
	13C6-PFDA	95%	87%	50-150%
	13C7-PFUnDA	82%	81%	50-150%
	13C2-PFDoDA	85%	75%	50-150%
	13C2-PFTeDA	69%	55%	50-150%
	13C3-PFBS	48% [c]	44% [c]	50-150%
	13C3-PFHxS	82%	73%	50-150%
	13C8-PFOS	77%	74%	50-150%
	13C8-FOSA	42% [c]	11% [c]	50-150%
	d3-MeFOSA	8% [c]	3% [c]	50-150%
	d3-MeFOSAA	107%	100%	50-150%
	d5-EtFOSAA	92%	90%	50-150%
	13C2-4:2FTS	74%	69%	50-150%
	13C2-6:2FTS	98%	87%	50-150%
	13C2-8:2FTS	94%	84%	50-150%
	13C3-HFPO-DA	64%	58%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0031-004.0-20230306
Lab Sample ID: FC3265-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41879.D	1	03/16/23 19:00	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42005.D	5	03/20/23 17:25	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0133	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0087	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0375	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0062	0.0080	0.0040	0.0020	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0128	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0679 [c]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0899 [c]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.735	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0237	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.635 [c]	0.040	0.020	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.040 U [c]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-004.0-20230306		
Lab Sample ID:	FC3265-7	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.198 [c]	0.016	0.0080	0.0040	ug/l	
	PFOS (Linear Isomer)	0.388 [c]	0.040	0.020	0.010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	50%	72%	50-150%
	13C5-PFPeA	44% [d]	62%	50-150%
	13C5-PFHxA	59%	73%	50-150%
	13C4-PFHpA	67%	78%	50-150%
	13C8-PFOA	79%	84%	50-150%
	13C9-PFNA	73%	80%	50-150%
	13C6-PFDA	89%	84%	50-150%
	13C7-PFUnDA	80%	74%	50-150%
	13C2-PFDoDA	76%	73%	50-150%
	13C2-PFTeDA	46% [d]	40% [d]	50-150%
	13C3-PFBS	43% [d]	60%	50-150%
	13C3-PFHxS	68%	82%	50-150%
	13C8-PFOS	70%	81%	50-150%
	13C8-FOSA	58%	63%	50-150%
	d3-MeFOSA	19% [d]	29% [d]	50-150%
	d3-MeFOSAA	89%	82%	50-150%
	d5-EtFOSAA	78%	73%	50-150%
	13C2-4:2FTS	63%	73%	50-150%
	13C2-6:2FTS	97%	89%	50-150%
	13C2-8:2FTS	87%	72%	50-150%
	13C3-HFPO-DA	53%	75%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-004.0-20230306		
Lab Sample ID:	FC3265-7	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0031-010.0-20230306
Lab Sample ID: FC3265-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41880.D	1	03/16/23 19:16	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42006.D	5	03/20/23 17:41	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0048	0.0078	0.0039	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0019	0.0039	0.0020	0.00098	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0070	0.0039	0.0020	0.00098	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0013	0.0039	0.0020	0.00098	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0023	0.0039	0.0020	0.00098	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0098 [c]	0.020	0.0098	0.0049	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0163 [c]	0.020	0.0098	0.0049	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.105	0.0039	0.0020	0.00098	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0046	0.0039	0.0020	0.00098	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.116	0.0039	0.0020	0.00098	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0039	0.0020	0.00098	ug/l	
31506-32-8	MeFOSA [b]	0.020 U [c]	0.039	0.020	0.0098	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-010.0-20230306		
Lab Sample ID:	FC3265-8	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
919005-14-4	ADONA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0450	0.0016	0.00078	0.00039	ug/l	
	PFOS (Linear Isomer)	0.0642	0.0039	0.0020	0.00098	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	61%	50-150%
	13C5-PFPeA	47% [d]	66%	50-150%
	13C5-PFHxA	62%	81%	50-150%
	13C4-PFHpA	73%	91%	50-150%
	13C8-PFOA	86%	100%	50-150%
	13C9-PFNA	83%	96%	50-150%
	13C6-PFDA	99%	101%	50-150%
	13C7-PFUnDA	90%	89%	50-150%
	13C2-PFDoDA	89%	94%	50-150%
	13C2-PFTeDA	80%	79%	50-150%
	13C3-PFBS	46% [d]	61%	50-150%
	13C3-PFHxS	74%	89%	50-150%
	13C8-PFOS	75%	89%	50-150%
	13C8-FOSA	71%	86%	50-150%
	d3-MeFOSA	37% [d]	45% [d]	50-150%
	d3-MeFOSAA	109%	103%	50-150%
	d5-EtFOSAA	95%	89%	50-150%
	13C2-4:2FTS	63%	81%	50-150%
	13C2-6:2FTS	100%	103%	50-150%
	13C2-8:2FTS	103%	83%	50-150%
	13C3-HFPO-DA	56%	82%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-010.0-20230306		
Lab Sample ID:	FC3265-8	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0031-018.0-20230306
Lab Sample ID: FC3265-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41881.D	1	03/16/23 19:31	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42250.D	1	03/24/23 14:35	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0046	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0059 [a]	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [b]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-018.0-20230306		
Lab Sample ID:	FC3265-9	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0037	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0056	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	45% [c]	50-150%
	13C5-PFPeA	52%	42% [c]	50-150%
	13C5-PFHxA	70%	56%	50-150%
	13C4-PFHpA	79%	63%	50-150%
	13C8-PFOA	91%	77%	50-150%
	13C9-PFNA	89%	75%	50-150%
	13C6-PFDA	101%	85%	50-150%
	13C7-PFUnDA	90%	77%	50-150%
	13C2-PFDoDA	91%	72%	50-150%
	13C2-PFTeDA	75%	58%	50-150%
	13C3-PFBS	52%	43% [c]	50-150%
	13C3-PFHxS	81%	70%	50-150%
	13C8-PFOS	84%	74%	50-150%
	13C8-FOSA	61%	22% [c]	50-150%
	d3-MeFOSA	12% [c]	3% [c]	50-150%
	d3-MeFOSAA	110%	86%	50-150%
	d5-EtFOSAA	95%	80%	50-150%
	13C2-4:2FTS	71%	61%	50-150%
	13C2-6:2FTS	104%	85%	50-150%
	13C2-8:2FTS	99%	77%	50-150%
	13C3-HFPO-DA	61%	52%	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-025.0-20230306		
Lab Sample ID:	FC3265-10	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41882.D	1	03/16/23 19:47	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42007.D	5	03/20/23 17:57	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.020 U [b]	0.039	0.020	0.0098	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0098 U [b]	0.020	0.0098	0.0049	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019	0.0039	0.0020	0.00098	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-67-1	Perfluorooctanoic acid	0.0012	0.0039	0.0020	0.00098	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0024	0.0039	0.0020	0.00098	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0050 [b]	0.020	0.0098	0.0049	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0424	0.0039	0.0020	0.00098	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0014	0.0039	0.0020	0.00098	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0625	0.0039	0.0020	0.00098	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0098 U [b]	0.020	0.0098	0.0049	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.039	0.020	0.0098	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-025.0-20230306		
Lab Sample ID:	FC3265-10	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
919005-14-4	ADONA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0220	0.0016	0.00078	0.00039	ug/l	
	PFOS (Linear Isomer)	0.0404	0.0039	0.0020	0.00098	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [d]	64%	50-150%
	13C5-PFPeA	49% [d]	67%	50-150%
	13C5-PFHxA	68%	84%	50-150%
	13C4-PFHpA	76%	91%	50-150%
	13C8-PFOA	86%	98%	50-150%
	13C9-PFNA	83%	96%	50-150%
	13C6-PFDA	94%	94%	50-150%
	13C7-PFUnDA	81%	88%	50-150%
	13C2-PFDoDA	86%	92%	50-150%
	13C2-PFTeDA	74%	76%	50-150%
	13C3-PFBS	47% [d]	62%	50-150%
	13C3-PFHxS	77%	88%	50-150%
	13C8-PFOS	77%	90%	50-150%
	13C8-FOSA	33% [d]	47% [d]	50-150%
	d3-MeFOSA	6% [d]	16% [d]	50-150%
	d3-MeFOSAA	99%	94%	50-150%
	d5-EtFOSAA	90%	90%	50-150%
	13C2-4:2FTS	70%	83%	50-150%
	13C2-6:2FTS	101%	99%	50-150%
	13C2-8:2FTS	93%	87%	50-150%
	13C3-HFPO-DA	59%	78%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-025.0-20230306		
Lab Sample ID:	FC3265-10	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0031-042.0-20230306
Lab Sample ID: FC3265-11
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41883.D	1	03/16/23 20:02	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42008.D	5	03/20/23 18:12	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.043	0.021	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022	0.0043	0.0021	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0012	0.0043	0.0021	0.0011	ug/l	J
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
307-55-1	Perfluorododecanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0042	0.0043	0.0021	0.0011	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0060 [b]	0.021	0.011	0.0053	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0471	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021	0.0043	0.0021	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.136	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [b]	0.021	0.011	0.0053	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [b]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.021 U [b]	0.043	0.021	0.011	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-042.0-20230306		
Lab Sample ID:	FC3265-11	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.021 U [b]	0.043	0.021	0.011	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0413	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0955	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [d]	57%	50-150%
	13C5-PFPeA	43% [d]	62%	50-150%
	13C5-PFHxA	65%	82%	50-150%
	13C4-PFHpA	71%	87%	50-150%
	13C8-PFOA	81%	94%	50-150%
	13C9-PFNA	77%	88%	50-150%
	13C6-PFDA	89%	91%	50-150%
	13C7-PFUnDA	13% [d]	73%	50-150%
	13C2-PFDoDA	10% [d]	85%	50-150%
	13C2-PFTeDA	69%	74%	50-150%
	13C3-PFBS	37% [d]	57%	50-150%
	13C3-PFHxS	73%	89%	50-150%
	13C8-PFOS	72%	88%	50-150%
	13C8-FOSA	38% [d]	57%	50-150%
	d3-MeFOSA	8% [d]	22% [d]	50-150%
	d3-MeFOSAA	105%	98%	50-150%
	d5-EtFOSAA	6% [d]	84%	50-150%
	13C2-4:2FTS	66%	80%	50-150%
	13C2-6:2FTS	97%	98%	50-150%
	13C2-8:2FTS	91%	86%	50-150%
	13C3-HFPO-DA	58%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-042.0-20230306		
Lab Sample ID:	FC3265-11	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-057.0-20230306		
Lab Sample ID:	FC3265-12	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41884.D	1	03/16/23 20:18	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42251.D	1	03/24/23 14:51	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0045	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0101 [b]	0.0044	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0031-057.0-20230306		
Lab Sample ID:	FC3265-12	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0043	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.010	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	39% [c]	50-150%
	13C5-PFPeA	52%	40% [c]	50-150%
	13C5-PFHxA	71%	54%	50-150%
	13C4-PFHpA	77%	57%	50-150%
	13C8-PFOA	86%	67%	50-150%
	13C9-PFNA	78%	62%	50-150%
	13C6-PFDA	92%	71%	50-150%
	13C7-PFUnDA	83%	65%	50-150%
	13C2-PFDoDA	82%	62%	50-150%
	13C2-PFTeDA	65%	52%	50-150%
	13C3-PFBS	47% [c]	39% [c]	50-150%
	13C3-PFHxS	79%	61%	50-150%
	13C8-PFOS	75%	64%	50-150%
	13C8-FOSA	60%	40% [c]	50-150%
	d3-MeFOSA	19% [c]	6% [c]	50-150%
	d3-MeFOSAA	99%	76%	50-150%
	d5-EtFOSAA	85%	66%	50-150%
	13C2-4:2FTS	73%	58%	50-150%
	13C2-6:2FTS	98%	73%	50-150%
	13C2-8:2FTS	91%	66%	50-150%
	13C3-HFPO-DA	61%	48% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-004.0-20230307		
Lab Sample ID:	FC3265-13	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41885.D	1	03/16/23 20:33	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42009.D	5	03/20/23 18:28	AL	03/09/23 15:15	OP95812	S4Q603
Run #3 [a]	4Q42272.D	6	03/24/23 20:17	AL	03/22/23 09:35	OP95997	S4Q607

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024	0.0080	0.0040	0.0020	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0281	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0502	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-004.0-20230307		
Lab Sample ID:	FC3265-13	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0178	0.0032	0.0016	0.00080	ug/l	
	PFOS (Linear Isomer)	0.0333	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	72%	88%	51%	50-150%
	13C5-PFPeA	63%	81%	44% [c]	50-150%
	13C5-PFHxA	74%	85%	52%	50-150%
	13C4-PFHpA	80%	86%	55%	50-150%
	13C8-PFOA	94%	90%	64%	50-150%
	13C9-PFNA	85%	92%	60%	50-150%
	13C6-PFDA	89%	86%	59%	50-150%
	13C7-PFUnDA	78%	71%	57%	50-150%
	13C2-PFDoDA	64%	63%	63%	50-150%
	13C2-PFTeDA	38% [c]	37% [c]	42% [c]	50-150%
	13C3-PFBS	61%	82%	45% [c]	50-150%
	13C3-PFHxS	83%	90%	60%	50-150%
	13C8-PFOS	73%	70%	54%	50-150%
	13C8-FOSA	75%	74%	45% [c]	50-150%
	d3-MeFOSA	61%	60%	5% [c]	50-150%
	d3-MeFOSAA	92%	87%	70%	50-150%
	d5-EtFOSAA	83%	79%	67%	50-150%
	13C2-4:2FTS	79%	79%	55%	50-150%
	13C2-6:2FTS	103%	89%	60%	50-150%
	13C2-8:2FTS	87%	86%	49% [c]	50-150%
	13C3-HFPO-DA	63%	81%	44% [c]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-004.0-20230307		
Lab Sample ID:	FC3265-13	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-010.0-20230307		
Lab Sample ID:	FC3265-14	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41886.D	1	03/16/23 20:49	AL	03/09/23 15:15	OP95812	S4Q601
Run #2 [a]	4Q42273.D	2.7	03/24/23 20:33	AL	03/22/23 09:35	OP95997	S4Q607
Run #3 [b]	4Q42010.D	5	03/20/23 18:43	AL	03/09/23 15:15	OP95812	S4Q603

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0062	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0027	0.0080	0.0040	0.0020	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0271	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0379	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-010.0-20230307		
Lab Sample ID:	FC3265-14	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0169	0.0032	0.0016	0.00080	ug/l	
	PFOS (Linear Isomer)	0.0199	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	55%	45% e	78%	50-150%
	13C5-PFPeA	50%	36% e	68%	50-150%
	13C5-PFHxA	63%	47% e	80%	50-150%
	13C4-PFHpA	74%	52%	88%	50-150%
	13C8-PFOA	87%	64%	97%	50-150%
	13C9-PFNA	86%	65%	96%	50-150%
	13C6-PFDA	98%	69%	95%	50-150%
	13C7-PFUnDA	92%	69%	88%	50-150%
	13C2-PFDoDA	90%	76%	89%	50-150%
	13C2-PFTeDA	55%	72%	56%	50-150%
	13C3-PFBS	49% e	36% e	65%	50-150%
	13C3-PFHxS	78%	61%	90%	50-150%
	13C8-PFOS	79%	59%	92%	50-150%
	13C8-FOSA	52%	27% e	61%	50-150%
	d3-MeFOSA	11% e	3% e	27% e	50-150%
	d3-MeFOSAA	107%	80%	94%	50-150%
	d5-EtFOSAA	96%	79%	85%	50-150%
	13C2-4:2FTS	65%	52%	78%	50-150%
	13C2-6:2FTS	102%	68%	97%	50-150%
	13C2-8:2FTS	94%	65%	78%	50-150%
	13C3-HFPO-DA	56%	39% e	76%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-010.0-20230307		
Lab Sample ID:	FC3265-14	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-018.0-20230307		
Lab Sample ID:	FC3265-15	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41887.D	1	03/16/23 21:04	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42252.D	1	03/24/23 15:06	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0027	0.0040	0.0020	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U [b]	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA [a]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-018.0-20230307		
Lab Sample ID:	FC3265-15	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00070	0.0016	0.00080	0.00040	ug/l	J
	PFOS (Linear Isomer)	0.0020 U	0.0040	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	37% [c]	50-150%
	13C5-PFPeA	48% [c]	38% [c]	50-150%
	13C5-PFHxA	74%	58%	50-150%
	13C4-PFHpA	79%	62%	50-150%
	13C8-PFOA	88%	71%	50-150%
	13C9-PFNA	82%	67%	50-150%
	13C6-PFDA	94%	77%	50-150%
	13C7-PFUnDA	81%	69%	50-150%
	13C2-PFDoDA	82%	66%	50-150%
	13C2-PFTeDA	71%	60%	50-150%
	13C3-PFBS	44% [c]	38% [c]	50-150%
	13C3-PFHxS	81%	66%	50-150%
	13C8-PFOS	77%	66%	50-150%
	13C8-FOSA	67%	43% [c]	50-150%
	d3-MeFOSA	30% [c]	8% [c]	50-150%
	d3-MeFOSAA	109%	83%	50-150%
	d5-EtFOSAA	94%	76%	50-150%
	13C2-4:2FTS	76%	62%	50-150%
	13C2-6:2FTS	100%	78%	50-150%
	13C2-8:2FTS	97%	74%	50-150%
	13C3-HFPO-DA	61%	53%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0032-025.0-20230307
Lab Sample ID: FC3265-16
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/07/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41888.D	1	03/16/23 21:20	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42255.D	1	03/24/23 15:53	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0041	0.016	0.0080	0.0040	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0068	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0035 [a]	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [b]	0.0080 U [a]	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-025.0-20230307		
Lab Sample ID:	FC3265-16	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0036	0.0032	0.0016	0.00080	ug/l	
	PFOS (Linear Isomer)	0.0041	0.0080	0.0040	0.0020	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	47% [c]	50-150%
	13C5-PFPeA	55%	40% [c]	50-150%
	13C5-PFHxA	71%	55%	50-150%
	13C4-PFHpA	79%	62%	50-150%
	13C8-PFOA	91%	76%	50-150%
	13C9-PFNA	86%	74%	50-150%
	13C6-PFDA	97%	85%	50-150%
	13C7-PFUnDA	89%	81%	50-150%
	13C2-PFDoDA	90%	79%	50-150%
	13C2-PFTeDA	66%	72%	50-150%
	13C3-PFBS	52%	41% [c]	50-150%
	13C3-PFHxS	80%	67%	50-150%
	13C8-PFOS	83%	74%	50-150%
	13C8-FOSA	61%	69%	50-150%
	d3-MeFOSA	9% [c]	44% [c]	50-150%
	d3-MeFOSAA	102%	93%	50-150%
	d5-EtFOSAA	91%	86%	50-150%
	13C2-4:2FTS	73%	61%	50-150%
	13C2-6:2FTS	102%	81%	50-150%
	13C2-8:2FTS	94%	82%	50-150%
	13C3-HFPO-DA	61%	49% [c]	50-150%

(a) Result is from Run# 2
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0032-042.0-20230307
Lab Sample ID: FC3265-17
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/07/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41891.D	1	03/16/23 22:07	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42256.D	1	03/24/23 16:08	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0041	0.0080	0.0040	0.0020	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0102 [b]	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.0080 U	0.016	0.0080	0.0040	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-042.0-20230307		
Lab Sample ID:	FC3265-17	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0041	0.0032	0.0016	0.00080	ug/l	
	PFOS (Linear Isomer)	0.0090	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	46% [c]	50-150%
	13C5-PFPeA	51%	41% [c]	50-150%
	13C5-PFHxA	81%	61%	50-150%
	13C4-PFHpA	88%	66%	50-150%
	13C8-PFOA	97%	77%	50-150%
	13C9-PFNA	95%	73%	50-150%
	13C6-PFDA	107%	81%	50-150%
	13C7-PFUnDA	68%	63%	50-150%
	13C2-PFDoDA	66%	68%	50-150%
	13C2-PFTeDA	72%	67%	50-150%
	13C3-PFBS	43% [c]	39% [c]	50-150%
	13C3-PFHxS	89%	69%	50-150%
	13C8-PFOS	91%	72%	50-150%
	13C8-FOSA	91%	67%	50-150%
	d3-MeFOSA	71%	36% [c]	50-150%
	d3-MeFOSAA	118%	91%	50-150%
	d5-EtFOSAA	104%	83%	50-150%
	13C2-4:2FTS	84%	67%	50-150%
	13C2-6:2FTS	114%	85%	50-150%
	13C2-8:2FTS	103%	78%	50-150%
	13C3-HFPO-DA	70%	53%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0032-057.0-20230307
Lab Sample ID: FC3265-18
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/07/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41892.D	1	03/16/23 22:22	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42257.D	1	03/24/23 16:24	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0016	0.0043	0.0022	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0047 [b]	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0032-057.0-20230307		
Lab Sample ID:	FC3265-18	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0031	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0074	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%	35% [c]	50-150%
	13C5-PFPeA	51%	38% [c]	50-150%
	13C5-PFHxA	73%	54%	50-150%
	13C4-PFHpA	80%	58%	50-150%
	13C8-PFOA	85%	67%	50-150%
	13C9-PFNA	83%	64%	50-150%
	13C6-PFDA	93%	74%	50-150%
	13C7-PFUnDA	73%	63%	50-150%
	13C2-PFDoDA	79%	61%	50-150%
	13C2-PFTeDA	66%	53%	50-150%
	13C3-PFBS	45% [c]	38% [c]	50-150%
	13C3-PFHxS	80%	61%	50-150%
	13C8-PFOS	76%	67%	50-150%
	13C8-FOSA	69%	41% [c]	50-150%
	d3-MeFOSA	25% [c]	5% [c]	50-150%
	d3-MeFOSAA	102%	82%	50-150%
	d5-EtFOSAA	88%	70%	50-150%
	13C2-4:2FTS	75%	59%	50-150%
	13C2-6:2FTS	99%	74%	50-150%
	13C2-8:2FTS	93%	72%	50-150%
	13C3-HFPO-DA	64%	48% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0017-042.0-20230307
Lab Sample ID: FC3265-19
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/07/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41893.D	1	03/16/23 22:38	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42258.D	1	03/24/23 16:39	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0053	0.0087	0.0043	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid [a]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0033	0.0043	0.0022	0.0011	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0027	0.0043	0.0022	0.0011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0109	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0107 [b]	0.0044	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [a]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0017-042.0-20230307		
Lab Sample ID:	FC3265-19	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [a]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0064	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0096	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	40% [c]	50-150%
	13C5-PFPeA	46% [c]	39% [c]	50-150%
	13C5-PFHxA	62%	56%	50-150%
	13C4-PFHpA	69%	61%	50-150%
	13C8-PFOA	77%	70%	50-150%
	13C9-PFNA	75%	69%	50-150%
	13C6-PFDA	82%	77%	50-150%
	13C7-PFUnDA	58%	63%	50-150%
	13C2-PFDoDA	38% [c]	42% [c]	50-150%
	13C2-PFTeDA	62%	55%	50-150%
	13C3-PFBS	42% [c]	40% [c]	50-150%
	13C3-PFHxS	71%	62%	50-150%
	13C8-PFOS	67%	69%	50-150%
	13C8-FOSA	56%	49% [c]	50-150%
	d3-MeFOSA	10% [c]	9% [c]	50-150%
	d3-MeFOSAA	88%	85%	50-150%
	d5-EtFOSAA	79%	78%	50-150%
	13C2-4:2FTS	64%	61%	50-150%
	13C2-6:2FTS	90%	78%	50-150%
	13C2-8:2FTS	82%	75%	50-150%
	13C3-HFPO-DA	56%	47% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0017-057.0-20230307		
Lab Sample ID:	FC3265-20	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41894.D	1	03/16/23 22:53	AL	03/09/23 15:15	OP95812	S4Q601
Run #2	4Q42259.D	1	03/24/23 16:55	AL	03/21/23 14:06	OP95992	S4Q607

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U [b]	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA [a]	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0017-057.0-20230307		
Lab Sample ID:	FC3265-20	**Date Sampled:**	03/07/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00092	0.0015	0.00075	0.00038	ug/l	J
	PFOS (Linear Isomer)	0.0014	0.0038	0.0019	0.00094	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	48% [c]	50-150%
	13C5-PFPeA	50%	46% [c]	50-150%
	13C5-PFHxA	73%	66%	50-150%
	13C4-PFHpA	79%	70%	50-150%
	13C8-PFOA	87%	80%	50-150%
	13C9-PFNA	80%	75%	50-150%
	13C6-PFDA	95%	90%	50-150%
	13C7-PFUnDA	88%	85%	50-150%
	13C2-PFDoDA	82%	74%	50-150%
	13C2-PFTeDA	72%	52%	50-150%
	13C3-PFBS	47% [c]	45% [c]	50-150%
	13C3-PFHxS	80%	75%	50-150%
	13C8-PFOS	77%	72%	50-150%
	13C8-FOSA	60%	16% [c]	50-150%
	d3-MeFOSA	17% [c]	2% [c]	50-150%
	d3-MeFOSAA	104%	103%	50-150%
	d5-EtFOSAA	95%	88%	50-150%
	13C2-4:2FTS	75%	73%	50-150%
	13C2-6:2FTS	101%	91%	50-150%
	13C2-8:2FTS	99%	87%	50-150%
	13C3-HFPO-DA	62%	57%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD01-20230306
Lab Sample ID: FC3265-21
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/06/23
Date Received: 03/07/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42048.D	1	03/21/23 04:33	AL	03/10/23 09:10	OP95817	S4Q603
Run #2 [a]	4Q42049.D	5	03/21/23 04:49	AL	03/10/23 09:10	OP95817	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0011	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0052 [b]	0.019	0.0093	0.0046	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0512	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.148	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.019 U [b]	0.037	0.019	0.0093	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD01-20230306		
Lab Sample ID:	FC3265-21	**Date Sampled:**	03/06/23
Matrix:	AQ - Ground Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0452	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.101	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% d	65%	50-150%
	13C5-PFPeA	40% d	58%	50-150%
	13C5-PFHxA	63%	74%	50-150%
	13C4-PFHpA	71%	79%	50-150%
	13C8-PFOA	75%	84%	50-150%
	13C9-PFNA	75%	80%	50-150%
	13C6-PFDA	82%	88%	50-150%
	13C7-PFUnDA	17% d	69%	50-150%
	13C2-PFDoDA	13% d	69%	50-150%
	13C2-PFTeDA	54%	60%	50-150%
	13C3-PFBS	34% d	52%	50-150%
	13C3-PFHxS	69%	77%	50-150%
	13C8-PFOS	68%	75%	50-150%
	13C8-FOSA	49% d	65%	50-150%
	d3-MeFOSA	7% d	24% d	50-150%
	d3-MeFOSAA	100%	89%	50-150%
	d5-EtFOSAA	8% d	75%	50-150%
	13C2-4:2FTS	64%	72%	50-150%
	13C2-6:2FTS	89%	91%	50-150%
	13C2-8:2FTS	84%	78%	50-150%
	13C3-HFPO-DA	59%	71%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20230306		
Lab Sample ID:	FC3265-22	**Date Sampled:**	03/06/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42275.D	1	03/24/23 21:04	AL	03/22/23 09:35	OP95997	S4Q607
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB01-20230306		
Lab Sample ID:	FC3265-22	**Date Sampled:**	03/06/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	65%		50-150%
	13C5-PFPeA	63%		50-150%
	13C5-PFHxA	62%		50-150%
	13C4-PFHpA	61%		50-150%
	13C8-PFOA	69%		50-150%
	13C9-PFNA	71%		50-150%
	13C6-PFDA	71%		50-150%
	13C7-PFUnDA	66%		50-150%
	13C2-PFDoDA	67%		50-150%
	13C2-PFTeDA	54%		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	63%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSA	49% b		50-150%
	d3-MeFOSAA	72%		50-150%
	d5-EtFOSAA	67%		50-150%
	13C2-4:2FTS	60%		50-150%
	13C2-6:2FTS	62%		50-150%
	13C2-8:2FTS	58%		50-150%
	13C3-HFPO-DA	54%		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20230306		
Lab Sample ID:	FC3265-23	**Date Sampled:**	03/06/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42276.D	1	03/24/23 21:19	AL	03/22/23 09:35	OP95997	S4Q607
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB01-20230306		
Lab Sample ID:	FC3265-23	**Date Sampled:**	03/06/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%		50-150%
	13C5-PFPeA	57%		50-150%
	13C5-PFHxA	57%		50-150%
	13C4-PFHpA	56%		50-150%
	13C8-PFOA	62%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	64%		50-150%
	13C7-PFUnDA	60%		50-150%
	13C2-PFDoDA	57%		50-150%
	13C2-PFTeDA	49% [b]		50-150%
	13C3-PFBS	60%		50-150%
	13C3-PFHxS	59%		50-150%
	13C8-PFOS	60%		50-150%
	13C8-FOSA	63%		50-150%
	d3-MeFOSA	54%		50-150%
	d3-MeFOSAA	65%		50-150%
	d5-EtFOSAA	61%		50-150%
	13C2-4:2FTS	55%		50-150%
	13C2-6:2FTS	56%		50-150%
	13C2-8:2FTS	53%		50-150%
	13C3-HFPO-DA	49% [b]		50-150%

(a) Associated ID Standard outside control limits.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB02-20230307		
Lab Sample ID:	FC3265-24	**Date Sampled:**	03/07/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42279.D	1	03/24/23 22:06	AL	03/22/23 09:35	OP95997	S4Q607
Run #2 [a]	4Q42054.D	1	03/21/23 06:07	AL	03/10/23 09:10	OP95817	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB02-20230307		
Lab Sample ID:	FC3265-24	**Date Sampled:**	03/07/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	48% [c]	50-150%
	13C5-PFPeA	54%	48% [c]	50-150%
	13C5-PFHxA	53%	48% [c]	50-150%
	13C4-PFHpA	53%	48% [c]	50-150%
	13C8-PFOA	59%	51%	50-150%
	13C9-PFNA	61%	55%	50-150%
	13C6-PFDA	61%	61%	50-150%
	13C7-PFUnDA	57%	59%	50-150%
	13C2-PFDoDA	58%	63%	50-150%
	13C2-PFTeDA	46% [c]	48% [c]	50-150%
	13C3-PFBS	56%	53%	50-150%
	13C3-PFHxS	56%	50%	50-150%
	13C8-PFOS	54%	57%	50-150%
	13C8-FOSA	61%	56%	50-150%
	d3-MeFOSA	44% [c]	33% [c]	50-150%
	d3-MeFOSAA	64%	64%	50-150%
	d5-EtFOSAA	59%	58%	50-150%
	13C2-4:2FTS	52%	42% [c]	50-150%
	13C2-6:2FTS	52%	48% [c]	50-150%
	13C2-8:2FTS	53%	54%	50-150%
	13C3-HFPO-DA	44% [c]	43% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB02-20230307		
Lab Sample ID:	FC3265-25	**Date Sampled:**	03/07/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42280.D	1	03/24/23 22:22	AL	03/22/23 09:35	OP95997	S4Q607
Run #2 [a]	4Q42059.D	1	03/21/23 07:24	AL	03/10/23 09:10	OP95817	S4Q603

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA [b]	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB02-20230307		
Lab Sample ID:	FC3265-25	**Date Sampled:**	03/07/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/07/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	56%	50-150%
	13C5-PFPeA	52%	54%	50-150%
	13C5-PFHxA	52%	53%	50-150%
	13C4-PFHpA	51%	52%	50-150%
	13C8-PFOA	57%	54%	50-150%
	13C9-PFNA	60%	57%	50-150%
	13C6-PFDA	60%	62%	50-150%
	13C7-PFUnDA	56%	60%	50-150%
	13C2-PFDoDA	57%	66%	50-150%
	13C2-PFTeDA	45% [c]	49% [c]	50-150%
	13C3-PFBS	56%	57%	50-150%
	13C3-PFHxS	52%	52%	50-150%
	13C8-PFOS	54%	55%	50-150%
	13C8-FOSA	59%	56%	50-150%
	d3-MeFOSA	43% [c]	30% [c]	50-150%
	d3-MeFOSAA	64%	64%	50-150%
	d5-EtFOSAA	57%	60%	50-150%
	13C2-4:2FTS	49% [c]	46% [c]	50-150%
	13C2-6:2FTS	51%	51%	50-150%
	13C2-8:2FTS	51%	53%	50-150%
	13C3-HFPO-DA	44% [c]	50%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC3265

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 1 of 3

Project Name:	NASA KSC	PO No.	142581	Project No.	60667657.4
Site Location:	Site Assessment and Mitigation (SA&M)	Send Invoice To:	Instructions in MSA # 19S-24548-GV03	EDD to:	Jennifer Chastain Cc: Teresa Amentt Jennings
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Deliver Sample Kits To:	AECOM Depot, 523 18th Street, Orlando	Report to:	Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2	
Lab Name:	SGS Orlando	Turnaround Time(specify):	Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)	

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	PFAS Branched vs. Linear	MS/MSD	Comments
1	A3RB-DPT0030-004.0-20230306	A3RB-DPT0030	20230306	0835	WG	N	G	2	2	X		
2	A3RB-DPT0030-010.0-20230306	A3RB-DPT0030	20230306	0900	WG	N	G	2	2	X		
3	A3RB-DPT0030-018.0-20230306	A3RB-DPT0030	20230306	0925	WG	N	G	2	2	X		
4	A3RB-DPT0030-025.0-20230306	A3RB-DPT0030	20230306	0950	WG	N	G	2	2	X		
5	A3RB-DPT0030-042.0-20230306	A3RB-DPT0030	20230306	1030	WG	N	G	2	2	X		
6	A3RB-DPT0030-057.0-20230306	A3RB-DPT0030	20230306	1110	WG	N	G	2	2	X		
7	A3RB-DPT0031-004.0-20230306	A3RB-DPT0031	20230306	1305	WG	N	G	2	2	X		
8	A3RB-DPT0031-010.0-20230306	A3RB-DPT0031	20230306	1325	WG	N	G	2	2	X		
9	A3RB-DPT0031-018.0-20230306	A3RB-DPT0031	20230306	1345	WG	N	G	2	2	X		
10	A3RB-DPT0031-025.0-20230306	A3RB-DPT0031	20230306	1420	WG	N	G	2	2	X		
11	A3RB-DPT0031-042.0-20230306	A3RB-DPT0031	20230306	1445	WG	N	G	2	2	X		
12	A3RB-DPT0031-057.0-20230306	A3RB-DPT0031	20230306	1530	WG	N	G	2	2	X		

INITIAL ASSESSMENT

LABEL VERIFICATION

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		3/7/23	1550		3/7/23	1600
2		3/7/23	18:10		3/8/23	
3						

Samples Iced?(check) Yes___ No___ 2.2 1.4

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store In Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3265: Chain of Custody

Page 1 of 4

FC3265

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 2 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	PFOS Branched vs. Linear	MS/MSD									Comments
13	A3RB-DPT0032-004.0-20230307	A3RB-DPT0032	20230307	0800	WG	N	G	2	2	X										
14	A3RB-DPT0032-010.0-20230307	A3RB-DPT0032	20230307	0820	WG	N	G	2	2	X										
15	A3RB-DPT0032-018.0-20230307	A3RB-DPT0032	20230307	0850	WG	N	G	2	2	X										
16	A3RB-DPT0032-025.0-20230307	A3RB-DPT0032	20230307	0910	WG	N	G	2	2	X										
17	A3RB-DPT0032-042.0-20230307	A3RB-DPT0032	20230307	0945	WG	N	G	2	2	X										
18	A3RB-DPT0032-057.0-20230307	A3RB-DPT0032	20230307	1015	WG	N	G	2	2	X										
19	A3RB-DPT0017-042.0-20230307	A3RB-DPT0017	20230307	1450	WG	N	G	2	2	X										
20	A3RB-DPT0017-057.0-20230307	A3RB-DPT0017	20230307	1520	WG	N	G	2	2	X										
21	A3RB-FD01-20230306	A3RB-FD01	20230306	0815	WG	N	G	2	2	X										
22	A3RB-FB01-20230306	A3RB-FB01	20230306	1630	WQ	N	G	2	2											
23	A3RB-EB01-20230306	A3RB-EB01	20230306	1625	WQ	N	G	2	2											
24	A3RB-FB02-20230307	A3RB-FB02	20230307	1530	WQ	N	G	2	2											

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes____ No____

Shipping Company:

Tracking No:

Date Shipped:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		3/7/23	1550		3/7/23	1600
2		3/7/23	18:10	Cooler Rec'd Delgado 3/8		
3						

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3265: Chain of Custody
Page 2 of 4

FC3265

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 3 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
25	A3RB-EB02-20230307	A3RB-EB02	20230307	1540	WQ	N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	

***Field* Comments:** Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	3/7/23	1550	1	3/7/23	16:00
2	3/7/23	18:10	2	3/8	
3			3		

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FC3265: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC3265 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/7/2023 6:20:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2); Cooler 2: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.4); Cooler 2: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD Date: 3/7/2023 6:20:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95812	EPA 537M QSM5.3 B-15						
OP95812-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	92	%	73-129
OP95812-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	91	%	72-129
OP95812-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	91	%	72-129
OP95812-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	91	%	72-130
OP95812-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	91	%	71-133
OP95812-BS	375-95-1	Perfluorononanoic acid	BSP	REC	88	%	69-130
OP95812-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	90	%	71-129
OP95812-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	69-133
OP95812-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	93	%	72-134
OP95812-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	83	%	65-144
OP95812-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	93	%	71-132
OP95812-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	91	%	72-130
OP95812-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	82	%	71-127
OP95812-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	94	%	68-131
OP95812-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	87	%	69-134
OP95812-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	87	%	65-140
OP95812-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	89	%	69-127
OP95812-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	91	%	53-142
OP95812-BS	754-91-6	PFOSA	BSP	REC	91	%	67-137
OP95812-BS	31506-32-8	MeFOSA	BSP	REC	108	%	68-141
OP95812-BS	2355-31-9	MeFOSAA	BSP	REC	90	%	65-136
OP95812-BS	2991-50-6	EtFOSAA	BSP	REC	87	%	61-135
OP95812-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	95	%	63-143
OP95812-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	96	%	64-140
OP95812-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP95812-MS	375-22-4	Perfluorobutanoic acid	MS	REC	86	%	73-129
OP95812-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	85	%	72-129
OP95812-MS	307-24-4	Perfluorohexanoic acid	MS	REC	83	%	72-129
OP95812-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	86	%	72-130
OP95812-MS	335-67-1	Perfluorooctanoic acid	MS	REC	87	%	71-133
OP95812-MS	375-95-1	Perfluorononanoic acid	MS	REC	83	%	69-130
OP95812-MS	335-76-2	Perfluorodecanoic acid	MS	REC	84	%	71-129
OP95812-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	85	%	69-133
OP95812-MS	307-55-1	Perfluorododecanoic acid	MS	REC	88	%	72-134
OP95812-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	72	%	65-144
OP95812-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	87	%	71-132
OP95812-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	86	%	72-130
OP95812-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	104	%	71-127
OP95812-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	88	%	68-131
OP95812-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	94	%	69-134
OP95812-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	82	%	65-140
OP95812-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	91	%	69-127

* Sample used for QC is not from job FC3265

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95812-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	82	%	53-142
OP95812-MS	754-91-6	PFOSA	MS	REC	84	%	67-137
OP95812-MS	31506-32-8	MeFOSA	MS	REC	87	%	68-141
OP95812-MS	2355-31-9	MeFOSAA	MS	REC	83	%	65-136
OP95812-MS	2991-50-6	EtFOSAA	MS	REC	83	%	61-135
OP95812-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	89	%	63-143
OP95812-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	89	%	64-140
OP95812-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	89	%	67-138
OP95812-DUP	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP95812-DUP	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP95812-DUP	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP95812-DUP	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP95812-DUP	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP95812-DUP	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP95812-DUP	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP95812-DUP	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP95812-DUP	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP95812-DUP	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP95812-DUP	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP95812-DUP	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP95812-DUP	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP95812-DUP	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	3	%	30
OP95812-DUP	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP95812-DUP	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	17	%	30
OP95812-DUP	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP95812-DUP	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP95812-DUP	754-91-6	PFOSA	DUP	RPD	0	%	30
OP95812-DUP	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP95812-DUP	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP95812-DUP	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP95812-DUP	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95812-DUP	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95812-DUP	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95817	EPA 537M QSM5.3 B-15						
OP95817-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	86	%	73-129
OP95817-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	86	%	72-129
OP95817-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	87	%	72-129
OP95817-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	86	%	72-130
OP95817-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	87	%	71-133
OP95817-BS	375-95-1	Perfluorononanoic acid	BSP	REC	82	%	69-130
OP95817-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	86	%	71-129
OP95817-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	87	%	69-133
OP95817-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	91	%	72-134

* Sample used for QC is not from job FC3265

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95817-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	77	%	65-144
OP95817-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	89	%	71-132
OP95817-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	86	%	72-130
OP95817-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	76	%	71-127
OP95817-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	86	%	68-131
OP95817-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	87	%	69-134
OP95817-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	81	%	65-140
OP95817-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	84	%	69-127
OP95817-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	86	%	53-142
OP95817-BS	754-91-6	PFOSA	BSP	REC	90	%	67-137
OP95817-BS	31506-32-8	MeFOSA	BSP	REC	107	%	68-141
OP95817-BS	2355-31-9	MeFOSAA	BSP	REC	85	%	65-136
OP95817-BS	2991-50-6	EtFOSAA	BSP	REC	82	%	61-135
OP95817-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	93	%	63-143
OP95817-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	92	%	64-140
OP95817-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	92	%	67-138
OP95817-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	88	%	73-129
OP95817-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	89	%	72-129
OP95817-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	92	%	72-129
OP95817-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	85	%	72-130
OP95817-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	89	%	71-133
OP95817-MS*	375-95-1	Perfluorononanoic acid	MS	REC	89	%	69-130
OP95817-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	71-129
OP95817-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	89	%	69-133
OP95817-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	89	%	72-134
OP95817-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	71	%	65-144
OP95817-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	90	%	71-132
OP95817-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	86	%	72-130
OP95817-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	87	%	71-127
OP95817-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	68-131
OP95817-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	84	%	69-134
OP95817-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	21 [a]	%	65-140
OP95817-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	89	%	69-127
OP95817-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	93	%	53-142
OP95817-MS*	754-91-6	PFOSA	MS	REC	84	%	67-137
OP95817-MS*	31506-32-8	MeFOSA	MS	REC	100	%	68-141
OP95817-MS*	2355-31-9	MeFOSAA	MS	REC	84	%	65-136
OP95817-MS*	2991-50-6	EtFOSAA	MS	REC	93	%	61-135
OP95817-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	93	%	63-143
OP95817-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	92	%	64-140
OP95817-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	98	%	67-138
OP95817-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	1	%	30
OP95817-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	7	%	30
OP95817-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	2	%	30
OP95817-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	7	%	30

* Sample used for QC is not from job FC3265

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95817-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	3	%	30
OP95817-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP95817-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP95817-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	8	%	30
OP95817-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	2	%	30
OP95817-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP95817-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	3	%	30
OP95817-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP95817-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP95817-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP95817-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP95817-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP95817-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP95817-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95817-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95817-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP95992	EPA 537M QSM5.3 B-15						
OP95992-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	105	%	72-134
OP95992-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	96	%	72-134
OP95992-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	103	%	65-140
OP95992-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	85	%	65-140
OP95992-BS	31506-32-8	MeFOSA	BSP	REC	150 [a]	%	68-141
OP95992-BS	31506-32-8	MeFOSA	BSP	REC	103	%	68-141
OP95997	EPA 537M QSM5.3 B-15						
OP95997-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	93	%	73-129
OP95997-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	93	%	72-129
OP95997-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	94	%	72-129
OP95997-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	93	%	72-130
OP95997-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	71-133
OP95997-BS	375-95-1	Perfluorononanoic acid	BSP	REC	91	%	69-130
OP95997-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP95997-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	94	%	69-133
OP95997-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	96	%	72-134
OP95997-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	71	%	65-144
OP95997-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	95	%	71-132
OP95997-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	94	%	72-130

* Sample used for QC is not from job FC3265

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3265
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/06/23 thru 03/07/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95997-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	92	%	71-127
OP95997-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	92	%	68-131
OP95997-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	95	%	69-134
OP95997-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	90	%	65-140
OP95997-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	94	%	69-127
OP95997-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	90	%	53-142
OP95997-BS	754-91-6	PFOSA	BSP	REC	95	%	67-137
OP95997-BS	31506-32-8	MeFOSA	BSP	REC	134	%	68-141
OP95997-BS	2355-31-9	MeFOSAA	BSP	REC	92	%	65-136
OP95997-BS	2991-50-6	EtFOSAA	BSP	REC	94	%	61-135
OP95997-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP95997-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	98	%	64-140
OP95997-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	102	%	67-138

(a) Outside control limits.

* Sample used for QC is not from job FC3265

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q601-IBLK	4Q41861.D	1	03/16/23	AL	n/a	n/a	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	116%	50-150%

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q601-IBLK	4Q41861.D	1	03/16/23	AL	n/a	n/a	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	115%	50-150%
	13C5-PFHxA	115%	50-150%
	13C4-PFHpA	115%	50-150%
	13C8-PFOA	118%	50-150%
	13C9-PFNA	122%	50-150%
	13C6-PFDA	125%	50-150%
	13C7-PFUnDA	117%	50-150%
	13C2-PFDoDA	115%	50-150%
	13C2-PFTeDA	122%	50-150%
	13C3-PFBS	119%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	115%	50-150%
	13C8-FOSA	123%	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	111%	50-150%

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-2, FC3265-7, FC3265-8, FC3265-10, FC3265-11, FC3265-14, FC3265-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-2, FC3265-7, FC3265-8, FC3265-10, FC3265-11, FC3265-14, FC3265-21

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	104%	50-150%

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q607-IBLK	4Q42239.D	1	03/24/23	AL	n/a	n/a	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20, FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	97%	50-150%

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q607-IBLK	4Q42239.D	1	03/24/23	AL	n/a	n/a	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20, FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	103%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSAA	106%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	95%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-MB	4Q41868.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0027	0.0040	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	0.00099	0.0016	0.00040	ug/l	J
	PFOS (Linear Isomer)	0.0017	0.0040	0.0010	ug/l	J

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	84%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-MB	4Q41868.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	90%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSA	37%* [a]	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	80%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-MB	4Q41899.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019	0.0040	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	0.00067	0.0016	0.00040	ug/l	J
	PFOS (Linear Isomer)	0.0013	0.0040	0.0010	ug/l	J

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	94%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-MB	4Q41899.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	89%	50-150%
	d3-MeFOSA	52%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	90%	50-150%
	13C3-HFPO-DA	77%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95992-MB	5Q12214.D	1	03/24/23	AL	03/21/23	OP95992	S5Q187

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Result	RL	MDL	Units	Q
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	88%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	88%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	90%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	86%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSAA	91%	50-150%
	d5-EtFOSAA	89%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	79%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95992-MB	4Q42245.D	1	03/24/23	AL	03/21/23	OP95992	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Result	RL	MDL	Units	Q
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	86%	50-150%
	13C2-PFTeDA	68%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	43%* [a]	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	80%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95997-MB	4Q42268.D	1	03/24/23	AL	03/22/23	OP95997	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	83%	50-150%
	13C5-PFHxA	82%	50-150%

Method Blank Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95997-MB	4Q42268.D	1	03/24/23	AL	03/22/23	OP95997	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	82%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	86%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	75%	50-150%
	d3-MeFOSA	28%* [a]	50-150%
	d3-MeFOSAA	98%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	70%	50-150%

(a) Outside control limits.

Instrument Blank

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q187-IBLK	5Q12209.D	1	03/24/23	AL	n/a	n/a	S5Q187

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP95992-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	104%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	107%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	105%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	97%	50-150%

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-BS	4Q41867.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0733	92	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0724	91	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0730	91	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0727	91	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0728	91	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0701	88	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0718	90	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0745	93	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0742	93	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0663	83	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0746	93	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0731	91	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0654	82	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0754	94	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0699	87	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0699	87	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0710	89	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0730	91	53-142
754-91-6	PFOSA	0.08	0.0725	91	67-137
31506-32-8	MeFOSA	0.08	0.0862	108	68-141
2355-31-9	MeFOSAA	0.08	0.0720	90	65-136
2991-50-6	EtFOSAA	0.08	0.0695	87	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0757	95	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0766	96	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0757	95	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0810	101	60-140
919005-14-4	ADONA	0.08	0.0728	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0665	83	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0764	96	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-BS	4Q41867.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	96%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	81%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	77%	50-150%
	d3-MeFOSA	27%* [a]	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	96%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	85%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-BS	4Q41898.D	1	03/16/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0685	86	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0690	86	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0693	87	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0689	86	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0693	87	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0656	82	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0688	86	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0696	87	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0728	91	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0612	77	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0709	89	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0687	86	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0610	76	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0689	86	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0695	87	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0650	81	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0675	84	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0686	86	53-142
754-91-6	PFOSA	0.08	0.0717	90	67-137
31506-32-8	MeFOSA	0.08	0.0859	107	68-141
2355-31-9	MeFOSAA	0.08	0.0683	85	65-136
2991-50-6	EtFOSAA	0.08	0.0655	82	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0742	93	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0737	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0736	92	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0731	91	60-140
919005-14-4	ADONA	0.08	0.0682	85	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0621	78	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	100%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-BS	4Q41898.D	1	03/16/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	100%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	101%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSA	45%* [a]	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	95%	50-150%
	13C2-4:2FTS	102%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	89%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95992-BS	5Q12213.D	1	03/24/23	AL	03/21/23	OP95992	S5Q187

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
307-55-1	Perfluorododecanoic acid	0.08	0.0838	105	72-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0822	103	65-140
31506-32-8	MeFOSA	0.08	0.120	150* [a]	68-141

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	87%	50-150%
	13C5-PFHxA	87%	50-150%
	13C4-PFHpA	88%	50-150%
	13C8-PFOA	88%	50-150%
	13C9-PFNA	87%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	76%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSAA	80%	50-150%
	d5-EtFOSAA	76%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	80%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95992-BS [a]	4Q42244.D	1	03/24/23	AL	03/21/23	OP95992	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-9, FC3265-12, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
307-55-1	Perfluorododecanoic acid	0.08	0.0770	96	72-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0681	85	65-140
31506-32-8	MeFOSA	0.08	0.0827	103	68-141

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	85%	50-150%
	13C4-PFHpA	85%	50-150%
	13C8-PFOA	87%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	56%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	91%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSA	12%* [b]	50-150%
	d3-MeFOSAA	82%	50-150%
	d5-EtFOSAA	75%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	80%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95997-BS [a]	4Q42267.D	1	03/24/23	AL	03/22/23	OP95997	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0740	93	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0745	93	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0748	94	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0740	93	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0742	93	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0728	91	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0752	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0749	94	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0767	96	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0565	71	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0760	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0752	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0737	92	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0734	92	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0757	95	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0718	90	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0752	94	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0723	90	53-142
754-91-6	PFOSA	0.08	0.0763	95	67-137
31506-32-8	MeFOSA	0.08	0.107	134	68-141
2355-31-9	MeFOSAA	0.08	0.0732	92	65-136
2991-50-6	EtFOSAA	0.08	0.0751	94	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0765	96	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0786	98	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0813	102	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0819	102	60-140
919005-14-4	ADONA	0.08	0.0720	90	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0664	83	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0686	86	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95997-BS [a]	4Q42267.D	1	03/24/23	AL	03/22/23	OP95997	S4Q607

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-22, FC3265-23, FC3265-24, FC3265-25

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	80%	50-150%
	13C8-PFOA	81%	50-150%
	13C9-PFNA	81%	50-150%
	13C6-PFDA	85%	50-150%
	13C7-PFUnDA	85%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	70%	50-150%
	13C3-PFBS	81%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	81%	50-150%
	13C8-FOSA	70%	50-150%
	d3-MeFOSA	29%* [b]	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	81%	50-150%
	13C3-HFPO-DA	69%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-MS	4Q41870.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601
FC3265-1	4Q41869.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	FC3265-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0050	J	0.16	0.142	86	73-129
2706-90-3	Perfluoropentanoic acid	0.0021	J	0.16	0.138	85	72-129
307-24-4	Perfluorohexanoic acid	0.0075	J	0.16	0.140	83	72-129
375-85-9	Perfluoroheptanoic acid	0.0080 U		0.16	0.137	86	72-130
335-67-1	Perfluorooctanoic acid	0.0030	J	0.16	0.142	87	71-133
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.132	83	69-130
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.134	84	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.136	85	69-133
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.141	88	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.115	72	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.139	87	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0050	J	0.16	0.142	86	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0077	J	0.16	0.174	104	71-127
355-46-4	Perfluorohexanesulfonic acid	0.112		0.16	0.252	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0032	J	0.16	0.153	94	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.0822		0.16	0.213	82	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.146	91	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.131	82	53-142
754-91-6	PFOSA	0.0080 U		0.16	0.135	84	67-137
31506-32-8	MeFOSA	0.016 U		0.16	0.139	87	68-141
2355-31-9	MeFOSAA	0.016 U		0.16	0.132	83	65-136
2991-50-6	EtFOSAA	0.016 U		0.16	0.133	83	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.143	89	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.16	0.142	89	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.142	89	67-138
13252-13-6	HFPO-DA (GenX)	0.016 U		0.16	0.152	95	60-140
919005-14-4	ADONA	0.016 U		0.16	0.139	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		0.16	0.113	71	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		0.16	0.135	84	60-140

CAS No.	ID Standard Recoveries	MS	FC3265-1	Limits
	13C4-PFBA	56%	55%	50-150%
	13C5-PFPeA	53%	53%	50-150%
	13C5-PFHxA	67%	70%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-MS	4Q41870.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601
FC3265-1	4Q41869.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	ID Standard Recoveries	MS	FC3265-1	Limits
	13C4-PFHpA	76%	80%	50-150%
	13C8-PFOA	84%	91%	50-150%
	13C9-PFNA	85%	90%	50-150%
	13C6-PFDA	95%	102%	50-150%
	13C7-PFUnDA	88%	91%	50-150%
	13C2-PFDoDA	89%	90%	50-150%
	13C2-PFTeDA	63%	58%	50-150%
	13C3-PFBS	51%	52%	50-150%
	13C3-PFHxS	77%	82%	50-150%
	13C8-PFOS	78%	82%	50-150%
	13C8-FOSA	58%	68%	50-150%
	d3-MeFOSA	11%* [a]	11%* [a]	50-150%
	d3-MeFOSAA	100%	107%	50-150%
	d5-EtFOSAA	91%	95%	50-150%
	13C2-4:2FTS	78%	72%	50-150%
	13C2-6:2FTS	110%	108%	50-150%
	13C2-8:2FTS	104%	101%	50-150%
	13C3-HFPO-DA	63%	69%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-MS	4Q41992.D	5	03/20/23	AL	03/10/23	OP95817	S4Q603
FC3245-1	4Q41903.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601
FC3245-1 [a]	4Q41991.D	5	03/20/23	AL	03/10/23	OP95817	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	Compound	FC3245-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0115	J	0.16	0.153	88	73-129
2706-90-3	Perfluoropentanoic acid	0.0106 [b]	J	0.16	0.153	89	72-129
307-24-4	Perfluorohexanoic acid	0.0275 [b]	J	0.16	0.175	92	72-129
375-85-9	Perfluoroheptanoic acid	0.0065	J	0.16	0.143	85	72-130
335-67-1	Perfluorooctanoic acid	0.0093		0.16	0.152	89	71-133
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.142	89	69-130
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.152	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.143	89	69-133
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.142	89	72-134
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.113	71	65-144
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.144	90	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0153 [b]	J	0.16	0.153	86	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0182 [b]	J	0.16	0.157	87	71-127
355-46-4	Perfluorohexanesulfonic acid	0.163		0.16	0.317	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0129		0.16	0.147	84	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.630		0.16	0.664	21* [c]	65-140
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.142	89	69-127
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.148	93	53-142
754-91-6	PFOSA	0.0080 U		0.16	0.134	84	67-137
31506-32-8	MeFOSA	0.016 U		0.16	0.160	100	68-141
2355-31-9	MeFOSAA	0.016 U		0.16	0.134	84	65-136
2991-50-6	EtFOSAA	0.016 U		0.16	0.148	93	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.148	93	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.16	0.147	92	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.156	98	67-138
13252-13-6	HFPO-DA (GenX)	0.080 U [b]		0.16	0.141	88	60-140
919005-14-4	ADONA	0.016 U		0.16	0.141	88	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		0.16	0.134	84	60-140
	PFOS (Branched Isomers)	0.164			0.159		50-150 [d]
	PFOS (Linear Isomer)	0.457			0.508		50-150 [d]

CAS No.	ID Standard Recoveries	MS	FC3245-1	FC3245-1	Limits
	13C4-PFBA	53%	45%* [c]	49%* [c]	50-150%
	13C5-PFPeA	52%	40%* [c]	48%* [c]	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-MS	4Q41992.D	5	03/20/23	AL	03/10/23	OP95817	S4Q603
FC3245-1	4Q41903.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601
FC3245-1 [a]	4Q41991.D	5	03/20/23	AL	03/10/23	OP95817	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	ID Standard Recoveries	MS	FC3245-1	FC3245-1	Limits
	13C5-PFHxA	57%	49%* [c]	56%	50-150%
	13C4-PFHpA	61%	54%	57%	50-150%
	13C8-PFOA	63%	62%	59%	50-150%
	13C9-PFNA	63%	53%	57%	50-150%
	13C6-PFDA	63%	64%	60%	50-150%
	13C7-PFUnDA	56%	60%	55%	50-150%
	13C2-PFDoDA	62%	62%	61%	50-150%
	13C2-PFTeDA	54%	57%	54%	50-150%
	13C3-PFBS	56%	39%* [c]	52%	50-150%
	13C3-PFHxS	58%	57%	56%	50-150%
	13C8-PFOS	65%	54%	56%	50-150%
	13C8-FOSA	60%	54%	56%	50-150%
	d3-MeFOSAA	63%	65%	67%	50-150%
	d5-EtFOSAA	52%	60%	54%	50-150%
	13C2-4:2FTS	57%	50%	52%	50-150%
	13C2-6:2FTS	65%	65%	57%	50-150%
	13C2-8:2FTS	59%	58%	49%* [c]	50-150%
	13C3-HFPO-DA	63%	42%* [c]	64%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.
(d) Advisory control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-DUP	4Q42003.D	5	03/20/23	AL	03/09/23	OP95812	S4Q603
FC3265-2 [a]	4Q41872.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601
FC3265-2 [b]	4Q42004.D	5	03/20/23	AL	03/09/23	OP95812	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	Compound	FC3265-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.038 U [c]		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.019 U [c]		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0038 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0038 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0038 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0038 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0038 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0038 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0038 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0038 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0038 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.019 U [c]		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.019 U [c]		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0089		0.0086	J	3	30
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0090	B	0.0076	J	17	30
68259-12-1	Perfluorononanesulfonic acid	0.0038 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0038 U		ND		nc	30
754-91-6	PFOSA	0.0038 U		ND		nc	30
31506-32-8	MeFOSA	0.038 U [c]		ND		nc	30
2355-31-9	MeFOSAA	0.0075 U		ND		nc	30
2991-50-6	EtFOSAA	0.0075 U		ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0075 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0075 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0075 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0075 U		ND		nc	30
919005-14-4	ADONA	0.0075 U		ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0075 U		ND		nc	30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0075 U		ND		nc	30
	PFOS (Branched Isomers)	0.0040		0.0032	J	22	30 [d]
	PFOS (Linear Isomer)	0.0049		ND		200* [e]	30 [d]

CAS No.	ID Standard Recoveries	DUP	FC3265-2	FC3265-2	Limits
	13C4-PFBA	49%* [e]	37%* [e]	51%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95812-DUP	4Q42003.D	5	03/20/23	AL	03/09/23	OP95812	S4Q603
FC3265-2 [a]	4Q41872.D	1	03/16/23	AL	03/09/23	OP95812	S4Q601
FC3265-2 [b]	4Q42004.D	5	03/20/23	AL	03/09/23	OP95812	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-1, FC3265-2, FC3265-3, FC3265-4, FC3265-5, FC3265-6, FC3265-7, FC3265-8, FC3265-9, FC3265-10, FC3265-11, FC3265-12, FC3265-13, FC3265-14, FC3265-15, FC3265-16, FC3265-17, FC3265-18, FC3265-19, FC3265-20

CAS No.	ID Standard Recoveries	DUP	FC3265-2	FC3265-2	Limits
	13C5-PFPeA	66%	49%* [e]	66%	50-150%
	13C5-PFHxA	81%	65%	81%	50-150%
	13C4-PFHpA	88%	74%	87%	50-150%
	13C8-PFOA	95%	85%	96%	50-150%
	13C9-PFNA	95%	84%	95%	50-150%
	13C6-PFDA	95%	95%	93%	50-150%
	13C7-PFUnDA	87%	84%	79%	50-150%
	13C2-PFDoDA	90%	80%	82%	50-150%
	13C2-PFTeDA	69%	67%	64%	50-150%
	13C3-PFBS	64%	48%* [e]	63%	50-150%
	13C3-PFHxS	88%	78%	87%	50-150%
	13C8-PFOS	91%	77%	85%	50-150%
	13C8-FOSA	72%	63%	75%	50-150%
	d3-MeFOSA	18%* [e]	10%* [e]	21%* [e]	50-150%
	d3-MeFOSAA	99%	102%	96%	50-150%
	d5-EtFOSAA	86%	85%	76%	50-150%
	13C2-4:2FTS	78%	66%	77%	50-150%
	13C2-6:2FTS	95%	100%	97%	50-150%
	13C2-8:2FTS	83%	94%	81%	50-150%
	13C3-HFPO-DA	83%	62%	83%	50-150%

(a) Insufficient sample for re-extraction.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Advisory control limits.
(e) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-DUP	4Q41906.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601
FC3245-2	4Q41905.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	Compound	FC3245-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.0126	J	0.0125	J	1	30
2706-90-3	Perfluoropentanoic acid	0.0063	J	0.0059	J	7	30
307-24-4	Perfluorohexanoic acid	0.0191		0.0195		2	30
375-85-9	Perfluoroheptanoic acid	0.0026	J	0.0028	J	7	30
335-67-1	Perfluorooctanoic acid	0.0038	J	0.0039	J	3	30
375-95-1	Perfluorononanoic acid	0.0080	U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0080	U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0080	U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0080	U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0053	J	0.0053	J	0	30
2706-91-4	Perfluoropentanesulfonic acid	0.0065	J	0.0060	J	8	30
355-46-4	Perfluorohexanesulfonic acid	0.0568		0.0581		2	30
375-92-8	Perfluoroheptanesulfonic acid	0.0031	J	0.0031	J	0	30
1763-23-1	Perfluorooctanesulfonic acid	0.123		0.119		3	30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	ND		nc	30
754-91-6	PFOSA	0.0080	U	ND		nc	30
31506-32-8	MeFOSA	0.016	U	ND		nc	30
2355-31-9	MeFOSAA	0.016	U	ND		nc	30
2991-50-6	EtFOSAA	0.016	U	ND		nc	30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.016	U	ND		nc	30
919005-14-4	ADONA	0.016	U	ND		nc	30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	ND		nc	30
	PFOS (Branched Isomers)	0.0437		0.0416		5	30 [a]
	PFOS (Linear Isomer)	0.0793		0.0782		1	30 [a]

CAS No.	ID Standard Recoveries	DUP	FC3245-2	Limits
	13C4-PFBA	45%* [b]	52%	50-150%
	13C5-PFPeA	46%* [b]	53%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3265
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95817-DUP	4Q41906.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601
FC3245-2	4Q41905.D	1	03/17/23	AL	03/10/23	OP95817	S4Q601

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3265-21

CAS No.	ID Standard Recoveries	DUP	FC3245-2	Limits
	13C5-PFHxA	55%	64%	50-150%
	13C4-PFHpA	56%	65%	50-150%
	13C8-PFOA	62%	71%	50-150%
	13C9-PFNA	59%	65%	50-150%
	13C6-PFDA	67%	74%	50-150%
	13C7-PFUnDA	65%	73%	50-150%
	13C2-PFDoDA	67%	72%	50-150%
	13C2-PFTeDA	55%	59%	50-150%
	13C3-PFBS	47%* [b]	53%	50-150%
	13C3-PFHxS	58%	68%	50-150%
	13C8-PFOS	62%	67%	50-150%
	13C8-FOSA	62%	67%	50-150%
	d3-MeFOSA	47%* [b]		50-150%
	d3-MeFOSAA	68%	74%	50-150%
	d5-EtFOSAA	65%	71%	50-150%
	13C2-4:2FTS	53%	62%	50-150%
	13C2-6:2FTS	58%	69%	50-150%
	13C2-8:2FTS	59%	68%	50-150%
	13C3-HFPO-DA	49%* [b]	57%	50-150%

(a) Advisory control limits.
(b) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3373

Sampling Date: 03/10/23

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: 56

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC3373

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3373-1	03/10/23	10:40	DS	03/10/23	AQ	Ground Water	A3RB-DPT0034-004.0-20230310
FC3373-2	03/10/23	11:00	DS	03/10/23	AQ	Ground Water	A3RB-DPT0034-010.0-20230310
FC3373-3	03/10/23	12:10	DS	03/10/23	AQ	Ground Water	A3RB-DPT0034-025.0-20230310
FC3373-4	03/10/23	12:45	DS	03/10/23	AQ	Ground Water	A3RB-DPT0034-042.0-20230310
FC3373-5	03/10/23	13:10	DS	03/10/23	AQ	Ground Water	A3RB-DPT0034-057.0-20230310
FC3373-6	03/10/23	14:30	DS	03/10/23	AQ	Ground Water	A3RB-DPT0035-004.0-20230310
FC3373-7	03/10/23	14:50	DS	03/10/23	AQ	Ground Water	A3RB-DPT0035-010.0-20230310
FC3373-8	03/10/23	15:15	DS	03/10/23	AQ	Ground Water	A3RB-DPT0035-018.0-20230310
FC3373-9	03/10/23	10:00	DS	03/10/23	AQ	Ground Water	A3RB-FD03-20230310
FC3373-10	03/10/23	15:20	DS	03/10/23	AQ	Field Blank Water	A3RB-FB04-20230310
FC3373-11	03/10/23	15:30	DS	03/10/23	AQ	Equipment Blank	A3RB-EB04-20230310

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3373

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 3/21/2023 5:03:16 PM

On 03/10/2023, 10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3373 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95865

Sample(s) FC3362-1MS, FC3362-1MSD, OP95865-MSMSD were used as the QC samples indicated.

Sample(s) FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9 have surrogates outside control limits.

OP95865-MB for d3-MeFOSA: Outside control limits.

FC3373-1 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC3373-1: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-1: Dilution required (ID recovery standard failure).

FC3373-2 for 13C3-HFPO-DA: Outside control limits.

FC3373-2 for 13C3-PFBS: Outside control limits.

FC3373-2 for 13C4-PFBA: Outside control limits.

FC3373-2 for 13C5-PFPeA: Outside control limits.

FC3373-2 for d3-MeFOSA: Outside control limits.

FC3373-2: Dilution required (ID recovery standard failure).

FC3373-3 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3373-3: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-3: Dilution required (ID recovery standard failure).

FC3373-4: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-4: Dilution required (ID recovery standard failure).

FC3373-5 for MeFOSA: Associated ID Standard outside control limits.

FC3373-5: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-5: Dilution required (ID recovery standard failure).

FC3373-6 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3373-6: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-6: Dilution required (ID recovery standard failure).

FC3373-7 for d3-MeFOSA: Outside control limits.

FC3373-7 for MeFOSA: Associated ID Standard outside control limits.

FC3373-7: Dilution required (ID recovery standard failure).

FC3373-8 for Perfluorododecanoic acid: Associated ID Standard outside control limits.

FC3373-8: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3373-8: Dilution required (ID recovery standard failure).

FC3373-9 for d3-MeFOSA: Outside control limits.

FC3373-9 for MeFOSA: Associated ID Standard outside control limits.

FC3373-9: Dilution required (ID recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3373-1	**A3RB-DPT0034-004.0-20230310**					
Perfluorobutanoic acid [a]		0.0369 J	0.059	0.029	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0057 J	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]		0.0098	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [c]		0.0027 J	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [c]		0.0074	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0158 J	0.029	0.015	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [c]		0.132	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [c]		0.0077	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [c]		0.103	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [c]		0.0664	0.0024	0.0012	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [c]		0.0071	0.0060	0.0030	ug/l	EPA 537M QSM5.3 B-15
FC3373-2	**A3RB-DPT0034-010.0-20230310**					
Perfluorobutanoic acid [a]		0.0136 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0090 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0136	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0032 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0072	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0188 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0286	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.240	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0083	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.203	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0820	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0921	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3373-3	**A3RB-DPT0034-025.0-20230310**					
Perfluorooctanoic acid [c]		0.0016 J	0.0055	0.0027	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0020 J	0.0055	0.0027	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [c]		0.0080	0.0055	0.0027	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [c]		0.0080	0.0055	0.0027	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [c]		0.0030	0.0022	0.0011	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [c]		0.0051 J	0.0055	0.0027	ug/l	EPA 537M QSM5.3 B-15
FC3373-4	**A3RB-DPT0034-042.0-20230310**					
No hits reported in this sample.						
FC3373-5	**A3RB-DPT0034-057.0-20230310**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3373-6	**A3RB-DPT0035-004.0-20230310**					
Perfluorobutanoic acid [c]		0.0285	0.0096	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [c]		0.0013 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0071 J	0.024	0.012	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0065	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [c]		0.0173	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [c]		0.0029 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [c]		0.0140	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [c]		0.0102	0.0019	0.00096	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [c]		0.0014 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC3373-7	**A3RB-DPT0035-010.0-20230310**					
Perfluorobutanoic acid		0.0065 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0011 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0028 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0013 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0167	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0127	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0522	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0026 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0232	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0145	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0056	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3373-8	**A3RB-DPT0035-018.0-20230310**					
Perfluoropentanoic acid [c]		0.0060 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]		0.0183	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [c]		0.0040 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [c]		0.0043 J	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0339	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0342	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [c]		0.147	0.015	0.0077	ug/l	EPA 537M QSM5.3 B-15
FC3373-9	**A3RB-FD03-20230310**					
Perfluorobutanoic acid		0.0062 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0011 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0027 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0013 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0158	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0122	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		0.0496	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0025 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0211	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

FC3373-10 A3RB-FB04-20230310

No hits reported in this sample.

FC3373-11 A3RB-EB04-20230310

No hits reported in this sample.

(a) Dilution required (ID recovery standard failure).
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted. Associated ID Standard outside control limits.
(c) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0034-004.0-20230310
Lab Sample ID: FC3373-1 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41969.D	1.6	03/17/23 23:29	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42016.D	7.8	03/20/23 20:16	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0369 [c]	0.059	0.029	0.015	ug/l	J
2706-90-3	Perfluoropentanoic acid [d]	0.0057	0.0060	0.0030	0.0015	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0098	0.0060	0.0030	0.0015	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0027	0.0060	0.0030	0.0015	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0074	0.0060	0.0030	0.0015	ug/l	
375-95-1	Perfluorononanoic acid	0.0030 U	0.0060	0.0030	0.0015	ug/l	
335-76-2	Perfluorodecanoic acid	0.0030 U	0.0060	0.0030	0.0015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.015 U [c]	0.029	0.015	0.0074	ug/l	
307-55-1	Perfluorododecanoic acid	0.015 U [c]	0.029	0.015	0.0074	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.015 U [c]	0.029	0.015	0.0074	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0030 U	0.0060	0.0030	0.0015	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.015 U [c]	0.029	0.015	0.0074	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0158 [c]	0.029	0.015	0.0074	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.132	0.0060	0.0030	0.0015	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077	0.0060	0.0030	0.0015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.103	0.0060	0.0030	0.0015	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0030 U	0.0060	0.0030	0.0015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.015 U [c]	0.029	0.015	0.0074	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0030 U	0.0060	0.0030	0.0015	ug/l	
31506-32-8	MeFOSA [d]	0.029 U [c]	0.059	0.029	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.029 U [c]	0.059	0.029	0.015	ug/l	
2991-50-6	EtFOSAA	0.029 U [c]	0.059	0.029	0.015	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0060 U	0.012	0.0060	0.0030	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-004.0-20230310
Lab Sample ID: FC3373-1 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0060 U	0.012	0.0060	0.0030	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0060 U	0.012	0.0060	0.0030	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0060 U	0.012	0.0060	0.0030	ug/l	
919005-14-4	ADONA	0.0060 U	0.012	0.0060	0.0030	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0060 U	0.012	0.0060	0.0030	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.029 U [c]	0.059	0.029	0.015	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0664	0.0024	0.0012	0.00060	ug/l	
	PFOS (Linear Isomer)	0.0071	0.0060	0.0030	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	45% [e]	63%	50-150%
	13C5-PFPeA	47% [e]	70%	50-150%
	13C5-PFHxA	69%	82%	50-150%
	13C4-PFHpA	73%	82%	50-150%
	13C8-PFOA	76%	89%	50-150%
	13C9-PFNA	76%	91%	50-150%
	13C6-PFDA	79%	90%	50-150%
	13C7-PFUnDA	5% [e]	69%	50-150%
	13C2-PFDoDA	8% [e]	71%	50-150%
	13C2-PFTeDA	77%	86%	50-150%
	13C3-PFBS	43% [e]	69%	50-150%
	13C3-PFHxS	72%	92%	50-150%
	13C8-PFOS	75%	82%	50-150%
	13C8-FOSA	62%	76%	50-150%
	d3-MeFOSA	0% [e]	34% [e]	50-150%
	d3-MeFOSAA	2% [e]	99%	50-150%
	d5-EtFOSAA	4% [e]	81%	50-150%
	13C2-4:2FTS	71%	77%	50-150%
	13C2-6:2FTS	90%	88%	50-150%
	13C2-8:2FTS	84%	88%	50-150%
	13C3-HFPO-DA	56%	78%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0034-004.0-20230310		
Lab Sample ID:	FC3373-1	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-010.0-20230310
Lab Sample ID: FC3373-2 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41970.D	1	03/17/23 23:44	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [a]	4Q42017.D	5	03/20/23 20:32	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0136 [b]	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0090 [b]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0136	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0032	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0072	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0188 [b]	0.019	0.0093	0.0046	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0286 [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.240	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0083	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.203	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-010.0-20230310
Lab Sample ID: FC3373-2 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.019 U [b]	0.037	0.019	0.0093	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0820	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0921	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [c]	59%	50-150%
	13C5-PFPeA	38% [c]	53%	50-150%
	13C5-PFHxA	52%	64%	50-150%
	13C4-PFHpA	56%	69%	50-150%
	13C8-PFOA	61%	71%	50-150%
	13C9-PFNA	57%	65%	50-150%
	13C6-PFDA	71%	71%	50-150%
	13C7-PFUnDA	69%	67%	50-150%
	13C2-PFDoDA	69%	72%	50-150%
	13C2-PFTeDA	63%	62%	50-150%
	13C3-PFBS	38% [c]	51%	50-150%
	13C3-PFHxS	58%	67%	50-150%
	13C8-PFOS	55%	67%	50-150%
	13C8-FOSA	57%	68%	50-150%
	d3-MeFOSA	47% [c]	55%	50-150%
	d3-MeFOSAA	84%	73%	50-150%
	d5-EtFOSAA	70%	68%	50-150%
	13C2-4:2FTS	53%	62%	50-150%
	13C2-6:2FTS	72%	72%	50-150%
	13C2-8:2FTS	73%	65%	50-150%
	13C3-HFPO-DA	43% [c]	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-025.0-20230310
Lab Sample ID: FC3373-3 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41973.D	1.4	03/18/23 00:31	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42018.D	6.9	03/20/23 20:47	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.027 U [d]	0.054	0.027	0.014	ug/l	
2706-90-3	Perfluoropentanoic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
307-24-4	Perfluorohexanoic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
335-67-1	Perfluorooctanoic acid	0.0016	0.0055	0.0027	0.0014	ug/l	J
375-95-1	Perfluorononanoic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
335-76-2	Perfluorodecanoic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
307-55-1	Perfluorododecanoic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0020	0.0055	0.0027	0.0014	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0080	0.0055	0.0027	0.0014	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0080	0.0055	0.0027	0.0014	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0027 U	0.0055	0.0027	0.0014	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.014 U [d]	0.027	0.014	0.0068	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.014 U [d]	0.027	0.014	0.0068	ug/l	
31506-32-8	MeFOSA [c]	0.027 U [d]	0.054	0.027	0.014	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.027 U [d]	0.054	0.027	0.014	ug/l	
2991-50-6	EtFOSAA	0.027 U [d]	0.054	0.027	0.014	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0055 U	0.011	0.0055	0.0027	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-025.0-20230310
Lab Sample ID: FC3373-3 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0055 U	0.011	0.0055	0.0027	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0055 U	0.011	0.0055	0.0027	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0055 U	0.011	0.0055	0.0027	ug/l	
919005-14-4	ADONA	0.0055 U	0.011	0.0055	0.0027	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0055 U	0.011	0.0055	0.0027	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.027 U [d]	0.054	0.027	0.014	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0030	0.0022	0.0011	0.00055	ug/l	
	PFOS (Linear Isomer)	0.0051	0.0055	0.0027	0.0014	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	23% [e]	31% [e]	50-150%
	13C5-PFPeA	40% [e]	61%	50-150%
	13C5-PFHxA	62%	75%	50-150%
	13C4-PFHpA	64%	75%	50-150%
	13C8-PFOA	68%	79%	50-150%
	13C9-PFNA	69%	81%	50-150%
	13C6-PFDA	67%	84%	50-150%
	13C7-PFUnDA	4% [e]	61%	50-150%
	13C2-PFDoDA	6% [e]	62%	50-150%
	13C2-PFTeDA	73%	78%	50-150%
	13C3-PFBS	37% [e]	62%	50-150%
	13C3-PFHxS	68%	77%	50-150%
	13C8-PFOS	72%	81%	50-150%
	13C8-FOSA	47% [e]	73%	50-150%
	d3-MeFOSA	0% [e]	29% [e]	50-150%
	d3-MeFOSAA	1% [e]	84%	50-150%
	d5-EtFOSAA	4% [e]	78%	50-150%
	13C2-4:2FTS	64%	71%	50-150%
	13C2-6:2FTS	81%	82%	50-150%
	13C2-8:2FTS	76%	82%	50-150%
	13C3-HFPO-DA	50%	71%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0034-025.0-20230310		
Lab Sample ID:	FC3373-3	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-042.0-20230310
Lab Sample ID: FC3373-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/10/23
Date Received: 03/10/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41974.D	2.9	03/18/23 00:46	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42019.D	14.7	03/20/23 21:03	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.011 U	0.022	0.011	0.0055	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
307-24-4	Perfluorohexanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
335-67-1	Perfluorooctanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
375-95-1	Perfluorononanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
335-76-2	Perfluorodecanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
307-55-1	Perfluorododecanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0055 U	0.011	0.0055	0.0027	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0055 U	0.011	0.0055	0.0027	ug/l	
31506-32-8	MeFOSA	0.055 U [c]	0.11	0.055	0.028	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.011 U	0.022	0.011	0.0055	ug/l	
2991-50-6	EtFOSAA	0.011 U	0.022	0.011	0.0055	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-042.0-20230310
Lab Sample ID: FC3373-4 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.011 U	0.022	0.011	0.0055	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.011 U	0.022	0.011	0.0055	ug/l	
919005-14-4	ADONA	0.011 U	0.022	0.011	0.0055	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.011 U	0.022	0.011	0.0055	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.011 U	0.022	0.011	0.0055	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0022 U	0.0044	0.0022	0.0011	ug/l	
	PFOS (Linear Isomer)	0.0055 U	0.011	0.0055	0.0027	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	67%	50-150%
	13C5-PFPeA	53%	72%	50-150%
	13C5-PFHxA	65%	75%	50-150%
	13C4-PFHpA	66%	77%	50-150%
	13C8-PFOA	74%	82%	50-150%
	13C9-PFNA	74%	85%	50-150%
	13C6-PFDA	87%	92%	50-150%
	13C7-PFUnDA	99%	103%	50-150%
	13C2-PFDoDA	125%	140%	50-150%
	13C2-PFTeDA	111%	139%	50-150%
	13C3-PFBS	54%	75%	50-150%
	13C3-PFHxS	75%	81%	50-150%
	13C8-PFOS	80%	93%	50-150%
	13C8-FOSA	69%	75%	50-150%
	d3-MeFOSA	38% [d]	62%	50-150%
	d3-MeFOSAA	108%	114%	50-150%
	d5-EtFOSAA	117%	125%	50-150%
	13C2-4:2FTS	65%	67%	50-150%
	13C2-6:2FTS	78%	80%	50-150%
	13C2-8:2FTS	81%	78%	50-150%
	13C3-HFPO-DA	54%	75%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0034-042.0-20230310		
Lab Sample ID:	FC3373-4	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-057.0-20230310
Lab Sample ID: FC3373-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/10/23
Date Received: 03/10/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41975.D	2.1	03/18/23 01:02	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42020.D	10.4	03/20/23 21:19	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0081 U	0.016	0.0081	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0081	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.040 U [d]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0081 U	0.016	0.0081	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0081 U	0.016	0.0081	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0034-057.0-20230310
Lab Sample ID: FC3373-5 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0081 U	0.016	0.0081	0.0040	ug/l	
919005-14-4	ADONA	0.0081 U	0.016	0.0081	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0081 U	0.016	0.0081	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0081 U	0.016	0.0081	0.0040	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0016 U	0.0032	0.0016	0.00081	ug/l	
	PFOS (Linear Isomer)	0.0040 U	0.0081	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	58%	73%	50-150%
	13C5-PFPeA	54%	72%	50-150%
	13C5-PFHxA	69%	75%	50-150%
	13C4-PFHpA	70%	77%	50-150%
	13C8-PFOA	77%	86%	50-150%
	13C9-PFNA	77%	88%	50-150%
	13C6-PFDA	92%	94%	50-150%
	13C7-PFUnDA	89%	92%	50-150%
	13C2-PFDoDA	100%	110%	50-150%
	13C2-PFTeDA	96%	108%	50-150%
	13C3-PFBS	54%	73%	50-150%
	13C3-PFHxS	73%	84%	50-150%
	13C8-PFOS	85%	89%	50-150%
	13C8-FOSA	69%	76%	50-150%
	d3-MeFOSA	26% [e]	40% [e]	50-150%
	d3-MeFOSAA	104%	97%	50-150%
	d5-EtFOSAA	97%	97%	50-150%
	13C2-4:2FTS	69%	68%	50-150%
	13C2-6:2FTS	81%	76%	50-150%
	13C2-8:2FTS	85%	85%	50-150%
	13C3-HFPO-DA	57%	73%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0034-057.0-20230310		
Lab Sample ID:	FC3373-5	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-004.0-20230310
Lab Sample ID: FC3373-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/10/23
Date Received: 03/10/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41976.D	1.3	03/18/23 01:17	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42021.D	6.4	03/20/23 21:34	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0285	0.0096	0.0048	0.0024	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [c]	0.024	0.012	0.0059	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0013	0.0048	0.0024	0.0012	ug/l	J
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0071 [c]	0.024	0.012	0.0059	ug/l	J
2706-91-4	Perfluoropentanesulfonic aci [d]	0.0065	0.0048	0.0024	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0173	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0029	0.0048	0.0024	0.0012	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0140	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [d]	0.024 U [c]	0.047	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-004.0-20230310
Lab Sample ID: FC3373-6 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0048 U	0.0096	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0096	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U	0.0096	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0102	0.0019	0.00096	0.00048	ug/l	
	PFOS (Linear Isomer)	0.0014	0.0048	0.0024	0.0012	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	72%	50-150%
	13C5-PFPeA	47% [e]	65%	50-150%
	13C5-PFHxA	63%	75%	50-150%
	13C4-PFHpA	66%	77%	50-150%
	13C8-PFOA	76%	84%	50-150%
	13C9-PFNA	69%	81%	50-150%
	13C6-PFDA	81%	84%	50-150%
	13C7-PFUnDA	73%	73%	50-150%
	13C2-PFDoDA	78%	81%	50-150%
	13C2-PFTeDA	72%	73%	50-150%
	13C3-PFBS	45% [e]	64%	50-150%
	13C3-PFHxS	69%	78%	50-150%
	13C8-PFOS	67%	77%	50-150%
	13C8-FOSA	65%	75%	50-150%
	d3-MeFOSA	31% [e]	36% [e]	50-150%
	d3-MeFOSAA	88%	86%	50-150%
	d5-EtFOSAA	75%	72%	50-150%
	13C2-4:2FTS	64%	71%	50-150%
	13C2-6:2FTS	87%	80%	50-150%
	13C2-8:2FTS	82%	72%	50-150%
	13C3-HFPO-DA	50%	72%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-004.0-20230310		
Lab Sample ID:	FC3373-6	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-010.0-20230310
Lab Sample ID: FC3373-7 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41977.D	1	03/18/23 01:33	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [a]	4Q42022.D	5	03/20/23 21:50	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0065	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0011	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0028	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0013	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0167	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0127	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0522	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0026	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-010.0-20230310		
Lab Sample ID:	FC3373-7	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0145	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0056	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	77%	50-150%
	13C5-PFPeA	52%	72%	50-150%
	13C5-PFHxA	68%	85%	50-150%
	13C4-PFHpA	74%	89%	50-150%
	13C8-PFOA	81%	96%	50-150%
	13C9-PFNA	77%	90%	50-150%
	13C6-PFDA	92%	98%	50-150%
	13C7-PFUnDA	80%	84%	50-150%
	13C2-PFDoDA	82%	89%	50-150%
	13C2-PFTeDA	65%	71%	50-150%
	13C3-PFBS	51%	71%	50-150%
	13C3-PFHxS	77%	89%	50-150%
	13C8-PFOS	73%	87%	50-150%
	13C8-FOSA	70%	86%	50-150%
	d3-MeFOSA	35% d	48% d	50-150%
	d3-MeFOSAA	102%	99%	50-150%
	d5-EtFOSAA	83%	84%	50-150%
	13C2-4:2FTS	68%	84%	50-150%
	13C2-6:2FTS	95%	95%	50-150%
	13C2-8:2FTS	101%	85%	50-150%
	13C3-HFPO-DA	55%	81%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-010.0-20230310		
Lab Sample ID:	FC3373-7	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-018.0-20230310
Lab Sample ID: FC3373-8 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q41978.D	4.1	03/18/23 01:49	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [b]	4Q42026.D	20.4	03/20/23 22:52	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.015 U	0.031	0.015	0.0077	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0060	0.015	0.0077	0.0039	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0183	0.015	0.0077	0.0039	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040	0.015	0.0077	0.0039	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0043	0.015	0.0077	0.0039	ug/l	J
375-95-1	Perfluorononanoic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
335-76-2	Perfluorodecanoic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0077 U	0.015	0.0077	0.0039	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.038 U [d]	0.077	0.038	0.019	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0339	0.015	0.0077	0.0039	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0342	0.015	0.0077	0.0039	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.147	0.015	0.0077	0.0039	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0077 U	0.015	0.0077	0.0039	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0077 U	0.015	0.0077	0.0039	ug/l	
31506-32-8	MeFOSA	0.015 U	0.031	0.015	0.0077	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.077 U [d]	0.15	0.077	0.038	ug/l	
2991-50-6	EtFOSAA	0.015 U	0.031	0.015	0.0077	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-018.0-20230310
Lab Sample ID: FC3373-8 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.015 U	0.031	0.015	0.0077	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.015 U	0.031	0.015	0.0077	ug/l	
919005-14-4	ADONA	0.015 U	0.031	0.015	0.0077	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.015 U	0.031	0.015	0.0077	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.077 U [d]	0.15	0.077	0.038	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0031 U	0.0062	0.0031	0.0015	ug/l	
	PFOS (Linear Isomer)	0.0077 U	0.015	0.0077	0.0039	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%	73%	50-150%
	13C5-PFPeA	58%	74%	50-150%
	13C5-PFHxA	70%	77%	50-150%
	13C4-PFHpA	72%	83%	50-150%
	13C8-PFOA	84%	85%	50-150%
	13C9-PFNA	79%	91%	50-150%
	13C6-PFDA	98%	100%	50-150%
	13C7-PFUnDA	106%	118%	50-150%
	13C2-PFDoDA	161% [e]	166% [e]	50-150%
	13C2-PFTeDA	149%	163% [e]	50-150%
	13C3-PFBS	58%	84%	50-150%
	13C3-PFHxS	79%	77%	50-150%
	13C8-PFOS	85%	94%	50-150%
	13C8-FOSA	86%	88%	50-150%
	d3-MeFOSA	56%	64%	50-150%
	d3-MeFOSAA	168% [e]	141%	50-150%
	d5-EtFOSAA	137%	150%	50-150%
	13C2-4:2FTS	72%	67%	50-150%
	13C2-6:2FTS	86%	82%	50-150%
	13C2-8:2FTS	116%	89%	50-150%
	13C3-HFPO-DA	62%	77%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-018.0-20230310		
Lab Sample ID:	FC3373-8	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD03-20230310		
Lab Sample ID:	FC3373-9	**Date Sampled:**	03/10/23
Matrix:	AQ - Ground Water	**Date Received:**	03/10/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41979.D	1	03/18/23 02:04	AL	03/14/23 09:15	OP95865	S4Q602
Run #2 [a]	4Q42027.D	5	03/20/23 23:07	AL	03/14/23 09:15	OP95865	S4Q603

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0062	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0011	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0027	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0013	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0158	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0122	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0496	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0025	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0211	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD03-20230310
Lab Sample ID: FC3373-9 **Date Sampled:** 03/10/23
Matrix: AQ - Ground Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	75%	50-150%
	13C5-PFPeA	52%	70%	50-150%
	13C5-PFHxA	67%	82%	50-150%
	13C4-PFHpA	73%	88%	50-150%
	13C8-PFOA	80%	93%	50-150%
	13C9-PFNA	75%	89%	50-150%
	13C6-PFDA	87%	90%	50-150%
	13C7-PFUnDA	77%	79%	50-150%
	13C2-PFDoDA	76%	83%	50-150%
	13C2-PFTeDA	63%	67%	50-150%
	13C3-PFBS	50%	70%	50-150%
	13C3-PFHxS	74%	91%	50-150%
	13C8-PFOS	74%	84%	50-150%
	13C8-FOSA	71%	83%	50-150%
	d3-MeFOSA	44% [d]	47% [d]	50-150%
	d3-MeFOSAA	97%	88%	50-150%
	d5-EtFOSAA	79%	78%	50-150%
	13C2-4:2FTS	68%	77%	50-150%
	13C2-6:2FTS	92%	89%	50-150%
	13C2-8:2FTS	93%	84%	50-150%
	13C3-HFPO-DA	53%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB04-20230310
Lab Sample ID: FC3373-10
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/10/23
Date Received: 03/10/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41980.D	1	03/18/23 02:20	AL	03/14/23 09:15	OP95865	S4Q602
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB04-20230310
Lab Sample ID: FC3373-10 **Date Sampled:** 03/10/23
Matrix: AQ - Field Blank Water **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	72%		50-150%
	13C5-PFHxA	71%		50-150%
	13C4-PFHpA	68%		50-150%
	13C8-PFOA	72%		50-150%
	13C9-PFNA	72%		50-150%
	13C6-PFDA	72%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	69%		50-150%
	13C2-PFTeDA	58%		50-150%
	13C3-PFBS	74%		50-150%
	13C3-PFHxS	69%		50-150%
	13C8-PFOS	70%		50-150%
	13C8-FOSA	70%		50-150%
	d3-MeFOSA	64%		50-150%
	d3-MeFOSAA	68%		50-150%
	d5-EtFOSAA	61%		50-150%
	13C2-4:2FTS	61%		50-150%
	13C2-6:2FTS	67%		50-150%
	13C2-8:2FTS	64%		50-150%
	13C3-HFPO-DA	58%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB04-20230310
Lab Sample ID: FC3373-11
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/10/23
Date Received: 03/10/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41981.D	1	03/18/23 02:35	AL	03/14/23 09:15	OP95865	S4Q602
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB04-20230310
Lab Sample ID: FC3373-11 **Date Sampled:** 03/10/23
Matrix: AQ - Equipment Blank **Date Received:** 03/10/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	80%		50-150%
	13C5-PFPeA	78%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	73%		50-150%
	13C8-PFOA	75%		50-150%
	13C9-PFNA	73%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	69%		50-150%
	13C2-PFDoDA	71%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	82%		50-150%
	13C3-PFHxS	76%		50-150%
	13C8-PFOS	70%		50-150%
	13C8-FOSA	75%		50-150%
	d3-MeFOSA	68%		50-150%
	d3-MeFOSAA	68%		50-150%
	d5-EtFOSAA	63%		50-150%
	13C2-4:2FTS	67%		50-150%
	13C2-6:2FTS	70%		50-150%
	13C2-8:2FTS	65%		50-150%
	13C3-HFPO-DA	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC3373

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC			COC No.	Page: 1 of 1	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Dustin Slater/ 407-766-0747		Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name:	SGS Orlando	Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	PFOS Branched Vs. Linear	Comments
1	A3RB-OPT0034-001.0-20230310	A3RB-OPT0034	202303 10	1040	WG	N	G	2	2	X	
2	A3RB-OPT0034-010.0-20230310	A3RB-OPT0034	202303 10	1100	WG	N	G	2	2	X	
(FD)	~~A3RB-OPT0034-018.0-20230310~~	~~A3RB-OPT0034~~	~~202303 10~~	~~1140~~	~~WG~~	~~N~~	~~G~~	~~2~~	~~2~~		
3	A3RB-OPT0034-025.0-20230310	A3RB-OPT0034	202303 10	1210	WG	N	G	2	2	X	
4	A3RB-OPT0034-042.0-20230310	A3RB-OPT0034	202303 10	1245	WG	N	G	2	2	X	
5	A3RB-OPT0034-057.0-20230310	A3RB-OPT0034	202303 10	1310	WG	N	G	2	2	X	
6	A3RB-OPT0035-001.0-20230310	A3RB-OPT0035	202303 10	1430	WG	N	G	2	2	X	
7	A3RB-OPT0035-010.0-20230310	A3RB-OPT0035	202303 10	1450	WG	N	G	2	2	X	
8	A3RB-OPT0035-018.0-20230310	A3RB-OPT0035	202303 10	1515	WG	N	G	2	2	X	
9	A3RB-FD03-20230310	A3RB-FD03	202303 10	1000	WG	N	G	2	2		
10	A3RB-FB04-20230310	A3RB-FB04	202303 10	1520	WG	N	G	2	2		
11	A3RB-EB04-20230310	A3RB-EB04	202303 10	1530	WG	N	G	2	2		

INITIAL ASSESSMENT

LABEL VERIFICATION

3.2 IR

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		3/14/23	1630		3/10/23	1635
2						
3						

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VtC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3373: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3373 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/10/2023 4:35:00 PM **Delivery Method:** DO **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.2);

Cooler Temps (Corrected) °C: Cooler 1: (3.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/10/2023 4:35:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95865	EPA 537M QSM5.3 B-15						
OP95865-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	87	%	73-129
OP95865-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	87	%	72-129
OP95865-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	87	%	72-129
OP95865-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	85	%	72-130
OP95865-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP95865-BS	375-95-1	Perfluorononanoic acid	BSP	REC	83	%	69-130
OP95865-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	87	%	71-129
OP95865-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	87	%	69-133
OP95865-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	90	%	72-134
OP95865-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	71	%	65-144
OP95865-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	88	%	71-132
OP95865-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	86	%	72-130
OP95865-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	76	%	71-127
OP95865-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	88	%	68-131
OP95865-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	87	%	69-134
OP95865-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	83	%	65-140
OP95865-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	86	%	69-127
OP95865-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	87	%	53-142
OP95865-BS	754-91-6	PFOSA	BSP	REC	85	%	67-137
OP95865-BS	31506-32-8	MeFOSA	BSP	REC	102	%	68-141
OP95865-BS	2355-31-9	MeFOSAA	BSP	REC	84	%	65-136
OP95865-BS	2991-50-6	EtFOSAA	BSP	REC	86	%	61-135
OP95865-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	92	%	63-143
OP95865-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	91	%	64-140
OP95865-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	90	%	67-138
OP95865-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	85	%	73-129
OP95865-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	87	%	72-129
OP95865-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	88	%	72-129
OP95865-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	88	%	72-130
OP95865-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	89	%	71-133
OP95865-MS*	375-95-1	Perfluorononanoic acid	MS	REC	86	%	69-130
OP95865-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	87	%	71-129
OP95865-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	88	%	69-133
OP95865-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	92	%	72-134
OP95865-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	73	%	65-144
OP95865-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	89	%	71-132
OP95865-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	90	%	72-130
OP95865-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	90	%	71-127
OP95865-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	85	%	68-131
OP95865-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	85	%	69-134
OP95865-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	79	%	65-140
OP95865-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	90	%	69-127

* Sample used for QC is not from job FC3373

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95865-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	94	%	53-142
OP95865-MS*	754-91-6	PFOSA	MS	REC	85	%	67-137
OP95865-MS*	31506-32-8	MeFOSA	MS	REC	103	%	68-141
OP95865-MS*	2355-31-9	MeFOSAA	MS	REC	85	%	65-136
OP95865-MS*	2991-50-6	EtFOSAA	MS	REC	90	%	61-135
OP95865-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	94	%	63-143
OP95865-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	93	%	64-140
OP95865-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	92	%	67-138
OP95865-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	85	%	73-129
OP95865-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP95865-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	88	%	72-129
OP95865-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP95865-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	88	%	72-129
OP95865-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	0	%	30
OP95865-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	86	%	72-130
OP95865-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	91	%	71-133
OP95865-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	88	%	69-130
OP95865-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	93	%	71-129
OP95865-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	7	%	30
OP95865-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	90	%	69-133
OP95865-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	94	%	72-134
OP95865-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	71	%	65-144
OP95865-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP95865-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	90	%	71-132
OP95865-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP95865-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	82	%	72-130
OP95865-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	7	%	30
OP95865-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	86	%	71-127
OP95865-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP95865-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	70	%	68-131
OP95865-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	6	%	30
OP95865-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	91	%	69-134
OP95865-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	6	%	30
OP95865-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	85	%	65-140
OP95865-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	6	%	30
OP95865-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	98	%	69-127
OP95865-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	9	%	30
OP95865-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	91	%	53-142
OP95865-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP95865-MSD*	754-91-6	PFOSA	MSD	REC	89	%	67-137

* Sample used for QC is not from job FC3373

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3373
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/10/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95865-MSD*	754-91-6	PFOSA	MSD	RPD	5	%	30
OP95865-MSD*	31506-32-8	MeFOSA	MSD	REC	109	%	68-141
OP95865-MSD*	31506-32-8	MeFOSA	MSD	RPD	6	%	30
OP95865-MSD*	2355-31-9	MeFOSAA	MSD	REC	83	%	65-136
OP95865-MSD*	2355-31-9	MeFOSAA	MSD	RPD	3	%	30
OP95865-MSD*	2991-50-6	EtFOSAA	MSD	REC	85	%	61-135
OP95865-MSD*	2991-50-6	EtFOSAA	MSD	RPD	6	%	30
OP95865-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	96	%	63-143
OP95865-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP95865-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	93	%	64-140
OP95865-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95865-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	99	%	67-138
OP95865-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	7	%	30

* Sample used for QC is not from job FC3373

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q602-IBLK	4Q41931.D	1	03/17/23	AL	n/a	n/a	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%

Instrument Blank

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q602-IBLK	4Q41931.D	1	03/17/23	AL	n/a	n/a	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	88%	50-150%

Instrument Blank

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	78%	50-150%

Instrument Blank

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9

CAS No.	ID Standard Recoveries		Limits
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	104%	50-150%

Method Blank Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-MB	4Q41964.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	105%	50-150%

Method Blank Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-MB	4Q41964.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	104%	50-150%
	13C9-PFNA	104%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	99%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	82%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	92%	50-150%
	d3-MeFOSA	28%* [a]	50-150%
	d3-MeFOSAA	107%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	97%	50-150%
	13C3-HFPO-DA	84%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-BS	4Q41963.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0694	87	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0696	87	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0694	87	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0681	85	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0690	86	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0662	83	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0697	87	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0696	87	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0719	90	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0569	71	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0705	88	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0689	86	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0609	76	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0702	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0699	87	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0666	83	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0686	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0692	87	53-142
754-91-6	PFOSA	0.08	0.0683	85	67-137
31506-32-8	MeFOSA	0.08	0.0816	102	68-141
2355-31-9	MeFOSAA	0.08	0.0670	84	65-136
2991-50-6	EtFOSAA	0.08	0.0686	86	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0738	92	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0729	91	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0722	90	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0770	96	60-140
919005-14-4	ADONA	0.08	0.0695	87	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0644	81	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0703	88	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	117%	50-150%
	13C5-PFPeA	116%	50-150%
	13C5-PFHxA	113%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-BS	4Q41963.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	112%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	112%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	116%	50-150%
	13C3-PFHxS	111%	50-150%
	13C8-PFOS	110%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	61%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	105%	50-150%
	13C2-4:2FTS	113%	50-150%
	13C2-6:2FTS	115%	50-150%
	13C2-8:2FTS	116%	50-150%
	13C3-HFPO-DA	90%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-MS	4Q42014.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603
OP95865-MSD	4Q42015.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603
FC3362-1	4Q41965.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602
FC3362-1 [a]	4Q42013.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	Compound	FC3362-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0385		0.16	0.174	85	0.16	0.175	85	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0105 [b]	J	0.16	0.150	87	0.16	0.151	88	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0107		0.16	0.152	88	0.16	0.152	88	0	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0053	J	0.16	0.146	88	0.16	0.143	86	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0138		0.16	0.156	89	0.16	0.159	91	2	71-133/30
375-95-1	Perfluorononanoic acid	0.0080 U		0.16	0.137	86	0.16	0.140	88	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080 U		0.16	0.139	87	0.16	0.149	93	7	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080 U		0.16	0.141	88	0.16	0.144	90	2	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080 U		0.16	0.147	92	0.16	0.150	94	2	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080 U		0.16	0.116	73	0.16	0.114	71	2	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0080 U		0.16	0.143	89	0.16	0.144	90	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0247 [b]	J	0.16	0.168	90	0.16	0.156	82	7	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0340 [b]	J	0.16	0.178	90	0.16	0.172	86	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.254		0.16	0.390	85	0.16	0.366	70	6	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0030	J	0.16	0.139	85	0.16	0.148	91	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0130		0.16	0.140	79	0.16	0.149	85	6	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080 U		0.16	0.144	90	0.16	0.157	98	9	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080 U		0.16	0.151	94	0.16	0.146	91	3	53-142/30
754-91-6	PFOSA	0.0080 U		0.16	0.136	85	0.16	0.143	89	5	67-137/30
31506-32-8	MeFOSA	0.016 U		0.16	0.165	103	0.16	0.175	109	6	68-141/30
2355-31-9	MeFOSAA	0.016 U		0.16	0.136	85	0.16	0.132	83	3	65-136/30
2991-50-6	EtFOSAA	0.016 U		0.16	0.144	90	0.16	0.136	85	6	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016 U		0.16	0.150	94	0.16	0.153	96	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016 U		0.16	0.149	93	0.16	0.148	93	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016 U		0.16	0.147	92	0.16	0.158	99	7	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016 U		0.16	0.137	86	0.16	0.150	94	9	60-140/30
919005-14-4	ADONA	0.016 U		0.16	0.135	84	0.16	0.126	79	7	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016 U		0.16	0.130	81	0.16	0.133	83	2	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016 U		0.16	0.137	86	0.16	0.140	88	2	60-140/30
	PFOS (Branched Isomers)	0.0090			0.0390			0.0441		12	50-150/30 [c]
	PFOS (Linear Isomer)	0.0022	J		0.107			0.109		2	50-150/30 [c]

CAS No.	ID Standard Recoveries	MS	MSD	FC3362-1	FC3362-1	Limits
	13C4-PFBA	55%	57%	55%	68%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3373
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95865-MS	4Q42014.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603
OP95865-MSD	4Q42015.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603
FC3362-1	4Q41965.D	1	03/17/23	AL	03/14/23	OP95865	S4Q602
FC3362-1 [a]	4Q42013.D	5	03/20/23	AL	03/14/23	OP95865	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3373-1, FC3373-2, FC3373-3, FC3373-4, FC3373-5, FC3373-6, FC3373-7, FC3373-8, FC3373-9, FC3373-10, FC3373-11

CAS No.	ID Standard Recoveries	MS	MSD	FC3362-1	FC3362-1	Limits
	13C5-PFPeA	52%	53%	43%* [d]	64%	50-150%
	13C5-PFHxA	59%	62%	65%	75%	50-150%
	13C4-PFHpA	59%	62%	67%	76%	50-150%
	13C8-PFOA	63%	64%	70%	80%	50-150%
	13C9-PFNA	64%	64%	65%	81%	50-150%
	13C6-PFDA	70%	68%	82%	83%	50-150%
	13C7-PFUnDA	67%	66%	81%	79%	50-150%
	13C2-PFDoDA	76%	72%	84%	87%	50-150%
	13C2-PFTeDA	62%	59%	71%	70%	50-150%
	13C3-PFBS	52%	56%	38%* [d]	64%	50-150%
	13C3-PFHxS	62%	68%	66%	75%	50-150%
	13C8-PFOS	68%	64%	66%	75%	50-150%
	13C8-FOSA	64%	61%	59%	77%	50-150%
	d3-MeFOSAA	74%	74%	92%	84%	50-150%
	d5-EtFOSAA	64%	66%	83%	79%	50-150%
	13C2-4:2FTS	60%	61%	66%	68%	50-150%
	13C2-6:2FTS	67%	70%	80%	78%	50-150%
	13C2-8:2FTS	65%	64%	81%	69%	50-150%
	13C3-HFPO-DA	58%	55%			50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Advisory control limits.
(d) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3374

Sampling Dates: 03/08/23 - 03/09/23

Report to:

andrea.colby@sgs.com

Total number of pages in report: 76

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

March 31, 2023

Ms. Teresa Amentt Jennings
AECOM

RE: SGS North America Inc. - Orlando job FC3374 Reissue

Dear Ms. Amentt Jennings,

The final report for job number FC3374 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The missing analytes have been reported on -7.

SGS North America Inc. - Orlando apologies for any inconvenience this may have caused. Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

Sections: 1 2 3 4 5 6 7

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC3374

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3374-1	03/08/23	14:25	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-004.0-20230308
FC3374-1D	03/08/23	14:25	DS	03/09/23	AQ	Water Dup/MSD	A3RB-DPT0033-004.0-20230308
FC3374-1S	03/08/23	14:25	DS	03/09/23	AQ	Water Matrix Spike	A3RB-DPT0033-004.0-20230308
FC3374-2	03/08/23	14:50	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-010.0-20230308
FC3374-3	03/08/23	15:10	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-018.0-20230308
FC3374-4	03/09/23	08:25	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-025.0-20230309
FC3374-5	03/09/23	09:00	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-042.0-20230309
FC3374-6	03/09/23	09:30	DS	03/09/23	AQ	Ground Water	A3RB-DPT0033-057.0-20230309
FC3374-7	03/09/23	10:50	DS	03/09/23	AQ	Ground Water	A3RB-DPT0019-042.0-20230309
FC3374-8	03/09/23	11:35	DS	03/09/23	AQ	Ground Water	A3RB-DPT0019-057.0-20230309
FC3374-9	03/08/23	11:30	DS	03/09/23	SO	Soil	A3RB-SB0061-059.0-20230308
FC3374-10	03/09/23	08:00	DS	03/09/23	AQ	Ground Water	A3RB-FD02-20230309
FC3374-11	03/08/23	08:00	DS	03/09/23	AQ	Field Blank Water	A3RB-FB03-20230308

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

AECOM, Inc

Job No: FC3374

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC3374-12	03/08/23	11:50	DS	03/09/23	AQ	Equipment Blank	A3RB-EB03-20230308

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3374

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 3/31/2023 11:26:40 AM

On 03/09/2023, 11 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3374 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95878

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FC3374-1MS, FC3374-1MSD were used as the QC samples indicated.

Sample(s) FC3374-1, FC3374-10, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8 have surrogates outside control limits.

FC3374-2: Dilution required (ID recovery standard failure).

FC3374-6: Dilution required (ID recovery standard failure).

FC3374-1: Dilution required (ID recovery standard failure).

FC3374-5: Dilution required (ID recovery standard failure).

FC3374-10: Dilution required (ID recovery standard failure).

FC3374-3: Dilution required (ID recovery standard failure).

FC3374-4: Dilution required (ID recovery standard failure).

FC3374-8: Dilution required (ID recovery standard failure).

FC3374-3 for MeFOSA: Associated ID Standard outside control limits.

FC3374-4 for MeFOSA: Associated ID Standard outside control limits.

FC3374-5 for MeFOSA: Associated ID Standard outside control limits.

FC3374-1 for MeFOSA: Associated ID Standard outside control limits.

FC3374-2 for MeFOSA: Associated ID Standard outside control limits.

FC3374-6 for MeFOSA: Associated ID Standard outside control limits.

FC3374-8 for MeFOSA: Associated ID Standard outside control limits.

FC3374-7 for 13C6-PFDA: Outside control limits.

FC3374-7 for 13C4-PFBA: Outside control limits.

FC3374-1 for 13C5-PFPeA: Outside control limits.

OP95878-BS for d3-MeFOSA: Outside control limits.

FC3374-2 for 13C4-PFBA: Outside control limits.

OP95878-MB for d3-MeFOSA: Outside control limits.

FC3374-1 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC3374-1 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC3374-1 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95878

FC3374-1 for 13C3-HFPO-DA: Outside control limits.
FC3374-2 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3374-1 for 13C4-PFBA: Outside control limits.
FC3374-2 for 13C3-PFBS: Outside control limits.
FC3374-1 for 13C8-FOSA: Outside control limits.
FC3374-1 for d3-MeFOSA: Outside control limits.
FC3374-2 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3374-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC3374-7 for 13C7-PFUnDA: Outside control limits.
FC3374-2 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3374-7 for 13C5-PFPeA: Outside control limits.
FC3374-1 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3374-7 for 13C3-PFBS: Outside control limits.
FC3374-7 for 13C8-FOSA: Outside control limits.
FC3374-6 for d3-MeFOSA: Outside control limits.
FC3374-10 for d3-MeFOSA: Outside control limits.
FC3374-2 for d3-MeFOSA: Outside control limits.
FC3374-3 for 13C3-PFBS: Outside control limits.
FC3374-3 for 13C4-PFBA: Outside control limits.
FC3374-3 for 13C5-PFPeA: Outside control limits.
FC3374-3 for d3-MeFOSA: Outside control limits.
FC3374-6 for 13C5-PFPeA: Outside control limits.
FC3374-4 for 13C4-PFBA: Outside control limits.
FC3374-2 for 13C8-FOSA: Outside control limits.
FC3374-4 for d3-MeFOSA: Outside control limits.
FC3374-7 for 13C3-HFPO-DA: Outside control limits.
FC3374-5 for 13C3-PFBS: Outside control limits.
FC3374-5 for 13C5-PFPeA: Outside control limits.
FC3374-5 for 13C8-FOSA: Outside control limits.
FC3374-5 for d3-MeFOSA: Outside control limits.
FC3374-6 for 13C3-PFBS: Outside control limits.
FC3374-6 for 13C4-PFBA: Outside control limits.
FC3374-4 for 13C3-PFBS: Outside control limits.
FC3374-7 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC3374-7 for d3-MeFOSA: Outside control limits.
FC3374-7 for d3-MeFOSAA: Outside control limits.
FC3374-7 for d5-EtFOSAA: Outside control limits.
FC3374-2 for 13C3-HFPO-DA: Outside control limits.
FC3374-8 for d3-MeFOSA: Outside control limits.
FC3374-7 for 13C2-PFDoDA: Outside control limits.
FC3374-7 for MeFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95878

FC3374-7 for d3-MeFOSA: Outside control limits.

FC3374-7 for Perfluorodecanesulfonic acid: Associated ID Standard outside control limits.

FC3374-4 for 13C5-PFPeA: Outside control limits.

FC3374-7 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FC3374-7 for Perfluoroundecanoic acid: Associated ID Standard outside control limits.

FC3374-7 for 13C2-PFDoDA: Outside control limits.

FC3374-7 for 13C4-PFBA: Outside control limits.

FC3374-7 for 13C7-PFUnDA: Outside control limits.

FC3374-8 for 13C3-PFBS: Outside control limits.

FC3374-5 for 13C2-PFTeDA: Outside control limits.

FC3374-2 for 13C5-PFPeA: Outside control limits.

FC3374-7 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP95997

Sample(s) FC3374-7 have surrogates outside control limits.

FC3374-7: Confirmation run.

Matrix: SO **Batch ID:** OP95857

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FC3356-8MS, FC3356-8MSD were used as the QC samples indicated.

General Chemistry By Method ASTM D2974-87

Matrix: SO **Batch ID:** GN93733

Sample(s) FC3374-9DUP were used as the QC samples for Fractional Organic Carbon.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN93679

Sample(s) FC3356-8DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Andrea Colby, Project Manager

Summary of Hits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3374-1	**A3RB-DPT0033-004.0-20230308**					
Perfluorobutanoic acid [a]		0.0183 J	0.045	0.023	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0020 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0020 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0016 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0055	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0057	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0043 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0476	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0019 J	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0666	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0251	0.0018	0.00091	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0407	0.0045	0.0023	ug/l	EPA 537M QSM5.3 B-15
FC3374-2	**A3RB-DPT0033-010.0-20230308**					
Perfluorobutanoic acid [b]		0.0069 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0021 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0023 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0016 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0038 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [b]		0.0034 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [b]		0.0022 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0208	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0360	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0131	0.0017	0.00087	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0233	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC3374-3	**A3RB-DPT0033-018.0-20230308**					
No hits reported in this sample.						
FC3374-4	**A3RB-DPT0033-025.0-20230309**					
No hits reported in this sample.						
FC3374-5	**A3RB-DPT0033-042.0-20230309**					
Perfluorohexanesulfonic acid		0.0026 J	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0060	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0020 J	0.0021	0.0011	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0041 J	0.0053	0.0026	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3374-6	**A3RB-DPT0033-057.0-20230309**					
Perfluorohexanesulfonic acid		0.0032 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0075	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0025	0.0019	0.00095	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0054	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC3374-7	**A3RB-DPT0019-042.0-20230309**					
Perfluorohexanesulfonic acid		0.0030 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0049	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0011 J	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0042 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC3374-8	**A3RB-DPT0019-057.0-20230309**					
No hits reported in this sample.						
FC3374-9	**A3RB-SB0061-059.0-20230308**					
Fractional Organic Carbon		1.6	0.01	0.01	%	ASTM D2974-87
FC3374-10	**A3RB-FD02-20230309**					
Perfluorooctanesulfonic acid		0.0025 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
FC3374-11	**A3RB-FB03-20230308**					
No hits reported in this sample.						
FC3374-12	**A3RB-EB03-20230308**					
No hits reported in this sample.						

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0033-004.0-20230308
Lab Sample ID: FC3374-1 **Date Sampled:** 03/08/23
Matrix: AQ - Ground Water **Date Received:** 03/09/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41944.D	1	03/17/23 17:00	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42030.D	5	03/20/23 23:54	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	220 ml	1.0 ml
Run #2	220 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0183 [b]	0.045	0.023	0.011	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.0020	0.0045	0.0023	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0020	0.0045	0.0023	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0016	0.0045	0.0023	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0055	0.0045	0.0023	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0057	0.0045	0.0023	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0043	0.0045	0.0023	0.0011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0476	0.0045	0.0023	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019	0.0045	0.0023	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0666	0.0045	0.0023	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [b]	0.023	0.011	0.0057	ug/l	
31506-32-8	MeFOSA [c]	0.023 U [b]	0.045	0.023	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-004.0-20230308		
Lab Sample ID:	FC3374-1	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.023 U [b]	0.045	0.023	0.011	ug/l	
919005-14-4	ADONA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0251	0.0018	0.00091	0.00045	ug/l	
	PFOS (Linear Isomer)	0.0407	0.0045	0.0023	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [d]	69%	50-150%
	13C5-PFPeA	43% [d]	61%	50-150%
	13C5-PFHxA	51%	67%	50-150%
	13C4-PFHpA	58%	73%	50-150%
	13C8-PFOA	67%	82%	50-150%
	13C9-PFNA	64%	80%	50-150%
	13C6-PFDA	76%	81%	50-150%
	13C7-PFUnDA	66%	71%	50-150%
	13C2-PFDoDA	60%	68%	50-150%
	13C2-PFTeDA	51%	54%	50-150%
	13C3-PFBS	44% [d]	65%	50-150%
	13C3-PFHxS	62%	73%	50-150%
	13C8-PFOS	61%	72%	50-150%
	13C8-FOSA	48% [d]	59%	50-150%
	d3-MeFOSA	9% [d]	15% [d]	50-150%
	d3-MeFOSAA	79%	79%	50-150%
	d5-EtFOSAA	66%	70%	50-150%
	13C2-4:2FTS	54%	68%	50-150%
	13C2-6:2FTS	77%	81%	50-150%
	13C2-8:2FTS	75%	71%	50-150%
	13C3-HFPO-DA	44% [d]	63%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-004.0-20230308		
Lab Sample ID:	FC3374-1	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0033-010.0-20230308
Lab Sample ID: FC3374-2 **Date Sampled:** 03/08/23
Matrix: AQ - Ground Water **Date Received:** 03/09/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41947.D	1	03/17/23 17:47	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42033.D	5	03/21/23 00:40	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0069	0.0087	0.0043	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0021	0.0043	0.0022	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0023	0.0043	0.0022	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0016	0.0043	0.0022	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0038	0.0043	0.0022	0.0011	ug/l	J
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0034	0.0043	0.0022	0.0011	ug/l	J
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0022	0.0043	0.0022	0.0011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0208	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0360	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.022	0.011	0.0054	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0033-010.0-20230308
Lab Sample ID: FC3374-2 **Date Sampled:** 03/08/23
Matrix: AQ - Ground Water **Date Received:** 03/09/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.022 U [c]	0.043	0.022	0.011	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0131	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0233	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	48% [d]	69%	50-150%
	13C5-PFPeA	44% [d]	64%	50-150%
	13C5-PFHxA	58%	76%	50-150%
	13C4-PFHpA	64%	80%	50-150%
	13C8-PFOA	77%	89%	50-150%
	13C9-PFNA	69%	84%	50-150%
	13C6-PFDA	75%	79%	50-150%
	13C7-PFUnDA	61%	65%	50-150%
	13C2-PFDoDA	62%	68%	50-150%
	13C2-PFTeDA	52%	57%	50-150%
	13C3-PFBS	43% [d]	62%	50-150%
	13C3-PFHxS	68%	78%	50-150%
	13C8-PFOS	56%	67%	50-150%
	13C8-FOSA	49% [d]	66%	50-150%
	d3-MeFOSA	12% [d]	26% [d]	50-150%
	d3-MeFOSAA	78%	72%	50-150%
	d5-EtFOSAA	68%	63%	50-150%
	13C2-4:2FTS	59%	73%	50-150%
	13C2-6:2FTS	89%	89%	50-150%
	13C2-8:2FTS	75%	73%	50-150%
	13C3-HFPO-DA	48% [d]	70%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-010.0-20230308		
Lab Sample ID:	FC3374-2	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-018.0-20230308		
Lab Sample ID:	FC3374-3	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41948.D	1	03/17/23 18:02	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42034.D	5	03/21/23 00:56	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-018.0-20230308		
Lab Sample ID:	FC3374-3	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00087 U	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0022 U	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% d	57%	50-150%
	13C5-PFPeA	49% d	70%	50-150%
	13C5-PFHxA	64%	83%	50-150%
	13C4-PFHpA	71%	87%	50-150%
	13C8-PFOA	79%	91%	50-150%
	13C9-PFNA	73%	90%	50-150%
	13C6-PFDA	84%	88%	50-150%
	13C7-PFUnDA	70%	76%	50-150%
	13C2-PFDoDA	68%	72%	50-150%
	13C2-PFTeDA	59%	59%	50-150%
	13C3-PFBS	48% d	66%	50-150%
	13C3-PFHxS	73%	86%	50-150%
	13C8-PFOS	71%	80%	50-150%
	13C8-FOSA	65%	81%	50-150%
	d3-MeFOSA	21% d	34% d	50-150%
	d3-MeFOSAA	87%	88%	50-150%
	d5-EtFOSAA	72%	73%	50-150%
	13C2-4:2FTS	67%	81%	50-150%
	13C2-6:2FTS	92%	92%	50-150%
	13C2-8:2FTS	82%	76%	50-150%
	13C3-HFPO-DA	53%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-018.0-20230308		
Lab Sample ID:	FC3374-3	**Date Sampled:**	03/08/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-025.0-20230309		
Lab Sample ID:	FC3374-4	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41949.D	1	03/17/23 18:18	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42035.D	5	03/21/23 01:12	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.022 U [b]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-025.0-20230309		
Lab Sample ID:	FC3374-4	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00087 U	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0022 U	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	55%	50-150%
	13C5-PFPeA	47% [d]	67%	50-150%
	13C5-PFHxA	62%	79%	50-150%
	13C4-PFHpA	68%	83%	50-150%
	13C8-PFOA	74%	89%	50-150%
	13C9-PFNA	69%	85%	50-150%
	13C6-PFDA	79%	85%	50-150%
	13C7-PFUnDA	67%	72%	50-150%
	13C2-PFDoDA	59%	67%	50-150%
	13C2-PFTeDA	52%	52%	50-150%
	13C3-PFBS	45% [d]	65%	50-150%
	13C3-PFHxS	70%	85%	50-150%
	13C8-PFOS	64%	74%	50-150%
	13C8-FOSA	67%	85%	50-150%
	d3-MeFOSA	40% [d]	49% [d]	50-150%
	d3-MeFOSAA	83%	78%	50-150%
	d5-EtFOSAA	71%	69%	50-150%
	13C2-4:2FTS	64%	79%	50-150%
	13C2-6:2FTS	86%	90%	50-150%
	13C2-8:2FTS	81%	75%	50-150%
	13C3-HFPO-DA	50%	74%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-025.0-20230309		
Lab Sample ID:	FC3374-4	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-042.0-20230309		
Lab Sample ID:	FC3374-5	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41950.D	1	03/17/23 18:33	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42038.D	5	03/21/23 01:58	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	190 ml	1.0 ml
Run #2	190 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0053 U	0.011	0.0053	0.0026	ug/l	
2706-90-3	Perfluoropentanoic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
307-24-4	Perfluorohexanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-76-2	Perfluorodecanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
307-55-1	Perfluorododecanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.013 U [b]	0.026	0.013	0.0066	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.013 U [b]	0.026	0.013	0.0066	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0053	0.0026	0.0013	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0060	0.0053	0.0026	0.0013	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0026 U	0.0053	0.0026	0.0013	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.013 U [b]	0.026	0.013	0.0066	ug/l	
31506-32-8	MeFOSA [c]	0.026 U [b]	0.053	0.026	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0053 U	0.011	0.0053	0.0026	ug/l	
2991-50-6	EtFOSAA	0.0053 U	0.011	0.0053	0.0026	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-042.0-20230309		
Lab Sample ID:	FC3374-5	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0053 U	0.011	0.0053	0.0026	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0053 U	0.011	0.0053	0.0026	ug/l	
919005-14-4	ADONA	0.0053 U	0.011	0.0053	0.0026	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0053 U	0.011	0.0053	0.0026	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0053 U	0.011	0.0053	0.0026	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020	0.0021	0.0011	0.00053	ug/l	J
	PFOS (Linear Isomer)	0.0041	0.0053	0.0026	0.0013	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	75%	50-150%
	13C5-PFPeA	49% [d]	75%	50-150%
	13C5-PFHxA	72%	90%	50-150%
	13C4-PFHpA	76%	90%	50-150%
	13C8-PFOA	82%	97%	50-150%
	13C9-PFNA	75%	96%	50-150%
	13C6-PFDA	85%	97%	50-150%
	13C7-PFUnDA	64%	79%	50-150%
	13C2-PFDoDA	61%	78%	50-150%
	13C2-PFTeDA	29% [d]	43% [d]	50-150%
	13C3-PFBS	45% [d]	76%	50-150%
	13C3-PFHxS	78%	96%	50-150%
	13C8-PFOS	71%	88%	50-150%
	13C8-FOSA	26% [d]	36% [d]	50-150%
	d3-MeFOSA	3% [d]	8% [d]	50-150%
	d3-MeFOSAA	84%	94%	50-150%
	d5-EtFOSAA	73%	76%	50-150%
	13C2-4:2FTS	75%	85%	50-150%
	13C2-6:2FTS	94%	98%	50-150%
	13C2-8:2FTS	82%	85%	50-150%
	13C3-HFPO-DA	59%	81%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-042.0-20230309		
Lab Sample ID:	FC3374-5	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-057.0-20230309		
Lab Sample ID:	FC3374-6	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41951.D	1	03/17/23 18:49	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42039.D	5	03/21/23 02:14	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	210 ml	1.0 ml
Run #2	210 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.024 U [b]	0.048	0.024	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0032	0.0048	0.0024	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0075	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [c]	0.024 U [b]	0.048	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-057.0-20230309		
Lab Sample ID:	FC3374-6	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0025	0.0019	0.00095	0.00048	ug/l	
	PFOS (Linear Isomer)	0.0054	0.0048	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	47% [d]	63%	50-150%
	13C5-PFPeA	46% [d]	69%	50-150%
	13C5-PFHxA	66%	81%	50-150%
	13C4-PFHpA	70%	81%	50-150%
	13C8-PFOA	74%	88%	50-150%
	13C9-PFNA	69%	88%	50-150%
	13C6-PFDA	80%	89%	50-150%
	13C7-PFUnDA	55%	74%	50-150%
	13C2-PFDoDA	50%	71%	50-150%
	13C2-PFTeDA	56%	59%	50-150%
	13C3-PFBS	43% [d]	68%	50-150%
	13C3-PFHxS	70%	89%	50-150%
	13C8-PFOS	70%	79%	50-150%
	13C8-FOSA	51%	68%	50-150%
	d3-MeFOSA	10% [d]	21% [d]	50-150%
	d3-MeFOSAA	91%	87%	50-150%
	d5-EtFOSAA	78%	78%	50-150%
	13C2-4:2FTS	68%	76%	50-150%
	13C2-6:2FTS	87%	88%	50-150%
	13C2-8:2FTS	83%	80%	50-150%
	13C3-HFPO-DA	53%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0033-057.0-20230309		
Lab Sample ID:	FC3374-6	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-042.0-20230309
Lab Sample ID: FC3374-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/09/23
Date Received: 03/09/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41954.D	1	03/17/23 19:36	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42284.D	1.3	03/24/23 23:24	AL	03/22/23 09:35	OP95997	S4Q607
Run #3	4Q42040.D	5	03/21/23 02:29	AL	03/14/23 11:43	OP95878	S4Q603
Run #4 [a]	4Q42330.D	6.3	03/27/23 22:05	AL	03/22/23 09:35	OP95997	S4Q608

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	260 ml	1.0 ml
Run #3	235 ml	1.0 ml
Run #4	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.021 U [c]	0.043	0.021	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [c]	0.021	0.011	0.0053	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.011 U [c]	0.021	0.011	0.0053	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	0.011 U [c]	0.021	0.011	0.0053	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.011 U [c]	0.021	0.011	0.0053	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.011 U [c]	0.021	0.011	0.0053	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [c]	0.021	0.011	0.0053	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [c]	0.021	0.011	0.0053	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0043	0.0021	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0049	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.011 U [c]	0.021	0.011	0.0053	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.021	0.011	0.0053	ug/l	
31506-32-8	MeFOSA [b]	0.021 U [c]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.021 U [c]	0.043	0.021	0.011	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-042.0-20230309
Lab Sample ID: FC3374-7 **Date Sampled:** 03/09/23
Matrix: AQ - Ground Water **Date Received:** 03/09/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
2991-50-6	EtFOSAA	0.021 U [c]	0.043	0.021	0.011	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.021 U [c]	0.043	0.021	0.011	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.021 U [c]	0.043	0.021	0.011	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.021 U [c]	0.043	0.021	0.011	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0011	0.0017	0.00085	0.00043	ug/l	J
	PFOS (Linear Isomer)	0.0042	0.0043	0.0021	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	23% [d]	8% [d]	32% [d]	50-150%
	13C5-PFPeA	39% [d]	31% [d]	58%	50-150%
	13C5-PFHxA	59%	56%	72%	50-150%
	13C4-PFHpA	63%	54%	73%	50-150%
	13C8-PFOA	67%	54%	78%	50-150%
	13C9-PFNA	67%	60%	80%	50-150%
	13C6-PFDA	46% [d]	4% [d]	79%	50-150%
	13C7-PFUnDA	2% [d]	1% [d]	44% [d]	50-150%
	13C2-PFDoDA	2% [d]	2% [d]	25% [d]	50-150%
	13C2-PFTeDA	57%	65%	55%	50-150%
	13C3-PFBS	36% [d]	27% [d]	54%	50-150%
	13C3-PFHxS	66%	54%	73%	50-150%
	13C8-PFOS	66%	58%	76%	50-150%
	13C8-FOSA	41% [d]	0% [d]	76%	50-150%
	d3-MeFOSA	0% [d]	0% [d]	39% [d]	50-150%
	d3-MeFOSAA	1% [d]	1% [d]	101%	50-150%
	d5-EtFOSAA	0% [d]	0% [d]	77%	50-150%
	13C2-4:2FTS	61%	60%	68%	50-150%
	13C2-6:2FTS	81%	63%	80%	50-150%
	13C2-8:2FTS	60%	36% [d]	85%	50-150%
	13C3-HFPO-DA	48% [d]	46% [d]	61%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0019-042.0-20230309		
Lab Sample ID:	FC3374-7	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0019-057.0-20230309
Lab Sample ID: FC3374-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/09/23
Date Received: 03/09/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41955.D	1	03/17/23 19:51	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42041.D	5	03/21/23 02:45	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	215 ml	1.0 ml
Run #2	215 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0047 U	0.0093	0.0047	0.0023	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [b]	0.023	0.012	0.0058	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [b]	0.023	0.012	0.0058	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0023 U	0.0047	0.0023	0.0012	ug/l	
31506-32-8	MeFOSA [c]	0.023 U [b]	0.047	0.023	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0019-057.0-20230309		
Lab Sample ID:	FC3374-8	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
919005-14-4	ADONA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00093 U	0.0019	0.00093	0.00047	ug/l	
	PFOS (Linear Isomer)	0.0023 U	0.0047	0.0023	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	78%	50-150%
	13C5-PFPeA	53%	75%	50-150%
	13C5-PFHxA	72%	84%	50-150%
	13C4-PFHpA	76%	89%	50-150%
	13C8-PFOA	82%	93%	50-150%
	13C9-PFNA	76%	93%	50-150%
	13C6-PFDA	87%	93%	50-150%
	13C7-PFUnDA	65%	73%	50-150%
	13C2-PFDoDA	69%	75%	50-150%
	13C2-PFTeDA	62%	62%	50-150%
	13C3-PFBS	49% [d]	75%	50-150%
	13C3-PFHxS	76%	84%	50-150%
	13C8-PFOS	75%	84%	50-150%
	13C8-FOSA	67%	84%	50-150%
	d3-MeFOSA	30% [d]	43% [d]	50-150%
	d3-MeFOSAA	86%	85%	50-150%
	d5-EtFOSAA	72%	69%	50-150%
	13C2-4:2FTS	74%	82%	50-150%
	13C2-6:2FTS	96%	89%	50-150%
	13C2-8:2FTS	85%	78%	50-150%
	13C3-HFPO-DA	56%	83%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0019-057.0-20230309		
Lab Sample ID:	FC3374-8	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0061-059.0-20230308		
Lab Sample ID:	FC3374-9	**Date Sampled:**	03/08/23
Matrix:	SO - Soil	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	71.5
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q101205.D	1	03/14/23 22:33	AL	03/13/23 10:40	OP95857	SQ2158
Run #2							

	Initial Weight	Final Volume
Run #1	2.00 g	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.00070 U	0.0014	0.00070	0.00053	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-95-1	Perfluorononanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00070 U	0.0014	0.00070	0.00037	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
31506-32-8	MeFOSA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
2991-50-6	EtFOSAA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0061-059.0-20230308		
Lab Sample ID:	FC3374-9	**Date Sampled:**	03/08/23
Matrix:	SO - Soil	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	71.5
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
919005-14-4	ADONA	0.00070 U	0.0014	0.00070	0.00035	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00070 U	0.0014	0.00070	0.00041	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00070 U	0.0014	0.00070	0.00036	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		50-150%
	13C5-PFPeA	84%		50-150%
	13C5-PFHxA	88%		50-150%
	13C4-PFHpA	90%		50-150%
	13C8-PFOA	93%		50-150%
	13C9-PFNA	98%		50-150%
	13C6-PFDA	99%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDoDA	96%		50-150%
	13C2-PFTeDA	95%		50-150%
	13C3-PFBS	86%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	75%		50-150%
	13C8-FOSA	72%		50-150%
	d3-MeFOSA	56%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	102%		50-150%
	13C2-4:2FTS	79%		50-150%
	13C2-6:2FTS	101%		50-150%
	13C2-8:2FTS	99%		50-150%
	13C3-HFPO-DA	83%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SB0061-059.0-20230308		
Lab Sample ID:	FC3374-9	**Date Sampled:**	03/08/23
Matrix:	SO - Soil	**Date Received:**	03/09/23
		Percent Solids:	71.5
Project:	NASA KSC, PFAS SA & Mitigation		

General Chemistry

Analyte	Result	LOQ	LOD	DL	Units	DF	Analyzed	By	Method
Fractional Organic Carbon	1.6	0.01	0.01	0.01	%	1	03/20/23 12:00	ST	ASTM D2974-87
Solids, Percent	71.5				%	1	03/14/23 11:59	CW	SM19 2540G

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result >= DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	A3RB-FD02-20230309		
Lab Sample ID:	FC3374-10	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41956.D	1	03/17/23 20:07	AL	03/14/23 11:43	OP95878	S4Q602
Run #2 [a]	4Q42042.D	5	03/21/23 03:00	AL	03/14/23 11:43	OP95878	S4Q603

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2	125 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0080 U	0.016	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
307-55-1	Perfluorododecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0025	0.0080	0.0040	0.0020	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA	0.040 U [b]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.016	0.0080	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD02-20230309		
Lab Sample ID:	FC3374-10	**Date Sampled:**	03/09/23
Matrix:	AQ - Ground Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U	0.016	0.0080	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0080 U	0.016	0.0080	0.0040	ug/l	
919005-14-4	ADONA	0.0080 U	0.016	0.0080	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U	0.016	0.0080	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0080 U	0.016	0.0080	0.0040	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%	80%	50-150%
	13C5-PFPeA	56%	78%	50-150%
	13C5-PFHxA	76%	86%	50-150%
	13C4-PFHpA	80%	88%	50-150%
	13C8-PFOA	86%	93%	50-150%
	13C9-PFNA	79%	93%	50-150%
	13C6-PFDA	84%	89%	50-150%
	13C7-PFUnDA	74%	80%	50-150%
	13C2-PFDoDA	76%	85%	50-150%
	13C2-PFTeDA	71%	74%	50-150%
	13C3-PFBS	53%	81%	50-150%
	13C3-PFHxS	80%	86%	50-150%
	13C8-PFOS	72%	80%	50-150%
	13C8-FOSA	74%	85%	50-150%
	d3-MeFOSA	44% [c]	55%	50-150%
	d3-MeFOSAA	87%	85%	50-150%
	d5-EtFOSAA	77%	81%	50-150%
	13C2-4:2FTS	77%	79%	50-150%
	13C2-6:2FTS	95%	94%	50-150%
	13C2-8:2FTS	80%	81%	50-150%
	13C3-HFPO-DA	59%	79%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB03-20230308		
Lab Sample ID:	FC3374-11	**Date Sampled:**	03/08/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41957.D	1	03/17/23 20:22	AL	03/14/23 11:43	OP95878	S4Q602
Run #2							

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB03-20230308
Lab Sample ID: FC3374-11
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/08/23
Date Received: 03/09/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		50-150%
	13C5-PFPeA	91%		50-150%
	13C5-PFHxA	90%		50-150%
	13C4-PFHpA	89%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	100%		50-150%
	13C7-PFUnDA	80%		50-150%
	13C2-PFDoDA	70%		50-150%
	13C2-PFTeDA	62%		50-150%
	13C3-PFBS	95%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	89%		50-150%
	13C8-FOSA	74%		50-150%
	d3-MeFOSA	67%		50-150%
	d3-MeFOSAA	83%		50-150%
	d5-EtFOSAA	69%		50-150%
	13C2-4:2FTS	81%		50-150%
	13C2-6:2FTS	89%		50-150%
	13C2-8:2FTS	85%		50-150%
	13C3-HFPO-DA	74%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB03-20230308		
Lab Sample ID:	FC3374-12	**Date Sampled:**	03/08/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/09/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q41958.D	1	03/17/23 20:38	AL	03/14/23 11:43	OP95878	S4Q602
Run #2							

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB03-20230308
Lab Sample ID: FC3374-12
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/08/23
Date Received: 03/09/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	73%		50-150%
	13C4-PFHpA	71%		50-150%
	13C8-PFOA	77%		50-150%
	13C9-PFNA	77%		50-150%
	13C6-PFDA	81%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	71%		50-150%
	13C2-PFTeDA	56%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	73%		50-150%
	d3-MeFOSA	64%		50-150%
	d3-MeFOSAA	79%		50-150%
	d5-EtFOSAA	70%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	73%		50-150%
	13C2-8:2FTS	69%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	SO	SGS is not certified for this parameter.
Fractional Organic Carbon		**ASTM D2974-87**	SO	SGS is not certified for this parameter.

FC3374

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 2 of 2
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	Total No. of Containers (3)	Select PFAS by 537 (4 DEG)	PFAS Branched vs. Linear	MS/MSD	FOC	Comments
1	A3RB-DPT0033-001.0-20230308	A3RB-DPT0033	20230308	1425	WG	N	G	2	2	X	X		MS/MSD
2	A3RB-DPT0033-010.0-20230308	A3RB-DPT0033	20230308	1450	WG	N	G	2	2	X			
3	A3RB-DPT0033-018.0-20230308	A3RB-DPT0033	20230308	1510	WG	N	G	2	2	X			
4	A3RB-DPT0033-025.0-20230309	A3RB-DPT0033	20230309	0825	WG	N	G	2	2	X			
5	A3RB-DPT0033-042.0-20230309	A3RB-DPT0033	20230309	0900	WG	N	G	2	2	X			
6	A3RB-DPT0033-057.0-20230309	A3RB-DPT0033	20230309	0930	WG	N	G	2	2	X			
7	A3RB-DPT0019-042.0-20230309	A3RB-DPT0019	20230309	1050	WG	N	G	2	2	X			
8	A3RB-DPT0019-057.0-20230309	A3RB-DPT0019	20230309	1135	WG	N	G	2	2	X			
~~10~~	~~A3RB-DPT0034-001.0-20230309~~	~~A3RB-DPT0034~~	~~20230309~~		WG	N	G	2	2				
9	A3RB-SB0061-059.0-20230308	A3RB-SB0061	20230308	1130	SO	N	G	2	2			X	
10	A3RB-FD02-20230309	A3RB-FD02	20230309	0800	WG	N	G	2	2				
11	A3RB-FB03-20230308	A3RB-FB03	20230308	0800	WG	N	G	2	2				

INITIAL ASSESSMENT

LABEL VERIFICATION

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes____ No____

Shipping Company:

Tracking No:

Date Shipped:

Relinquished by(signature)	Date	Time	Received by (signature)	Date	Time
1	3/9/23	1550	1	3/9/23	16:00
2	3/9/23	17:12	2	3/9/23	17:12
3			3		

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3374: Chain of Custody
Page 1 of 3

FC3374

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 2 of 2
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747		Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)	

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
12	A3RB-EB03-20230308	A3RB-EB03	20230308	1150	WQ	N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	
			202303			N	G	2	2	

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

Relinquished by (signature)	Date	Time
1	3/9/23	1550
2	3/9/23	17:12
3		

***Lab* Comments:**

Received by (signature)	Date	Time
1	3/9/23	1600
2	3/9/23	1712
3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2
5

FC3374: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: FC3374 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/9/2023 5:12:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.0);

Cooler Temps (Corrected) °C: Cooler 1: (4.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/9/2023 5:12:00 PM Reviewer: _____ Date: _____

FC3374: Chain of Custody
Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95857	EPA 537M QSM5.3 B-15						
OP95857-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	95	%	71-135
OP95857-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	93	%	69-132
OP95857-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	96	%	70-132
OP95857-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	96	%	71-131
OP95857-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	69-133
OP95857-BS	375-95-1	Perfluorononanoic acid	BSP	REC	96	%	72-129
OP95857-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	69-133
OP95857-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	64-136
OP95857-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	96	%	69-135
OP95857-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	94	%	66-139
OP95857-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	97	%	69-133
OP95857-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	93	%	72-128
OP95857-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	99	%	73-123
OP95857-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	92	%	67-130
OP95857-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	97	%	70-132
OP95857-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	99	%	68-136
OP95857-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	115	%	69-125
OP95857-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	116	%	59-134
OP95857-BS	754-91-6	PFOSA	BSP	REC	99	%	67-137
OP95857-BS	2355-31-9	MeFOSAA	BSP	REC	99	%	63-144
OP95857-BS	2991-50-6	EtFOSAA	BSP	REC	105	%	61-139
OP95857-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	104	%	62-145
OP95857-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	93	%	64-140
OP95857-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	107	%	65-137
OP95857-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	97	%	71-135
OP95857-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	95	%	69-132
OP95857-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	70-132
OP95857-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	99	%	71-131
OP95857-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	95	%	69-133
OP95857-MS*	375-95-1	Perfluorononanoic acid	MS	REC	100	%	72-129
OP95857-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	101	%	69-133
OP95857-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	96	%	64-136
OP95857-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	100	%	69-135
OP95857-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	98	%	66-139
OP95857-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	96	%	69-133
OP95857-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	95	%	72-128
OP95857-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	101	%	73-123
OP95857-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	97	%	67-130
OP95857-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	103	%	70-132
OP95857-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	99	%	68-136
OP95857-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	121	%	69-125
OP95857-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	114	%	59-134

* Sample used for QC is not from job FC3374

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95857-MS*	754-91-6	PFOSA	MS	REC	96	%	67-137
OP95857-MS*	2355-31-9	MeFOSAA	MS	REC	84	%	63-144
OP95857-MS*	2991-50-6	EtFOSAA	MS	REC	101	%	61-139
OP95857-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	108	%	62-145
OP95857-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	102	%	64-140
OP95857-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	93	%	65-137
OP95857-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	98	%	71-135
OP95857-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP95857-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	95	%	69-132
OP95857-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	2	%	30
OP95857-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	99	%	70-132
OP95857-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	5	%	30
OP95857-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	100	%	71-131
OP95857-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	3	%	30
OP95857-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	100	%	69-133
OP95857-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	7	%	30
OP95857-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	102	%	72-129
OP95857-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	4	%	30
OP95857-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	102	%	69-133
OP95857-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	3	%	30
OP95857-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	99	%	64-136
OP95857-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	5	%	30
OP95857-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	98	%	69-135
OP95857-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	0	%	30
OP95857-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	95	%	66-139
OP95857-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP95857-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	101	%	69-133
OP95857-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	7	%	30
OP95857-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	96	%	72-128
OP95857-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	3	%	30
OP95857-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	101	%	73-123
OP95857-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP95857-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	97	%	67-130
OP95857-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	2	%	30
OP95857-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	104	%	70-132
OP95857-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	3	%	30
OP95857-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	106	%	68-136
OP95857-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	9	%	30
OP95857-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	124	%	69-125
OP95857-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	4	%	30
OP95857-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	125	%	59-134
OP95857-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	11	%	30
OP95857-MSD*	754-91-6	PFOSA	MSD	REC	97	%	67-137
OP95857-MSD*	754-91-6	PFOSA	MSD	RPD	3	%	30
OP95857-MSD*	31506-32-8	MeFOSA	MSD	RPD	2	%	30

* Sample used for QC is not from job FC3374

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95857-MSD*	2355-31-9	MeFOSAA	MSD	REC	98	%	63-144
OP95857-MSD*	2355-31-9	MeFOSAA	MSD	RPD	17	%	30
OP95857-MSD*	2991-50-6	EtFOSAA	MSD	REC	97	%	61-139
OP95857-MSD*	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP95857-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	100	%	62-145
OP95857-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP95857-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	107	%	64-140
OP95857-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	8	%	30
OP95857-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	112	%	65-137
OP95857-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	20	%	30
OP95878	EPA 537M QSM5.3 B-15						
OP95878-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	101	%	73-129
OP95878-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	99	%	72-129
OP95878-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP95878-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	98	%	72-130
OP95878-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	99	%	71-133
OP95878-BS	375-95-1	Perfluorononanoic acid	BSP	REC	98	%	69-130
OP95878-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	99	%	71-129
OP95878-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	102	%	69-133
OP95878-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP95878-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	76	%	65-144
OP95878-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	104	%	71-132
OP95878-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-130
OP95878-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP95878-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	100	%	68-131
OP95878-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	101	%	69-134
OP95878-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	94	%	65-140
OP95878-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP95878-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	98	%	53-142
OP95878-BS	754-91-6	PFOSA	BSP	REC	98	%	67-137
OP95878-BS	31506-32-8	MeFOSA	BSP	REC	100	%	68-141
OP95878-BS	2355-31-9	MeFOSAA	BSP	REC	102	%	65-136
OP95878-BS	2991-50-6	EtFOSAA	BSP	REC	102	%	61-135
OP95878-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	104	%	63-143
OP95878-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP95878-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	105	%	67-138
OP95878-MS	375-22-4	Perfluorobutanoic acid	MS	REC	99	%	73-129
OP95878-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	99	%	72-129
OP95878-MS	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	72-129
OP95878-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	96	%	72-130
OP95878-MS	335-67-1	Perfluorooctanoic acid	MS	REC	99	%	71-133
OP95878-MS	375-95-1	Perfluorononanoic acid	MS	REC	98	%	69-130
OP95878-MS	335-76-2	Perfluorodecanoic acid	MS	REC	100	%	71-129

* Sample used for QC is not from job FC3374

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95878-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	99	%	69-133
OP95878-MS	307-55-1	Perfluorododecanoic acid	MS	REC	103	%	72-134
OP95878-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	88	%	65-144
OP95878-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	101	%	71-132
OP95878-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	96	%	72-130
OP95878-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	108	%	71-127
OP95878-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	98	%	68-131
OP95878-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	117	%	69-134
OP95878-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	111	%	65-140
OP95878-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	109	%	69-127
OP95878-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	98	%	53-142
OP95878-MS	754-91-6	PFOSA	MS	REC	103	%	67-137
OP95878-MS	31506-32-8	MeFOSA	MS	REC	95	%	68-141
OP95878-MS	2355-31-9	MeFOSAA	MS	REC	99	%	65-136
OP95878-MS	2991-50-6	EtFOSAA	MS	REC	100	%	61-135
OP95878-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	102	%	63-143
OP95878-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	100	%	64-140
OP95878-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	102	%	67-138
OP95878-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	95	%	73-129
OP95878-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	3	%	30
OP95878-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	98	%	72-129
OP95878-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP95878-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	95	%	72-129
OP95878-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP95878-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	96	%	72-130
OP95878-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	0	%	30
OP95878-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	97	%	71-133
OP95878-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP95878-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	93	%	69-130
OP95878-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	5	%	30
OP95878-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	96	%	71-129
OP95878-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	4	%	30
OP95878-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	99	%	69-133
OP95878-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	0	%	30
OP95878-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	103	%	72-134
OP95878-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	0	%	30
OP95878-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	89	%	65-144
OP95878-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP95878-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	100	%	71-132
OP95878-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP95878-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	94	%	72-130
OP95878-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	2	%	30
OP95878-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	105	%	71-127
OP95878-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP95878-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	99	%	68-131

* Sample used for QC is not from job FC3374

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3374
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23 thru 03/09/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95878-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	1	%	30
OP95878-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	110	%	69-134
OP95878-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	7	%	30
OP95878-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	97	%	65-140
OP95878-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	8	%	30
OP95878-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	99	%	69-127
OP95878-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	9	%	30
OP95878-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	96	%	53-142
OP95878-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP95878-MSD	754-91-6	PFOSA	MSD	REC	100	%	67-137
OP95878-MSD	754-91-6	PFOSA	MSD	RPD	3	%	30
OP95878-MSD	31506-32-8	MeFOSA	MSD	REC	106	%	68-141
OP95878-MSD	31506-32-8	MeFOSA	MSD	RPD	12	%	30
OP95878-MSD	2355-31-9	MeFOSAA	MSD	REC	101	%	65-136
OP95878-MSD	2355-31-9	MeFOSAA	MSD	RPD	1	%	30
OP95878-MSD	2991-50-6	EtFOSAA	MSD	REC	98	%	61-135
OP95878-MSD	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP95878-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	101	%	63-143
OP95878-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95878-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	99	%	64-140
OP95878-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95878-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	102	%	67-138
OP95878-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30

* Sample used for QC is not from job FC3374

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2158-IBLK	Q101182.D	1	03/14/23	AL	n/a	n/a	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	107%	50-150%
	13C5-PFPeA	110%	50-150%
	13C5-PFHxA	112%	50-150%

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2158-IBLK	Q101182.D	1	03/14/23	AL	n/a	n/a	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	115%	50-150%
	13C8-PFOA	117%	50-150%
	13C9-PFNA	116%	50-150%
	13C6-PFDA	121%	50-150%
	13C7-PFUnDA	121%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	108%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	111%	50-150%
	13C8-PFOS	110%	50-150%
	13C8-FOSA	111%	50-150%
	d3-MeFOSA	105%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	110%	50-150%
	13C2-8:2FTS	116%	50-150%
	13C3-HFPO-DA	106%	50-150%

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q602-IBLK	4Q41931.D	1	03/17/23	AL	n/a	n/a	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	91%	50-150%

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q602-IBLK	4Q41931.D	1	03/17/23	AL	n/a	n/a	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	92%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	88%	50-150%

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	89%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	98%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	97%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	91%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	105%	50-150%

Instrument Blank

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q603-IBLK	4Q41987.D	1	03/20/23	AL	n/a	n/a	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10

CAS No.	ID Standard Recoveries		Limits
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	87%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	104%	50-150%

Method Blank Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-MB	Q101204.D	1	03/14/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	1.0	0.38	ug/kg	
2706-90-3	Perfluoropentanoic acid	ND	1.0	0.25	ug/kg	
307-24-4	Perfluorohexanoic acid	ND	1.0	0.25	ug/kg	
375-85-9	Perfluoroheptanoic acid	ND	1.0	0.25	ug/kg	
335-67-1	Perfluorooctanoic acid	ND	1.0	0.25	ug/kg	
375-95-1	Perfluorononanoic acid	ND	1.0	0.25	ug/kg	
335-76-2	Perfluorodecanoic acid	ND	1.0	0.25	ug/kg	
2058-94-8	Perfluoroundecanoic acid	ND	1.0	0.25	ug/kg	
307-55-1	Perfluorododecanoic acid	ND	1.0	0.25	ug/kg	
72629-94-8	Perfluorotridecanoic acid	ND	1.0	0.27	ug/kg	
376-06-7	Perfluorotetradecanoic acid	ND	1.0	0.25	ug/kg	
375-73-5	Perfluorobutanesulfonic acid	ND	1.0	0.25	ug/kg	
2706-91-4	Perfluoropentanesulfonic acid	ND	1.0	0.25	ug/kg	
355-46-4	Perfluorohexanesulfonic acid	ND	1.0	0.25	ug/kg	
375-92-8	Perfluoroheptanesulfonic acid	ND	1.0	0.25	ug/kg	
1763-23-1	Perfluorooctanesulfonic acid	ND	1.0	0.25	ug/kg	
68259-12-1	Perfluorononanesulfonic acid	ND	1.0	0.25	ug/kg	
335-77-3	Perfluorodecanesulfonic acid	ND	1.0	0.25	ug/kg	
754-91-6	PFOSA	ND	1.0	0.25	ug/kg	
31506-32-8	MeFOSA	ND	1.0	0.25	ug/kg	
2355-31-9	MeFOSAA	ND	1.0	0.25	ug/kg	
2991-50-6	EtFOSAA	ND	1.0	0.25	ug/kg	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	1.0	0.25	ug/kg	
13252-13-6	HFPO-DA (GenX)	ND	1.0	0.25	ug/kg	
919005-14-4	ADONA	ND	1.0	0.25	ug/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	1.0	0.29	ug/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	1.0	0.26	ug/kg	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	103%	50-150%

Method Blank Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-MB	Q101204.D	1	03/14/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	104%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	114%	50-150%
	13C2-PFDoDA	105%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	89%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	104%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	106%	50-150%
	13C2-8:2FTS	115%	50-150%
	13C3-HFPO-DA	95%	50-150%

Method Blank Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-MB	4Q41943.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	111%	50-150%

Method Blank Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-MB	4Q41943.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	110%	50-150%
	13C5-PFHxA	109%	50-150%
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	111%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	121%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	115%	50-150%
	13C3-PFHxS	106%	50-150%
	13C8-PFOS	108%	50-150%
	13C8-FOSA	83%	50-150%
	d3-MeFOSA	9%* [a]	50-150%
	d3-MeFOSAA	115%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	108%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	93%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-BS	Q101203.D	1	03/14/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	9.5	95	71-135
2706-90-3	Perfluoropentanoic acid	10	9.3	93	69-132
307-24-4	Perfluorohexanoic acid	10	9.6	96	70-132
375-85-9	Perfluoroheptanoic acid	10	9.6	96	71-131
335-67-1	Perfluorooctanoic acid	10	9.3	93	69-133
375-95-1	Perfluorononanoic acid	10	9.6	96	72-129
335-76-2	Perfluorodecanoic acid	10	9.4	94	69-133
2058-94-8	Perfluoroundecanoic acid	10	9.3	93	64-136
307-55-1	Perfluorododecanoic acid	10	9.6	96	69-135
72629-94-8	Perfluorotridecanoic acid	10	9.4	94	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.7	97	69-133
375-73-5	Perfluorobutanesulfonic acid	10	9.3	93	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	9.9	99	73-123
355-46-4	Perfluorohexanesulfonic acid	10	9.2	92	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	9.7	97	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	9.9	99	68-136
68259-12-1	Perfluorononanesulfonic acid	10	11.5	115	69-125
335-77-3	Perfluorodecanesulfonic acid	10	11.6	116	59-134
754-91-6	PFOSA	10	9.9	99	67-137
31506-32-8	MeFOSA	10	11.2	112	60-140
2355-31-9	MeFOSAA	10	9.9	99	63-144
2991-50-6	EtFOSAA	10	10.5	105	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.4	104	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	9.3	93	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	10.7	107	65-137
13252-13-6	HFPO-DA (GenX)	10	9.0	90	60-140
919005-14-4	ADONA	10	9.4	94	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	8.3	83	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	9.2	92	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-BS	Q101203.D	1	03/14/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	90%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	92%	50-150%
	13C2-PFTeDA	89%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	81%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSA	84%	50-150%
	d3-MeFOSAA	83%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-BS	4Q41942.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0807	101	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0795	99	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0787	98	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0786	98	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0793	99	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0781	98	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0795	99	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0813	102	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0828	104	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0604	76	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0833	104	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0780	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0702	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0798	100	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0805	101	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0753	94	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0817	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0782	98	53-142
754-91-6	PFOSA	0.08	0.0786	98	67-137
31506-32-8	MeFOSA	0.08	0.0800	100	68-141
2355-31-9	MeFOSAA	0.08	0.0814	102	65-136
2991-50-6	EtFOSAA	0.08	0.0818	102	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0834	104	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0822	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0837	105	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0883	110	60-140
919005-14-4	ADONA	0.08	0.0774	97	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0724	91	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0846	106	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	100%	50-150%
	13C5-PFPeA	103%	50-150%
	13C5-PFHxA	102%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-BS	4Q41942.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	64%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSA	9%* [a]	50-150%
	d3-MeFOSAA	89%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	103%	50-150%
	13C2-6:2FTS	105%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	88%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-MS	Q101226.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158
OP95857-MSD	Q101228.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158
FC3356-8	Q101224.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	Compound	FC3356-8 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	1.1	U	10.9	10.6	97	11.2	10.9	98	3	71-135/30
2706-90-3	Perfluoropentanoic acid	1.1	U	10.9	10.4	95	11.2	10.6	95	2	69-132/30
307-24-4	Perfluorohexanoic acid	1.1	U	10.9	10.5	96	11.2	11.0	99	5	70-132/30
375-85-9	Perfluoroheptanoic acid	1.1	U	10.9	10.8	99	11.2	11.1	100	3	71-131/30
335-67-1	Perfluorooctanoic acid	1.1	U	10.9	10.4	95	11.2	11.1	100	7	69-133/30
375-95-1	Perfluorononanoic acid	1.1	U	10.9	10.9	100	11.2	11.4	102	4	72-129/30
335-76-2	Perfluorodecanoic acid	1.1	U	10.9	11.1	101	11.2	11.4	102	3	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.1	U	10.9	10.5	96	11.2	11.0	99	5	64-136/30
307-55-1	Perfluorododecanoic acid	1.1	U	10.9	10.9	100	11.2	10.9	98	0	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.1	U	10.9	10.7	98	11.2	10.6	95	1	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.1	U	10.9	10.5	96	11.2	11.3	101	7	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.1	U	10.9	10.4	95	11.2	10.7	96	3	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.1	U	10.9	11.1	101	11.2	11.3	101	2	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.1	U	10.9	10.6	97	11.2	10.8	97	2	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.1	U	10.9	11.3	103	11.2	11.6	104	3	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.1	U	10.9	10.8	99	11.2	11.8	106	9	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.1	U	10.9	13.2	121	11.2	13.8	124	4	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.1	U	10.9	12.5	114	11.2	13.9	125	11	59-134/30
754-91-6	PFOSA	1.1	U	10.9	10.5	96	11.2	10.8	97	3	67-137/30
31506-32-8	MeFOSA	1.1	U	10.9	13.2	121	11.2	13.0	117	2	60-140/30
2355-31-9	MeFOSAA	1.1	U	10.9	9.2	84	11.2	10.9	98	17	63-144/30
2991-50-6	EtFOSAA	1.1	U	10.9	11.0	101	11.2	10.8	97	2	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.1	U	10.9	11.8	108	11.2	11.2	100	3	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.1	U	10.9	11.2	102	11.2	11.9	107	8	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.1	U	10.9	10.2	93	11.2	12.5	112	20	65-137/30
13252-13-6	HFPO-DA (GenX)	1.1	U	10.9	10.3	94	11.2	10.3	92	3	60-140/30
919005-14-4	ADONA	1.1	U	10.9	10.3	94	11.2	10.5	94	2	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.1	U	10.9	9.4	86	11.2	9.8	88	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.1	U	10.9	10.0	91	11.2	10.7	96	6	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC3356-8	Limits
	13C4-PFBA	95%	90%	91%	50-150%
	13C5-PFPeA	98%	93%	94%	50-150%
	13C5-PFHxA	99%	92%	97%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95857-MS	Q101226.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158
OP95857-MSD	Q101228.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158
FC3356-8	Q101224.D	1	03/15/23	AL	03/13/23	OP95857	SQ2158

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-9

CAS No.	ID Standard Recoveries	MS	MSD	FC3356-8	Limits
	13C4-PFHpA	97%	92%	99%	50-150%
	13C8-PFOA	98%	89%	103%	50-150%
	13C9-PFNA	96%	88%	101%	50-150%
	13C6-PFDA	93%	88%	102%	50-150%
	13C7-PFUnDA	97%	87%	103%	50-150%
	13C2-PFDoDA	98%	94%	101%	50-150%
	13C2-PFTeDA	99%	89%	96%	50-150%
	13C3-PFBS	96%	91%	95%	50-150%
	13C3-PFHxS	94%	90%	92%	50-150%
	13C8-PFOS	86%	76%	83%	50-150%
	13C8-FOSA	99%	90%	93%	50-150%
	d3-MeFOSA	85%	79%		50-150%
	d3-MeFOSAA	98%	90%	99%	50-150%
	d5-EtFOSAA	96%	93%	97%	50-150%
	13C2-4:2FTS	93%	89%	84%	50-150%
	13C2-6:2FTS	98%	90%	101%	50-150%
	13C2-8:2FTS	99%	79%	99%	50-150%
	13C3-HFPO-DA	96%	97%	98%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-MS	4Q41945.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
OP95878-MSD	4Q41946.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
FC3374-1	4Q41944.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
FC3374-1 [a]	4Q42030.D	5	03/20/23	AL	03/14/23	OP95878	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	Compound	FC3374-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0183 [b]	J	0.087	0.104	99	0.087	0.101	95	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0020	J	0.087	0.0878	99	0.087	0.0869	98	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0020	J	0.087	0.0858	96	0.087	0.0844	95	2	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0016	J	0.087	0.0849	96	0.087	0.0847	96	0	72-130/30
335-67-1	Perfluorooctanoic acid	0.0055		0.087	0.0913	99	0.087	0.0900	97	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0045	U	0.087	0.0852	98	0.087	0.0812	93	5	69-130/30
335-76-2	Perfluorodecanoic acid	0.0045	U	0.087	0.0868	100	0.087	0.0832	96	4	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0045	U	0.087	0.0864	99	0.087	0.0865	99	0	69-133/30
307-55-1	Perfluorododecanoic acid	0.0045	U	0.087	0.0898	103	0.087	0.0899	103	0	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0045	U	0.087	0.0768	88	0.087	0.0772	89	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0045	U	0.087	0.0876	101	0.087	0.0871	100	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0057		0.087	0.0896	96	0.087	0.0875	94	2	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0043	J	0.087	0.0986	108	0.087	0.0959	105	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0476		0.087	0.133	98	0.087	0.134	99	1	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0019	J	0.087	0.104	117	0.087	0.0972	110	7	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0666		0.087	0.163	111	0.087	0.151	97	8	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0045	U	0.087	0.0944	109	0.087	0.0864	99	9	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0045	U	0.087	0.0855	98	0.087	0.0837	96	2	53-142/30
754-91-6	PFOSA	0.023	U [b]	0.087	0.0899	103	0.087	0.0870	100	3	67-137/30
31506-32-8	MeFOSA	0.045	U [b]	0.087	0.0824	95	0.087	0.0926	106	12	68-141/30
2355-31-9	MeFOSAA	0.0091	U	0.087	0.0864	99	0.087	0.0876	101	1	65-136/30
2991-50-6	EtFOSAA	0.0091	U	0.087	0.0868	100	0.087	0.0849	98	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091	U	0.087	0.0890	102	0.087	0.0877	101	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0091	U	0.087	0.0873	100	0.087	0.0863	99	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091	U	0.087	0.0886	102	0.087	0.0885	102	0	67-138/30
13252-13-6	HFPO-DA (GenX)	0.045	U [b]	0.087	0.0958	110	0.087	0.100	115	4	60-140/30
919005-14-4	ADONA	0.0091	U	0.087	0.0813	93	0.087	0.0823	95	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091	U	0.087	0.0731	84	0.087	0.0701	81	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0091	U	0.087	0.0890	102	0.087	0.0867	100	3	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC3374-1	FC3374-1	Limits
	13C4-PFBA	56%	43%* [c]	48%* [c]	69%	50-150%
	13C5-PFPeA	56%	40%* [c]	43%* [c]	61%	50-150%
	13C5-PFHxA	66%	47%* [c]	51%	67%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3374
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95878-MS	4Q41945.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
OP95878-MSD	4Q41946.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
FC3374-1	4Q41944.D	1	03/17/23	AL	03/14/23	OP95878	S4Q602
FC3374-1 [a]	4Q42030.D	5	03/20/23	AL	03/14/23	OP95878	S4Q603

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3374-1, FC3374-2, FC3374-3, FC3374-4, FC3374-5, FC3374-6, FC3374-7, FC3374-8, FC3374-10, FC3374-11, FC3374-12

CAS No.	ID Standard Recoveries	MS	MSD	FC3374-1	FC3374-1	Limits
	13C4-PFHpA	76%	54%	58%	73%	50-150%
	13C8-PFOA	82%	60%	67%	82%	50-150%
	13C9-PFNA	81%	59%	64%	80%	50-150%
	13C6-PFDA	93%	69%	76%	81%	50-150%
	13C7-PFUnDA	83%	61%	66%	71%	50-150%
	13C2-PFDoDA	81%	60%	60%	68%	50-150%
	13C2-PFTeDA	64%	54%	51%	54%	50-150%
	13C3-PFBS	57%	42%* [c]	44%* [c]	65%	50-150%
	13C3-PFHxS	81%	56%	62%	73%	50-150%
	13C8-PFOS	75%	56%	61%	72%	50-150%
	13C8-FOSA	52%	52%	48%* [c]	59%	50-150%
	d3-MeFOSA	12%* [c]	33%* [c]	9%* [c]	15%* [c]	50-150%
	d3-MeFOSAA	98%	70%	79%	79%	50-150%
	d5-EtFOSAA	89%	64%	66%	70%	50-150%
	13C2-4:2FTS	78%	56%	54%	68%	50-150%
	13C2-6:2FTS	110%	80%	77%	81%	50-150%
	13C2-8:2FTS	107%	77%	75%	71%	50-150%
	13C3-HFPO-DA	58%	39%* [c]	44%* [c]	63%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FC3374
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Fractional Organic Carbon	GN93733	FC3374-9	%	1.6	1.4	14.5	0-40%
Solids, Percent	GN93679	FC3356-8	%	89.2	89.6	0.4	0-5%

Associated Samples:
Batch GN93679: FC3374-9
Batch GN93733: FC3374-9
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3375

Sampling Date: 03/08/23

Report to:

AECOM
150 N Orange Ave Suite 200
Orlando, FL 32801
gloria.richie@aecom.com; linnea.king@aecom.com;
megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: 21

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections:

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC3375

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3375-1	03/08/23	08:58	DS	03/09/23	SO	Soil	A3RB-SB0061-010.0-20230308
FC3375-2	03/08/23	10:15	DS	03/09/23	SO	Soil	A3RB-SB0061-035.0-20230308

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3375

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 3/31/2023 11:45:19 AM

On 03/09/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3375 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

General Chemistry By Method ASTM D422-63

Matrix: SO **Batch ID:** N:GP45498

FC3375-1 for 3 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-1 for 1.5 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-1 for % Silt, Clay, Colloids: Analysis performed at SGS Dayton, NJ.
FC3375-1 for 0.0015 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-1 for 0.005 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-1 for 0.030 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-1 for 0.375 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.10 Sieve (2.00 mm): Analysis performed at SGS Dayton, NJ.
FC3375-2 for % Gravel: Analysis performed at SGS Dayton, NJ.
FC3375-2 for 1.5 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.8 Sieve (2.36 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.100 Sieve (0.15 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.16 Sieve (1.18 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.200 Sieve (0.075 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.30 Sieve (0.60 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.4 Sieve (4.75 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for % Gravel: Analysis performed at SGS Dayton, NJ.
FC3375-1 for 0.75 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-2 for 3 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-2 for % Sand: Analysis performed at SGS Dayton, NJ.
FC3375-2 for % Silt, Clay, Colloids: Analysis performed at SGS Dayton, NJ.
FC3375-2 for 0.0015 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-2 for 0.005 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-2 for 0.030 mm (Hydrometer): Analysis performed at SGS Dayton, NJ.
FC3375-2 for 0.375 Inch Sieve: Analysis performed at SGS Dayton, NJ.
FC3375-1 for % Sand: Analysis performed at SGS Dayton, NJ.
FC3375-2 for No.8 Sieve (2.36 mm): Analysis performed at SGS Dayton, NJ.
FC3375-2 for No.10 Sieve (2.00 mm): Analysis performed at SGS Dayton, NJ.
FC3375-1 for No.50 Sieve (0.30 mm): Analysis performed at SGS Dayton, NJ.
FC3375-2 for No.100 Sieve (0.15 mm): Analysis performed at SGS Dayton, NJ.

General Chemistry By Method ASTM D422-63

Matrix: SO **Batch ID:** N:GP45498

FC3375-2 for No.16 Sieve (1.18 mm): Analysis performed at SGS Dayton, NJ.

FC3375-2 for No.200 Sieve (0.075 mm): Analysis performed at SGS Dayton, NJ.

FC3375-2 for No.30 Sieve (0.60 mm): Analysis performed at SGS Dayton, NJ.

FC3375-2 for No.4 Sieve (4.75 mm): Analysis performed at SGS Dayton, NJ.

FC3375-2 for No.50 Sieve (0.30 mm): Analysis performed at SGS Dayton, NJ.

FC3375-2 for 0.75 Inch Sieve: Analysis performed at SGS Dayton, NJ.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Andrea Colby, Project Manager

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	SGS Orlando, FL	**Job No:**	FC3375
Site:	MEFLOR: NASA KSC, PFAS SA & Mitigation	**Report Date**	3/24/2023 9:03:27 AM

On 03/15/2023, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 2.4 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of FC3375 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

General Chemistry By Method ASTM D422-63

Matrix: SO **Batch ID:** GP45498

- Sample(s) JD61296-7DUP were used as the QC samples for the % Gravel, % Sand, % Silt, Clay, Colloids, 0.0015 mm (Hydrometer), 0.005 mm (Hydrometer), 0.030 mm (Hydrometer), 0.375 Inch Sieve, 0.75 inch sieve, 1.5 Inch Sieve, 3 inch sieve, No.10 Sieve (2.00 mm), No.100 Sieve (0.15 mm), No.16 Sieve (1.18 mm), No.200 Sieve (0.075 mm), No.30 Sieve (0.60 mm), No.4 Sieve (4.75 mm), No.50 Sieve (0.30 mm), No.8 Sieve (2.36 mm) analysis.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: FC3375
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3375-1	**A3RB-SB0061-010.0-20230308**					
3 Inch Sieve [a]		100		[b]	%	ASTM D422-63
1.5 Inch Sieve [a]		100		[b]	%	ASTM D422-63
0.75 Inch Sieve [a]		100		[b]	%	ASTM D422-63
0.375 Inch Sieve [a]		99.6		[b]	%	ASTM D422-63
No.4 Sieve (4.75 mm) [a]		95.5		[b]	%	ASTM D422-63
No.8 Sieve (2.36 mm) [a]		89.9		[b]	%	ASTM D422-63
No.10 Sieve (2.00 mm) [a]		88.6		[b]	%	ASTM D422-63
No.16 Sieve (1.18 mm) [a]		82.5		[b]	%	ASTM D422-63
No.30 Sieve (0.60 mm) [a]		73.8		[b]	%	ASTM D422-63
No.50 Sieve (0.30 mm) [a]		50.2		[b]	%	ASTM D422-63
No.100 Sieve (0.15 mm) [a]		9.9		[b]	%	ASTM D422-63
No.200 Sieve (0.075 mm) [a]		4.3		[b]	%	ASTM D422-63
0.030 mm (Hydrometer) [a]		3.7		[b]	%	ASTM D422-63
0.005 mm (Hydrometer) [a]		3.7		[b]	%	ASTM D422-63
0.0015 mm (Hydrometer) [a]		2.2		[b]	%	ASTM D422-63
% Gravel [a]		4.5		[b]	%	ASTM D422-63
% Sand [a]		91.2		[b]	%	ASTM D422-63
% Silt, Clay, Colloids [a]		4.3		[b]	%	ASTM D422-63
FC3375-2	**A3RB-SB0061-035.0-20230308**					
3 Inch Sieve [a]		100		[b]	%	ASTM D422-63
1.5 Inch Sieve [a]		100		[b]	%	ASTM D422-63
0.75 Inch Sieve [a]		100		[b]	%	ASTM D422-63
0.375 Inch Sieve [a]		99.1		[b]	%	ASTM D422-63
No.4 Sieve (4.75 mm) [a]		98.6		[b]	%	ASTM D422-63
No.8 Sieve (2.36 mm) [a]		93.9		[b]	%	ASTM D422-63
No.10 Sieve (2.00 mm) [a]		91.9		[b]	%	ASTM D422-63
No.16 Sieve (1.18 mm) [a]		71.8		[b]	%	ASTM D422-63
No.30 Sieve (0.60 mm) [a]		55.7		[b]	%	ASTM D422-63
No.50 Sieve (0.30 mm) [a]		35.1		[b]	%	ASTM D422-63
No.100 Sieve (0.15 mm) [a]		8.4		[b]	%	ASTM D422-63
No.200 Sieve (0.075 mm) [a]		4.6		[b]	%	ASTM D422-63
0.030 mm (Hydrometer) [a]		4.5		[b]	%	ASTM D422-63
0.005 mm (Hydrometer) [a]		4.5		[b]	%	ASTM D422-63
0.0015 mm (Hydrometer) [a]		2.7		[b]	%	ASTM D422-63
% Gravel [a]		1.4		[b]	%	ASTM D422-63
% Sand [a]		94.0		[b]	%	ASTM D422-63
% Silt, Clay, Colloids [a]		4.6		[b]	%	ASTM D422-63

(a) Analysis performed at SGS Dayton, NJ.
(b) Value reported is laboratory DL (MDL).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-SB0061-010.0-20230308		
Lab Sample ID:	FC3375-1	**Date Sampled:**	03/08/23
Matrix:	SO - Soil	**Date Received:**	03/09/23
		Percent Solids:	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Particle Size Analysis (Sieve and Hydrometer Testing)							
3 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
1.5 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.75 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.375 Inch Sieve [a]	99.6		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.4 Sieve (4.75 mm) [a]	95.5		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.8 Sieve (2.36 mm) [a]	89.9		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.10 Sieve (2.00 mm) [a]	88.6		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.16 Sieve (1.18 mm) [a]	82.5		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.30 Sieve (0.60 mm) [a]	73.8		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.50 Sieve (0.30 mm) [a]	50.2		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.100 Sieve (0.15 mm) [a]	9.9		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.200 Sieve (0.075 mm) [a]	4.3		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.030 mm (Hydrometer) [a]	3.7		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.005 mm (Hydrometer) [a]	3.7		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.0015 mm (Hydrometer) [a]	2.2		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Gravel [a]	4.5		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Sand [a]	91.2		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Silt, Clay, Colloids [a]	4.3		%	1	03/23/23 01:32	ANJ	ASTM D422-63

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	A3RB-SB0061-035.0-20230308		
Lab Sample ID:	FC3375-2	**Date Sampled:**	03/08/23
Matrix:	SO - Soil	**Date Received:**	03/09/23
		Percent Solids:	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Particle Size Analysis (Sieve and Hydrometer Testing)							
3 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
1.5 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.75 Inch Sieve [a]	100		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.375 Inch Sieve [a]	99.1		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.4 Sieve (4.75 mm) [a]	98.6		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.8 Sieve (2.36 mm) [a]	93.9		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.10 Sieve (2.00 mm) [a]	91.9		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.16 Sieve (1.18 mm) [a]	71.8		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.30 Sieve (0.60 mm) [a]	55.7		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.50 Sieve (0.30 mm) [a]	35.1		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.100 Sieve (0.15 mm) [a]	8.4		%	1	03/23/23 01:32	ANJ	ASTM D422-63
No.200 Sieve (0.075 mm) [a]	4.6		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.030 mm (Hydrometer) [a]	4.5		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.005 mm (Hydrometer) [a]	4.5		%	1	03/23/23 01:32	ANJ	ASTM D422-63
0.0015 mm (Hydrometer) [a]	2.7		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Gravel [a]	1.4		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Sand [a]	94.0		%	1	03/23/23 01:32	ANJ	ASTM D422-63
% Silt, Clay, Colloids [a]	4.6		%	1	03/23/23 01:32	ANJ	ASTM D422-63

(a) Analysis performed at SGS Dayton, NJ.

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FC3375

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS	COC No.		Page: 1 of 1		
Project Name: NASA KSC	PO No. 142581	Project No. 60667657.4	Phase:		
Site Location: Site Assessment and Mitigation (SA&M)	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings			
TO No.: 80KSC021F0096 AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings			
Sampler/Phone # Dustin Slater/ 407-766-0747	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2			
Lab Name: SGS Orlando Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)				

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select #'s by ###	4 DEG Grains	Comments
	A3RB-SB0061-010.0-20230308	A3RB-SB0061	20230308	0858	SO	N	G	2	2	1	
	A3RB-SB0061-035.0-20230308	A3RB-SB0061	20230308	1015	SO	N	G	2	2	1	
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		
			202303			N	G	2	2		

INITIAL ASSESSMENT

LABEL VERIFICATION

S.C 3/9

***Field* Comments:**	***Lab* Comments:**	**Sample Shipment and Delivery Details**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD		Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time	
1	3/9/23	1550	1	3/9/23	16:00	Samples Iced?(check) Yes____ No____
2	3/9/23	17:12	2	3/9/23	17:12	Shipping Company:
3			3			Tracking No:
						Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3375: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3375 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/9/2023 5:12:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (5.0);

Cooler Temps (Corrected) °C: Cooler 1: (5.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 3/9/2023 5:12:00 PM Reviewer: _____ Date: _____

FC3375: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3375
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC3375

Misc. Forms

6

Custody Documents and Other Forms

(SGS Dayton, NJ)

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS

SO

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking # 6134 6606 6120 | Bottle Order Control # AC-03623-48
SGS Quote # | SGS Job # FC3375

Client / Reporting Information	Project Information	Requested Analysis (see TEST CODE sheet)	Matrix Codes
Company Name: SGS North America Inc.	Project Name: NASA KSC, PFAS SA & Mitigation		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank EB-Equipment Blank RB- Rinse Blank TB-Trip Blank
Street Address: 4405 Vineland Rd, Suite C-15	Street:	Billing Information (if different from Report to)	
City: Orlando State: FL Zip: 32811	City: State:	Company Name:	
Project Contact: andrea.colby@sgs.com E-mail:	Project #:	Street Address:	
Phone #: 407-425-6700 Fax #:	Client Purchase Order #:	City: State: Zip:	
Sampler(s) Name(s): DS Phone:	Project Manager:	Attention:	

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	GRAINS	LAB USE ONLY
1	A3RB-SB0061-010.0-20230308		3/8/23	8:58:00 AM	DS	SO	1									X	
2	A3RB-SB0061-035.0-20230308		3/8/23	10:15:00 AM	DS	SO	1									X	D12

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [X] other Due 3/30/2023

Emergency & Rush T/A data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [X] CC

Commercial "A" = Results Onl
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

NJ

Initial Assessment 2B EC

Label Verification: ___

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		3/14/23	1 FX	2 FX	3/15/23 10:20	2
3		Date Time: 17:20	3	4	Date Time:	4
5		Date Time:	5	Custody Seal #	Intact / Not Intact	Preserved where applicable / Therm. ID:	On Ice	Cooler Temp. 2.4

IR40

FC3375: Chain of Custody
Page 1 of 2
SGS Dayton, NJ

SGS Sample Receipt Summary

Job Number: FC3375 **Client:** _____ **Project:** _____

Date / Time Received: 3/15/2023 10:20:00 AM **Delivery Method:** FEDEX **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (2.4);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

FC3375: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3375
Account: SGS Orlando, FL
Project: MEFLOR: NASA KSC, PFAS SA & Mitigation
Collected: 03/08/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC3375

General Chemistry

QC Data Summaries

(SGS Dayton, NJ)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: FC3375
Account: ALSE - SGS Orlando, FL
Project: MEFLOR: NASA KSC, PFAS SA & Mitigation

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
% Gravel	GP45498/GN39575	JD61296-7	%	27.4	26.6	3.1	0-41%
% Sand	GP45498/GN39575	JD61296-7	%	39.7	39.1	1.6	0-16%
% Silt, Clay, Colloids	GP45498/GN39575	JD61296-7	%	32.9	34.4	-4.3	0-40%
0.0015 mm (Hydrometer)	GP45498/GN39575	JD61296-7	%	5.4	5.6	-4.2	0-45%
0.005 mm (Hydrometer)	GP45498/GN39575	JD61296-7	%	10.1	10.6	-4.1	0-48%
0.030 mm (Hydrometer)	GP45498/GN39575	JD61296-7	%	20.9	23.0	-9.6	0-36%
0.375 Inch Sieve	GP45498/GN39575	JD61296-7	%	80.2	83.2	-3.6	0-14%
0.75 Inch Sieve	GP45498/GN39575	JD61296-7	%	90.2	94.3	-4.4	0-9%
1.5 Inch Sieve	GP45498/GN39575	JD61296-7	%	100	100	0.0	0-20%
3 Inch Sieve	GP45498/GN39575	JD61296-7	%	100	100	0.0	0-20%
No.10 Sieve (2.00 mm)	GP45498/GN39575	JD61296-7	%	64.7	65.8	-1.7	0-14%
No.100 Sieve (0.15 mm)	GP45498/GN39575	JD61296-7	%	40.4	42.7	-5.6	0-31%
No.16 Sieve (1.18 mm)	GP45498/GN39575	JD61296-7	%	62.0	62.9	-1.4	0-17%
No.200 Sieve (0.075 mm)	GP45498/GN39575	JD61296-7	%	32.9	34.4	-4.3	0-40%
No.30 Sieve (0.60 mm)	GP45498/GN39575	JD61296-7	%	58.8	59.9	-1.9	0-21%
No.4 Sieve (4.75 mm)	GP45498/GN39575	JD61296-7	%	72.6	73.4	-1.1	0-13%
No.50 Sieve (0.30 mm)	GP45498/GN39575	JD61296-7	%	53.8	55.2	-2.7	0-30%
No.8 Sieve (2.36 mm)	GP45498/GN39575	JD61296-7	%	65.6	66.8	-1.8	0-14%

Associated Samples:
Batch GP45498: FC3375-1, FC3375-2
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3478

Sampling Date: 03/15/23

Report to:

AECOM
150 N Orange Ave Suite 200
Orlando, FL 32801
gloria.richie@aecom.com; linnea.king@aecom.com;
megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: 64

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FC3478

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC3478-1	03/15/23	09:35	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-004.0-20230315
FC3478-2	03/15/23	10:05	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-010.0-20230315
FC3478-3	03/15/23	10:55	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-018.0-20230315
FC3478-4	03/15/23	11:25	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-025.0-20230315
FC3478-5	03/15/23	11:50	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-042.0-20230315
FC3478-6	03/15/23	12:15	DS	03/16/23	AQ	Ground Water	A3RB-DPT0037-057.0-20230315
FC3478-7	03/15/23	08:00	DS	03/16/23	AQ	Ground Water	A3RB-FD05-20230315
FC3478-8	03/15/23	15:45	DS	03/16/23	AQ	Surface Water	A3RB-SW0009-001.0-20230315
FC3478-9	03/15/23	16:00	DS	03/16/23	AQ	Surface Water	A3RB-SW0010-001.0-20230315
FC3478-10	03/15/23	16:20	DS	03/16/23	AQ	Field Blank Water	A3RB-FB06-20230315
FC3478-11	03/15/23	16:25	DS	03/16/23	AQ	Equipment Blank	A3RB-EB06-20230315

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3478

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 3/31/2023 11:37:19 AM

On 03/16/2023, 10 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3478 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95950

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FC3507-1MS, FC3507-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Sample(s) FC3478-1, FC3478-10, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9 have surrogates outside control limits.

FC3478-10: Confirmation run.

FC3478-7: Dilution required (ID recovery standard failure).

FC3478-6: Dilution required (ID recovery standard failure).

FC3478-6: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3478-5: Dilution required (ID recovery standard failure).

FC3478-4: Dilution required (ID recovery standard failure).

FC3478-4: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3478-3: Dilution required (ID recovery standard failure).

OP95950-MS: sample sent to redo

FC3478-2: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3478-2: Dilution required (ID recovery standard failure).

FC3478-1: Dilution required (ID recovery standard failure).

OP95950-MSD: sample sent to redo

FC3478-3: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3478-1 for MeFOSA: Associated ID Standard outside control limits.

FC3478-4 for MeFOSA: Associated ID Standard outside control limits.

FC3478-5 for MeFOSA: Associated ID Standard outside control limits.

FC3478-6 for MeFOSA: Associated ID Standard outside control limits.

FC3478-7 for MeFOSA: Associated ID Standard outside control limits.

FC3478-3 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC3478-2 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC3478-7 for 13C3-PFBS: Outside control limits.

FC3478-8 for 13C5-PFPeA: Outside control limits.

OP95950-MB for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95950

FC3478-8 for 13C4-PFBA: Outside control limits.
FC3478-8 for 13C3-PFBS: Outside control limits.
FC3478-8 for 13C2-PFTeDA: Outside control limits.
FC3478-8 for PFOSA: Associated ID Standard outside control limits.
FC3478-9 for MeFOSA: Associated ID Standard outside control limits.
FC3478-8 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC3478-7 for 13C2-PFDoDA: Outside control limits.
FC3478-8 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
OP95950-MB for d3-MeFOSA: Outside control limits.
FC3478-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC3478-7 for 13C4-PFHpA: Outside control limits.
FC3478-8 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3478-8 for MeFOSA: Associated ID Standard outside control limits.
FC3478-8 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
OP95950-BS for d3-MeFOSA: Outside control limits.
FC3478-7 for 13C4-PFBA: Outside control limits.
FC3478-1 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3478-1 for 13C2-4:2FTS: Outside control limits.
FC3478-1 for 13C3-HFPO-DA: Outside control limits.
FC3478-1 for 13C3-PFBS: Outside control limits.
FC3478-1 for 13C4-PFBA: Outside control limits.
FC3478-1 for 13C4-PFHpA: Outside control limits.
FC3478-1 for 13C5-PFHxA: Outside control limits.
FC3478-1 for 13C5-PFPeA: Outside control limits.
FC3478-7 for 13C3-HFPO-DA: Outside control limits.
OP95950-BS for d3-MeFOSA: Outside control limits.
FC3478-7 for 13C2-PFTeDA: Outside control limits.
FC3478-5 for 13C2-PFDoDA: Outside control limits.
FC3478-8 for 13C8-FOSA: Outside control limits.
FC3478-5 for 13C4-PFBA: Outside control limits.
FC3478-5 for 13C5-PFPeA: Outside control limits.
FC3478-5 for 13C7-PFUnDA: Outside control limits.
FC3478-5 for d3-MeFOSA: Outside control limits.
FC3478-7 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3478-7 for 13C2-4:2FTS: Outside control limits.
FC3478-7 for 13C2-8:2FTS: Outside control limits.
FC3478-1 for d3-MeFOSA: Outside control limits.
FC3478-10 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3478-10 for 13C2-PFTeDA: Outside control limits.
FC3478-9 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC3478-9 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95950

FC3478-9 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC3478-9 for PFOSA: Associated ID Standard outside control limits.
FC3478-9 for 13C2-PFTeDA: Outside control limits.
FC3478-9 for 13C3-PFBS: Outside control limits.
FC3478-9 for 13C4-PFBA: Outside control limits.
FC3478-9 for 13C5-PFPeA: Outside control limits.
FC3478-8 for d3-MeFOSA: Outside control limits.
FC3478-9 for d3-MeFOSA: Outside control limits.
FC3478-9 for d3-MeFOSA: Outside control limits.
FC3478-9 for 13C8-PFOS: Outside control limits.
FC3478-8 for d3-MeFOSA: Outside control limits.
FC3478-7 for 13C5-PFHxA: Outside control limits.
FC3478-7 for 13C5-PFPeA: Outside control limits.
FC3478-7 for 13C8-FOSA: Outside control limits.
FC3478-7 for d3-MeFOSA: Outside control limits.
FC3478-8 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3478-8 for 13C2-PFTeDA: Outside control limits.
FC3478-8 for 13C3-HFPO-DA: Outside control limits.
FC3478-9 for 13C8-FOSA: Outside control limits.
FC3478-9 for 13C3-HFPO-DA: Outside control limits.
FC3478-8 for 13C3-PFBS: Outside control limits.
FC3478-9 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC3478-8 for 13C5-PFPeA: Outside control limits.
FC3478-8 for 13C5-PFHxA: Outside control limits.
FC3478-5 for 13C3-PFBS: Outside control limits.
FC3478-8 for 13C4-PFBA: Outside control limits.
FC3478-8 for 13C8-FOSA: Outside control limits.
FC3478-7 for 13C3-PFHxS: Outside control limits.
FC3478-9 for Perfluoroheptanoic acid: Associated ID Standard outside control limits.
FC3478-9 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC3478-9 for 13C2-PFTeDA: Outside control limits.
FC3478-8 for 13C8-PFOS: Outside control limits.
FC3478-9 for 13C3-PFBS: Outside control limits.
FC3478-9 for 13C3-PFHxS: Outside control limits.
FC3478-9 for 13C4-PFBA: Outside control limits.
FC3478-9 for 13C4-PFHpA: Outside control limits.
FC3478-9 for 13C5-PFHxA: Outside control limits.
FC3478-9 for 13C5-PFPeA: Outside control limits.
FC3478-9 for 13C8-FOSA: Outside control limits.
FC3478-9 for HFPO-DA (GenX): Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP96049

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96049

Sample(s) FC3478-1 have surrogates outside control limits.

FC3478-1: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Andrea Colby, Project Manager

Summary of Hits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3478-1	**A3RB-DPT0037-004.0-20230315**					
Perfluorooctanoic acid		0.0021 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0108 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0095 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0681	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0014 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0142	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0097	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0031 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3478-2	**A3RB-DPT0037-010.0-20230315**					
Perfluorooctanoic acid [b]		0.0045 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0223 J	0.049	0.024	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0186 J	0.049	0.024	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.162	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [b]		0.0038 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [b]		0.0707	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers) [b]		0.0332	0.0019	0.00096	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer) [b]		0.0331	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC3478-3	**A3RB-DPT0037-018.0-20230315**					
Perfluorohexanesulfonic acid [b]		0.0039 J	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
FC3478-4	**A3RB-DPT0037-025.0-20230315**					
No hits reported in this sample.						
FC3478-5	**A3RB-DPT0037-042.0-20230315**					
No hits reported in this sample.						
FC3478-6	**A3RB-DPT0037-057.0-20230315**					
No hits reported in this sample.						
FC3478-7	**A3RB-FD05-20230315**					
Perfluorooctanoic acid		0.0020 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0101 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.010 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.0668	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0015 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.0157	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3478-8	**A3RB-SW0009-001.0-20230315**					
Perfluorobutanoic acid [c]		0.0101 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0086 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0210	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0041	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0090	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0010 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0213	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0385	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.385	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0139 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.661	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.141	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.147	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.459	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC3478-9	**A3RB-SW0010-001.0-20230315**					
Perfluorobutanoic acid [c]		0.0102	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0093 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0202	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [c]		0.0040	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0089	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0199	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0353	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.367	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0149 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.562	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
6:2 Fluorotelomer sulfonate		0.0410	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.133	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.383	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC3478-10	**A3RB-FB06-20230315**					
No hits reported in this sample.						
FC3478-11	**A3RB-EB06-20230315**					
No hits reported in this sample.						

(a) Dilution required (ID recovery standard failure).
(b) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

Summary of Hits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(c) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-DPT0037-004.0-20230315		
Lab Sample ID:	FC3478-1	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42124.D	1	03/22/23 04:07	AL	03/20/23 09:30	OP95950	S4Q604
Run #2 [a]	4Q42372.D	1	03/29/23 11:47	AL	03/24/23 09:35	OP96049	S4Q610
Run #3 [b]	4Q42195.D	5	03/22/23 23:37	AL	03/20/23 09:30	OP95950	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	245 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [c]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid [d]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0108 [c]	0.019	0.0093	0.0046	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0095 [c]	0.019	0.0093	0.0046	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0681	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0014	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0142	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-004.0-20230315		
Lab Sample ID:	FC3478-1	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [c]	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0097	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0031	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	42% [e]	42% [e]	50%	50-150%
	13C5-PFPeA	37% [e]	40% [e]	47% [e]	50-150%
	13C5-PFHxA	46% [e]	50%	51%	50-150%
	13C4-PFHpA	49% [e]	53%	53%	50-150%
	13C8-PFOA	58%	61%	62%	50-150%
	13C9-PFNA	57%	57%	63%	50-150%
	13C6-PFDA	61%	58%	67%	50-150%
	13C7-PFUnDA	57%	51%	58%	50-150%
	13C2-PFDoDA	55%	42% [e]	58%	50-150%
	13C2-PFTeDA	51%	34% [e]	51%	50-150%
	13C3-PFBS	38% [e]	41% [e]	51%	50-150%
	13C3-PFHxS	51%	56%	61%	50-150%
	13C8-PFOS	57%	55%	64%	50-150%
	13C8-FOSA	56%	29% [e]	64%	50-150%
	d3-MeFOSA	41% [e]	6% [e]	48% [e]	50-150%
	d3-MeFOSAA	65%	61%	62%	50-150%
	d5-EtFOSAA	63%	53%	61%	50-150%
	13C2-4:2FTS	49% [e]	52%	53%	50-150%
	13C2-6:2FTS	59%	64%	58%	50-150%
	13C2-8:2FTS	58%	54%	56%	50-150%
	13C3-HFPO-DA	42% [e]	48% [e]	48% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-004.0-20230315		
Lab Sample ID:	FC3478-1	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-010.0-20230315		
Lab Sample ID:	FC3478-2	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42125.D	1.2	03/22/23 04:22	AL	03/20/23 09:30	OP95950	S4Q604
Run #2 [b]	4Q42196.D	12.2	03/22/23 23:52	AL	03/20/23 09:30	OP95950	S4Q605
Run #3 [b]	4Q42197.D	24.4	03/23/23 00:08	AL	03/20/23 09:30	OP95950	S4Q605

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml
Run #3	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.098 U [d]	0.20	0.098	0.049	ug/l	
2706-90-3	Perfluoropentanoic acid	0.024 U [e]	0.049	0.024	0.012	ug/l	
307-24-4	Perfluorohexanoic acid	0.024 U [e]	0.049	0.024	0.012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.024 U [e]	0.049	0.024	0.012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0045	0.0048	0.0024	0.0012	ug/l	J
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.024 U [e]	0.049	0.024	0.012	ug/l	
2058-94-8	Perfluoroundecanoic acid [c]	0.024 U [e]	0.049	0.024	0.012	ug/l	
307-55-1	Perfluorododecanoic acid	0.024 U [e]	0.049	0.024	0.012	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0223 [e]	0.049	0.024	0.012	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0186 [e]	0.049	0.024	0.012	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.162	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0038	0.0048	0.0024	0.0012	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0707	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.024 U [e]	0.049	0.024	0.012	ug/l	
31506-32-8	MeFOSA [c]	0.049 U [e]	0.098	0.049	0.024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.049 U [e]	0.098	0.049	0.024	ug/l	
2991-50-6	EtFOSAA	0.049 U [e]	0.098	0.049	0.024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-010.0-20230315		
Lab Sample ID:	FC3478-2	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0096	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.049 U [e]	0.098	0.049	0.024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0048 U	0.0096	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0096	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major) [c]	0.0048 U	0.0096	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.0048 U	0.0096	0.0048	0.0024	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0332	0.0019	0.00096	0.00048	ug/l	
	PFOS (Linear Isomer)	0.0331	0.0048	0.0024	0.0012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	6% [f]	9% [f]	30% [f]	50-150%
	13C5-PFPeA	31% [f]	50%	74%	50-150%
	13C5-PFHxA	46% [f]	55%	78%	50-150%
	13C4-PFHpA	48% [f]	55%	77%	50-150%
	13C8-PFOA	52%	61%	84%	50-150%
	13C9-PFNA	63%	66%	88%	50-150%
	13C6-PFDA	15% [f]	66%	84%	50-150%
	13C7-PFUnDA	2% [f]	49% [f]	63%	50-150%
	13C2-PFDoDA	2% [f]	50%	68%	50-150%
	13C2-PFTeDA	52%	54%	66%	50-150%
	13C3-PFBS	28% [f]	54%	82%	50-150%
	13C3-PFHxS	51%	64%	73%	50-150%
	13C8-PFOS	57%	68%	89%	50-150%
	13C8-FOSA	1% [f]	68%	77%	50-150%
	d3-MeFOSA	0% [f]	20% [f]	30% [f]	50-150%
	d3-MeFOSAA	1% [f]	64%	96%	50-150%
	d5-EtFOSAA	0% [f]	64%	92%	50-150%
	13C2-4:2FTS	50%	56%	74%	50-150%
	13C2-6:2FTS	58%	63%	75%	50-150%
	13C2-8:2FTS	40% [f]	58%	76%	50-150%
	13C3-HFPO-DA	43% [f]	50%	84%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-010.0-20230315		
Lab Sample ID:	FC3478-2	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Result is from Run# 2
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-018.0-20230315		
Lab Sample ID:	FC3478-3	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42156.D	2.3	03/22/23 12:49	AL	03/20/23 09:30	OP95950	S4Q605
Run #2 [b]	4Q42217.D	11.5	03/23/23 15:39	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.043 U [c]	0.087	0.043	0.022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
307-55-1	Perfluorododecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0039	0.0087	0.0043	0.0022	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
31506-32-8	MeFOSA [d]	0.043 U [c]	0.087	0.043	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
2991-50-6	EtFOSAA	0.0087 U	0.017	0.0087	0.0043	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-018.0-20230315		
Lab Sample ID:	FC3478-3	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0087 U	0.017	0.0087	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.0087 U	0.017	0.0087	0.0043	ug/l	
919005-14-4	ADONA	0.0087 U	0.017	0.0087	0.0043	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0087 U	0.017	0.0087	0.0043	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0087 U	0.017	0.0087	0.0043	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0017 U	0.0035	0.0017	0.00087	ug/l	
	PFOS (Linear Isomer)	0.0043 U	0.0087	0.0043	0.0022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [e]	50%	50-150%
	13C5-PFPeA	41% [e]	52%	50-150%
	13C5-PFHxA	53%	57%	50-150%
	13C4-PFHpA	54%	58%	50-150%
	13C8-PFOA	62%	61%	50-150%
	13C9-PFNA	60%	69%	50-150%
	13C6-PFDA	65%	70%	50-150%
	13C7-PFUnDA	64%	64%	50-150%
	13C2-PFDoDA	70%	73%	50-150%
	13C2-PFTeDA	75%	78%	50-150%
	13C3-PFBS	42% [e]	57%	50-150%
	13C3-PFHxS	63%	62%	50-150%
	13C8-PFOS	67%	64%	50-150%
	13C8-FOSA	47% [e]	47% [e]	50-150%
	d3-MeFOSA	13% [e]	17% [e]	50-150%
	d3-MeFOSAA	70%	75%	50-150%
	d5-EtFOSAA	71%	66%	50-150%
	13C2-4:2FTS	57%	58%	50-150%
	13C2-6:2FTS	64%	56%	50-150%
	13C2-8:2FTS	58%	55%	50-150%
	13C3-HFPO-DA	49% [e]	50%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-018.0-20230315		
Lab Sample ID:	FC3478-3	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-025.0-20230315		
Lab Sample ID:	FC3478-4	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42157.D	1.6	03/22/23 13:05	AL	03/20/23 09:30	OP95950	S4Q605
Run #2 [b]	4Q42218.D	7.9	03/23/23 15:55	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.030 U [d]	0.061	0.030	0.015	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.015 U [d]	0.030	0.015	0.0076	ug/l	
307-24-4	Perfluorohexanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
335-67-1	Perfluorooctanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
375-95-1	Perfluorononanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
335-76-2	Perfluorodecanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
307-55-1	Perfluorododecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0031 U	0.0062	0.0031	0.0015	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.015 U [d]	0.030	0.015	0.0076	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0031 U	0.0062	0.0031	0.0015	ug/l	
31506-32-8	MeFOSA [c]	0.030 U [d]	0.061	0.030	0.015	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0062 U	0.012	0.0062	0.0031	ug/l	
2991-50-6	EtFOSAA	0.030 U [d]	0.061	0.030	0.015	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0062 U	0.012	0.0062	0.0031	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-025.0-20230315		
Lab Sample ID:	FC3478-4	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0062 U	0.012	0.0062	0.0031	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0062 U	0.012	0.0062	0.0031	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0062 U	0.012	0.0062	0.0031	ug/l	
919005-14-4	ADONA	0.0062 U	0.012	0.0062	0.0031	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0062 U	0.012	0.0062	0.0031	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.030 U [d]	0.061	0.030	0.015	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0012 U	0.0025	0.0012	0.00062	ug/l	
	PFOS (Linear Isomer)	0.0031 U	0.0062	0.0031	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	36% [e]	43% [e]	50-150%
	13C5-PFPeA	38% [e]	48% [e]	50-150%
	13C5-PFHxA	53%	56%	50-150%
	13C4-PFHpA	57%	57%	50-150%
	13C8-PFOA	64%	64%	50-150%
	13C9-PFNA	63%	66%	50-150%
	13C6-PFDA	64%	66%	50-150%
	13C7-PFUnDA	13% [e]	57%	50-150%
	13C2-PFDoDA	13% [e]	69%	50-150%
	13C2-PFTeDA	70%	69%	50-150%
	13C3-PFBS	39% [e]	56%	50-150%
	13C3-PFHxS	63%	61%	50-150%
	13C8-PFOS	64%	64%	50-150%
	13C8-FOSA	58%	61%	50-150%
	d3-MeFOSA	25% [e]	28% [e]	50-150%
	d3-MeFOSAA	78%	74%	50-150%
	d5-EtFOSAA	6% [e]	68%	50-150%
	13C2-4:2FTS	57%	58%	50-150%
	13C2-6:2FTS	67%	60%	50-150%
	13C2-8:2FTS	61%	62%	50-150%
	13C3-HFPO-DA	52%	52%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-025.0-20230315		
Lab Sample ID:	FC3478-4	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-042.0-20230315		
Lab Sample ID:	FC3478-5	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42158.D	1	03/22/23 13:20	AL	03/20/23 09:30	OP95950	S4Q605
Run #2 [a]	4Q42219.D	5	03/23/23 16:10	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.038	0.019	0.0096	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
307-55-1	Perfluorododecanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0096 U [b]	0.019	0.0096	0.0048	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00096	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-042.0-20230315		
Lab Sample ID:	FC3478-5	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U [b]	0.038	0.019	0.0096	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00077 U	0.0015	0.00077	0.00038	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0038	0.0019	0.00096	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [d]	54%	50-150%
	13C5-PFPeA	38% [d]	52%	50-150%
	13C5-PFHxA	54%	62%	50-150%
	13C4-PFHpA	57%	64%	50-150%
	13C8-PFOA	62%	69%	50-150%
	13C9-PFNA	59%	68%	50-150%
	13C6-PFDA	63%	71%	50-150%
	13C7-PFUnDA	45% [d]	65%	50-150%
	13C2-PFDoDA	35% [d]	66%	50-150%
	13C2-PFTeDA	56%	64%	50-150%
	13C3-PFBS	37% [d]	58%	50-150%
	13C3-PFHxS	58%	67%	50-150%
	13C8-PFOS	61%	71%	50-150%
	13C8-FOSA	50%	59%	50-150%
	d3-MeFOSA	25% [d]	28% [d]	50-150%
	d3-MeFOSAA	78%	74%	50-150%
	d5-EtFOSAA	73%	67%	50-150%
	13C2-4:2FTS	58%	64%	50-150%
	13C2-6:2FTS	68%	67%	50-150%
	13C2-8:2FTS	63%	61%	50-150%
	13C3-HFPO-DA	53%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-042.0-20230315		
Lab Sample ID:	FC3478-5	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-057.0-20230315		
Lab Sample ID:	FC3478-6	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42159.D	2.2	03/22/23 13:37	AL	03/20/23 09:30	OP95950	S4Q605
Run #2 [b]	4Q42220.D	10.8	03/23/23 16:26	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.042 U [d]	0.083	0.042	0.021	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.021 U [d]	0.042	0.021	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-67-1	Perfluorooctanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-95-1	Perfluorononanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-76-2	Perfluorodecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
307-55-1	Perfluorododecanoic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0042 U	0.0085	0.0042	0.0021	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.021 U [d]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0042 U	0.0085	0.0042	0.0021	ug/l	
31506-32-8	MeFOSA [c]	0.042 U [d]	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0085 U	0.017	0.0085	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0085 U	0.017	0.0085	0.0042	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-057.0-20230315		
Lab Sample ID:	FC3478-6	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0085 U	0.017	0.0085	0.0042	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0085 U	0.017	0.0085	0.0042	ug/l	
919005-14-4	ADONA	0.0085 U	0.017	0.0085	0.0042	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0085 U	0.017	0.0085	0.0042	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.042 U [d]	0.083	0.042	0.021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0017 U	0.0034	0.0017	0.00085	ug/l	
	PFOS (Linear Isomer)	0.0042 U	0.0085	0.0042	0.0021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [e]	48% [e]	50-150%
	13C5-PFPeA	39% [e]	49% [e]	50-150%
	13C5-PFHxA	52%	52%	50-150%
	13C4-PFHpA	53%	54%	50-150%
	13C8-PFOA	59%	59%	50-150%
	13C9-PFNA	58%	60%	50-150%
	13C6-PFDA	62%	67%	50-150%
	13C7-PFUnDA	26% [e]	62%	50-150%
	13C2-PFDoDA	25% [e]	80%	50-150%
	13C2-PFTeDA	86%	88%	50-150%
	13C3-PFBS	40% [e]	53%	50-150%
	13C3-PFHxS	58%	54%	50-150%
	13C8-PFOS	60%	65%	50-150%
	13C8-FOSA	54%	56%	50-150%
	d3-MeFOSA	29% [e]	33% [e]	50-150%
	d3-MeFOSAA	84%	83%	50-150%
	d5-EtFOSAA	68%	75%	50-150%
	13C2-4:2FTS	55%	54%	50-150%
	13C2-6:2FTS	60%	55%	50-150%
	13C2-8:2FTS	58%	61%	50-150%
	13C3-HFPO-DA	50%	58%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0037-057.0-20230315		
Lab Sample ID:	FC3478-6	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD05-20230315
Lab Sample ID: FC3478-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/15/23
Date Received: 03/16/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42160.D	1	03/22/23 13:53	AL	03/20/23 09:30	OP95950	S4Q605
Run #2 [a]	4Q42221.D	5	03/23/23 16:41	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0101 [c]	0.019	0.0093	0.0046	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.010 [c]	0.019	0.0093	0.0046	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0668 [c]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0015	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0157	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [c]	0.037	0.019	0.0093	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD05-20230315		
Lab Sample ID:	FC3478-7	**Date Sampled:**	03/15/23
Matrix:	AQ - Ground Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U [c]	0.037	0.019	0.0093	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U [c]	0.037	0.019	0.0093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	48% [d]	50-150%
	13C5-PFPeA	36% [d]	45% [d]	50-150%
	13C5-PFHxA	44% [d]	51%	50-150%
	13C4-PFHpA	47% [d]	52%	50-150%
	13C8-PFOA	55%	59%	50-150%
	13C9-PFNA	51%	59%	50-150%
	13C6-PFDA	54%	59%	50-150%
	13C7-PFUnDA	50%	52%	50-150%
	13C2-PFDoDA	49% [d]	53%	50-150%
	13C2-PFTeDA	43% [d]	45% [d]	50-150%
	13C3-PFBS	37% [d]	51%	50-150%
	13C3-PFHxS	48% [d]	55%	50-150%
	13C8-PFOS	51%	56%	50-150%
	13C8-FOSA	45% [d]	47% [d]	50-150%
	d3-MeFOSA	16% [d]	21% [d]	50-150%
	d3-MeFOSAA	59%	58%	50-150%
	d5-EtFOSAA	52%	54%	50-150%
	13C2-4:2FTS	48% [d]	52%	50-150%
	13C2-6:2FTS	57%	51%	50-150%
	13C2-8:2FTS	49% [d]	52%	50-150%
	13C3-HFPO-DA	42% [d]	47% [d]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-SW0009-001.0-20230315
Lab Sample ID: FC3478-8
Matrix: AQ - Surface Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/15/23
Date Received: 03/16/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42161.D	1	03/22/23 14:08	AL	03/20/23 09:30	OP95950	S4Q605
Run #2	4Q42222.D	5	03/23/23 16:57	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0101 [b]	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid [a]	0.0086 [b]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0210 [b]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0041	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0090	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0010	0.0037	0.0019	0.00093	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0213 [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0385 [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.385 [b]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0139 [b]	0.019	0.0093	0.0046	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.661 [b]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [a]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [a]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0009-001.0-20230315		
Lab Sample ID:	FC3478-8	**Date Sampled:**	03/15/23
Matrix:	AQ - Surface Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.141	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.147 [b]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Linear Isomer)	0.459 [b]	0.019	0.0093	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	33% [c]	47% [c]	50-150%
	13C5-PFPeA	34% [c]	47% [c]	50-150%
	13C5-PFHxA	47% [c]	58%	50-150%
	13C4-PFHpA	51%	61%	50-150%
	13C8-PFOA	57%	67%	50-150%
	13C9-PFNA	52%	60%	50-150%
	13C6-PFDA	61%	70%	50-150%
	13C7-PFUnDA	52%	62%	50-150%
	13C2-PFDoDA	56%	60%	50-150%
	13C2-PFTeDA	41% [c]	44% [c]	50-150%
	13C3-PFBS	34% [c]	49% [c]	50-150%
	13C3-PFHxS	53%	63%	50-150%
	13C8-PFOS	49% [c]	64%	50-150%
	13C8-FOSA	36% [c]	48% [c]	50-150%
	d3-MeFOSA	12% [c]	21% [c]	50-150%
	d3-MeFOSAA	74%	78%	50-150%
	d5-EtFOSAA	70%	61%	50-150%
	13C2-4:2FTS	50%	61%	50-150%
	13C2-6:2FTS	83%	81%	50-150%
	13C2-8:2FTS	65%	58%	50-150%
	13C3-HFPO-DA	45% [c]	53%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0010-001.0-20230315		
Lab Sample ID:	FC3478-9	**Date Sampled:**	03/15/23
Matrix:	AQ - Surface Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42223.D	1	03/23/23 17:12	AL	03/20/23 09:30	OP95950	S4Q606
Run #2	4Q42224.D	5	03/23/23 17:28	AL	03/20/23 09:30	OP95950	S4Q606

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0102	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0093 [b]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0202 [b]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid [a]	0.0040	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0089	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [a]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [a]	0.0199 [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [a]	0.0353 [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.367 [b]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0149 [b]	0.019	0.0093	0.0046	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.562 [b]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [a]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [a]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-SW0010-001.0-20230315		
Lab Sample ID:	FC3478-9	**Date Sampled:**	03/15/23
Matrix:	AQ - Surface Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0410	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.133 [b]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Linear Isomer)	0.383 [b]	0.019	0.0093	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	34% [c]	48% [c]	50-150%
	13C5-PFPeA	33% [c]	44% [c]	50-150%
	13C5-PFHxA	45% [c]	53%	50-150%
	13C4-PFHpA	49% [c]	56%	50-150%
	13C8-PFOA	57%	63%	50-150%
	13C9-PFNA	52%	58%	50-150%
	13C6-PFDA	66%	65%	50-150%
	13C7-PFUnDA	61%	61%	50-150%
	13C2-PFDoDA	57%	62%	50-150%
	13C2-PFTeDA	44% [c]	46% [c]	50-150%
	13C3-PFBS	32% [c]	48% [c]	50-150%
	13C3-PFHxS	49% [c]	60%	50-150%
	13C8-PFOS	49% [c]	52%	50-150%
	13C8-FOSA	36% [c]	47% [c]	50-150%
	d3-MeFOSA	15% [c]	23% [c]	50-150%
	d3-MeFOSAA	72%	69%	50-150%
	d5-EtFOSAA	68%	58%	50-150%
	13C2-4:2FTS	50%	59%	50-150%
	13C2-6:2FTS	66%	66%	50-150%
	13C2-8:2FTS	60%	55%	50-150%
	13C3-HFPO-DA	41% [c]	50%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB06-20230315		
Lab Sample ID:	FC3478-10	**Date Sampled:**	03/15/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42225.D	1	03/23/23 17:43	AL	03/20/23 09:30	OP95950	S4Q606
Run #2 [a]	5Q12229.D	1	03/24/23 18:59	LR	03/20/23 09:30	OP95950	S5Q188

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB06-20230315		
Lab Sample ID:	FC3478-10	**Date Sampled:**	03/15/23
Matrix:	AQ - Field Blank Water	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	61%	62%	50-150%
	13C5-PFPeA	59%	58%	50-150%
	13C5-PFHxA	58%	58%	50-150%
	13C4-PFHpA	58%	60%	50-150%
	13C8-PFOA	63%	56%	50-150%
	13C9-PFNA	66%	58%	50-150%
	13C6-PFDA	67%	60%	50-150%
	13C7-PFUnDA	63%	59%	50-150%
	13C2-PFDoDA	64%	55%	50-150%
	13C2-PFTeDA	47% [c]	47% [c]	50-150%
	13C3-PFBS	61%	59%	50-150%
	13C3-PFHxS	60%	60%	50-150%
	13C8-PFOS	64%	58%	50-150%
	13C8-FOSA	62%	59%	50-150%
	d3-MeFOSA	50%	44% [c]	50-150%
	d3-MeFOSAA	67%	60%	50-150%
	d5-EtFOSAA	59%	60%	50-150%
	13C2-4:2FTS	56%	56%	50-150%
	13C2-6:2FTS	57%	61%	50-150%
	13C2-8:2FTS	54%	55%	50-150%
	13C3-HFPO-DA	55%	48% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB06-20230315		
Lab Sample ID:	FC3478-11	**Date Sampled:**	03/15/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42166.D	1	03/22/23 15:26	AL	03/20/23 09:30	OP95950	S4Q605
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB06-20230315		
Lab Sample ID:	FC3478-11	**Date Sampled:**	03/15/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/16/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	58%		50-150%
	13C8-PFOA	64%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	65%		50-150%
	13C7-PFUnDA	60%		50-150%
	13C2-PFDoDA	59%		50-150%
	13C2-PFTeDA	51%		50-150%
	13C3-PFBS	63%		50-150%
	13C3-PFHxS	62%		50-150%
	13C8-PFOS	62%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSA	61%		50-150%
	d3-MeFOSAA	64%		50-150%
	d5-EtFOSAA	62%		50-150%
	13C2-4:2FTS	58%		50-150%
	13C2-6:2FTS	57%		50-150%
	13C2-8:2FTS	55%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC3478

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 1 of 1

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Does Standard VS Limited	Comments
1	A3RB-DPT0037-004.0-20230315	A3RB-DPT037	20230315	0935	WG	N	G	2	2	X	
2	A3RB-DPT0037-010.0-20230315	A3RB-DPT037	20230315	1005	WG	N	G	2	2	X	
3	A3RB-DPT0037-018.0-20230315	A3RB-DPT037	20230315	1055	WG	N	G	2	2	X	
4	A3RB-DPT0037-025.0-20230315	A3RB-DPT037	20230315	1125	WG	N	G	2	2	X	
5	A3RB-DPT0037-042.0-20230315	A3RB-DPT037	20230315	1150	WG	N	G	2	2	X	
6	A3RB-DPT0037-057.0-20230315	A3RB-DPT037	20230315	1215	WG	N	G	2	2	X	
7	A3RB-FD05-20230315	A3RB-FD05	20230315	0800	WG	N	G	2	2		
8	A3RB-SW0009-001.0-20230315	A3RB-SW0009	20230315	1545	WS	N	G	2	2	X	
9	A3RB-SW0010-001.0-20230315	A3RB-SW0010	20230315	1600	WS	N	G	2	2	X	
10	A3RB-FB06-20230315	A3RB-FB06	20230315	1620	WQ	N	G	2	2		
11	A3RB-EB04-20230315	A3RB-EB04	20230315	1625	WS	N	G	2	2		
			20230			N	G	2	2		

INITIAL ASSESSMENT ZB

LABEL VERIFICATION

2.0IR1

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		3/16/23	1100		3/16/23	1102
2						
3						

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC3478: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3478 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/16/2023 11:02:00 AM **Delivery Method:** DROP OFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: ZANEB Date: 3/16/2023 11:02:00 A Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95950	EPA 537M QSM5.3 B-15						
OP95950-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	88	%	73-129
OP95950-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	90	%	73-129
OP95950-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	91	%	72-129
OP95950-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	90	%	72-129
OP95950-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	91	%	72-129
OP95950-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	90	%	72-129
OP95950-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	91	%	72-130
OP95950-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	89	%	72-130
OP95950-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	86	%	71-133
OP95950-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	88	%	71-133
OP95950-BS	375-95-1	Perfluorononanoic acid	BSP	REC	85	%	69-130
OP95950-BS	375-95-1	Perfluorononanoic acid	BSP	REC	88	%	69-130
OP95950-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	90	%	71-129
OP95950-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	90	%	71-129
OP95950-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	91	%	69-133
OP95950-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	69-133
OP95950-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	96	%	72-134
OP95950-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	97	%	72-134
OP95950-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	83	%	65-144
OP95950-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	82	%	65-144
OP95950-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	95	%	71-132
OP95950-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	95	%	71-132
OP95950-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	92	%	72-130
OP95950-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	93	%	72-130
OP95950-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	89	%	71-127
OP95950-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	90	%	71-127
OP95950-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	87	%	68-131
OP95950-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	90	%	68-131
OP95950-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	92	%	69-134
OP95950-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	91	%	69-134
OP95950-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	85	%	65-140
OP95950-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	85	%	65-140
OP95950-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	89	%	69-127
OP95950-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	88	%	69-127
OP95950-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	91	%	53-142
OP95950-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	91	%	53-142
OP95950-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP95950-BS	754-91-6	PFOSA	BSP	REC	92	%	67-137
OP95950-BS	31506-32-8	MeFOSA	BSP	REC	136	%	68-141
OP95950-BS	31506-32-8	MeFOSA	BSP	REC	126	%	68-141
OP95950-BS	2355-31-9	MeFOSAA	BSP	REC	89	%	65-136
OP95950-BS	2355-31-9	MeFOSAA	BSP	REC	93	%	65-136

* Sample used for QC is not from job FC3478

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95950-BS	2991-50-6	EtFOSAA	BSP	REC	96	%	61-135
OP95950-BS	2991-50-6	EtFOSAA	BSP	REC	93	%	61-135
OP95950-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	93	%	63-143
OP95950-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	92	%	63-143
OP95950-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	97	%	64-140
OP95950-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	98	%	64-140
OP95950-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	97	%	67-138
OP95950-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	99	%	67-138
OP95950-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	93	%	73-129
OP95950-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	91	%	72-129
OP95950-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	93	%	72-129
OP95950-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	90	%	72-130
OP95950-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	90	%	71-133
OP95950-MS*	375-95-1	Perfluorononanoic acid	MS	REC	86	%	69-130
OP95950-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	89	%	71-129
OP95950-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	91	%	69-133
OP95950-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	94	%	72-134
OP95950-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	82	%	65-144
OP95950-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	92	%	71-132
OP95950-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	92	%	72-130
OP95950-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	97	%	71-127
OP95950-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	68-131
OP95950-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	92	%	69-134
OP95950-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	88	%	65-140
OP95950-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	94	%	69-127
OP95950-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	89	%	53-142
OP95950-MS*	754-91-6	PFOSA	MS	REC	92	%	67-137
OP95950-MS*	31506-32-8	MeFOSA	MS	REC	116	%	68-141
OP95950-MS*	2355-31-9	MeFOSAA	MS	REC	93	%	65-136
OP95950-MS*	2991-50-6	EtFOSAA	MS	REC	91	%	61-135
OP95950-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	93	%	63-143
OP95950-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	96	%	64-140
OP95950-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	98	%	67-138
OP95950-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	94	%	73-129
OP95950-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	92	%	72-129
OP95950-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	92	%	72-129
OP95950-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	92	%	72-130
OP95950-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP95950-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	91	%	71-133
OP95950-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	84	%	69-130
OP95950-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30

* Sample used for QC is not from job FC3478

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3478
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/15/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95950-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	89	%	71-129
OP95950-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	93	%	69-133
OP95950-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	1	%	30
OP95950-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	94	%	72-134
OP95950-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	0	%	30
OP95950-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	79	%	65-144
OP95950-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	3	%	30
OP95950-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	92	%	71-132
OP95950-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	0	%	30
OP95950-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	92	%	72-130
OP95950-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP95950-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	94	%	71-127
OP95950-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	2	%	30
OP95950-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	96	%	68-131
OP95950-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	0	%	30
OP95950-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	93	%	69-134
OP95950-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	1	%	30
OP95950-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	89	%	65-140
OP95950-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP95950-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	91	%	69-127
OP95950-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	3	%	30
OP95950-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	91	%	53-142
OP95950-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	2	%	30
OP95950-MSD*	754-91-6	PFOSA	MSD	REC	94	%	67-137
OP95950-MSD*	754-91-6	PFOSA	MSD	RPD	2	%	30
OP95950-MSD*	31506-32-8	MeFOSA	MSD	REC	119	%	68-141
OP95950-MSD*	31506-32-8	MeFOSA	MSD	RPD	2	%	30
OP95950-MSD*	2355-31-9	MeFOSAA	MSD	REC	87	%	65-136
OP95950-MSD*	2355-31-9	MeFOSAA	MSD	RPD	7	%	30
OP95950-MSD*	2991-50-6	EtFOSAA	MSD	REC	88	%	61-135
OP95950-MSD*	2991-50-6	EtFOSAA	MSD	RPD	4	%	30
OP95950-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	94	%	63-143
OP95950-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95950-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	97	%	64-140
OP95950-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95950-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	96	%	67-138
OP95950-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30

* Sample used for QC is not from job FC3478

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q604-IBLK	4Q42085.D	1	03/21/23	AL	n/a	n/a	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	96%	50-150%

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q604-IBLK	4Q42085.D	1	03/21/23	AL	n/a	n/a	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2

CAS No.	ID Standard Recoveries		Limits
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	86%	50-150%

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q605-IBLK	4Q42150.D	1	03/22/23	AL	n/a	n/a	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q605-IBLK	4Q42150.D	1	03/22/23	AL	n/a	n/a	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	94%	50-150%

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q606-IBLK	4Q42213.D	1	03/23/23	AL	n/a	n/a	S4Q606

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	93%	50-150%

Instrument Blank

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q606-IBLK	4Q42213.D	1	03/23/23	AL	n/a	n/a	S4Q606

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	93%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	100%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	93%	50-150%

Method Blank Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MB	4Q42117.D	1	03/22/23	AL	03/20/23	OP95950	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	88%	50-150%

Method Blank Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MB	4Q42117.D	1	03/22/23	AL	03/20/23	OP95950	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	84%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	91%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	82%	50-150%
	13C2-PFTeDA	73%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSA	40%* [a]	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	80%	50-150%
	13C2-8:2FTS	79%	50-150%
	13C3-HFPO-DA	82%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MB	4Q42155.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%

Method Blank Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MB	4Q42155.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	84%	50-150%
	13C5-PFHxA	83%	50-150%
	13C4-PFHpA	82%	50-150%
	13C8-PFOA	89%	50-150%
	13C9-PFNA	91%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	72%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	84%	50-150%
	d3-MeFOSA	39%* [a]	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	85%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	79%	50-150%
	13C2-8:2FTS	80%	50-150%
	13C3-HFPO-DA	84%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-BS	4Q42116.D	1	03/22/23	AL	03/20/23	OP95950	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0705	88	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0716	90	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0725	91	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0715	89	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0689	86	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0679	85	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0716	90	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0726	91	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0771	96	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0662	83	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0756	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0732	92	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0710	89	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0722	90	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0726	91	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0676	85	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0713	89	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0724	91	53-142
754-91-6	PFOSA	0.08	0.0737	92	67-137
31506-32-8	MeFOSA	0.08	0.101	126	68-141
2355-31-9	MeFOSAA	0.08	0.0715	89	65-136
2991-50-6	EtFOSAA	0.08	0.0766	96	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0739	92	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0774	97	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0777	97	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0720	90	60-140
919005-14-4	ADONA	0.08	0.0705	88	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0631	79	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0736	92	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	85%	50-150%
	13C5-PFHxA	83%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-BS	4Q42116.D	1	03/22/23	AL	03/20/23	OP95950	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	83%	50-150%
	13C8-PFOA	85%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	86%	50-150%
	13C7-PFUnDA	85%	50-150%
	13C2-PFDoDA	80%	50-150%
	13C2-PFTeDA	71%	50-150%
	13C3-PFBS	83%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	74%	50-150%
	d3-MeFOSA	31%* [a]	50-150%
	d3-MeFOSAA	86%	50-150%
	d5-EtFOSAA	83%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	81%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-BS	4Q42154.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0719	90	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0725	91	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0719	90	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0730	91	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0702	88	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0706	88	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0723	90	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0744	93	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0772	97	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0652	82	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0761	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0743	93	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0720	90	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0695	87	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0738	92	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0678	85	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0703	88	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0731	91	53-142
754-91-6	PFOSA	0.08	0.0747	93	67-137
31506-32-8	MeFOSA	0.08	0.109	136	68-141
2355-31-9	MeFOSAA	0.08	0.0742	93	65-136
2991-50-6	EtFOSAA	0.08	0.0747	93	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0745	93	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0785	98	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0795	99	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0732	92	60-140
919005-14-4	ADONA	0.08	0.0675	84	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0663	83	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0741	93	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	85%	50-150%
	13C5-PFPeA	83%	50-150%
	13C5-PFHxA	82%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-BS	4Q42154.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	81%	50-150%
	13C8-PFOA	83%	50-150%
	13C9-PFNA	80%	50-150%
	13C6-PFDA	84%	50-150%
	13C7-PFUnDA	82%	50-150%
	13C2-PFDoDA	79%	50-150%
	13C2-PFTeDA	69%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	84%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	74%	50-150%
	d3-MeFOSA	31%* [a]	50-150%
	d3-MeFOSAA	84%	50-150%
	d5-EtFOSAA	82%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	81%	50-150%
	13C3-HFPO-DA	82%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MS [a]	4Q42168.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
OP95950-MSD [a]	4Q42169.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
FC3507-1	4Q42167.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
FC3507-1 [b]	4Q42229.D	5	03/23/23	AL	03/20/23	OP95950	S4Q606

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	Compound	FC3507-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0063	J	0.16	0.155	93	0.16	0.156	94	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0085		0.16	0.154	91	0.16	0.155	92	1	72-129/30
307-24-4	Perfluorohexanoic acid	0.0262		0.16	0.175	93	0.16	0.174	92	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0053	J	0.16	0.150	90	0.16	0.153	92	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0150		0.16	0.159	90	0.16	0.161	91	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0080	U	0.16	0.137	86	0.16	0.135	84	1	69-130/30
335-76-2	Perfluorodecanoic acid	0.0080	U	0.16	0.142	89	0.16	0.143	89	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0080	U	0.16	0.146	91	0.16	0.148	93	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.0080	U	0.16	0.151	94	0.16	0.151	94	0	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0080	U	0.16	0.131	82	0.16	0.127	79	3	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.040	U [c]	0.16	0.147	92	0.16	0.147	92	0	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0179		0.16	0.165	92	0.16	0.165	92	0	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0164		0.16	0.171	97	0.16	0.167	94	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0937		0.16	0.248	96	0.16	0.248	96	0	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0080	U	0.16	0.147	92	0.16	0.149	93	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0252		0.16	0.166	88	0.16	0.168	89	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0080	U	0.16	0.151	94	0.16	0.146	91	3	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0080	U	0.16	0.143	89	0.16	0.146	91	2	53-142/30
754-91-6	PFOSA	0.0080	U	0.16	0.147	92	0.16	0.150	94	2	67-137/30
31506-32-8	MeFOSA	0.016	U	0.16	0.186	116	0.16	0.190	119	2	68-141/30
2355-31-9	MeFOSAA	0.016	U	0.16	0.149	93	0.16	0.139	87	7	65-136/30
2991-50-6	EtFOSAA	0.016	U	0.16	0.145	91	0.16	0.140	88	4	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.016	U	0.16	0.149	93	0.16	0.150	94	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.016	U	0.16	0.154	96	0.16	0.155	97	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.016	U	0.16	0.157	98	0.16	0.153	96	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.016	U	0.16	0.146	91	0.16	0.148	93	1	60-140/30
919005-14-4	ADONA	0.016	U	0.16	0.130	81	0.16	0.136	85	5	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.016	U	0.16	0.134	84	0.16	0.134	84	0	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.016	U	0.16	0.147	92	0.16	0.145	91	1	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC3507-1	FC3507-1	Limits
	13C4-PFBA	42%* [d]	50%	50%	52%	50-150%
	13C5-PFPeA	45%* [d]	52%	52%	54%	50-150%
	13C5-PFHxA	47%* [d]	55%	55%	54%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3478
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95950-MS [a]	4Q42168.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
OP95950-MSD [a]	4Q42169.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
FC3507-1	4Q42167.D	1	03/22/23	AL	03/20/23	OP95950	S4Q605
FC3507-1 [b]	4Q42229.D	5	03/23/23	AL	03/20/23	OP95950	S4Q606

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3478-1, FC3478-2, FC3478-3, FC3478-4, FC3478-5, FC3478-6, FC3478-7, FC3478-8, FC3478-9, FC3478-10, FC3478-11

CAS No.	ID Standard Recoveries	MS	MSD	FC3507-1	FC3507-1	Limits
	13C4-PFHpA	48%* [d]	54%	54%	55%	50-150%
	13C8-PFOA	52%	58%	60%	59%	50-150%
	13C9-PFNA	54%	59%	61%	66%	50-150%
	13C6-PFDA	58%	61%	64%	65%	50-150%
	13C7-PFUnDA	59%	62%	60%	60%	50-150%
	13C2-PFDoDA	57%	61%	58%	63%	50-150%
	13C2-PFTeDA	50%	52%	47%* [d]	47%* [d]	50-150%
	13C3-PFBS	47%* [d]	54%	56%	59%	50-150%
	13C3-PFHxS	52%	58%	57%	54%	50-150%
	13C8-PFOS	55%	60%	60%	60%	50-150%
	13C8-FOSA	58%	61%	63%	61%	50-150%
	d3-MeFOSAA	59%	65%	62%	70%	50-150%
	d5-EtFOSAA	59%	63%	60%	65%	50-150%
	13C2-4:2FTS	52%	59%	53%	53%	50-150%
	13C2-6:2FTS	53%	60%	53%	53%	50-150%
	13C2-8:2FTS	54%	59%	53%	52%	50-150%
	13C3-HFPO-DA	48%* [d]	54%			50-150%

(a) sample sent to redo
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC3492

Sampling Date: 03/13/23

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: **60**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC3492

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3492-1	03/13/23	08:50	DS	03/14/23	AQ	Ground Water	A3RB-DPT0035-025.0-20230313
FC3492-2	03/13/23	09:15	DS	03/14/23	AQ	Ground Water	A3RB-DPT0035-042.0-20230313
FC3492-3	03/13/23	09:45	DS	03/14/23	AQ	Ground Water	A3RB-DPT0035-057.0-20230313
FC3492-4	03/13/23	11:30	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-004.0-20230313
FC3492-5	03/13/23	11:55	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-010.0-20230313
FC3492-6	03/13/23	12:25	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-018.0-20230313
FC3492-7	03/13/23	15:05	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-025.0-20230313
FC3492-8	03/13/23	15:30	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-042.0-20230313
FC3492-9	03/13/23	16:05	DS	03/14/23	AQ	Ground Water	A3RB-DPT0036-057.0-20230313
FC3492-9D	03/13/23	16:05	DS	03/14/23	AQ	Water Dup/MSD	A3RB-DPT0036-057.0-20230313
FC3492-9S	03/13/23	16:05	DS	03/14/23	AQ	Water Matrix Spike	A3RB-DPT0036-057.0-20230313
FC3492-10	03/13/23	08:00	DS	03/14/23	AQ	Ground Water	A3RB-FD04-20230313
FC3492-11	03/13/23	16:15	DS	03/14/23	AQ	Field Blank Water	A3RB-FB05-20230313

Sample Summary
(continued)

AECOM, Inc

Job No: FC3492

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC3492-12	03/13/23	16:20	DS	03/14/23	AQ	Equipment Blank	A3RB-EB05-20230313

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC3492

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 3/24/2023 11:09:08 AM

On 03/14/2023, 11 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3492 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95928

Sample(s) FC3492-9MS, FC3492-9MSD were used as the QC samples indicated.

Sample(s) FC3492-1, FC3492-10, FC3492-12, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9 have surrogates outside control limits.

Sample(s) FC3492-3, FC3492-9 are outside limits due to dilution.

FC3492-1 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC3492-1: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3492-1: Dilution required (ID recovery standard failure).

FC3492-2 for 13C3-HFPO-DA: Outside control limits.

FC3492-2 for 13C3-PFBS: Outside control limits.

FC3492-2 for 13C4-PFBA: Outside control limits.

FC3492-2 for 13C5-PFPeA: Outside control limits.

FC3492-2 for 13C7-PFUnDA: Outside control limits.

FC3492-2 for d3-MeFOSA: Outside control limits.

FC3492-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC3492-2 for MeFOSA: Associated ID Standard outside control limits.

FC3492-2: Dilution required (ID recovery standard failure).

FC3492-3 for 13C4-PFBA: Outside control limits due to dilution.

FC3492-3 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC3492-3: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.

FC3492-3: Dilution required (ID recovery standard failure).

FC3492-4 for 13C2-4:2FTS: Outside control limits.

FC3492-4 for 13C2-PFTeDA: Outside control limits.

FC3492-4 for 13C3-HFPO-DA: Outside control limits.

FC3492-4 for 13C3-PFBS: Outside control limits.

FC3492-4 for 13C3-PFHxS: Outside control limits.

FC3492-4 for 13C4-PFBA: Outside control limits.

FC3492-4 for 13C4-PFHpA: Outside control limits.

FC3492-4 for 13C5-PFHxA: Outside control limits.

FC3492-4 for 13C5-PFPeA: Outside control limits.

FC3492-4 for 13C8-FOSA: Outside control limits.

FC3492-4 for 13C9-PFNA: Outside control limits.

FC3492-4 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

FC3492-4 for d3-MeFOSA: Outside control limits.

FC3492-4 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC3492-4 for Perfluorohexanesulfonic acid: Associated ID Standard outside control limits.

FC3492-4 for Perfluorononanoic acid: Associated ID Standard outside control limits.

FC3492-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC3492-4: Dilution required (ID recovery standard failure).

FC3492-5 for 13C2-4:2FTS: Outside control limits.

FC3492-5 for 13C3-HFPO-DA: Outside control limits.

FC3492-5 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP95928

FC3492-5 for 13C4-PFBA: Outside control limits.
FC3492-5 for 13C4-PFHpA: Outside control limits.
FC3492-5 for 13C5-PFHxA: Outside control limits.
FC3492-5 for 13C5-PFPeA: Outside control limits.
FC3492-5 for d3-MeFOSA: Outside control limits.
FC3492-5 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3492-5 for MeFOSA: Associated ID Standard outside control limits.
FC3492-5: Dilution required (ID recovery standard failure).
FC3492-6: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC3492-6: Dilution required (ID recovery standard failure).
FC3492-7 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC3492-7: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC3492-7: Dilution required (ID recovery standard failure).
FC3492-8 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC3492-8: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC3492-8: Dilution required (ID recovery standard failure).
FC3492-9 for 13C4-PFBA: Outside control limits due to dilution.
FC3492-9 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3492-9: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC3492-9: Dilution required (ID recovery standard failure).
FC3492-10 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC3492-10: Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
FC3492-10: Dilution required (ID recovery standard failure).
FC3492-12 for 13C2-PFTeDA: Outside control limits.
FC3492-12: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC3492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/13/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3492-1	**A3RB-DPT0035-025.0-20230313**					
No hits reported in this sample.						
FC3492-2	**A3RB-DPT0035-042.0-20230313**					
No hits reported in this sample.						
FC3492-3	**A3RB-DPT0035-057.0-20230313**					
No hits reported in this sample.						
FC3492-4	**A3RB-DPT0036-004.0-20230313**					
Perfluorobutanoic acid [a]		0.0157 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0145 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.0077 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.0115 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0124 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [b]		0.0600	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0082	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0047	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0033 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3492-5	**A3RB-DPT0036-010.0-20230313**					
Perfluorobutanoic acid [a]		0.0112 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0026 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0198	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0127	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0070	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0055	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC3492-6	**A3RB-DPT0036-018.0-20230313**					
No hits reported in this sample.						
FC3492-7	**A3RB-DPT0036-025.0-20230313**					
No hits reported in this sample.						
FC3492-8	**A3RB-DPT0036-042.0-20230313**					
No hits reported in this sample.						

Summary of Hits

Job Number: FC3492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/13/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

FC3492-9 **A3RB-DPT0036-057.0-20230313**

No hits reported in this sample.

FC3492-10 **A3RB-FD04-20230313**

No hits reported in this sample.

FC3492-11 **A3RB-FB05-20230313**

No hits reported in this sample.

FC3492-12 **A3RB-EB05-20230313**

No hits reported in this sample.

(a) Dilution required (ID recovery standard failure). Associated ID Standard outside control limits.
(b) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: A3RB-DPT0035-025.0-20230313
Lab Sample ID: FC3492-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42097.D	1.4	03/21/23 21:07	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42179.D	6.8	03/22/23 19:28	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.013 U [d]	0.025	0.013	0.0063	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.013 U [d]	0.025	0.013	0.0063	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.0026 U	0.0052	0.0026	0.0013	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
375-95-1	Perfluorononanoic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
335-76-2	Perfluorodecanoic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
2058-94-8	Perfluoroundecanoic acid [c]	0.013 U [d]	0.025	0.013	0.0063	ug/l	
307-55-1	Perfluorododecanoic acid	0.013 U [d]	0.025	0.013	0.0063	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0026 U	0.0052	0.0026	0.0013	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.013 U [d]	0.025	0.013	0.0063	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0026 U	0.0052	0.0026	0.0013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0026 U	0.0052	0.0026	0.0013	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	0.0026 U	0.0052	0.0026	0.0013	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0026 U	0.0052	0.0026	0.0013	ug/l	
31506-32-8	MeFOSA [c]	0.025 U [d]	0.050	0.025	0.013	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0052 U	0.010	0.0052	0.0026	ug/l	
2991-50-6	EtFOSAA	0.0052 U	0.010	0.0052	0.0026	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-025.0-20230313
Lab Sample ID: FC3492-1 **Date Sampled:** 03/13/23
Matrix: AQ - Ground Water **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0052 U	0.010	0.0052	0.0026	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	
919005-14-4	ADONA	0.0052 U	0.010	0.0052	0.0026	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0052 U	0.010	0.0052	0.0026	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0010 U	0.0021	0.0010	0.00052	ug/l	
	PFOS (Linear Isomer)	0.0026 U	0.0052	0.0026	0.0013	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	37% [e]	42% [e]	50-150%
	13C5-PFPeA	34% [e]	43% [e]	50-150%
	13C5-PFHxA	45% [e]	47% [e]	50-150%
	13C4-PFHpA	48% [e]	46% [e]	50-150%
	13C8-PFOA	53%	51%	50-150%
	13C9-PFNA	52%	54%	50-150%
	13C6-PFDA	52%	52%	50-150%
	13C7-PFUnDA	45% [e]	48% [e]	50-150%
	13C2-PFDoDA	49% [e]	50%	50-150%
	13C2-PFTeDA	52%	52%	50-150%
	13C3-PFBS	32% [e]	47% [e]	50-150%
	13C3-PFHxS	50%	53%	50-150%
	13C8-PFOS	52%	50%	50-150%
	13C8-FOSA	50%	55%	50-150%
	d3-MeFOSA	28% [e]	34% [e]	50-150%
	d3-MeFOSAA	56%	56%	50-150%
	d5-EtFOSAA	53%	52%	50-150%
	13C2-4:2FTS	47% [e]	47% [e]	50-150%
	13C2-6:2FTS	53%	49% [e]	50-150%
	13C2-8:2FTS	49% [e]	47% [e]	50-150%
	13C3-HFPO-DA	43% [e]	46% [e]	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-025.0-20230313		
Lab Sample ID:	FC3492-1	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-042.0-20230313
Lab Sample ID: FC3492-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42098.D	1	03/21/23 21:22	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [a]	4Q42180.D	5	03/22/23 19:43	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [b]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-042.0-20230313
Lab Sample ID: FC3492-2 **Date Sampled:** 03/13/23
Matrix: AQ - Ground Water **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [d]	54%	50-150%
	13C5-PFPeA	37% [d]	49% [d]	50-150%
	13C5-PFHxA	51%	56%	50-150%
	13C4-PFHpA	53%	55%	50-150%
	13C8-PFOA	59%	64%	50-150%
	13C9-PFNA	57%	63%	50-150%
	13C6-PFDA	61%	66%	50-150%
	13C7-PFUnDA	49% [d]	57%	50-150%
	13C2-PFDoDA	54%	60%	50-150%
	13C2-PFTeDA	56%	56%	50-150%
	13C3-PFBS	35% [d]	49% [d]	50-150%
	13C3-PFHxS	57%	59%	50-150%
	13C8-PFOS	59%	63%	50-150%
	13C8-FOSA	50%	64%	50-150%
	d3-MeFOSA	27% [d]	36% [d]	50-150%
	d3-MeFOSAA	74%	67%	50-150%
	d5-EtFOSAA	67%	67%	50-150%
	13C2-4:2FTS	54%	58%	50-150%
	13C2-6:2FTS	64%	62%	50-150%
	13C2-8:2FTS	59%	57%	50-150%
	13C3-HFPO-DA	47% [d]	50%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-042.0-20230313		
Lab Sample ID:	FC3492-2	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-057.0-20230313		
Lab Sample ID:	FC3492-3	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42099.D	2.1	03/21/23 21:38	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42181.D	10.4	03/22/23 19:59	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.040 U [d]	0.080	0.040	0.020	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.020 U [d]	0.040	0.020	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-67-1	Perfluorooctanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-95-1	Perfluorononanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-76-2	Perfluorodecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
307-55-1	Perfluorododecanoic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0040 U	0.0081	0.0040	0.0020	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.020 U [d]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0040 U	0.0081	0.0040	0.0020	ug/l	
31506-32-8	MeFOSA [c]	0.040 U [d]	0.080	0.040	0.020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0081 U	0.016	0.0081	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0081 U	0.016	0.0081	0.0040	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0035-057.0-20230313
Lab Sample ID: FC3492-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0081 U	0.016	0.0081	0.0040	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0081 U	0.016	0.0081	0.0040	ug/l	
919005-14-4	ADONA	0.0081 U	0.016	0.0081	0.0040	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0081 U	0.016	0.0081	0.0040	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.040 U [d]	0.080	0.040	0.020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0016 U	0.0032	0.0016	0.00081	ug/l	
	PFOS (Linear Isomer)	0.0040 U	0.0081	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	26% [f]	27% [e]	50-150%
	13C5-PFPeA	40% [f]	48% [e]	50-150%
	13C5-PFHxA	53%	53%	50-150%
	13C4-PFHpA	54%	51%	50-150%
	13C8-PFOA	59%	58%	50-150%
	13C9-PFNA	59%	60%	50-150%
	13C6-PFDA	62%	61%	50-150%
	13C7-PFUnDA	16% [f]	56%	50-150%
	13C2-PFDoDA	10% [f]	61%	50-150%
	13C2-PFTeDA	72%	71%	50-150%
	13C3-PFBS	41% [f]	51%	50-150%
	13C3-PFHxS	59%	56%	50-150%
	13C8-PFOS	57%	55%	50-150%
	13C8-FOSA	54%	58%	50-150%
	d3-MeFOSA	30% [f]	42% [e]	50-150%
	d3-MeFOSAA	78%	72%	50-150%
	d5-EtFOSAA	66%	63%	50-150%
	13C2-4:2FTS	55%	50%	50-150%
	13C2-6:2FTS	61%	51%	50-150%
	13C2-8:2FTS	60%	60%	50-150%
	13C3-HFPO-DA	48% [f]	52%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0035-057.0-20230313		
Lab Sample ID:	FC3492-3	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits due to dilution.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-004.0-20230313
Lab Sample ID: FC3492-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42100.D	1	03/21/23 21:54	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [a]	4Q42182.D	5	03/22/23 20:15	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0157 [c]	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0145 [c]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid [b]	0.0077 [c]	0.019	0.0093	0.0046	ug/l	J
375-85-9	Perfluoroheptanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0115 [c]	0.019	0.0093	0.0046	ug/l	J
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0124 [c]	0.019	0.0093	0.0046	ug/l	J
355-46-4	Perfluorohexanesulfonic acid [b]	0.0600	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0082	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-004.0-20230313
Lab Sample ID: FC3492-4 **Date Sampled:** 03/13/23
Matrix: AQ - Ground Water **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0047	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0033	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	35% [d]	42% [d]	50-150%
	13C5-PFPeA	30% [d]	39% [d]	50-150%
	13C5-PFHxA	40% [d]	45% [d]	50-150%
	13C4-PFHpA	44% [d]	46% [d]	50-150%
	13C8-PFOA	51%	53%	50-150%
	13C9-PFNA	49% [d]	55%	50-150%
	13C6-PFDA	56%	59%	50-150%
	13C7-PFUnDA	55%	52%	50-150%
	13C2-PFDoDA	54%	54%	50-150%
	13C2-PFTeDA	47% [d]	46% [d]	50-150%
	13C3-PFBS	29% [d]	42% [d]	50-150%
	13C3-PFHxS	46% [d]	49% [d]	50-150%
	13C8-PFOS	50%	57%	50-150%
	13C8-FOSA	49% [d]	60%	50-150%
	d3-MeFOSA	34% [d]	44% [d]	50-150%
	d3-MeFOSAA	64%	61%	50-150%
	d5-EtFOSAA	57%	50%	50-150%
	13C2-4:2FTS	43% [d]	47% [d]	50-150%
	13C2-6:2FTS	54%	51%	50-150%
	13C2-8:2FTS	53%	49% [d]	50-150%
	13C3-HFPO-DA	37% [d]	42% [d]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-004.0-20230313		
Lab Sample ID:	FC3492-4	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-010.0-20230313
Lab Sample ID: FC3492-5 **Date Sampled:** 03/13/23
Matrix: AQ - Ground Water **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42103.D	1	03/21/23 22:40	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [a]	4Q42183.D	5	03/22/23 20:30	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0112 [c]	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0026	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0198	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0127	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [c]	0.037	0.019	0.0093	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-010.0-20230313		
Lab Sample ID:	FC3492-5	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0070	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0055	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	32% [d]	38% [d]	50-150%
	13C5-PFPeA	32% [d]	42% [d]	50-150%
	13C5-PFHxA	44% [d]	49% [d]	50-150%
	13C4-PFHpA	48% [d]	50%	50-150%
	13C8-PFOA	56%	58%	50-150%
	13C9-PFNA	53%	60%	50-150%
	13C6-PFDA	61%	62%	50-150%
	13C7-PFUnDA	61%	59%	50-150%
	13C2-PFDoDA	54%	61%	50-150%
	13C2-PFTeDA	57%	55%	50-150%
	13C3-PFBS	31% [d]	45% [d]	50-150%
	13C3-PFHxS	50%	57%	50-150%
	13C8-PFOS	52%	60%	50-150%
	13C8-FOSA	50%	64%	50-150%
	d3-MeFOSA	36% [d]	43% [d]	50-150%
	d3-MeFOSAA	69%	65%	50-150%
	d5-EtFOSAA	66%	63%	50-150%
	13C2-4:2FTS	47% [d]	51%	50-150%
	13C2-6:2FTS	58%	54%	50-150%
	13C2-8:2FTS	59%	56%	50-150%
	13C3-HFPO-DA	40% [d]	45% [d]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-010.0-20230313		
Lab Sample ID:	FC3492-5	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-018.0-20230313
Lab Sample ID: FC3492-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42104.D	1.9	03/21/23 22:56	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42184.D	9.3	03/22/23 20:46	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0070 U	0.014	0.0070	0.0035	ug/l	
2706-90-3	Perfluoropentanoic acid	0.017 U [c]	0.034	0.017	0.0086	ug/l	
307-24-4	Perfluorohexanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
335-67-1	Perfluorooctanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
375-95-1	Perfluorononanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
335-76-2	Perfluorodecanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
307-55-1	Perfluorododecanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.017 U [c]	0.034	0.017	0.0086	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.017 U [c]	0.034	0.017	0.0086	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0035 U	0.0070	0.0035	0.0018	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0035 U	0.0070	0.0035	0.0018	ug/l	
31506-32-8	MeFOSA [d]	0.034 U [c]	0.069	0.034	0.017	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0070 U	0.014	0.0070	0.0035	ug/l	
2991-50-6	EtFOSAA	0.0070 U	0.014	0.0070	0.0035	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0070 U	0.014	0.0070	0.0035	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-018.0-20230313
Lab Sample ID: FC3492-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0070 U	0.014	0.0070	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0070 U	0.014	0.0070	0.0035	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0070 U	0.014	0.0070	0.0035	ug/l	
919005-14-4	ADONA	0.0070 U	0.014	0.0070	0.0035	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0070 U	0.014	0.0070	0.0035	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0070 U	0.014	0.0070	0.0035	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0014 U	0.0028	0.0014	0.00070	ug/l	
	PFOS (Linear Isomer)	0.0035 U	0.0070	0.0035	0.0018	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	64%	50-150%
	13C5-PFPeA	44% d	56%	50-150%
	13C5-PFHxA	57%	62%	50-150%
	13C4-PFHpA	61%	61%	50-150%
	13C8-PFOA	72%	71%	50-150%
	13C9-PFNA	70%	78%	50-150%
	13C6-PFDA	76%	79%	50-150%
	13C7-PFUnDA	72%	70%	50-150%
	13C2-PFDoDA	85%	81%	50-150%
	13C2-PFTeDA	77%	80%	50-150%
	13C3-PFBS	43% d	57%	50-150%
	13C3-PFHxS	67%	67%	50-150%
	13C8-PFOS	69%	73%	50-150%
	13C8-FOSA	55%	63%	50-150%
	d3-MeFOSA	15% d	28% d	50-150%
	d3-MeFOSAA	78%	79%	50-150%
	d5-EtFOSAA	80%	76%	50-150%
	13C2-4:2FTS	60%	63%	50-150%
	13C2-6:2FTS	73%	68%	50-150%
	13C2-8:2FTS	70%	73%	50-150%
	13C3-HFPO-DA	52%	54%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-018.0-20230313		
Lab Sample ID:	FC3492-6	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-025.0-20230313
Lab Sample ID: FC3492-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42105.D	2.7	03/21/23 23:11	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42185.D	13.7	03/22/23 21:01	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.053 U [d]	0.11	0.053	0.026	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.026 U [d]	0.053	0.026	0.013	ug/l	
307-24-4	Perfluorohexanoic acid	0.026 U [d]	0.053	0.026	0.013	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-67-1	Perfluorooctanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
375-95-1	Perfluorononanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-76-2	Perfluorodecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
2058-94-8	Perfluoroundecanoic acid [c]	0.026 U [d]	0.053	0.026	0.013	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.026 U [d]	0.053	0.026	0.013	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.026 U [d]	0.053	0.026	0.013	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.026 U [d]	0.053	0.026	0.013	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0052 U	0.010	0.0052	0.0026	ug/l	
335-77-3	Perfluorodecanesulfonic acid [c]	0.0052 U	0.010	0.0052	0.0026	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0052 U	0.010	0.0052	0.0026	ug/l	
31506-32-8	MeFOSA	0.053 U [d]	0.11	0.053	0.026	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.053 U [d]	0.11	0.053	0.026	ug/l	
2991-50-6	EtFOSAA	0.053 U [d]	0.11	0.053	0.026	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-025.0-20230313
Lab Sample ID: FC3492-7 **Date Sampled:** 03/13/23
Matrix: AQ - Ground Water **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.010 U	0.021	0.010	0.0052	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.010 U	0.021	0.010	0.0052	ug/l	
919005-14-4	ADONA	0.010 U	0.021	0.010	0.0052	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.010 U	0.021	0.010	0.0052	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.010 U	0.021	0.010	0.0052	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0021 U	0.0042	0.0021	0.0010	ug/l	
	PFOS (Linear Isomer)	0.0052 U	0.010	0.0052	0.0026	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	23% [e]	27% [e]	50-150%
	13C5-PFPeA	40% [e]	47% [e]	50-150%
	13C5-PFHxA	49% [e]	52%	50-150%
	13C4-PFHpA	51%	53%	50-150%
	13C8-PFOA	55%	57%	50-150%
	13C9-PFNA	57%	56%	50-150%
	13C6-PFDA	53%	57%	50-150%
	13C7-PFUnDA	3% [e]	47% [e]	50-150%
	13C2-PFDoDA	4% [e]	49% [e]	50-150%
	13C2-PFTeDA	89%	89%	50-150%
	13C3-PFBS	38% [e]	51%	50-150%
	13C3-PFHxS	53%	51%	50-150%
	13C8-PFOS	54%	61%	50-150%
	13C8-FOSA	56%	64%	50-150%
	d3-MeFOSA	0% [e]	60%	50-150%
	d3-MeFOSAA	1% [e]	80%	50-150%
	d5-EtFOSAA	2% [e]	72%	50-150%
	13C2-4:2FTS	52%	52%	50-150%
	13C2-6:2FTS	58%	53%	50-150%
	13C2-8:2FTS	55%	58%	50-150%
	13C3-HFPO-DA	46% [e]	44% [e]	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-025.0-20230313		
Lab Sample ID:	FC3492-7	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-042.0-20230313		
Lab Sample ID:	FC3492-8	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42106.D	1.8	03/21/23 23:27	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42188.D	9.1	03/22/23 21:48	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.034 U [d]	0.069	0.034	0.017	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.017 U [d]	0.034	0.017	0.0086	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.017 U [d]	0.034	0.017	0.0086	ug/l	
375-85-9	Perfluoroheptanoic acid [c]	0.017 U [d]	0.034	0.017	0.0086	ug/l	
335-67-1	Perfluorooctanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
375-95-1	Perfluorononanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
335-76-2	Perfluorodecanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
307-55-1	Perfluorododecanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.017 U [d]	0.034	0.017	0.0086	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.017 U [d]	0.034	0.017	0.0086	ug/l	
355-46-4	Perfluorohexanesulfonic acid [c]	0.0034 U	0.0068	0.0034	0.0017	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0034 U	0.0068	0.0034	0.0017	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0034 U	0.0068	0.0034	0.0017	ug/l	
31506-32-8	MeFOSA [c]	0.034 U [d]	0.069	0.034	0.017	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0068 U	0.014	0.0068	0.0034	ug/l	
2991-50-6	EtFOSAA	0.0068 U	0.014	0.0068	0.0034	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.0068 U	0.014	0.0068	0.0034	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-042.0-20230313		
Lab Sample ID:	FC3492-8	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate [c]	0.0068 U	0.014	0.0068	0.0034	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate [c]	0.0068 U	0.014	0.0068	0.0034	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0068 U	0.014	0.0068	0.0034	ug/l	
919005-14-4	ADONA	0.0068 U	0.014	0.0068	0.0034	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0068 U	0.014	0.0068	0.0034	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0068 U	0.014	0.0068	0.0034	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0014 U	0.0027	0.0014	0.00068	ug/l	
	PFOS (Linear Isomer)	0.0034 U	0.0068	0.0034	0.0017	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	36% [e]	42% [e]	50-150%
	13C5-PFPeA	34% [e]	42% [e]	50-150%
	13C5-PFHxA	42% [e]	44% [e]	50-150%
	13C4-PFHpA	44% [e]	45% [e]	50-150%
	13C8-PFOA	50%	50%	50-150%
	13C9-PFNA	50%	53%	50-150%
	13C6-PFDA	55%	56%	50-150%
	13C7-PFUnDA	53%	55%	50-150%
	13C2-PFDoDA	63%	61%	50-150%
	13C2-PFTeDA	62%	63%	50-150%
	13C3-PFBS	34% [e]	43% [e]	50-150%
	13C3-PFHxS	48% [e]	52%	50-150%
	13C8-PFOS	55%	50%	50-150%
	13C8-FOSA	51%	55%	50-150%
	d3-MeFOSA	35% [e]	46% [e]	50-150%
	d3-MeFOSAA	57%	64%	50-150%
	d5-EtFOSAA	61%	61%	50-150%
	13C2-4:2FTS	45% [e]	44% [e]	50-150%
	13C2-6:2FTS	49% [e]	45% [e]	50-150%
	13C2-8:2FTS	47% [e]	44% [e]	50-150%
	13C3-HFPO-DA	39% [e]	40% [e]	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-042.0-20230313		
Lab Sample ID:	FC3492-8	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-057.0-20230313
Lab Sample ID: FC3492-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42107.D	2.2	03/21/23 23:42	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42189.D	11.1	03/22/23 22:03	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.044 U [d]	0.087	0.044	0.022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
335-67-1	Perfluorooctanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
375-95-1	Perfluorononanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
335-76-2	Perfluorodecanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
307-55-1	Perfluorododecanoic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0043 U	0.0086	0.0043	0.0022	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.022 U [d]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0043 U	0.0086	0.0043	0.0022	ug/l	
31506-32-8	MeFOSA	0.044 U [d]	0.087	0.044	0.022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0086 U	0.017	0.0086	0.0043	ug/l	
2991-50-6	EtFOSAA	0.044 U [d]	0.087	0.044	0.022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0086 U	0.017	0.0086	0.0043	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0036-057.0-20230313
Lab Sample ID: FC3492-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0086 U	0.017	0.0086	0.0043	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0086 U	0.017	0.0086	0.0043	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0086 U	0.017	0.0086	0.0043	ug/l	
919005-14-4	ADONA	0.0086 U	0.017	0.0086	0.0043	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0086 U	0.017	0.0086	0.0043	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.044 U [d]	0.087	0.044	0.022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0017 U	0.0035	0.0017	0.00086	ug/l	
	PFOS (Linear Isomer)	0.0043 U	0.0086	0.0043	0.0022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [f]	48% [e]	50-150%
	13C5-PFPeA	39% [f]	51%	50-150%
	13C5-PFHxA	53%	56%	50-150%
	13C4-PFHpA	54%	53%	50-150%
	13C8-PFOA	57%	57%	50-150%
	13C9-PFNA	57%	61%	50-150%
	13C6-PFDA	57%	57%	50-150%
	13C7-PFUnDA	16% [f]	54%	50-150%
	13C2-PFDoDA	16% [f]	72%	50-150%
	13C2-PFTeDA	85%	84%	50-150%
	13C3-PFBS	36% [f]	53%	50-150%
	13C3-PFHxS	56%	65%	50-150%
	13C8-PFOS	54%	62%	50-150%
	13C8-FOSA	54%	63%	50-150%
	d3-MeFOSA	36% [f]	54%	50-150%
	d3-MeFOSAA	75%	73%	50-150%
	d5-EtFOSAA	47% [f]	65%	50-150%
	13C2-4:2FTS	55%	55%	50-150%
	13C2-6:2FTS	58%	54%	50-150%
	13C2-8:2FTS	54%	55%	50-150%
	13C3-HFPO-DA	48% [f]	56%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0036-057.0-20230313		
Lab Sample ID:	FC3492-9	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Result is from Run# 2
(e) Outside control limits due to dilution.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD04-20230313
Lab Sample ID: FC3492-10
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q42110.D	1.1	03/22/23 00:29	AL	03/17/23 09:15	OP95928	S4Q604
Run #2 [b]	4Q42192.D	5.6	03/22/23 22:50	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [c]	0.041	0.021	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid [d]	0.010 U [c]	0.021	0.010	0.0052	ug/l	
307-24-4	Perfluorohexanoic acid	0.010 U [c]	0.021	0.010	0.0052	ug/l	
375-85-9	Perfluoroheptanoic acid	0.010 U [c]	0.021	0.010	0.0052	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [d]	0.010 U [c]	0.021	0.010	0.0052	ug/l	
2706-91-4	Perfluoropentanesulfonic aci [d]	0.010 U [c]	0.021	0.010	0.0052	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.010 U [c]	0.021	0.010	0.0052	ug/l	
31506-32-8	MeFOSA [d]	0.021 U [c]	0.041	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U	0.0081	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U	0.0081	0.0041	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.021 U [c]	0.041	0.021	0.010	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD04-20230313		
Lab Sample ID:	FC3492-10	**Date Sampled:**	03/13/23
Matrix:	AQ - Ground Water	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U	0.0081	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U	0.0081	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.0041 U	0.0081	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U	0.0081	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U	0.0081	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U	0.0081	0.0041	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [e]	51%	50-150%
	13C5-PFPeA	36% [e]	48% [e]	50-150%
	13C5-PFHxA	46% [e]	53%	50-150%
	13C4-PFHpA	49% [e]	54%	50-150%
	13C8-PFOA	56%	61%	50-150%
	13C9-PFNA	53%	61%	50-150%
	13C6-PFDA	57%	61%	50-150%
	13C7-PFUnDA	50%	55%	50-150%
	13C2-PFDoDA	58%	56%	50-150%
	13C2-PFTeDA	51%	53%	50-150%
	13C3-PFBS	34% [e]	48% [e]	50-150%
	13C3-PFHxS	52%	60%	50-150%
	13C8-PFOS	52%	60%	50-150%
	13C8-FOSA	48% [e]	61%	50-150%
	d3-MeFOSA	27% [e]	37% [e]	50-150%
	d3-MeFOSAA	61%	60%	50-150%
	d5-EtFOSAA	58%	60%	50-150%
	13C2-4:2FTS	49% [e]	56%	50-150%
	13C2-6:2FTS	60%	56%	50-150%
	13C2-8:2FTS	56%	54%	50-150%
	13C3-HFPO-DA	44% [e]	46% [e]	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB05-20230313
Lab Sample ID: FC3492-11
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42111.D	1	03/22/23 00:45	AL	03/17/23 09:15	OP95928	S4Q604
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB05-20230313
Lab Sample ID: FC3492-11
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 03/13/23
Date Received: 03/14/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	62%		50-150%
	13C5-PFPeA	61%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	59%		50-150%
	13C8-PFOA	65%		50-150%
	13C9-PFNA	65%		50-150%
	13C6-PFDA	67%		50-150%
	13C7-PFUnDA	64%		50-150%
	13C2-PFDoDA	63%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	63%		50-150%
	13C3-PFHxS	60%		50-150%
	13C8-PFOS	64%		50-150%
	13C8-FOSA	68%		50-150%
	d3-MeFOSA	54%		50-150%
	d3-MeFOSAA	67%		50-150%
	d5-EtFOSAA	64%		50-150%
	13C2-4:2FTS	56%		50-150%
	13C2-6:2FTS	58%		50-150%
	13C2-8:2FTS	57%		50-150%
	13C3-HFPO-DA	59%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB05-20230313		
Lab Sample ID:	FC3492-12	**Date Sampled:**	03/13/23
Matrix:	AQ - Equipment Blank	**Date Received:**	03/14/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q42193.D	1	03/22/23 23:05	AL	03/17/23 09:15	OP95928	S4Q605
Run #2 [a]	4Q42194.D	5	03/22/23 23:21	AL	03/17/23 09:15	OP95928	S4Q605

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB05-20230313
Lab Sample ID: FC3492-12 **Date Sampled:** 03/13/23
Matrix: AQ - Equipment Blank **Date Received:** 03/14/23
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD **Percent Solids:** n/a
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	59%	56%	50-150%
	13C5-PFPeA	58%	55%	50-150%
	13C5-PFHxA	57%	53%	50-150%
	13C4-PFHpA	55%	52%	50-150%
	13C8-PFOA	59%	56%	50-150%
	13C9-PFNA	60%	57%	50-150%
	13C6-PFDA	61%	56%	50-150%
	13C7-PFUnDA	57%	53%	50-150%
	13C2-PFDoDA	57%	52%	50-150%
	13C2-PFTeDA	45% [b]	42% [b]	50-150%
	13C3-PFBS	60%	59%	50-150%
	13C3-PFHxS	57%	53%	50-150%
	13C8-PFOS	57%	55%	50-150%
	13C8-FOSA	62%	59%	50-150%
	d3-MeFOSA	58%	53%	50-150%
	d3-MeFOSAA	61%	57%	50-150%
	d5-EtFOSAA	60%	57%	50-150%
	13C2-4:2FTS	54%	51%	50-150%
	13C2-6:2FTS	53%	50%	50-150%
	13C2-8:2FTS	51%	46% [b]	50-150%
	13C3-HFPO-DA	53%	52%	50-150%

(a) Confirmation run.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC3492

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 1 of 1

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: Jennifer Gootee cc: Megan Garcia | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	PFOS Branched vs. Linear	MS/MSD	Comments
1	A3RB-DPT0035-025.0-20230313	A3RB-DPT0035	20230313	0850	WG	N	G	2	2	X		
2	A3RB-DPT0035-042.0-20230313	A3RB-DPT0035	20230313	0915	WG	N	G	2	2	X		
3	A3RB-DPT0035-057.0-20230313	A3RB-DPT0035	20230313	0945	WG	N	G	2	2	X		
4	A3RB-DPT0036-004.0-20230313	A3RB-DPT0036	20230313	1130	WG	N	G	2	2	X		
5	A3RB-DPT0036-016.0-20230313	A3RB-DPT0036	20230313	1155	WG	N	G	2	2	X		
6	A3RB-DPT0036-028.0-20230313	A3RB-DPT0036	20230313	1225	WG	N	G	2	2	X		
7	A3RB-DPT0036-035.0-20230313	A3RB-DPT0036	20230313	1505	WG	N	G	2	2	X		
8	A3RB-DPT0036-042.0-20230313	A3RB-DPT0036	20230313	1530	WG	N	G	2	2	X		
9	A3RB-DPT0036-057.0-20230313	A3RB-DPT0036	20230313	1605	WG	N	G	2	2	X	X	
10	A3RB-FD04-20230313	A3RB-FD04	20230313	0800	WG	N	G	2	2			
11	A3RB-FB05-20230313	A3RB-FB05	20230313	1615	WQ	N	G	2	2			
12	A3RB-EB05-20230313	A3RB-EB05	20230313	1620	WQ	N	G	2	2			

INITIAL ASSESSMENT

LABEL VERIFICATION ZB 1.4IR1

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		3/14/23	1505		3/14/23	1505
2		3/14/23	1630		3/14/23	~~1000~~ 1505
3						

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC3492: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FC3492 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 3/14/2023 3:05:00 PM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.4);

Cooler Temps (Corrected) °C: Cooler 1: (1.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: ZANEB Date: 3/14/2023 3:05:00 PM Reviewer: _____ Date: _____

FC3492: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/13/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95928	EPA 537M QSM5.3 B-15						
OP95928-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	85	%	73-129
OP95928-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	86	%	72-129
OP95928-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	86	%	72-129
OP95928-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	87	%	72-130
OP95928-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	85	%	71-133
OP95928-BS	375-95-1	Perfluorononanoic acid	BSP	REC	83	%	69-130
OP95928-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	86	%	71-129
OP95928-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	87	%	69-133
OP95928-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	89	%	72-134
OP95928-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	75	%	65-144
OP95928-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	89	%	71-132
OP95928-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	87	%	72-130
OP95928-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	86	%	71-127
OP95928-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	87	%	68-131
OP95928-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	88	%	69-134
OP95928-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	81	%	65-140
OP95928-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	86	%	69-127
OP95928-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	88	%	53-142
OP95928-BS	754-91-6	PFOSA	BSP	REC	88	%	67-137
OP95928-BS	31506-32-8	MeFOSA	BSP	REC	130	%	68-141
OP95928-BS	2355-31-9	MeFOSAA	BSP	REC	87	%	65-136
OP95928-BS	2991-50-6	EtFOSAA	BSP	REC	87	%	61-135
OP95928-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	91	%	63-143
OP95928-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	93	%	64-140
OP95928-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP95928-MS2	375-22-4	Perfluorobutanoic acid	MS	REC	96	%	73-129
OP95928-MS2	2706-90-3	Perfluoropentanoic acid	MS	REC	88	%	72-129
OP95928-MS2	307-24-4	Perfluorohexanoic acid	MS	REC	87	%	72-129
OP95928-MS2	375-85-9	Perfluoroheptanoic acid	MS	REC	88	%	72-130
OP95928-MS2	335-67-1	Perfluorooctanoic acid	MS	REC	89	%	71-133
OP95928-MS2	375-95-1	Perfluorononanoic acid	MS	REC	89	%	69-130
OP95928-MS2	335-76-2	Perfluorodecanoic acid	MS	REC	87	%	71-129
OP95928-MS2	2058-94-8	Perfluoroundecanoic acid	MS	REC	91	%	69-133
OP95928-MS2	307-55-1	Perfluorododecanoic acid	MS	REC	89	%	72-134
OP95928-MS2	72629-94-8	Perfluorotridecanoic acid	MS	REC	90	%	65-144
OP95928-MS2	376-06-7	Perfluorotetradecanoic acid	MS	REC	88	%	71-132
OP95928-MS2	375-73-5	Perfluorobutanesulfonic acid	MS	REC	95	%	72-130
OP95928-MS2	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	91	%	71-127
OP95928-MS2	355-46-4	Perfluorohexanesulfonic acid	MS	REC	80	%	68-131
OP95928-MS2	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	90	%	69-134
OP95928-MS2	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	84	%	65-140
OP95928-MS2	68259-12-1	Perfluorononanesulfonic acid	MS	REC	88	%	69-127

* Sample used for QC is not from job FC3492

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/13/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95928-MS2	335-77-3	Perfluorodecanesulfonic acid	MS	REC	102	%	53-142
OP95928-MS2	754-91-6	PFOSA	MS	REC	91	%	67-137
OP95928-MS2	31506-32-8	MeFOSA	MS	REC	97	%	68-141
OP95928-MS2	2355-31-9	MeFOSAA	MS	REC	83	%	65-136
OP95928-MS2	2991-50-6	EtFOSAA	MS	REC	80	%	61-135
OP95928-MS2	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	87	%	63-143
OP95928-MS2	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	93	%	64-140
OP95928-MS2	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	98	%	67-138
OP95928-MSD2	375-22-4	Perfluorobutanoic acid	MSD	REC	97	%	73-129
OP95928-MSD2	375-22-4	Perfluorobutanoic acid	MSD	RPD	2	%	30
OP95928-MSD2	2706-90-3	Perfluoropentanoic acid	MSD	REC	93	%	72-129
OP95928-MSD2	2706-90-3	Perfluoropentanoic acid	MSD	RPD	6	%	30
OP95928-MSD2	307-24-4	Perfluorohexanoic acid	MSD	REC	92	%	72-129
OP95928-MSD2	307-24-4	Perfluorohexanoic acid	MSD	RPD	6	%	30
OP95928-MSD2	375-85-9	Perfluoroheptanoic acid	MSD	REC	92	%	72-130
OP95928-MSD2	375-85-9	Perfluoroheptanoic acid	MSD	RPD	4	%	30
OP95928-MSD2	335-67-1	Perfluorooctanoic acid	MSD	REC	88	%	71-133
OP95928-MSD2	335-67-1	Perfluorooctanoic acid	MSD	RPD	0	%	30
OP95928-MSD2	375-95-1	Perfluorononanoic acid	MSD	REC	91	%	69-130
OP95928-MSD2	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP95928-MSD2	335-76-2	Perfluorodecanoic acid	MSD	REC	96	%	71-129
OP95928-MSD2	335-76-2	Perfluorodecanoic acid	MSD	RPD	9	%	30
OP95928-MSD2	2058-94-8	Perfluoroundecanoic acid	MSD	REC	95	%	69-133
OP95928-MSD2	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	4	%	30
OP95928-MSD2	307-55-1	Perfluorododecanoic acid	MSD	REC	97	%	72-134
OP95928-MSD2	307-55-1	Perfluorododecanoic acid	MSD	RPD	8	%	30
OP95928-MSD2	72629-94-8	Perfluorotridecanoic acid	MSD	REC	99	%	65-144
OP95928-MSD2	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	10	%	30
OP95928-MSD2	376-06-7	Perfluorotetradecanoic acid	MSD	REC	94	%	71-132
OP95928-MSD2	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	6	%	30
OP95928-MSD2	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	95	%	72-130
OP95928-MSD2	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	0	%	30
OP95928-MSD2	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	92	%	71-127
OP95928-MSD2	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP95928-MSD2	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	83	%	68-131
OP95928-MSD2	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP95928-MSD2	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	94	%	69-134
OP95928-MSD2	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP95928-MSD2	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	96	%	65-140
OP95928-MSD2	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	13	%	30
OP95928-MSD2	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	91	%	69-127
OP95928-MSD2	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	3	%	30
OP95928-MSD2	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	119	%	53-142
OP95928-MSD2	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	16	%	30
OP95928-MSD2	754-91-6	PFOSA	MSD	REC	91	%	67-137

* Sample used for QC is not from job FC3492

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3492
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 03/13/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP95928-MSD2	754-91-6	PFOSA	MSD	RPD	0	%	30
OP95928-MSD2	31506-32-8	MeFOSA	MSD	REC	119	%	68-141
OP95928-MSD2	31506-32-8	MeFOSA	MSD	RPD	21	%	30
OP95928-MSD2	2355-31-9	MeFOSAA	MSD	REC	92	%	65-136
OP95928-MSD2	2355-31-9	MeFOSAA	MSD	RPD	10	%	30
OP95928-MSD2	2991-50-6	EtFOSAA	MSD	REC	89	%	61-135
OP95928-MSD2	2991-50-6	EtFOSAA	MSD	RPD	11	%	30
OP95928-MSD2	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	94	%	63-143
OP95928-MSD2	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	8	%	30
OP95928-MSD2	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	94	%	64-140
OP95928-MSD2	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP95928-MSD2	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	90	%	67-138
OP95928-MSD2	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	8	%	30

* Sample used for QC is not from job FC3492

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q604-IBLK	4Q42085.D	1	03/21/23	AL	n/a	n/a	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	92%	50-150%

Instrument Blank

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q604-IBLK	4Q42085.D	1	03/21/23	AL	n/a	n/a	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	96%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	95%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	96%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	86%	50-150%

Instrument Blank

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q605-IBLK	4Q42150.D	1	03/22/23	AL	n/a	n/a	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-12

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	94%	50-150%
	13C5-PFPeA	92%	50-150%
	13C5-PFHxA	90%	50-150%

Instrument Blank

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q605-IBLK	4Q42150.D	1	03/22/23	AL	n/a	n/a	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-12

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	100%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	93%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	98%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	86%	50-150%
	13C3-HFPO-DA	94%	50-150%

Method Blank Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-MB	4Q42092.D	1	03/21/23	AL	03/17/23	OP95928	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	64%	50-150%

Method Blank Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-MB	4Q42092.D	1	03/21/23	AL	03/17/23	OP95928	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	59%	50-150%
	13C5-PFHxA	56%	50-150%
	13C4-PFHpA	54%	50-150%
	13C8-PFOA	59%	50-150%
	13C9-PFNA	61%	50-150%
	13C6-PFDA	63%	50-150%
	13C7-PFUnDA	62%	50-150%
	13C2-PFDoDA	67%	50-150%
	13C2-PFTeDA	67%	50-150%
	13C3-PFBS	57%	50-150%
	13C3-PFHxS	54%	50-150%
	13C8-PFOS	62%	50-150%
	13C8-FOSA	68%	50-150%
	d3-MeFOSA	57%	50-150%
	d3-MeFOSAA	69%	50-150%
	d5-EtFOSAA	68%	50-150%
	13C2-4:2FTS	52%	50-150%
	13C2-6:2FTS	51%	50-150%
	13C2-8:2FTS	55%	50-150%
	13C3-HFPO-DA	54%	50-150%

Blank Spike Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-BS	4Q42091.D	1	03/21/23	AL	03/17/23	OP95928	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0677	85	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0690	86	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0691	86	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0699	87	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0676	85	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0661	83	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0688	86	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0699	87	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0713	89	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0598	75	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0709	89	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0694	87	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0684	86	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0692	87	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0700	88	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0651	81	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0689	86	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0704	88	53-142
754-91-6	PFOSA	0.08	0.0705	88	67-137
31506-32-8	MeFOSA	0.08	0.104	130	68-141
2355-31-9	MeFOSAA	0.08	0.0694	87	65-136
2991-50-6	EtFOSAA	0.08	0.0692	87	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0727	91	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0743	93	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0758	95	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0706	88	60-140
919005-14-4	ADONA	0.08	0.0666	83	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0639	80	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0689	86	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	83%	50-150%
	13C5-PFPeA	81%	50-150%
	13C5-PFHxA	81%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-BS	4Q42091.D	1	03/21/23	AL	03/17/23	OP95928	S4Q604

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	81%	50-150%
	13C8-PFOA	84%	50-150%
	13C9-PFNA	82%	50-150%
	13C6-PFDA	87%	50-150%
	13C7-PFUnDA	88%	50-150%
	13C2-PFDoDA	88%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	81%	50-150%
	13C3-PFHxS	82%	50-150%
	13C8-PFOS	86%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSA	61%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	88%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	83%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	76%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-MS2	4Q42190.D	10	03/22/23	AL	03/17/23	OP95928	S4Q605
OP95928-MSD2	4Q42191.D	10.4	03/22/23	AL	03/17/23	OP95928	S4Q605
FC3492-9 [a]	4Q42107.D	2.2	03/21/23	AL	03/17/23	OP95928	S4Q604
FC3492-9 [b]	4Q42189.D	11.1	03/22/23	AL	03/17/23	OP95928	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	Compound	FC3492-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.087 U [c]		0.08	0.0764	96	0.08	0.0776	97	2	73-129/30
2706-90-3	Perfluoropentanoic acid	0.044 U [c]		0.08	0.0702	88	0.08	0.0745	93	6	72-129/30
307-24-4	Perfluorohexanoic acid	0.0086 U		0.08	0.0695	87	0.08	0.0735	92	6	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0086 U		0.08	0.0704	88	0.08	0.0733	92	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.0086 U		0.08	0.0709	89	0.08	0.0707	88	0	71-133/30
375-95-1	Perfluorononanoic acid	0.0086 U		0.08	0.0708	89	0.08	0.0724	91	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0086 U		0.08	0.0699	87	0.08	0.0765	96	9	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.044 U [c]		0.08	0.0727	91	0.08	0.0756	95	4	69-133/30
307-55-1	Perfluorododecanoic acid	0.044 U [c]		0.08	0.0714	89	0.08	0.0772	97	8	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.044 U [c]		0.08	0.0718	90	0.08	0.0791	99	10	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0086 U		0.08	0.0703	88	0.08	0.0749	94	6	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.044 U [c]		0.08	0.0759	95	0.08	0.0761	95	0	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.044 U [c]		0.08	0.0729	91	0.08	0.0736	92	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0086 U		0.08	0.0636	80	0.08	0.0663	83	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0086 U		0.08	0.0723	90	0.08	0.0753	94	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0086 U		0.08	0.0674	84	0.08	0.0767	96	13	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0086 U		0.08	0.0707	88	0.08	0.0728	91	3	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.044 U [c]		0.08	0.0814	102	0.08	0.0952	119	16	53-142/30
754-91-6	PFOSA	0.0086 U		0.08	0.0727	91	0.08	0.0730	91	0	67-137/30
31506-32-8	MeFOSA	0.087 U [c]		0.08	0.0772	97	0.08	0.0955	119	21	68-141/30
2355-31-9	MeFOSAA	0.017 U		0.08	0.0667	83	0.08	0.0738	92	10	65-136/30
2991-50-6	EtFOSAA	0.087 U [c]		0.08	0.0638	80	0.08	0.0712	89	11	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.017 U		0.08	0.0697	87	0.08	0.0755	94	8	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.017 U		0.08	0.0740	93	0.08	0.0749	94	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.017 U		0.08	0.0780	98	0.08	0.0721	90	8	67-138/30
13252-13-6	HFPO-DA (GenX)	0.017 U		0.08	0.0644	81	0.08	0.0753	94	16	60-140/30
919005-14-4	ADONA	0.017 U		0.08	0.0577	72	0.08	0.0639	80	10	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017 U		0.08	0.0637	80	0.08	0.0696	87	9	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.087 U [c]		0.08	0.0622	78	0.08	0.0722	90	15	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC3492-9	FC3492-9	Limits
	13C4-PFBA	45%* [e]	47%* [e]	41%* [e]	48%* [d]	50-150%
	13C5-PFPeA	48%* [e]	50%	39%* [e]	51%	50-150%
	13C5-PFHxA	54%	53%	53%	56%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3492
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95928-MS2	4Q42190.D	10	03/22/23	AL	03/17/23	OP95928	S4Q605
OP95928-MSD2	4Q42191.D	10.4	03/22/23	AL	03/17/23	OP95928	S4Q605
FC3492-9 [a]	4Q42107.D	2.2	03/21/23	AL	03/17/23	OP95928	S4Q604
FC3492-9 [b]	4Q42189.D	11.1	03/22/23	AL	03/17/23	OP95928	S4Q605

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC3492-1, FC3492-2, FC3492-3, FC3492-4, FC3492-5, FC3492-6, FC3492-7, FC3492-8, FC3492-9, FC3492-10, FC3492-11, FC3492-12

CAS No.	ID Standard Recoveries	MS	MSD	FC3492-9	FC3492-9	Limits
	13C4-PFHpA	54%	53%	54%	53%	50-150%
	13C8-PFOA	58%	58%	57%	57%	50-150%
	13C9-PFNA	59%	57%	57%	61%	50-150%
	13C6-PFDA	61%	58%	57%	57%	50-150%
	13C7-PFUnDA	51%	53%	16%* [e]	54%	50-150%
	13C2-PFDoDA	73%	71%	16%* [e]	72%	50-150%
	13C2-PFTeDA	79%	77%	85%	84%	50-150%
	13C3-PFBS	54%	55%	36%* [e]	53%	50-150%
	13C3-PFHxS	62%	59%	56%	65%	50-150%
	13C8-PFOS	59%	58%	54%	62%	50-150%
	13C8-FOSA	59%	49%* [e]	54%	63%	50-150%
	d3-MeFOSA			36%* [e]	54%	50-150%
	d3-MeFOSAA	74%	73%	75%	73%	50-150%
	d5-EtFOSAA	74%	70%	47%* [e]	65%	50-150%
	13C2-4:2FTS	61%	59%	55%	55%	50-150%
	13C2-6:2FTS	62%	62%	58%	54%	50-150%
	13C2-8:2FTS	59%	63%	54%	55%	50-150%
	13C3-HFPO-DA	51%	51%	48%* [e]	56%	50-150%

(a) Dilution due to sample clogging SPE cartridge, only partial volume was extracted.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Outside control limits due to dilution.
(e) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657.4

SGS Job Number: FC5812

Sampling Dates: 05/02/23 - 05/03/23

Report to:

AECOM
150 N Orange Ave Suite 200
Orlando, FL 32801
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megan.garcia@aecom.com; jennifer.chastain@aecom.com;
ATTN: Jennifer Joyal

Total number of pages in report: 144

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Table of Contents

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC5812

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5812-1	05/02/23	09:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0038-004.0-20230502
FC5812-2	05/02/23	09:30	DS	05/04/23	AQ	Ground Water	A3RB-DPT0038-010.0-20230502
FC5812-3	05/02/23	12:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0038-025.0-20230502
FC5812-4	05/02/23	12:27	DS	05/04/23	AQ	Ground Water	A3RB-DPT0038-042.0-20230502
FC5812-5	05/02/23	13:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0038-057.0-20230502
FC5812-6	05/02/23	13:40	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-004.0-20230502
FC5812-7	05/02/23	14:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-010.0-20230502
FC5812-7D	05/02/23	14:00	DS	05/04/23	AQ	Water Dup/MSD	A3RB-DPT0039-010.0-20230502
FC5812-7S	05/02/23	14:00	DS	05/04/23	AQ	Water Matrix Spike	A3RB-DPT0039-010.0-20230502
FC5812-8	05/02/23	14:30	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-018.0-20230502
FC5812-9	05/02/23	08:00	DS	05/04/23	AQ	Ground Water	A3RB-FD05-20230502
FC5812-10	05/02/23	11:20	DS	05/04/23	AQ	Field Blank Water	A3RB-FB07-20230502
FC5812-11	05/02/23	11:25	DS	05/04/23	AQ	Equipment Blank	A3RB-EB07-20230502

Sample Summary
(continued)

AECOM, Inc

Job No: FC5812

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC5812-12	05/02/23	14:48	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-025.0-20230502
FC5812-13	05/02/23	08:05	DS	05/04/23	AQ	Ground Water	A3RB-FD06-20230502
FC5812-14	05/02/23	15:20	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-042.0-20230502
FC5812-15	05/02/23	15:55	DS	05/04/23	AQ	Ground Water	A3RB-DPT0039-057.0-20230502
FC5812-16	05/03/23	09:05	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-004.0-20230503
FC5812-17	05/03/23	09:50	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-010.0-20230503
FC5812-18	05/03/23	10:20	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-018.0-20230503
FC5812-19	05/03/23	10:40	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-025.0-20230503
FC5812-20	05/03/23	11:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-042.0-20230503
FC5812-21	05/03/23	11:30	DS	05/04/23	AQ	Ground Water	A3RB-DPT0040-057.0-20230503
FC5812-22	05/03/23	09:20	DS	05/04/23	AQ	Field Blank Water	A3RB-FB08-20230503
FC5812-23	05/03/23	09:25	DS	05/04/23	AQ	Equipment Blank	A3RB-EB08-20230503
FC5812-24	05/03/23	08:00	DS	05/04/23	AQ	Ground Water	A3RB-FD07-20230503

Sample Summary
(continued)

AECOM, Inc

Job No: FC5812

NASA KSC, PFAS SA & Mitigation
Project No: 60667657.4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FC5812-25	05/03/23	14:25	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-004.0-20230503
FC5812-26	05/03/23	14:40	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-010.0-20230503
FC5812-26D	05/03/23	14:40	DS	05/04/23	AQ	Water Dup/MSD	A3RB-DPT0041-010.0-20230503
FC5812-26S	05/03/23	14:40	DS	05/04/23	AQ	Water Matrix Spike	A3RB-DPT0041-010.0-20230503
FC5812-27	05/03/23	15:05	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-018.0-20230503
FC5812-28	05/03/23	15:40	DS	05/04/23	AQ	Equipment Blank	A3RB-EB09-20230503
FC5812-29	05/03/23	15:30	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-025.0-20230503
FC5812-30	05/03/23	16:00	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-042.0-20230503
FC5812-31	05/03/23	16:35	DS	05/04/23	AQ	Ground Water	A3RB-DPT0041-057.0-20230503

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC5812

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 6/8/2023 3:23:38 PM

On 05/04/2023, 29 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5812 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96823

Sample(s) FC5812-7MS, FC5812-7MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluoroheptanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC5812-1, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16, FC5812-2, FC5812-3, FC5812-4, FC5812-6, FC5812-7, FC5812-8, FC5812-9 have surrogates outside control limits.

FC5812-1 for 13C2-PFDoDA: Outside control limits.

FC5812-1 for 13C2-PFDoDA: Outside control limits.

FC5812-1 for 13C2-PFTeDA: Outside control limits.

FC5812-1 for 13C2-PFTeDA: Outside control limits.

FC5812-1 for 13C4-PFBA: Outside control limits.

FC5812-1 for 13C4-PFBA: Outside control limits.

FC5812-1 for 13C5-PFPeA: Outside control limits.

FC5812-1 for 13C8-FOSA: Outside control limits.

FC5812-1 for d3-MeFOSA: Outside control limits.

FC5812-1 for d3-MeFOSA: Outside control limits.

FC5812-1 for d5-EtFOSAA: Outside control limits.

FC5812-1 for d5-EtFOSAA: Outside control limits.

FC5812-1 for MeFOSA: Associated ID Standard outside control limits.

FC5812-1 for PFOSA: Associated ID Standard outside control limits.

FC5812-2 for 13C2-PFTeDA: Outside control limits.

FC5812-2 for 13C4-PFBA: Outside control limits.

FC5812-2 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5812-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5812-2: Confirmation run.

FC5812-3 for 13C4-PFBA: Outside control limits.

FC5812-3: Dilution required (ID recovery standard failure).

FC5812-4 for d3-MeFOSA: Outside control limits.

FC5812-4: Dilution required (ID recovery standard failure).

FC5812-6 for 13C4-PFBA: Outside control limits.

FC5812-6 for 13C5-PFPeA: Outside control limits.

FC5812-6 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5812-6: Dilution required (ID recovery standard failure).

FC5812-7 for 13C4-PFBA: Outside control limits.

FC5812-7 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5812-7: Dilution required (ID recovery standard failure).

FC5812-8 for 13C4-PFBA: Outside control limits.

FC5812-8 for d3-MeFOSA: Outside control limits.

FC5812-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5812-8: Dilution required (ID recovery standard failure).

FC5812-9 for 13C4-PFBA: Outside control limits.

FC5812-9 for d3-MeFOSA: Outside control limits.

FC5812-9 for MeFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96823

FC5812-9: Dilution required (ID recovery standard failure).

FC5812-10 for d3-MeFOSA: Outside control limits.

FC5812-10: Dilution required (ID recovery standard failure).

FC5812-11 for d3-MeFOSA: Outside control limits.

FC5812-11: Dilution required (ID recovery standard failure).

FC5812-12 for 13C4-PFBA: Outside control limits.

FC5812-12 for d3-MeFOSA: Outside control limits.

FC5812-12: Dilution required (ID recovery standard failure).

FC5812-13 for 13C2-PFTeDA: Outside control limits.

FC5812-13 for 13C4-PFBA: Outside control limits.

FC5812-13 for d3-MeFOSA: Outside control limits.

FC5812-13 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5812-13: Dilution required (ID recovery standard failure).

FC5812-14 for d3-MeFOSA: Outside control limits.

FC5812-14 for MeFOSA: Associated ID Standard outside control limits.

FC5812-14: Dilution required (ID recovery standard failure).

FC5812-15 for d3-MeFOSA: Outside control limits.

FC5812-15 for MeFOSA: Associated ID Standard outside control limits.

FC5812-15: Dilution required (ID recovery standard failure).

FC5812-16 for 13C2-PFTeDA: Outside control limits.

FC5812-16 for d3-MeFOSA: Outside control limits.

FC5812-16 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5812-16: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP96824

Sample(s) FC5812-26MS, FC5812-26MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for Perfluorodecanoic acid, Perfluorononanesulfonic acid, Perfluorotetradecanoic acid are outside control limits.

Matrix Spike Recovery(s) for Perfluorooctanesulfonic acid, Perfluoropentanesulfonic acid, Perfluorotetradecanoic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluoroheptanesulfonic acid, Perfluoropentanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-23, FC5812-24, FC5812-25, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31 have surrogates outside control limits.

FC5812-17 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-18 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-19 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-20 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-22 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-24 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-26 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-28 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-29 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-31 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

FC5812-17 for 13C2-PFDoDA: Outside control limits.

FC5812-17 for 13C2-PFTeDA: Outside control limits.

FC5812-17 for 13C4-PFBA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96824

FC5812-17 for 13C7-PFUnDA: Outside control limits.
FC5812-17 for d3-MeFOSA: Outside control limits.
FC5812-17 for MeFOSA: Associated ID Standard outside control limits.
FC5812-17 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-17 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-17: Dilution required (ID recovery standard failure).
FC5812-18 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-18 for 13C2-PFDoDA: Outside control limits.
FC5812-18 for 13C2-PFTeDA: Outside control limits.
FC5812-18 for 13C3-HFPO-DA: Outside control limits.
FC5812-18 for 13C3-PFBS: Outside control limits.
FC5812-18 for 13C4-PFBA: Outside control limits.
FC5812-18 for 13C5-PFPeA: Outside control limits.
FC5812-18 for d3-MeFOSA: Outside control limits.
FC5812-18 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-18 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-18: Dilution required (ID recovery standard failure).
FC5812-19 for 13C2-4:2FTS: Outside control limits.
FC5812-19 for 13C2-PFDoDA: Outside control limits.
FC5812-19 for 13C2-PFTeDA: Outside control limits.
FC5812-19 for 13C3-HFPO-DA: Outside control limits.
FC5812-19 for 13C3-PFBS: Outside control limits.
FC5812-19 for 13C4-PFBA: Outside control limits.
FC5812-19 for 13C5-PFHxA: Outside control limits.
FC5812-19 for 13C5-PFPeA: Outside control limits.
FC5812-19 for 13C8-FOSA: Outside control limits.
FC5812-19 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC5812-19 for d3-MeFOSA: Outside control limits.
FC5812-19 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-19 for MeFOSA: Associated ID Standard outside control limits.
FC5812-19 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.
FC5812-19 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC5812-19 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-19 for Perfluorohexanoic acid: Associated ID Standard outside control limits.
FC5812-19 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-19 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.
FC5812-19 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC5812-19: Dilution required (ID recovery standard failure).
FC5812-20 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-20 for 13C2-PFDoDA: Outside control limits.
FC5812-20 for 13C2-PFTeDA: Outside control limits.
FC5812-20 for 13C3-HFPO-DA: Outside control limits.
FC5812-20 for 13C3-PFBS: Outside control limits.
FC5812-20 for 13C4-PFBA: Outside control limits.
FC5812-20 for 13C5-PFHxA: Outside control limits.
FC5812-20 for 13C5-PFPeA: Outside control limits.
FC5812-20 for 13C7-PFUnDA: Outside control limits.
FC5812-20 for 13C8-FOSA: Outside control limits.
FC5812-20 for d3-MeFOSA: Outside control limits.
FC5812-20 for d5-EtFOSAA: Outside control limits.
FC5812-20 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-20 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-20 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96824

FC5812-20: Dilution required (ID recovery standard failure).
FC5812-21 for Perfluorotetradecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-21: Confirmation run.
FC5812-21: Dilution required (ID recovery standard failure).
FC5812-22 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-22 for 13C2-PFDoDA: Outside control limits.
FC5812-22 for 13C2-PFTeDA: Outside control limits.
FC5812-22 for 13C3-HFPO-DA: Outside control limits.
FC5812-22 for d3-MeFOSA: Outside control limits.
FC5812-22 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-22 for MeFOSA: Associated ID Standard outside control limits.
FC5812-22 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-22 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC5812-22 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-22 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC5812-23: Confirmation run.
FC5812-24 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-24 for 13C2-PFDoDA: Outside control limits.
FC5812-24 for 13C2-PFTeDA: Outside control limits.
FC5812-24 for 13C3-HFPO-DA: Outside control limits.
FC5812-24 for 13C3-PFBS: Outside control limits.
FC5812-24 for 13C4-PFBA: Outside control limits.
FC5812-24 for 13C5-PFHxA: Outside control limits.
FC5812-24 for 13C5-PFPeA: Outside control limits.
FC5812-24 for 13C7-PFUnDA: Outside control limits.
FC5812-24 for d3-MeFOSA: Outside control limits.
FC5812-24 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-24 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-24 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-24: Dilution required (ID recovery standard failure).
FC5812-25: Confirmation run.
FC5812-26 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-26 for 13C2-PFDoDA: Outside control limits.
FC5812-26 for 13C2-PFTeDA: Outside control limits.
FC5812-26 for 13C3-HFPO-DA: Outside control limits.
FC5812-26 for 13C3-PFBS: Outside control limits.
FC5812-26 for 13C4-PFBA: Outside control limits.
FC5812-26 for 13C5-PFPeA: Outside control limits.
FC5812-26 for 13C8-FOSA: Outside control limits.
FC5812-26 for d3-MeFOSA: Outside control limits.
FC5812-26 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-26 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC5812-26 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-26 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC5812-26 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-26 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC5812-26 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC5812-26: Dilution required (ID recovery standard failure).
FC5812-27 for 13C2-PFDoDA: Outside control limits.
FC5812-27 for 13C4-PFBA: Outside control limits.
FC5812-27 for d3-MeFOSA: Outside control limits.
FC5812-27 for MeFOSA: Associated ID Standard outside control limits.
FC5812-27 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96824

FC5812-27 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-27 for Perfluorotetradecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-27: Dilution required (ID recovery standard failure).
FC5812-28 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-28 for 13C2-PFDoDA: Outside control limits.
FC5812-28 for 13C2-PFTeDA: Outside control limits.
FC5812-28 for 13C3-HFPO-DA: Outside control limits.
FC5812-28 for d3-MeFOSA: Outside control limits.
FC5812-28 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-28 for MeFOSA: Associated ID Standard outside control limits.
FC5812-28 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-28 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC5812-28 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-28 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC5812-29 for 13C2-PFDoDA: Outside control limits.
FC5812-29 for 13C2-PFTeDA: Outside control limits.
FC5812-29 for 13C4-PFBA: Outside control limits.
FC5812-29 for 13C5-PFPeA: Outside control limits.
FC5812-29 for 13C7-PFUnDA: Outside control limits.
FC5812-29 for d3-MeFOSA: Outside control limits.
FC5812-29 for MeFOSA: Associated ID Standard outside control limits.
FC5812-29 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-29 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-29: Dilution required (ID recovery standard failure).
FC5812-30 for 13C2-PFDoDA: Outside control limits.
FC5812-30 for 13C2-PFTeDA: Outside control limits.
FC5812-30 for 13C4-PFBA: Outside control limits.
FC5812-30 for 13C5-PFPeA: Outside control limits.
FC5812-30 for 13C7-PFUnDA: Outside control limits.
FC5812-30 for d3-MeFOSA: Outside control limits.
FC5812-30 for MeFOSA: Associated ID Standard outside control limits.
FC5812-30 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-30 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.
FC5812-30 for Perfluorotetradecanoic acid: Associated BS outside control limits high, sample was ND.
FC5812-30: Dilution required (ID recovery standard failure).
FC5812-31 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC5812-31 for 13C2-4:2FTS: Outside control limits.
FC5812-31 for 13C2-PFDoDA: Outside control limits.
FC5812-31 for 13C2-PFTeDA: Outside control limits.
FC5812-31 for 13C3-HFPO-DA: Outside control limits.
FC5812-31 for 13C3-PFBS: Outside control limits.
FC5812-31 for 13C4-PFBA: Outside control limits.
FC5812-31 for 13C5-PFHxA: Outside control limits.
FC5812-31 for 13C5-PFPeA: Outside control limits.
FC5812-31 for 13C7-PFUnDA: Outside control limits.
FC5812-31 for 13C8-FOSA: Outside control limits.
FC5812-31 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC5812-31 for d3-MeFOSA: Outside control limits.
FC5812-31 for d3-MeFOSAA: Outside control limits.
FC5812-31 for d5-EtFOSAA: Outside control limits.
FC5812-31 for EtFOSAA: Associated ID Standard outside control limits.
FC5812-31 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC5812-31 for MeFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP96824

FC5812-31 for MeFOSAA: Associated ID Standard outside control limits.

FC5812-31 for Perfluorodecanoic acid: Associated BS outside control limits high, sample was ND.

FC5812-31 for Perfluorononanesulfonic acid: Associated BS outside control limits high, sample was ND.

FC5812-31: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP96962

Sample(s) FC5812-19, FC5812-21, FC5812-22, FC5812-23, FC5812-25, FC5812-26, FC5812-28 have surrogates outside control limits.

OP96962-BSD for 13C8-FOSA: Outside control limits.

FC5812-19: Confirmation run.

FC5812-21 for 13C2-PFTeDA: Outside control limits.

FC5812-21 for 13C3-HFPO-DA: Outside control limits.

FC5812-21 for 13C4-PFBA: Outside control limits.

FC5812-21 for d3-MeFOSA: Outside control limits.

FC5812-21 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC5812-21 for MeFOSA: Associated ID Standard outside control limits.

FC5812-22: Confirmation run.

FC5812-23 for d3-MeFOSA: Outside control limits.

FC5812-23 for MeFOSA: Associated ID Standard outside control limits.

FC5812-25 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC5812-25 for 13C2-PFDoDA: Outside control limits.

FC5812-25 for 13C2-PFTeDA: Outside control limits.

FC5812-25 for 13C3-HFPO-DA: Outside control limits.

FC5812-25 for 13C4-PFBA: Outside control limits.

FC5812-25 for d3-MeFOSA: Outside control limits.

FC5812-25 for d5-EtFOSAA: Outside control limits.

FC5812-25 for EtFOSAA: Associated ID Standard outside control limits.

FC5812-25 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC5812-25 for MeFOSA: Associated ID Standard outside control limits.

FC5812-25 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC5812-25 for Perfluorododecanoic acid: Associated ID Standard outside control limits.

FC5812-25 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC5812-25 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.

FC5812-26 for 13C2-8:2FTS: Outside control limits.

FC5812-26 for 13C2-PFDoDA: Outside control limits.

FC5812-26 for 13C2-PFTeDA: Outside control limits.

FC5812-26 for 13C3-HFPO-DA: Outside control limits.

FC5812-26 for 13C3-PFBS: Outside control limits.

FC5812-26 for 13C4-PFBA: Outside control limits.

FC5812-26 for 13C5-PFHxA: Outside control limits.

FC5812-26 for 13C5-PFPeA: Outside control limits.

FC5812-26 for 13C7-PFUnDA: Outside control limits.

FC5812-26 for 13C8-PFOS: Outside control limits.

FC5812-26 for d3-MeFOSA: Outside control limits.

FC5812-26 for d3-MeFOSAA: Outside control limits.

FC5812-26 for d5-EtFOSAA: Outside control limits.

FC5812-26 for MeFOSA: Associated ID Standard outside control limits.

FC5812-28: Confirmation run.

Matrix: AQ **Batch ID:** OP97045

OP97045-BS: Insufficient sample for MS/MSD.

OP97045-BS for d3-MeFOSA: Outside control limits.

OP97045-BSD for d3-MeFOSA: Outside control limits.

OP97045-BSD for d3-MeFOSA: Outside control limits.

OP97045-MB for d3-MeFOSA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97045

OP97045-MB for d3-MeFOSA: Outside control limits.

Sample(s) FC5812-1 have surrogates outside control limits.

FC5812-1 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC5812-1 for 13C4-PFBA: Outside control limits.

FC5812-1 for 13C5-PFPeA: Outside control limits.

FC5812-1 for 13C8-FOSA: Outside control limits.

FC5812-1 for d3-MeFOSA: Outside control limits.

FC5812-1 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC5812-1	**A3RB-DPT0038-004.0-20230502**					
Perfluorobutanoic acid [a]		0.0315	0.0085	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0040 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0033 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0022 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0039 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0045	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0048	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0478	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0014 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0470	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC5812-2	**A3RB-DPT0038-010.0-20230502**					
Perfluorobutanoic acid [a]		0.0060 J	0.0077	0.0038	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0020 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0047	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0014 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0024 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0058	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0059	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0933	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0021 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.191	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5812-3	**A3RB-DPT0038-025.0-20230502**					
Perfluoropentanoic acid		0.0022 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0069	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0018 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0023 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0114	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0101	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0656	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0020 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0035 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5812-4	**A3RB-DPT0038-042.0-20230502**					
Perfluorobutanoic acid		0.0241	0.0095	0.0048	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0019 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0013 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0038 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0015 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		0.0103	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0076	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC5812-5	**A3RB-DPT0038-057.0-20230502**					
Perfluorobutanoic acid		0.0042 J	0.0089	0.0044	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0041 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0071	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC5812-6	**A3RB-DPT0039-004.0-20230502**					
Perfluorobutanoic acid [b]		0.0228 J	0.038	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0011 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0028 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0020 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0093	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0055	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5812-7	**A3RB-DPT0039-010.0-20230502**					
Perfluorohexanoic acid		0.0016 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0023 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0022 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0234	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0156	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5812-8	**A3RB-DPT0039-018.0-20230502**					
Perfluorohexanesulfonic acid		0.0024 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0011 J	0.0038	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC5812-9	**A3RB-FD05-20230502**					
Perfluoropentanoic acid		0.0022 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0074	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0020 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0023 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0127	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0114	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0722	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0019 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0028 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC5812-10	**A3RB-FB07-20230502**					
No hits reported in this sample.						
FC5812-11	**A3RB-EB07-20230502**					
No hits reported in this sample.						
FC5812-12	**A3RB-DPT0039-025.0-20230502**					
Perfluorohexanoic acid		0.0010 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0016 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0081	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0024 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC5812-13	**A3RB-FD06-20230502**					
Perfluorohexanesulfonic acid		0.0025 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0016 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5812-14	**A3RB-DPT0039-042.0-20230502**					
Perfluorobutanoic acid		0.0049 J	0.0082	0.0041	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0018 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5812-15	**A3RB-DPT0039-057.0-20230502**					
No hits reported in this sample.						
FC5812-16	**A3RB-DPT0040-004.0-20230503**					
Perfluorobutanoic acid		0.0030 J	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0011 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0025 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0129	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.131	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5812-17	**A3RB-DPT0040-010.0-20230503**					
Perfluorobutanoic acid [c]		0.0122 J	0.043	0.022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0020 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0040 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0013 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0046	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0262	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoropentanesulfonic acid		0.0278	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.178	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0073	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0908	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC5812-18	**A3RB-DPT0040-018.0-20230503**					
Perfluorooctanesulfonic acid		0.0015 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC5812-19	**A3RB-DPT0040-025.0-20230503**					
Perfluorooctanesulfonic acid		0.0016 J	0.0049	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC5812-20	**A3RB-DPT0040-042.0-20230503**					
Perfluorohexanesulfonic acid		0.0030 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0031 J	0.0044	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC5812-21	**A3RB-DPT0040-057.0-20230503**					
Perfluorohexanesulfonic acid		0.0018 J	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0064	0.0048	0.0024	ug/l	EPA 537M QSM5.3 B-15
FC5812-22	**A3RB-FB08-20230503**					
No hits reported in this sample.						
FC5812-23	**A3RB-EB08-20230503**					
No hits reported in this sample.						
FC5812-24	**A3RB-FD07-20230503**					
Perfluorohexanesulfonic acid		0.0019 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0020 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
FC5812-25	**A3RB-DPT0041-004.0-20230503**					
Perfluorobutanoic acid [a]		0.0205	0.0087	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0015 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0087	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0017 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0021 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0793	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0319	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.101	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC5812-26	**A3RB-DPT0041-010.0-20230503**					
Perfluorobutanoic acid [a]		0.0220	0.0080	0.0040	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0023 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0021 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0020 J	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0150	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0174	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0182	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.158	0.0040	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC5812-27	**A3RB-DPT0041-018.0-20230503**					
Perfluorobutanesulfonic acid		0.0036 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0042 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0274	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0023 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0198	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC5812-28	**A3RB-EB09-20230503**					
No hits reported in this sample.						
FC5812-29	**A3RB-DPT0041-025.0-20230503**					
Perfluorohexanoic acid		0.0018 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0017 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0031 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0029 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0176	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0011 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0130	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC5812-30	**A3RB-DPT0041-042.0-20230503**					
Perfluorooctanoic acid		0.0023 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0036 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0027 J	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0281	0.0047	0.0023	ug/l	EPA 537M QSM5.3 B-15
FC5812-31	**A3RB-DPT0041-057.0-20230503**					
Perfluorooctanesulfonic acid		0.0034 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(a) Associated ID Standard outside control limits.
(b) Dilution required (ID recovery standard failure). Associated ID Standard outside control limits.
(c) Dilution required (ID recovery standard failure).

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-DPT0038-004.0-20230502		
Lab Sample ID:	FC5812-1	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45278.D	1	05/31/23 16:53	AL	05/24/23 14:09	OP97045	S4Q658
Run #2	2Q109513.D	1	05/19/23 14:56	LR	05/10/23 14:45	OP96823	S2Q1543
Run #3	2Q109542.D	5	05/19/23 23:24	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	255 ml	1.0 ml
Run #3	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0315	0.0085	0.0043	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0040	0.0043	0.0021	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0033	0.0043	0.0021	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0022	0.0043	0.0021	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0039	0.0043	0.0021	0.0011	ug/l	J
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0045	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0048	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0478	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0014	0.0043	0.0021	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0470	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [a]	0.0020 U [b]	0.0039	0.0020	0.00098	ug/l	
31506-32-8	MeFOSA [a]	0.020 U [c]	0.039	0.020	0.0098	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0038-004.0-20230502		
Lab Sample ID:	FC5812-1	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	35% d	31% d	42% d	50-150%
	13C5-PFPeA	46% d	46% d	64%	50-150%
	13C5-PFHxA	58%	57%	77%	50-150%
	13C4-PFHpA	72%	66%	82%	50-150%
	13C8-PFOA	85%	73%	84%	50-150%
	13C9-PFNA	83%	80%	85%	50-150%
	13C6-PFDA	79%	76%	76%	50-150%
	13C7-PFUnDA	71%	57%	57%	50-150%
	13C2-PFDoDA	65%	45% d	46% d	50-150%
	13C2-PFTeDA	56%	29% d	32% d	50-150%
	13C3-PFBS	55%	61%	82%	50-150%
	13C3-PFHxS	81%	67%	84%	50-150%
	13C8-PFOS	77%	62%	70%	50-150%
	13C8-FOSA	24% d	49% d	75%	50-150%
	d3-MeFOSA	1% d	6% d	12% d	50-150%
	d3-MeFOSAA	92%	56%	54%	50-150%
	d5-EtFOSAA	83%	48% d	46% d	50-150%
	13C2-4:2FTS	59%	53%	72%	50-150%
	13C2-6:2FTS	93%	78%	79%	50-150%
	13C2-8:2FTS	86%	83%	78%	50-150%
	13C3-HFPO-DA	56%	54%	65%	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0038-010.0-20230502
Lab Sample ID: FC5812-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109514.D	1	05/19/23 15:14	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109560.D	5	05/20/23 12:20	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0060	0.0077	0.0038	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0020	0.0038	0.0019	0.00096	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0047	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0014	0.0038	0.0019	0.00096	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0024	0.0038	0.0019	0.00096	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0058	0.0038	0.0019	0.00096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0059	0.0038	0.0019	0.00096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0933	0.0038	0.0019	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021	0.0038	0.0019	0.00096	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.191	0.0038	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00096	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0038-010.0-20230502		
Lab Sample ID:	FC5812-2	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0077	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [c]	48% [c]	50-150%
	13C5-PFPeA	56%	69%	50-150%
	13C5-PFHxA	67%	74%	50-150%
	13C4-PFHpA	72%	76%	50-150%
	13C8-PFOA	81%	78%	50-150%
	13C9-PFNA	85%	78%	50-150%
	13C6-PFDA	84%	71%	50-150%
	13C7-PFUnDA	69%	61%	50-150%
	13C2-PFDoDA	63%	55%	50-150%
	13C2-PFTeDA	45% [c]	41% [c]	50-150%
	13C3-PFBS	65%	76%	50-150%
	13C3-PFHxS	74%	73%	50-150%
	13C8-PFOS	76%	69%	50-150%
	13C8-FOSA	67%	81%	50-150%
	d3-MeFOSA	51%	63%	50-150%
	d3-MeFOSAA	61%	61%	50-150%
	d5-EtFOSAA	54%	59%	50-150%
	13C2-4:2FTS	63%	72%	50-150%
	13C2-6:2FTS	82%	74%	50-150%
	13C2-8:2FTS	86%	72%	50-150%
	13C3-HFPO-DA	65%	66%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
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Report of Analysis

Client Sample ID: A3RB-DPT0038-025.0-20230502
Lab Sample ID: FC5812-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109515.D	1	05/19/23 15:31	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109561.D	5	05/20/23 12:37	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022	0.0040	0.0020	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0069	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0018	0.0040	0.0020	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0023	0.0040	0.0020	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0114	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0101	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0656	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020	0.0040	0.0020	0.0010	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0035	0.0040	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0038-025.0-20230502		
Lab Sample ID:	FC5812-3	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [c]	52%	50-150%
	13C5-PFPeA	58%	71%	50-150%
	13C5-PFHxA	68%	76%	50-150%
	13C4-PFHpA	72%	78%	50-150%
	13C8-PFOA	80%	80%	50-150%
	13C9-PFNA	85%	79%	50-150%
	13C6-PFDA	87%	73%	50-150%
	13C7-PFUnDA	75%	65%	50-150%
	13C2-PFDoDA	69%	60%	50-150%
	13C2-PFTeDA	57%	51%	50-150%
	13C3-PFBS	69%	76%	50-150%
	13C3-PFHxS	74%	78%	50-150%
	13C8-PFOS	78%	73%	50-150%
	13C8-FOSA	64%	83%	50-150%
	d3-MeFOSA	52%	61%	50-150%
	d3-MeFOSAA	60%	63%	50-150%
	d5-EtFOSAA	57%	58%	50-150%
	13C2-4:2FTS	65%	74%	50-150%
	13C2-6:2FTS	84%	77%	50-150%
	13C2-8:2FTS	90%	75%	50-150%
	13C3-HFPO-DA	68%	68%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0038-042.0-20230502
Lab Sample ID: FC5812-4
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109516.D	1	05/19/23 15:49	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109562.D	5	05/20/23 12:55	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	210 ml	1.0 ml
Run #2	210 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0241	0.0095	0.0048	0.0024	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019	0.0048	0.0024	0.0012	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0013	0.0048	0.0024	0.0012	ug/l	J
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0038	0.0048	0.0024	0.0012	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0015	0.0048	0.0024	0.0012	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0103	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0076	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA	0.024 U [b]	0.048	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0038-042.0-20230502		
Lab Sample ID:	FC5812-4	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U	0.0095	0.0048	0.0024	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	56%	62%	50-150%
	13C5-PFPeA	69%	77%	50-150%
	13C5-PFHxA	73%	78%	50-150%
	13C4-PFHpA	73%	76%	50-150%
	13C8-PFOA	75%	77%	50-150%
	13C9-PFNA	72%	76%	50-150%
	13C6-PFDA	81%	78%	50-150%
	13C7-PFUnDA	66%	69%	50-150%
	13C2-PFDoDA	70%	66%	50-150%
	13C2-PFTeDA	55%	51%	50-150%
	13C3-PFBS	72%	80%	50-150%
	13C3-PFHxS	72%	77%	50-150%
	13C8-PFOS	81%	68%	50-150%
	13C8-FOSA	58%	85%	50-150%
	d3-MeFOSA	43% [c]	53%	50-150%
	d3-MeFOSAA	66%	65%	50-150%
	d5-EtFOSAA	63%	60%	50-150%
	13C2-4:2FTS	70%	75%	50-150%
	13C2-6:2FTS	81%	74%	50-150%
	13C2-8:2FTS	102%	74%	50-150%
	13C3-HFPO-DA	69%	67%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0038-057.0-20230502
Lab Sample ID: FC5812-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109517.D	1	05/19/23 16:06	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2							

	Initial Volume	Final Volume
Run #1	225 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0042	0.0089	0.0044	0.0022	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0041	0.0044	0.0022	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0071	0.0044	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0044	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0038-057.0-20230502		
Lab Sample ID:	FC5812-5	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
919005-14-4	ADONA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0044 U	0.0089	0.0044	0.0022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%		50-150%
	13C5-PFPeA	67%		50-150%
	13C5-PFHxA	74%		50-150%
	13C4-PFHpA	74%		50-150%
	13C8-PFOA	83%		50-150%
	13C9-PFNA	79%		50-150%
	13C6-PFDA	83%		50-150%
	13C7-PFUnDA	64%		50-150%
	13C2-PFDoDA	73%		50-150%
	13C2-PFTeDA	63%		50-150%
	13C3-PFBS	76%		50-150%
	13C3-PFHxS	73%		50-150%
	13C8-PFOS	81%		50-150%
	13C8-FOSA	64%		50-150%
	d3-MeFOSA	57%		50-150%
	d3-MeFOSAA	67%		50-150%
	d5-EtFOSAA	64%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	87%		50-150%
	13C2-8:2FTS	108%		50-150%
	13C3-HFPO-DA	70%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0039-004.0-20230502
Lab Sample ID: FC5812-6
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109518.D	1	05/19/23 16:24	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109563.D	5	05/20/23 13:12	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0228 [c]	0.038	0.019	0.0096	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0096 U [c]	0.019	0.0096	0.0048	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0011	0.0038	0.0019	0.00096	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0028	0.0038	0.0019	0.00096	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020	0.0038	0.0019	0.00096	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0093	0.0038	0.0019	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0055	0.0038	0.0019	0.00096	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00096	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-004.0-20230502		
Lab Sample ID:	FC5812-6	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0077	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	31% [d]	41% [d]	50-150%
	13C5-PFPeA	46% [d]	64%	50-150%
	13C5-PFHxA	58%	76%	50-150%
	13C4-PFHpA	63%	78%	50-150%
	13C8-PFOA	72%	83%	50-150%
	13C9-PFNA	82%	85%	50-150%
	13C6-PFDA	89%	81%	50-150%
	13C7-PFUnDA	80%	74%	50-150%
	13C2-PFDoDA	74%	69%	50-150%
	13C2-PFTeDA	54%	51%	50-150%
	13C3-PFBS	60%	80%	50-150%
	13C3-PFHxS	63%	81%	50-150%
	13C8-PFOS	81%	87%	50-150%
	13C8-FOSA	54%	91%	50-150%
	d3-MeFOSA	50%	56%	50-150%
	d3-MeFOSAA	72%	74%	50-150%
	d5-EtFOSAA	65%	65%	50-150%
	13C2-4:2FTS	55%	74%	50-150%
	13C2-6:2FTS	77%	82%	50-150%
	13C2-8:2FTS	92%	81%	50-150%
	13C3-HFPO-DA	52%	69%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-010.0-20230502		
Lab Sample ID:	FC5812-7	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109521.D	1	05/19/23 17:17	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109564.D	5	05/20/23 13:30	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.019 U [c]	0.038	0.019	0.0094	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0016	0.0038	0.0019	0.00094	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0023	0.0038	0.0019	0.00094	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0022	0.0038	0.0019	0.00094	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0234	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0156	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0039-010.0-20230502
Lab Sample ID: FC5812-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	49% [d]	50-150%
	13C5-PFPeA	57%	70%	50-150%
	13C5-PFHxA	68%	78%	50-150%
	13C4-PFHpA	74%	79%	50-150%
	13C8-PFOA	83%	82%	50-150%
	13C9-PFNA	86%	80%	50-150%
	13C6-PFDA	90%	75%	50-150%
	13C7-PFUnDA	78%	70%	50-150%
	13C2-PFDoDA	74%	65%	50-150%
	13C2-PFTeDA	57%	52%	50-150%
	13C3-PFBS	69%	77%	50-150%
	13C3-PFHxS	75%	78%	50-150%
	13C8-PFOS	82%	73%	50-150%
	13C8-FOSA	71%	87%	50-150%
	d3-MeFOSA	56%	67%	50-150%
	d3-MeFOSAA	65%	69%	50-150%
	d5-EtFOSAA	64%	60%	50-150%
	13C2-4:2FTS	65%	73%	50-150%
	13C2-6:2FTS	83%	78%	50-150%
	13C2-8:2FTS	98%	79%	50-150%
	13C3-HFPO-DA	64%	73%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0039-018.0-20230502
Lab Sample ID: FC5812-8
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109524.D	1	05/19/23 18:09	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109565.D	5	05/20/23 13:47	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2	260 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.019 U [c]	0.038	0.019	0.0096	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024	0.0038	0.0019	0.00096	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0011	0.0038	0.0019	0.00096	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00096	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00096	ug/l	
31506-32-8	MeFOSA	0.019 U [c]	0.038	0.019	0.0096	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-018.0-20230502		
Lab Sample ID:	FC5812-8	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0077	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0077	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0077	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0077	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [d]	49% [d]	50-150%
	13C5-PFPeA	52%	63%	50-150%
	13C5-PFHxA	61%	68%	50-150%
	13C4-PFHpA	66%	68%	50-150%
	13C8-PFOA	73%	73%	50-150%
	13C9-PFNA	77%	74%	50-150%
	13C6-PFDA	84%	71%	50-150%
	13C7-PFUnDA	73%	64%	50-150%
	13C2-PFDoDA	67%	60%	50-150%
	13C2-PFTeDA	54%	48% [d]	50-150%
	13C3-PFBS	62%	71%	50-150%
	13C3-PFHxS	68%	70%	50-150%
	13C8-PFOS	77%	71%	50-150%
	13C8-FOSA	60%	78%	50-150%
	d3-MeFOSA	46% [d]	57%	50-150%
	d3-MeFOSAA	60%	61%	50-150%
	d5-EtFOSAA	56%	56%	50-150%
	13C2-4:2FTS	58%	64%	50-150%
	13C2-6:2FTS	72%	66%	50-150%
	13C2-8:2FTS	87%	72%	50-150%
	13C3-HFPO-DA	53%	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD05-20230502
Lab Sample ID: FC5812-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109525.D	1	05/19/23 18:27	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109566.D	5	05/20/23 14:05	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.020 U [b]	0.040	0.020	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022	0.0040	0.0020	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0074	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020	0.0040	0.0020	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0023	0.0040	0.0020	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0127	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0114	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0722	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019	0.0040	0.0020	0.0010	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0028	0.0040	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.020 U [b]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD05-20230502		
Lab Sample ID:	FC5812-9	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [d]	51%	50-150%
	13C5-PFPeA	55%	69%	50-150%
	13C5-PFHxA	64%	73%	50-150%
	13C4-PFHpA	69%	75%	50-150%
	13C8-PFOA	76%	77%	50-150%
	13C9-PFNA	81%	76%	50-150%
	13C6-PFDA	83%	72%	50-150%
	13C7-PFUnDA	69%	67%	50-150%
	13C2-PFDoDA	67%	61%	50-150%
	13C2-PFTeDA	56%	52%	50-150%
	13C3-PFBS	64%	73%	50-150%
	13C3-PFHxS	69%	76%	50-150%
	13C8-PFOS	73%	74%	50-150%
	13C8-FOSA	60%	75%	50-150%
	d3-MeFOSA	25% [d]	45% [d]	50-150%
	d3-MeFOSAA	62%	61%	50-150%
	d5-EtFOSAA	57%	61%	50-150%
	13C2-4:2FTS	60%	73%	50-150%
	13C2-6:2FTS	78%	74%	50-150%
	13C2-8:2FTS	83%	75%	50-150%
	13C3-HFPO-DA	58%	69%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB07-20230502		
Lab Sample ID:	FC5812-10	**Date Sampled:**	05/02/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109526.D	1	05/19/23 18:44	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109567.D	5	05/20/23 14:22	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	265 ml	1.0 ml
Run #2	265 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0038	0.0019	0.00094	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0038	0.0019	0.00094	ug/l	
31506-32-8	MeFOSA	0.019 U [b]	0.038	0.019	0.0094	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB07-20230502		
Lab Sample ID:	FC5812-10	**Date Sampled:**	05/02/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0038 U	0.0075	0.0038	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
919005-14-4	ADONA	0.0038 U	0.0075	0.0038	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0038 U	0.0075	0.0038	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0038 U	0.0075	0.0038	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	87%	83%	50-150%
	13C5-PFPeA	89%	86%	50-150%
	13C5-PFHxA	90%	84%	50-150%
	13C4-PFHpA	90%	80%	50-150%
	13C8-PFOA	85%	79%	50-150%
	13C9-PFNA	81%	74%	50-150%
	13C6-PFDA	83%	71%	50-150%
	13C7-PFUnDA	75%	68%	50-150%
	13C2-PFDoDA	74%	66%	50-150%
	13C2-PFTeDA	66%	62%	50-150%
	13C3-PFBS	87%	84%	50-150%
	13C3-PFHxS	82%	78%	50-150%
	13C8-PFOS	80%	79%	50-150%
	13C8-FOSA	72%	78%	50-150%
	d3-MeFOSA	43% [c]	51%	50-150%
	d3-MeFOSAA	60%	63%	50-150%
	d5-EtFOSAA	58%	60%	50-150%
	13C2-4:2FTS	81%	79%	50-150%
	13C2-6:2FTS	78%	74%	50-150%
	13C2-8:2FTS	81%	71%	50-150%
	13C3-HFPO-DA	77%	77%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB07-20230502		
Lab Sample ID:	FC5812-11	**Date Sampled:**	05/02/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109527.D	1	05/19/23 19:02	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109568.D	5	05/20/23 14:40	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB07-20230502
Lab Sample ID: FC5812-11
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	85%	82%	50-150%
	13C5-PFPeA	87%	84%	50-150%
	13C5-PFHxA	88%	83%	50-150%
	13C4-PFHpA	89%	81%	50-150%
	13C8-PFOA	84%	78%	50-150%
	13C9-PFNA	79%	75%	50-150%
	13C6-PFDA	77%	69%	50-150%
	13C7-PFUnDA	69%	64%	50-150%
	13C2-PFDoDA	68%	61%	50-150%
	13C2-PFTeDA	64%	60%	50-150%
	13C3-PFBS	86%	81%	50-150%
	13C3-PFHxS	81%	77%	50-150%
	13C8-PFOS	75%	71%	50-150%
	13C8-FOSA	69%	72%	50-150%
	d3-MeFOSA	45% [c]	53%	50-150%
	d3-MeFOSAA	58%	57%	50-150%
	d5-EtFOSAA	55%	54%	50-150%
	13C2-4:2FTS	80%	77%	50-150%
	13C2-6:2FTS	78%	74%	50-150%
	13C2-8:2FTS	75%	65%	50-150%
	13C3-HFPO-DA	93%	82%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-025.0-20230502		
Lab Sample ID:	FC5812-12	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109528.D	1	05/19/23 19:19	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109569.D	5	05/20/23 14:57	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0010	0.0042	0.0021	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0016	0.0042	0.0021	0.0010	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0081	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0024	0.0042	0.0021	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
31506-32-8	MeFOSA	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-025.0-20230502		
Lab Sample ID:	FC5812-12	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
919005-14-4	ADONA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.0083	0.0042	0.0021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	42% [c]	50%	50-150%
	13C5-PFPeA	58%	70%	50-150%
	13C5-PFHxA	68%	76%	50-150%
	13C4-PFHpA	72%	76%	50-150%
	13C8-PFOA	81%	78%	50-150%
	13C9-PFNA	83%	79%	50-150%
	13C6-PFDA	86%	81%	50-150%
	13C7-PFUnDA	65%	66%	50-150%
	13C2-PFDoDA	58%	62%	50-150%
	13C2-PFTeDA	57%	51%	50-150%
	13C3-PFBS	68%	77%	50-150%
	13C3-PFHxS	71%	78%	50-150%
	13C8-PFOS	84%	82%	50-150%
	13C8-FOSA	68%	85%	50-150%
	d3-MeFOSA	46% [c]	59%	50-150%
	d3-MeFOSAA	67%	64%	50-150%
	d5-EtFOSAA	61%	65%	50-150%
	13C2-4:2FTS	65%	73%	50-150%
	13C2-6:2FTS	84%	77%	50-150%
	13C2-8:2FTS	101%	76%	50-150%
	13C3-HFPO-DA	59%	62%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FD06-20230502
Lab Sample ID: FC5812-13
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109529.D	1	05/19/23 19:37	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109574.D	5	05/20/23 16:25	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	245 ml	1.0 ml
Run #2	245 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.020 U [b]	0.041	0.020	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0025	0.0041	0.0020	0.0010	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016	0.0041	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0041	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	0.020 U [b]	0.041	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD06-20230502		
Lab Sample ID:	FC5812-13	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U	0.0082	0.0041	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% d	54%	50-150%
	13C5-PFPeA	55%	71%	50-150%
	13C5-PFHxA	65%	75%	50-150%
	13C4-PFHpA	69%	76%	50-150%
	13C8-PFOA	75%	79%	50-150%
	13C9-PFNA	82%	82%	50-150%
	13C6-PFDA	85%	78%	50-150%
	13C7-PFUnDA	68%	63%	50-150%
	13C2-PFDoDA	63%	58%	50-150%
	13C2-PFTeDA	48% d	46% d	50-150%
	13C3-PFBS	67%	74%	50-150%
	13C3-PFHxS	71%	83%	50-150%
	13C8-PFOS	69%	73%	50-150%
	13C8-FOSA	63%	84%	50-150%
	d3-MeFOSA	47% d	60%	50-150%
	d3-MeFOSAA	59%	61%	50-150%
	d5-EtFOSAA	56%	57%	50-150%
	13C2-4:2FTS	61%	71%	50-150%
	13C2-6:2FTS	78%	75%	50-150%
	13C2-8:2FTS	85%	80%	50-150%
	13C3-HFPO-DA	54%	61%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0039-042.0-20230502
Lab Sample ID: FC5812-14
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/02/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109530.D	1	05/19/23 19:54	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109575.D	5	05/20/23 16:42	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	245 ml	1.0 ml
Run #2	245 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0049	0.0082	0.0041	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0018	0.0041	0.0020	0.0010	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0041	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA [b]	0.020 U [c]	0.041	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-042.0-20230502		
Lab Sample ID:	FC5812-14	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U	0.0082	0.0041	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	64%	50-150%
	13C5-PFPeA	71%	84%	50-150%
	13C5-PFHxA	78%	90%	50-150%
	13C4-PFHpA	80%	87%	50-150%
	13C8-PFOA	83%	88%	50-150%
	13C9-PFNA	91%	91%	50-150%
	13C6-PFDA	89%	83%	50-150%
	13C7-PFUnDA	67%	70%	50-150%
	13C2-PFDoDA	62%	61%	50-150%
	13C2-PFTeDA	50%	49% d	50-150%
	13C3-PFBS	77%	85%	50-150%
	13C3-PFHxS	78%	83%	50-150%
	13C8-PFOS	78%	80%	50-150%
	13C8-FOSA	62%	88%	50-150%
	d3-MeFOSA	32% d	44% d	50-150%
	d3-MeFOSAA	66%	67%	50-150%
	d5-EtFOSAA	66%	62%	50-150%
	13C2-4:2FTS	75%	83%	50-150%
	13C2-6:2FTS	89%	85%	50-150%
	13C2-8:2FTS	91%	82%	50-150%
	13C3-HFPO-DA	66%	75%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-057.0-20230502		
Lab Sample ID:	FC5812-15	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109533.D	1	05/19/23 20:47	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109576.D	5	05/20/23 17:00	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	255 ml	1.0 ml
Run #2	255 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0039	0.0020	0.00098	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0039	0.0020	0.00098	ug/l	
31506-32-8	MeFOSA [b]	0.020 U [c]	0.039	0.020	0.0098	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0039-057.0-20230502		
Lab Sample ID:	FC5812-15	**Date Sampled:**	05/02/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0039 U	0.0078	0.0039	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
919005-14-4	ADONA	0.0039 U	0.0078	0.0039	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0039 U	0.0078	0.0039	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0039 U	0.0078	0.0039	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	59%	50-150%
	13C5-PFPeA	67%	77%	50-150%
	13C5-PFHxA	74%	82%	50-150%
	13C4-PFHpA	75%	80%	50-150%
	13C8-PFOA	80%	81%	50-150%
	13C9-PFNA	84%	82%	50-150%
	13C6-PFDA	84%	77%	50-150%
	13C7-PFUnDA	74%	68%	50-150%
	13C2-PFDoDA	70%	65%	50-150%
	13C2-PFTeDA	59%	57%	50-150%
	13C3-PFBS	73%	80%	50-150%
	13C3-PFHxS	75%	85%	50-150%
	13C8-PFOS	78%	74%	50-150%
	13C8-FOSA	61%	77%	50-150%
	d3-MeFOSA	42% [d]	49% [d]	50-150%
	d3-MeFOSAA	65%	66%	50-150%
	d5-EtFOSAA	61%	57%	50-150%
	13C2-4:2FTS	69%	79%	50-150%
	13C2-6:2FTS	82%	78%	50-150%
	13C2-8:2FTS	87%	74%	50-150%
	13C3-HFPO-DA	62%	73%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-004.0-20230503		
Lab Sample ID:	FC5812-16	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q109534.D	1	05/19/23 21:04	LR	05/10/23 14:45	OP96823	S2Q1543
Run #2 [a]	2Q109577.D	5	05/20/23 17:17	LR	05/10/23 14:45	OP96823	S2Q1543

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0030	0.0080	0.0040	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0011	0.0040	0.0020	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0025	0.0040	0.0020	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0129	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.131	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
31506-32-8	MeFOSA	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-004.0-20230503		
Lab Sample ID:	FC5812-16	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0040 U	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	53%	56%	50-150%
	13C5-PFPeA	66%	70%	50-150%
	13C5-PFHxA	72%	72%	50-150%
	13C4-PFHpA	73%	72%	50-150%
	13C8-PFOA	76%	74%	50-150%
	13C9-PFNA	77%	73%	50-150%
	13C6-PFDA	79%	67%	50-150%
	13C7-PFUnDA	58%	60%	50-150%
	13C2-PFDoDA	58%	53%	50-150%
	13C2-PFTeDA	44% d	42% d	50-150%
	13C3-PFBS	71%	72%	50-150%
	13C3-PFHxS	74%	73%	50-150%
	13C8-PFOS	68%	74%	50-150%
	13C8-FOSA	70%	74%	50-150%
	d3-MeFOSA	43% d	54%	50-150%
	d3-MeFOSAA	55%	59%	50-150%
	d5-EtFOSAA	51%	55%	50-150%
	13C2-4:2FTS	66%	67%	50-150%
	13C2-6:2FTS	72%	67%	50-150%
	13C2-8:2FTS	78%	70%	50-150%
	13C3-HFPO-DA	60%	62%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-010.0-20230503		
Lab Sample ID:	FC5812-17	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14386.D	1	05/15/23 23:01	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14382A.D	5	05/16/23 17:20	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0122 [b]	0.043	0.022	0.011	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0020	0.0043	0.0022	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0040	0.0043	0.0022	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0013	0.0043	0.0022	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0046	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
307-55-1	Perfluorododecanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0262	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0278	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.178	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0073	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0908	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid [c]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.011 U [b]	0.022	0.011	0.0054	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [e]	0.022 U [b]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-010.0-20230503		
Lab Sample ID:	FC5812-17	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.022 U [b]	0.043	0.022	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	41% [f]	51%	50-150%
	13C5-PFPeA	51%	63%	50-150%
	13C5-PFHxA	62%	70%	50-150%
	13C4-PFHpA	68%	71%	50-150%
	13C8-PFOA	75%	73%	50-150%
	13C9-PFNA	75%	75%	50-150%
	13C6-PFDA	74%	73%	50-150%
	13C7-PFUnDA	23% [f]	62%	50-150%
	13C2-PFDoDA	22% [f]	52%	50-150%
	13C2-PFTeDA	45% [f]	45% [f]	50-150%
	13C3-PFBS	55%	66%	50-150%
	13C3-PFHxS	69%	76%	50-150%
	13C8-PFOS	71%	70%	50-150%
	13C8-FOSA	67%	72%	50-150%
	d3-MeFOSA	39% [f]	40% [f]	50-150%
	d3-MeFOSAA	95%	60%	50-150%
	d5-EtFOSAA	64%	58%	50-150%
	13C2-4:2FTS	67%	67%	50-150%
	13C2-6:2FTS	83%	72%	50-150%
	13C2-8:2FTS	78%	73%	50-150%
	13C3-HFPO-DA	52%	58%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(e) Associated ID Standard outside control limits.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-018.0-20230503		
Lab Sample ID:	FC5812-18	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14387.D	1	05/15/23 23:17	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14383A.D	5	05/16/23 17:36	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	210 ml	1.0 ml
Run #2	210 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.024 U [b]	0.048	0.024	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid [d]	0.012 U [b]	0.024	0.012	0.0060	ug/l	
72629-94-8	Perfluorotridecanoic acid [d]	0.012 U [b]	0.024	0.012	0.0060	ug/l	
376-06-7	Perfluorotetradecanoic acid [e]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [b]	0.024	0.012	0.0060	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0015	0.0048	0.0024	0.0012	ug/l	J
68259-12-1	Perfluorononanesulfonic acid [c]	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [d]	0.024 U [b]	0.048	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-018.0-20230503		
Lab Sample ID:	FC5812-18	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.024 U [b]	0.048	0.024	0.012	ug/l	
919005-14-4	ADONA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [d]	0.024 U [b]	0.048	0.024	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	44% [f]	55%	50-150%
	13C5-PFPeA	44% [f]	59%	50-150%
	13C5-PFHxA	54%	62%	50-150%
	13C4-PFHpA	60%	66%	50-150%
	13C8-PFOA	65%	67%	50-150%
	13C9-PFNA	65%	66%	50-150%
	13C6-PFDA	62%	62%	50-150%
	13C7-PFUnDA	52%	52%	50-150%
	13C2-PFDoDA	46% [f]	49% [f]	50-150%
	13C2-PFTeDA	44% [f]	41% [f]	50-150%
	13C3-PFBS	49% [f]	60%	50-150%
	13C3-PFHxS	62%	66%	50-150%
	13C8-PFOS	60%	62%	50-150%
	13C8-FOSA	55%	63%	50-150%
	d3-MeFOSA	22% [f]	32% [f]	50-150%
	d3-MeFOSAA	56%	53%	50-150%
	d5-EtFOSAA	53%	48% [f]	50-150%
	13C2-4:2FTS	57%	67%	50-150%
	13C2-6:2FTS	74%	69%	50-150%
	13C2-8:2FTS	66%	63%	50-150%
	13C3-HFPO-DA	48% [f]	52%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits.
(e) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-025.0-20230503		
Lab Sample ID:	FC5812-19	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14388.D	1	05/15/23 23:33	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	3Q77062.D	1	05/23/23 23:22	AL	05/18/23 15:33	OP96962	S3Q1064
Run #3 [b]	5Q14384A.D	5	05/16/23 17:52	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	205 ml	1.0 ml
Run #2	220 ml	1.0 ml
Run #3	205 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0049 U	0.0098	0.0049	0.0024	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.012 U [e]	0.024	0.012	0.0061	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.012 U [e]	0.024	0.012	0.0061	ug/l	
376-06-7	Perfluorotetradecanoic acid [f]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016	0.0049	0.0024	0.0012	ug/l	J
68259-12-1	Perfluorononanesulfonic acid [d]	0.0024 U	0.0049	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0049	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.012 U [e]	0.024	0.012	0.0061	ug/l	
31506-32-8	MeFOSA [c]	0.024 U [e]	0.049	0.024	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0049 U	0.0098	0.0049	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-025.0-20230503		
Lab Sample ID:	FC5812-19	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.0049 U	0.0098	0.0049	0.0024	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0049 U	0.0098	0.0049	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0049 U	0.0098	0.0049	0.0024	ug/l	
919005-14-4	ADONA	0.0049 U	0.0098	0.0049	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0049 U	0.0098	0.0049	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.024 U [e]	0.049	0.024	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	32% [g]	34% [g]	40% [g]	50-150%
	13C5-PFPeA	37% [g]	42% [g]	48% [g]	50-150%
	13C5-PFHxA	46% [g]	44% [g]	55%	50-150%
	13C4-PFHpA	53%	53%	59%	50-150%
	13C8-PFOA	58%	58%	60%	50-150%
	13C9-PFNA	59%	61%	62%	50-150%
	13C6-PFDA	58%	64%	58%	50-150%
	13C7-PFUnDA	50%	56%	51%	50-150%
	13C2-PFDoDA	45% [g]	47% [g]	50%	50-150%
	13C2-PFTeDA	40% [g]	38% [g]	40% [g]	50-150%
	13C3-PFBS	44% [g]	47% [g]	55%	50-150%
	13C3-PFHxS	56%	55%	62%	50-150%
	13C8-PFOS	54%	57%	62%	50-150%
	13C8-FOSA	25% [g]	12% [g]	32% [g]	50-150%
	d3-MeFOSA	3% [g]	1% [g]	8% [g]	50-150%
	d3-MeFOSAA	53%	57%	53%	50-150%
	d5-EtFOSAA	52%	51%	51%	50-150%
	13C2-4:2FTS	49% [g]	50%	54%	50-150%
	13C2-6:2FTS	64%	68%	60%	50-150%
	13C2-8:2FTS	58%	57%	56%	50-150%
	13C3-HFPO-DA	40% [g]	39% [g]	44% [g]	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-025.0-20230503		
Lab Sample ID:	FC5812-19	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Result is from Run# 3

(f) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

(g) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-042.0-20230503		
Lab Sample ID:	FC5812-20	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14389.D	1	05/15/23 23:49	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14385A.D	5	05/16/23 18:08	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	225 ml	1.0 ml
Run #2	225 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.022 U [c]	0.044	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
307-24-4	Perfluorohexanoic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0022 U	0.0044	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
376-06-7	Perfluorotetradecanoic acid [e]	0.0022 U	0.0044	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [c]	0.022	0.011	0.0056	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0044	0.0022	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0044	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0031	0.0044	0.0022	0.0011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid [d]	0.0022 U	0.0044	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.011 U [c]	0.022	0.011	0.0056	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.022	0.011	0.0056	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.044	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
2991-50-6	EtFOSAA	0.022 U [c]	0.044	0.022	0.011	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-042.0-20230503		
Lab Sample ID:	FC5812-20	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0044 U	0.0089	0.0044	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0044 U	0.0089	0.0044	0.0022	ug/l	
919005-14-4	ADONA	0.0044 U	0.0089	0.0044	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0044 U	0.0089	0.0044	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.022 U [c]	0.044	0.022	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	34% [f]	41% [f]	50-150%
	13C5-PFPeA	39% [f]	52%	50-150%
	13C5-PFHxA	47% [f]	57%	50-150%
	13C4-PFHpA	52%	60%	50-150%
	13C8-PFOA	56%	59%	50-150%
	13C9-PFNA	57%	59%	50-150%
	13C6-PFDA	56%	57%	50-150%
	13C7-PFUnDA	44% [f]	49% [f]	50-150%
	13C2-PFDoDA	36% [f]	43% [f]	50-150%
	13C2-PFTeDA	36% [f]	35% [f]	50-150%
	13C3-PFBS	43% [f]	57%	50-150%
	13C3-PFHxS	54%	60%	50-150%
	13C8-PFOS	53%	58%	50-150%
	13C8-FOSA	48% [f]	54%	50-150%
	d3-MeFOSA	20% [f]	30% [f]	50-150%
	d3-MeFOSAA	51%	49% [f]	50-150%
	d5-EtFOSAA	47% [f]	52%	50-150%
	13C2-4:2FTS	51%	56%	50-150%
	13C2-6:2FTS	61%	59%	50-150%
	13C2-8:2FTS	56%	57%	50-150%
	13C3-HFPO-DA	40% [f]	49% [f]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated BS outside control limits high, sample was ND.
(e) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-057.0-20230503		
Lab Sample ID:	FC5812-21	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q77063.D	1	05/23/23 23:39	AL	05/18/23 15:33	OP96962	S3Q1064
Run #2 [a]	5Q14390.D	1	05/16/23 00:04	LR	05/10/23 15:12	OP96824	S5Q225
Run #3 [b]	5Q14386A.D	5	05/16/23 18:23	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	210 ml	1.0 ml
Run #2	215 ml	1.0 ml
Run #3	215 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.023 U [c]	0.047	0.023	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-24-4	Perfluorohexanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
307-55-1	Perfluorododecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0018	0.0048	0.0024	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0064	0.0048	0.0024	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0024 U	0.0048	0.0024	0.0012	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0024 U	0.0048	0.0024	0.0012	ug/l	
31506-32-8	MeFOSA [e]	0.0048 U	0.0095	0.0048	0.0024	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
2991-50-6	EtFOSAA	0.0048 U	0.0095	0.0048	0.0024	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-057.0-20230503		
Lab Sample ID:	FC5812-21	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0048 U	0.0095	0.0048	0.0024	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [e]	0.0048 U	0.0095	0.0048	0.0024	ug/l	
919005-14-4	ADONA	0.0048 U	0.0095	0.0048	0.0024	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0048 U	0.0095	0.0048	0.0024	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0048 U	0.0095	0.0048	0.0024	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	42% [f]	37% [f]	50%	50-150%
	13C5-PFPeA	54%	45% [f]	63%	50-150%
	13C5-PFHxA	54%	55%	68%	50-150%
	13C4-PFHpA	61%	58%	72%	50-150%
	13C8-PFOA	65%	63%	72%	50-150%
	13C9-PFNA	68%	65%	76%	50-150%
	13C6-PFDA	71%	63%	73%	50-150%
	13C7-PFUnDA	59%	46% [f]	62%	50-150%
	13C2-PFDoDA	52%	46% [f]	59%	50-150%
	13C2-PFTeDA	46% [f]	43% [f]	50%	50-150%
	13C3-PFBS	57%	49% [f]	70%	50-150%
	13C3-PFHxS	60%	62%	80%	50-150%
	13C8-PFOS	60%	60%	77%	50-150%
	13C8-FOSA	57%	30% [f]	42% [f]	50-150%
	d3-MeFOSA	22% [f]	3% [f]	15% [f]	50-150%
	d3-MeFOSAA	62%	61%	64%	50-150%
	d5-EtFOSAA	55%	57%	60%	50-150%
	13C2-4:2FTS	60%	59%	73%	50-150%
	13C2-6:2FTS	74%	69%	76%	50-150%
	13C2-8:2FTS	63%	64%	71%	50-150%
	13C3-HFPO-DA	49% [f]	45% [f]	56%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0040-057.0-20230503		
Lab Sample ID:	FC5812-21	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Associated ID Standard outside control limits.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB08-20230503		
Lab Sample ID:	FC5812-22	**Date Sampled:**	05/03/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14391.D	1	05/16/23 00:20	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	3Q77056.D	1	05/23/23 21:41	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB08-20230503		
Lab Sample ID:	FC5812-22	**Date Sampled:**	05/03/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	54%	48% [e]	50-150%
	13C5-PFPeA	55%	52%	50-150%
	13C5-PFHxA	57%	52%	50-150%
	13C4-PFHpA	58%	54%	50-150%
	13C8-PFOA	60%	56%	50-150%
	13C9-PFNA	59%	55%	50-150%
	13C6-PFDA	59%	57%	50-150%
	13C7-PFUnDA	56%	54%	50-150%
	13C2-PFDoDA	49% [e]	48% [e]	50-150%
	13C2-PFTeDA	45% [e]	42% [e]	50-150%
	13C3-PFBS	59%	54%	50-150%
	13C3-PFHxS	61%	55%	50-150%
	13C8-PFOS	59%	53%	50-150%
	13C8-FOSA	52%	51%	50-150%
	d3-MeFOSA	42% [e]	41% [e]	50-150%
	d3-MeFOSAA	53%	50%	50-150%
	d5-EtFOSAA	52%	45% [e]	50-150%
	13C2-4:2FTS	56%	51%	50-150%
	13C2-6:2FTS	62%	56%	50-150%
	13C2-8:2FTS	61%	55%	50-150%
	13C3-HFPO-DA	49% [e]	50%	50-150%

(a) Confirmation run.
(b) Associated BS outside control limits high, sample was ND.
(c) Associated ID Standard outside control limits.
(d) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB08-20230503		
Lab Sample ID:	FC5812-23	**Date Sampled:**	05/03/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q77065.D	1	05/24/23 00:12	AL	05/18/23 15:33	OP96962	S3Q1064
Run #2 [a]	5Q14394.D	1	05/16/23 01:07	LR	05/10/23 15:12	OP96824	S5Q225

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	245 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB08-20230503		
Lab Sample ID:	FC5812-23	**Date Sampled:**	05/03/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	60%	67%	50-150%
	13C5-PFPeA	64%	67%	50-150%
	13C5-PFHxA	63%	68%	50-150%
	13C4-PFHpA	67%	69%	50-150%
	13C8-PFOA	67%	68%	50-150%
	13C9-PFNA	63%	68%	50-150%
	13C6-PFDA	68%	64%	50-150%
	13C7-PFUnDA	63%	58%	50-150%
	13C2-PFDoDA	57%	50%	50-150%
	13C2-PFTeDA	51%	44% [c]	50-150%
	13C3-PFBS	64%	70%	50-150%
	13C3-PFHxS	69%	70%	50-150%
	13C8-PFOS	59%	62%	50-150%
	13C8-FOSA	62%	56%	50-150%
	d3-MeFOSA	48% [c]	43% [c]	50-150%
	d3-MeFOSAA	63%	59%	50-150%
	d5-EtFOSAA	59%	55%	50-150%
	13C2-4:2FTS	62%	66%	50-150%
	13C2-6:2FTS	67%	75%	50-150%
	13C2-8:2FTS	63%	66%	50-150%
	13C3-HFPO-DA	59%	58%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD07-20230503		
Lab Sample ID:	FC5812-24	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14395.D	1	05/16/23 01:23	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14389A.D	5	05/16/23 19:11	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	215 ml	1.0 ml
Run #2	215 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.023 U [c]	0.047	0.023	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
307-24-4	Perfluorohexanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0023 U	0.0047	0.0023	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
376-06-7	Perfluorotetradecanoic acid [e]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019	0.0047	0.0023	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020	0.0047	0.0023	0.0012	ug/l	J
68259-12-1	Perfluorononanesulfonic acid [d]	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0023 U	0.0047	0.0023	0.0012	ug/l	
31506-32-8	MeFOSA [b]	0.023 U [c]	0.047	0.023	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD07-20230503		
Lab Sample ID:	FC5812-24	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0047 U	0.0093	0.0047	0.0023	ug/l	
919005-14-4	ADONA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.023 U [c]	0.047	0.023	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [f]	41% [f]	50-150%
	13C5-PFPeA	42% [f]	51%	50-150%
	13C5-PFHxA	49% [f]	57%	50-150%
	13C4-PFHpA	54%	60%	50-150%
	13C8-PFOA	58%	60%	50-150%
	13C9-PFNA	59%	60%	50-150%
	13C6-PFDA	57%	58%	50-150%
	13C7-PFUnDA	48% [f]	51%	50-150%
	13C2-PFDoDA	38% [f]	45% [f]	50-150%
	13C2-PFTeDA	39% [f]	40% [f]	50-150%
	13C3-PFBS	45% [f]	55%	50-150%
	13C3-PFHxS	55%	60%	50-150%
	13C8-PFOS	56%	56%	50-150%
	13C8-FOSA	53%	59%	50-150%
	d3-MeFOSA	29% [f]	36% [f]	50-150%
	d3-MeFOSAA	55%	51%	50-150%
	d5-EtFOSAA	52%	48% [f]	50-150%
	13C2-4:2FTS	53%	57%	50-150%
	13C2-6:2FTS	64%	62%	50-150%
	13C2-8:2FTS	60%	56%	50-150%
	13C3-HFPO-DA	43% [f]	47% [f]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated BS outside control limits high, sample was ND.
(e) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-DPT0041-004.0-20230503
Lab Sample ID: FC5812-25
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/03/23
Date Received: 05/04/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q77066.D	1	05/24/23 00:29	AL	05/18/23 15:33	OP96962	S3Q1064
Run #2 [a]	5Q14396.D	1	05/16/23 01:39	LR	05/10/23 15:12	OP96824	S5Q225

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0205	0.0087	0.0043	0.0022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0015	0.0043	0.0022	0.0011	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0087	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0017	0.0043	0.0022	0.0011	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0021	0.0043	0.0022	0.0011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0793	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0319	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.101	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-004.0-20230503		
Lab Sample ID:	FC5812-25	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	40% [c]	28% [c]	50-150%
	13C5-PFPeA	50%	34% [c]	50-150%
	13C5-PFHxA	51%	40% [c]	50-150%
	13C4-PFHpA	56%	42% [c]	50-150%
	13C8-PFOA	60%	44% [c]	50-150%
	13C9-PFNA	62%	43% [c]	50-150%
	13C6-PFDA	63%	41% [c]	50-150%
	13C7-PFUnDA	54%	35% [c]	50-150%
	13C2-PFDoDA	45% [c]	32% [c]	50-150%
	13C2-PFTeDA	40% [c]	30% [c]	50-150%
	13C3-PFBS	53%	39% [c]	50-150%
	13C3-PFHxS	60%	44% [c]	50-150%
	13C8-PFOS	56%	42% [c]	50-150%
	13C8-FOSA	61%	38% [c]	50-150%
	d3-MeFOSA	33% [c]	20% [c]	50-150%
	d3-MeFOSAA	55%	37% [c]	50-150%
	d5-EtFOSAA	48% [c]	35% [c]	50-150%
	13C2-4:2FTS	54%	41% [c]	50-150%
	13C2-6:2FTS	63%	45% [c]	50-150%
	13C2-8:2FTS	56%	41% [c]	50-150%
	13C3-HFPO-DA	45% [c]	34% [c]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-010.0-20230503		
Lab Sample ID:	FC5812-26	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14397.D	1	05/16/23 01:55	LR	05/10/23 15:12	OP96824	S5Q225
Run #2	3Q77067.D	1	05/24/23 00:46	AL	05/18/23 15:33	OP96962	S3Q1064
Run #3 [a]	5Q14391A.D	5	05/16/23 19:42	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	225 ml	1.0 ml
Run #3	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0220	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.0023	0.0040	0.0020	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0021	0.0040	0.0020	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0020	0.0040	0.0020	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0150	0.0040	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.010 U [e]	0.020	0.010	0.0050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.010 U [e]	0.020	0.010	0.0050	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0174	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0182	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.158	0.0040	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid [c]	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.010 U [e]	0.020	0.010	0.0050	ug/l	
31506-32-8	MeFOSA [b]	0.0044 U [f]	0.0089	0.0044	0.0022	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-010.0-20230503		
Lab Sample ID:	FC5812-26	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0040 U	0.0080	0.0040	0.0020	ug/l	
919005-14-4	ADONA	0.0040 U	0.0080	0.0040	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0040 U	0.0080	0.0040	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.020 U [e]	0.040	0.020	0.010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	41% [g]	40% [g]	48% [g]	50-150%
	13C5-PFPeA	42% [g]	47% [g]	53%	50-150%
	13C5-PFHxA	51%	47% [g]	56%	50-150%
	13C4-PFHpA	54%	52%	58%	50-150%
	13C8-PFOA	57%	55%	58%	50-150%
	13C9-PFNA	58%	56%	58%	50-150%
	13C6-PFDA	58%	52%	56%	50-150%
	13C7-PFUnDA	52%	43% [g]	53%	50-150%
	13C2-PFDoDA	44% [g]	38% [g]	49% [g]	50-150%
	13C2-PFTeDA	45% [g]	37% [g]	46% [g]	50-150%
	13C3-PFBS	46% [g]	47% [g]	57%	50-150%
	13C3-PFHxS	56%	55%	60%	50-150%
	13C8-PFOS	54%	45% [g]	59%	50-150%
	13C8-FOSA	43% [g]	50%	45% [g]	50-150%
	d3-MeFOSA	10% [g]	34% [g]	15% [g]	50-150%
	d3-MeFOSAA	57%	45% [g]	53%	50-150%
	d5-EtFOSAA	52%	40% [g]	48% [g]	50-150%
	13C2-4:2FTS	54%	51%	56%	50-150%
	13C2-6:2FTS	61%	58%	60%	50-150%
	13C2-8:2FTS	59%	45% [g]	54%	50-150%
	13C3-HFPO-DA	43% [g]	42% [g]	45% [g]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-010.0-20230503		
Lab Sample ID:	FC5812-26	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Result is from Run# 3
(f) Result is from Run# 2
(g) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-018.0-20230503		
Lab Sample ID:	FC5812-27	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14400.D	1	05/16/23 02:42	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14394A.D	5	05/16/23 20:29	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.022 U [c]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.011 U [c]	0.022	0.011	0.0054	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.011 U [c]	0.022	0.011	0.0054	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0036	0.0043	0.0022	0.0011	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0042	0.0043	0.0022	0.0011	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0274	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023	0.0043	0.0022	0.0011	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0198	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-018.0-20230503		
Lab Sample ID:	FC5812-27	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.022 U [c]	0.043	0.022	0.011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	43% [e]	47% [e]	50-150%
	13C5-PFPeA	53%	65%	50-150%
	13C5-PFHxA	62%	70%	50-150%
	13C4-PFHpA	66%	74%	50-150%
	13C8-PFOA	72%	76%	50-150%
	13C9-PFNA	73%	75%	50-150%
	13C6-PFDA	71%	74%	50-150%
	13C7-PFUnDA	58%	66%	50-150%
	13C2-PFDoDA	47% [e]	56%	50-150%
	13C2-PFTeDA	56%	55%	50-150%
	13C3-PFBS	57%	69%	50-150%
	13C3-PFHxS	69%	78%	50-150%
	13C8-PFOS	68%	78%	50-150%
	13C8-FOSA	65%	76%	50-150%
	d3-MeFOSA	42% [e]	46% [e]	50-150%
	d3-MeFOSAA	80%	72%	50-150%
	d5-EtFOSAA	67%	63%	50-150%
	13C2-4:2FTS	66%	70%	50-150%
	13C2-6:2FTS	78%	76%	50-150%
	13C2-8:2FTS	77%	73%	50-150%
	13C3-HFPO-DA	54%	57%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated BS outside control limits high, sample was ND.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB09-20230503		
Lab Sample ID:	FC5812-28	**Date Sampled:**	05/03/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14401.D	1	05/16/23 02:58	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	3Q77068.D	1	05/24/23 01:02	AL	05/18/23 15:33	OP96962	S3Q1064

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB09-20230503		
Lab Sample ID:	FC5812-28	**Date Sampled:**	05/03/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	55%	48% [e]	50-150%
	13C5-PFPeA	55%	57%	50-150%
	13C5-PFHxA	56%	53%	50-150%
	13C4-PFHpA	57%	56%	50-150%
	13C8-PFOA	59%	57%	50-150%
	13C9-PFNA	59%	56%	50-150%
	13C6-PFDA	59%	54%	50-150%
	13C7-PFUnDA	54%	48% [e]	50-150%
	13C2-PFDoDA	46% [e]	47% [e]	50-150%
	13C2-PFTeDA	41% [e]	45% [e]	50-150%
	13C3-PFBS	58%	58%	50-150%
	13C3-PFHxS	60%	58%	50-150%
	13C8-PFOS	58%	50%	50-150%
	13C8-FOSA	53%	51%	50-150%
	d3-MeFOSA	37% [e]	30% [e]	50-150%
	d3-MeFOSAA	55%	53%	50-150%
	d5-EtFOSAA	52%	50%	50-150%
	13C2-4:2FTS	56%	53%	50-150%
	13C2-6:2FTS	60%	58%	50-150%
	13C2-8:2FTS	61%	50%	50-150%
	13C3-HFPO-DA	48% [e]	50%	50-150%

(a) Confirmation run.
(b) Associated BS outside control limits high, sample was ND.
(c) Associated ID Standard outside control limits.
(d) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-025.0-20230503		
Lab Sample ID:	FC5812-29	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14402.D	1	05/16/23 03:13	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14396A.D	5	05/16/23 21:01	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.042	0.021	0.010	ug/l	
2706-90-3	Perfluoropentanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
307-24-4	Perfluorohexanoic acid	0.0018	0.0042	0.0021	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0017	0.0042	0.0021	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid [c]	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
307-55-1	Perfluorododecanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.010 U [b]	0.021	0.010	0.0052	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0031	0.0042	0.0021	0.0010	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0029	0.0042	0.0021	0.0010	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0176	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0011	0.0042	0.0021	0.0010	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0130	0.0042	0.0021	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid [c]	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.010 U [b]	0.021	0.010	0.0052	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
31506-32-8	MeFOSA [e]	0.021 U [b]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-025.0-20230503		
Lab Sample ID:	FC5812-29	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
919005-14-4	ADONA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.021 U [b]	0.042	0.021	0.010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	45% [f]	58%	50-150%
	13C5-PFPeA	48% [f]	64%	50-150%
	13C5-PFHxA	57%	68%	50-150%
	13C4-PFHpA	62%	71%	50-150%
	13C8-PFOA	66%	73%	50-150%
	13C9-PFNA	66%	70%	50-150%
	13C6-PFDA	64%	69%	50-150%
	13C7-PFUnDA	48% [f]	59%	50-150%
	13C2-PFDoDA	45% [f]	53%	50-150%
	13C2-PFTeDA	44% [f]	47% [f]	50-150%
	13C3-PFBS	50%	68%	50-150%
	13C3-PFHxS	65%	73%	50-150%
	13C8-PFOS	61%	63%	50-150%
	13C8-FOSA	60%	70%	50-150%
	d3-MeFOSA	37% [f]	45% [f]	50-150%
	d3-MeFOSAA	61%	61%	50-150%
	d5-EtFOSAA	55%	58%	50-150%
	13C2-4:2FTS	61%	70%	50-150%
	13C2-6:2FTS	71%	72%	50-150%
	13C2-8:2FTS	64%	69%	50-150%
	13C3-HFPO-DA	52%	54%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated BS outside control limits high, sample was ND.
(d) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(e) Associated ID Standard outside control limits.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-042.0-20230503		
Lab Sample ID:	FC5812-30	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14403.D	1	05/16/23 03:29	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14397A.D	5	05/16/23 21:17	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	215 ml	1.0 ml
Run #2	215 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.023 U [c]	0.047	0.023	0.012	ug/l	
2706-90-3	Perfluoropentanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023	0.0047	0.0023	0.0012	ug/l	J
375-95-1	Perfluorononanoic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0023 U	0.0047	0.0023	0.0012	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
307-55-1	Perfluorododecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0023 U	0.0047	0.0023	0.0012	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0036	0.0047	0.0023	0.0012	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0027	0.0047	0.0023	0.0012	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0281	0.0047	0.0023	0.0012	ug/l	
68259-12-1	Perfluorononanesulfonic acid [d]	0.0023 U	0.0047	0.0023	0.0012	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.012 U [c]	0.023	0.012	0.0058	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0023 U	0.0047	0.0023	0.0012	ug/l	
31506-32-8	MeFOSA [b]	0.023 U [c]	0.047	0.023	0.012	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-042.0-20230503		
Lab Sample ID:	FC5812-30	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0047 U	0.0093	0.0047	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
919005-14-4	ADONA	0.0047 U	0.0093	0.0047	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0047 U	0.0093	0.0047	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.023 U [c]	0.047	0.023	0.012	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	39% [e]	42% [e]	50-150%
	13C5-PFPeA	46% [e]	58%	50-150%
	13C5-PFHxA	58%	69%	50-150%
	13C4-PFHpA	63%	72%	50-150%
	13C8-PFOA	67%	73%	50-150%
	13C9-PFNA	66%	72%	50-150%
	13C6-PFDA	62%	68%	50-150%
	13C7-PFUnDA	48% [e]	60%	50-150%
	13C2-PFDoDA	47% [e]	57%	50-150%
	13C2-PFTeDA	49% [e]	53%	50-150%
	13C3-PFBS	51%	64%	50-150%
	13C3-PFHxS	64%	76%	50-150%
	13C8-PFOS	60%	71%	50-150%
	13C8-FOSA	58%	69%	50-150%
	d3-MeFOSA	40% [e]	49% [e]	50-150%
	d3-MeFOSAA	64%	63%	50-150%
	d5-EtFOSAA	57%	58%	50-150%
	13C2-4:2FTS	63%	70%	50-150%
	13C2-6:2FTS	74%	77%	50-150%
	13C2-8:2FTS	65%	68%	50-150%
	13C3-HFPO-DA	50%	51%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated BS outside control limits high, sample was ND.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-057.0-20230503		
Lab Sample ID:	FC5812-31	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Q14406.D	1	05/16/23 04:16	LR	05/10/23 15:12	OP96824	S5Q225
Run #2 [a]	5Q14398A.D	5	05/16/23 21:32	LR	05/10/23 15:12	OP96824	S5Q226

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.022 U [c]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid [b]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
307-24-4	Perfluorohexanoic acid	0.011 U [c]	0.022	0.011	0.0054	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
376-06-7	Perfluorotetradecanoic acid [e]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.011 U [c]	0.022	0.011	0.0054	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.011 U [c]	0.022	0.011	0.0054	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0034	0.0043	0.0022	0.0011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid [d]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [c]	0.022	0.011	0.0054	ug/l	
31506-32-8	MeFOSA [b]	0.022 U [c]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-DPT0041-057.0-20230503		
Lab Sample ID:	FC5812-31	**Date Sampled:**	05/03/23
Matrix:	AQ - Ground Water	**Date Received:**	05/04/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0043 U	0.0087	0.0043	0.0022	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	34% [f]	41% [f]	50-150%
	13C5-PFPeA	38% [f]	49% [f]	50-150%
	13C5-PFHxA	46% [f]	53%	50-150%
	13C4-PFHpA	50%	56%	50-150%
	13C8-PFOA	53%	57%	50-150%
	13C9-PFNA	55%	55%	50-150%
	13C6-PFDA	51%	53%	50-150%
	13C7-PFUnDA	44% [f]	47% [f]	50-150%
	13C2-PFDoDA	40% [f]	44% [f]	50-150%
	13C2-PFTeDA	37% [f]	41% [f]	50-150%
	13C3-PFBS	41% [f]	54%	50-150%
	13C3-PFHxS	52%	61%	50-150%
	13C8-PFOS	50%	56%	50-150%
	13C8-FOSA	46% [f]	53%	50-150%
	d3-MeFOSA	27% [f]	31% [f]	50-150%
	d3-MeFOSAA	49% [f]	46% [f]	50-150%
	d5-EtFOSAA	45% [f]	45% [f]	50-150%
	13C2-4:2FTS	49% [f]	54%	50-150%
	13C2-6:2FTS	57%	59%	50-150%
	13C2-8:2FTS	52%	52%	50-150%
	13C3-HFPO-DA	40% [f]	39% [f]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Associated BS outside control limits high, sample was ND.
(e) Associated ID Standard outside control limits. Associated BS outside control limits high, sample was ND.
(f) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions (DOD)
- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

Parameter Certification Exceptions

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

The following parameters included in this report are exceptions to DOD certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
MeFOSA	31506-32-8	**EPA 537M QSM5.3 B-15**	AQ	SGS is not certified for this parameter.

FC5812

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 1 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone #: Dustin Slater/ 407-766-0747 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	MS/MSD										Comments
1	A3RB-DPT0038-004.0-20230502 PB	A3RB-DPT0038	202303 02	0900	WG	N	G	2	2											
2	A3RB-DPT0038-010.0-20230502 PB	A3RB-DPT0038	202303 02	0430	WG	N	G	2	2											
3	A3RB-DPT0038-025.0-20230502 PB	A3RB-DPT0038	202303 02	1200	WG	N	G	2	2											
4	A3RB-DPT0038-042.0-20230502	A3RB-DPT0038	202303 02	1227	WG	N	G	2	2		INITIAL ASSESSMENT									
5	A3RB-DPT0038-057.0-20230502	A3RB-DPT0038	202303 02	1300	WG	N	G	2	2											
6	A3RB-DPT0039-004.0-20230502	A3RB-DPT0039	202303 02	1340	WG	N	G	2	2		LABEL VERIFICATION									
7	A3RB-DPT0039-010.0-20230502	A3RB-DPT0039	202303 02	1400	WG	N	G	6 2PB	2	4										
8	A3RB-DPT0039-018.0-20230502	A3RB-DPT0039	202303 02	1430	WG	N	G	2	2											
9	A3RB-FD05-20230502	A3RB-FD05	202303 02	800	WG	N	G	2	2											
	A3RB-DPT-DUP01-20230502	A3RB-DPT-DUP01	202303	0800	WG	N	G	2	2											PB
10	A3RB-FB07-20230502	A3RB-FB07	202303 02	1120	WQ	N	G	2	2											
11	A3RB-EB07-20230502	A3RB-EB07	202303 02	1125	WQ	N	G	2	2											

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	1024	5/4/23	1	05/04/23	1024
2			2		
3			3		

Samples Iced?(check) Yes____ No____

Shipping Company: 4.2, 4.0 IR#1

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=TIssue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfaté, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FC5812: Chain of Custody
Page 1 of 4

FC5812

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: 2 of 3	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	Jennifer Gootee cc: Megan Garcia	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando — Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537	Comments
12	A3RB-DPT0039-025.0-20230502	A3RB-DPT0039	20230502	1448	WG	N	G	2	2	
13	A3RB-FD06-20230502	FD A3RB-FD06	20230502	805	WG	N	G	2	2	
14	A3RB-DPT0039-042.0-20230502	A3RB-DPT0039	20230502	1520	WG	N	G	2	2	
15	A3RB-DPT0039-057.0-20230502	A3RB-DPT0039	20230502	1555	WG	N	G	2	2	
16	A3RB-DPT0040-009.0-20230503	A3RB-DPT0040	20230503	805	WG	N	G	2	2	
17	A3RB-DPT0040-010.0-20230503	A3RB-DPT0040	20230503	0950	WG	N	G	2	2	
18	A3RB-DPT0040-018.0-20230503	A3RB-DPT0040	20230503	1020	WG	N	G	2	2	
19	A3RB-DPT0040-025.0-20230503	A3RB-DPT0040	20230503	1040	WG	N	G	2	2	
20	A3RB-DPT0040-042.0-20230503	A3RB-DPT0040	20230503	1100	WG	N	G	2	2	
21	A3RB-DPT0040-057.0-20230503	A3RB-DPT00	20230503	1130	WG	N	G	2	2	
22	A3RB-FB08-20230503	A3RB-FB08	20230503	0920	WQ	N	G	2	2	
23	A3RB-EB08-20230503	A3RB-EB08	20230503	0925	WQ	N	G	2	2	

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	5/4/23	1024	1	05/04/23	1024
2			2		
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.2 5

FC5812: Chain of Custody
Page 2 of 4

FC 5812

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 3 of 3
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Dustin Slater/ 407-766-0747		Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	Total No. of Containers (3)	Select PFAS by 537 4 DEG	MS/MSD										Comments
24	A3RB-FD07-20230503	A3RB-FD07	20230503	0800	WG	N	G	2	2											
25	A3RB-DPT0041-004.0-20230503	A3RB-DPT0041	20230503	1425	WG	N	G	2	2											
26	A3RB-DPT0041-010.0-20230503	A3RB-DPT0041	20230503	1440	WG	N	G	6	2	4										
27	A3RB-DPT0041-018.0-20230503	A3RB-DPT0041	20230503	1505	WG	N	G	2	2											
28	A3RB-EB09-20230503	A3RB-EB09	20230503	1540	WQ	N	G	2	2											
29	A3RB-DPT0041-28.0-20230503	A3RB-DPT0041	20230503	1530	WG	N	G	2	2											
30	A3RB-DPT0041-042.0-20230503	A3RB-DPT0041	20230503	1600	WG	N	G	2	2											
31	A3RB-DPT0041-057.0-20230503	A3RB-DPT0041	20230503	1635	WG	N	G	2	2											
			202303			N	G	2	2											
			202303			N	G	2	2											
			202303			N	G	2	2											
			202303			N	G	2	2											

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	5/4/23	1024	1	05/04/23	1024
2			2		
3			3		

Sample Shipment and Delivery Details
Number of coolers in shipment:
Samples Iced?(check) Yes____ No____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank

Rev 8/19

5.2 5

FC5812: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FC5812 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 5/4/2023 10:24:00 AM **Delivery Method:** DROP OFF **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** 2

Cooler Temps (Raw Measured) °C: Cooler 1: (4.3); Cooler 2: (4.1);

Cooler Temps (Corrected) °C: Cooler 1: (4.2); Cooler 2: (4.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 5/4/2023 10:24:00 AM Reviewer: _____ Date: _____

FC5812: Chain of Custody
Page 4 of 4

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96823	EPA 537M QSM5.3 B-15						
OP96823-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	126	%	73-129
OP96823-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	124	%	73-129
OP96823-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	122	%	72-129
OP96823-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	121	%	72-129
OP96823-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	121	%	72-129
OP96823-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	121	%	72-129
OP96823-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	120	%	72-130
OP96823-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	119	%	72-130
OP96823-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	126	%	71-133
OP96823-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	126	%	71-133
OP96823-BS	375-95-1	Perfluorononanoic acid	BSP	REC	121	%	69-130
OP96823-BS	375-95-1	Perfluorononanoic acid	BSP	REC	123	%	69-130
OP96823-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	119	%	71-129
OP96823-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	122	%	71-129
OP96823-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	123	%	69-133
OP96823-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	123	%	69-133
OP96823-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	128	%	72-134
OP96823-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	126	%	72-134
OP96823-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	117	%	65-144
OP96823-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	118	%	65-144
OP96823-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	125	%	71-132
OP96823-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	128	%	71-132
OP96823-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	124	%	72-130
OP96823-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	119	%	72-130
OP96823-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	125	%	71-127
OP96823-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	120	%	71-127
OP96823-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	118	%	68-131
OP96823-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	122	%	68-131
OP96823-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	125	%	69-134
OP96823-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	123	%	69-134
OP96823-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	126	%	65-140
OP96823-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	122	%	65-140
OP96823-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	119	%	69-127
OP96823-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	124	%	69-127
OP96823-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	129	%	53-142
OP96823-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	119	%	53-142
OP96823-BS	754-91-6	PFOSA	BSP	REC	125	%	67-137
OP96823-BS	754-91-6	PFOSA	BSP	REC	124	%	67-137
OP96823-BS	31506-32-8	MeFOSA	BSP	REC	141	%	68-141
OP96823-BS	31506-32-8	MeFOSA	BSP	REC	134	%	68-141
OP96823-BS	2355-31-9	MeFOSAA	BSP	REC	128	%	65-136
OP96823-BS	2355-31-9	MeFOSAA	BSP	REC	129	%	65-136

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96823-BS	2991-50-6	EtFOSAA	BSP	REC	128	%	61-135
OP96823-BS	2991-50-6	EtFOSAA	BSP	REC	123	%	61-135
OP96823-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	119	%	63-143
OP96823-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	121	%	63-143
OP96823-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	128	%	64-140
OP96823-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	126	%	64-140
OP96823-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	120	%	67-138
OP96823-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	121	%	67-138
OP96823-MS	375-22-4	Perfluorobutanoic acid	MS	REC	121	%	73-129
OP96823-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	127	%	72-129
OP96823-MS	307-24-4	Perfluorohexanoic acid	MS	REC	123	%	72-129
OP96823-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	125	%	72-130
OP96823-MS	335-67-1	Perfluorooctanoic acid	MS	REC	133	%	71-133
OP96823-MS	375-95-1	Perfluorononanoic acid	MS	REC	123	%	69-130
OP96823-MS	335-76-2	Perfluorodecanoic acid	MS	REC	121	%	71-129
OP96823-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	128	%	69-133
OP96823-MS	307-55-1	Perfluorododecanoic acid	MS	REC	129	%	72-134
OP96823-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	121	%	65-144
OP96823-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	126	%	71-132
OP96823-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	126	%	72-130
OP96823-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	123	%	71-127
OP96823-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	120	%	68-131
OP96823-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	140	%	69-134
OP96823-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	122	%	65-140
OP96823-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	120	%	69-127
OP96823-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	116	%	53-142
OP96823-MS	754-91-6	PFOSA	MS	REC	123	%	67-137
OP96823-MS	31506-32-8	MeFOSA	MS	REC	127	%	68-141
OP96823-MS	2355-31-9	MeFOSAA	MS	REC	134	%	65-136
OP96823-MS	2991-50-6	EtFOSAA	MS	REC	124	%	61-135
OP96823-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	123	%	63-143
OP96823-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	130	%	64-140
OP96823-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	123	%	67-138
OP96823-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	119	%	73-129
OP96823-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP96823-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	123	%	72-129
OP96823-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	3	%	30
OP96823-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	122	%	72-129
OP96823-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP96823-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	122	%	72-130
OP96823-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	2	%	30
OP96823-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	129	%	71-133
OP96823-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	3	%	30
OP96823-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	120	%	69-130
OP96823-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96823-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	119	%	71-129
OP96823-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	2	%	30
OP96823-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	124	%	69-133
OP96823-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	3	%	30
OP96823-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	126	%	72-134
OP96823-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP96823-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	116	%	65-144
OP96823-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP96823-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	125	%	71-132
OP96823-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP96823-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	123	%	72-130
OP96823-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	2	%	30
OP96823-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	122	%	71-127
OP96823-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP96823-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	119	%	68-131
OP96823-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	1	%	30
OP96823-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	134	%	69-134
OP96823-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	5	%	30
OP96823-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	114	%	65-140
OP96823-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	6	%	30
OP96823-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	111	%	69-127
OP96823-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	8	%	30
OP96823-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	103	%	53-142
OP96823-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	12	%	30
OP96823-MSD	754-91-6	PFOSA	MSD	REC	126	%	67-137
OP96823-MSD	754-91-6	PFOSA	MSD	RPD	2	%	30
OP96823-MSD	31506-32-8	MeFOSA	MSD	REC	122	%	68-141
OP96823-MSD	31506-32-8	MeFOSA	MSD	RPD	4	%	30
OP96823-MSD	2355-31-9	MeFOSAA	MSD	REC	125	%	65-136
OP96823-MSD	2355-31-9	MeFOSAA	MSD	RPD	7	%	30
OP96823-MSD	2991-50-6	EtFOSAA	MSD	REC	122	%	61-135
OP96823-MSD	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP96823-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	123	%	63-143
OP96823-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP96823-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	125	%	64-140
OP96823-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP96823-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	118	%	67-138
OP96823-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP96824	EPA 537M QSM5.3 B-15						
OP96824-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	125	%	73-129
OP96824-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	128	%	72-129
OP96824-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	129	%	72-129
OP96824-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	126	%	72-130

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96824-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	126	%	71-133
OP96824-BS	375-95-1	Perfluorononanoic acid	BSP	REC	128	%	69-130
OP96824-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	130	%	71-129
OP96824-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	126	%	69-133
OP96824-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	130	%	72-134
OP96824-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	121	%	65-144
OP96824-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	135	%	71-132
OP96824-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	128	%	72-130
OP96824-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	126	%	71-127
OP96824-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	129	%	68-131
OP96824-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	133	%	69-134
OP96824-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	130	%	65-140
OP96824-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	129	%	69-127
OP96824-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	109	%	53-142
OP96824-BS	754-91-6	PFOSA	BSP	REC	129	%	67-137
OP96824-BS	31506-32-8	MeFOSA	BSP	REC	123	%	68-141
OP96824-BS	2355-31-9	MeFOSAA	BSP	REC	130	%	65-136
OP96824-BS	2991-50-6	EtFOSAA	BSP	REC	128	%	61-135
OP96824-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	121	%	63-143
OP96824-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	124	%	64-140
OP96824-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	118	%	67-138
OP96824-MS	375-22-4	Perfluorobutanoic acid	MS	REC	125	%	73-129
OP96824-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	123	%	72-129
OP96824-MS	307-24-4	Perfluorohexanoic acid	MS	REC	126	%	72-129
OP96824-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	125	%	72-130
OP96824-MS	335-67-1	Perfluorooctanoic acid	MS	REC	125	%	71-133
OP96824-MS	375-95-1	Perfluorononanoic acid	MS	REC	125	%	69-130
OP96824-MS	335-76-2	Perfluorodecanoic acid	MS	REC	126	%	71-129
OP96824-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	126	%	69-133
OP96824-MS	307-55-1	Perfluorododecanoic acid	MS	REC	126	%	72-134
OP96824-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	125	%	65-144
OP96824-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	134	%	71-132
OP96824-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	127	%	72-130
OP96824-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	141	%	71-127
OP96824-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	126	%	68-131
OP96824-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	134	%	69-134
OP96824-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	146	%	65-140
OP96824-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	117	%	69-127
OP96824-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	116	%	53-142
OP96824-MS	754-91-6	PFOSA	MS	REC	132	%	67-137
OP96824-MS	31506-32-8	MeFOSA	MS	REC	105	%	68-141
OP96824-MS	2355-31-9	MeFOSAA	MS	REC	130	%	65-136
OP96824-MS	2991-50-6	EtFOSAA	MS	REC	122	%	61-135
OP96824-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	117	%	63-143
OP96824-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	122	%	64-140

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96824-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	115	%	67-138
OP96824-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	125	%	73-129
OP96824-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	4	%	30
OP96824-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	123	%	72-129
OP96824-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	5	%	30
OP96824-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	128	%	72-129
OP96824-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	6	%	30
OP96824-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	127	%	72-130
OP96824-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	6	%	30
OP96824-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	126	%	71-133
OP96824-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	5	%	30
OP96824-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	127	%	69-130
OP96824-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	6	%	30
OP96824-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	129	%	71-129
OP96824-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	7	%	30
OP96824-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	128	%	69-133
OP96824-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	6	%	30
OP96824-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	125	%	72-134
OP96824-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	4	%	30
OP96824-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	124	%	65-144
OP96824-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	4	%	30
OP96824-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	128	%	71-132
OP96824-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	0	%	30
OP96824-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	128	%	72-130
OP96824-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	5	%	30
OP96824-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	145	%	71-127
OP96824-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	7	%	30
OP96824-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	131	%	68-131
OP96824-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	7	%	30
OP96824-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	135	%	69-134
OP96824-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP96824-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	140	%	65-140
OP96824-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	0	%	30
OP96824-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	119	%	69-127
OP96824-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	6	%	30
OP96824-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	117	%	53-142
OP96824-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	5	%	30
OP96824-MSD	754-91-6	PFOSA	MSD	REC	131	%	67-137
OP96824-MSD	754-91-6	PFOSA	MSD	RPD	4	%	30
OP96824-MSD	31506-32-8	MeFOSA	MSD	REC	115	%	68-141
OP96824-MSD	31506-32-8	MeFOSA	MSD	RPD	13	%	30
OP96824-MSD	2355-31-9	MeFOSAA	MSD	REC	129	%	65-136
OP96824-MSD	2355-31-9	MeFOSAA	MSD	RPD	4	%	30
OP96824-MSD	2991-50-6	EtFOSAA	MSD	REC	124	%	61-135
OP96824-MSD	2991-50-6	EtFOSAA	MSD	RPD	6	%	30

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96824-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	118	%	63-143
OP96824-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	6	%	30
OP96824-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	122	%	64-140
OP96824-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP96824-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	119	%	67-138
OP96824-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	8	%	30
OP96962	EPA 537M QSM5.3 B-15						
OP96962-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	120	%	73-129
OP96962-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	117	%	72-129
OP96962-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	118	%	72-129
OP96962-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	117	%	72-130
OP96962-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	117	%	71-133
OP96962-BS	375-95-1	Perfluorononanoic acid	BSP	REC	114	%	69-130
OP96962-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	117	%	71-129
OP96962-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	119	%	69-133
OP96962-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	121	%	72-134
OP96962-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	112	%	65-144
OP96962-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	122	%	71-132
OP96962-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	119	%	72-130
OP96962-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	119	%	71-127
OP96962-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	118	%	68-131
OP96962-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	123	%	69-134
OP96962-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	115	%	65-140
OP96962-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	115	%	69-127
OP96962-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	103	%	53-142
OP96962-BS	754-91-6	PFOSA	BSP	REC	125	%	67-137
OP96962-BS	31506-32-8	MeFOSA	BSP	REC	138	%	68-141
OP96962-BS	2355-31-9	MeFOSAA	BSP	REC	116	%	65-136
OP96962-BS	2991-50-6	EtFOSAA	BSP	REC	123	%	61-135
OP96962-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	118	%	63-143
OP96962-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	122	%	64-140
OP96962-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	119	%	67-138
OP96962-BSD	375-22-4	Perfluorobutanoic acid	BSD	REC	115	%	73-129
OP96962-BSD	375-22-4	Perfluorobutanoic acid	BSD	RPD	4	%	30
OP96962-BSD	2706-90-3	Perfluoropentanoic acid	BSD	REC	113	%	72-129
OP96962-BSD	2706-90-3	Perfluoropentanoic acid	BSD	RPD	4	%	30
OP96962-BSD	307-24-4	Perfluorohexanoic acid	BSD	REC	114	%	72-129
OP96962-BSD	307-24-4	Perfluorohexanoic acid	BSD	RPD	4	%	30
OP96962-BSD	375-85-9	Perfluoroheptanoic acid	BSD	REC	113	%	72-130
OP96962-BSD	375-85-9	Perfluoroheptanoic acid	BSD	RPD	4	%	30
OP96962-BSD	335-67-1	Perfluorooctanoic acid	BSD	REC	112	%	71-133
OP96962-BSD	335-67-1	Perfluorooctanoic acid	BSD	RPD	5	%	30
OP96962-BSD	375-95-1	Perfluorononanoic acid	BSD	REC	109	%	69-130

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP96962-BSD	375-95-1	Perfluorononanoic acid	BSD	RPD	4	%	30
OP96962-BSD	335-76-2	Perfluorodecanoic acid	BSD	REC	113	%	71-129
OP96962-BSD	335-76-2	Perfluorodecanoic acid	BSD	RPD	3	%	30
OP96962-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	REC	113	%	69-133
OP96962-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	RPD	5	%	30
OP96962-BSD	307-55-1	Perfluorododecanoic acid	BSD	REC	114	%	72-134
OP96962-BSD	307-55-1	Perfluorododecanoic acid	BSD	RPD	6	%	30
OP96962-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	REC	109	%	65-144
OP96962-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	RPD	3	%	30
OP96962-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	REC	115	%	71-132
OP96962-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	RPD	7	%	30
OP96962-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	REC	112	%	72-130
OP96962-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	RPD	6	%	30
OP96962-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	REC	112	%	71-127
OP96962-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	RPD	6	%	30
OP96962-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	REC	116	%	68-131
OP96962-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	RPD	2	%	30
OP96962-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	REC	118	%	69-134
OP96962-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	RPD	4	%	30
OP96962-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	REC	111	%	65-140
OP96962-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	RPD	4	%	30
OP96962-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	REC	121	%	69-127
OP96962-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	RPD	5	%	30
OP96962-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	REC	112	%	53-142
OP96962-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	RPD	9	%	30
OP96962-BSD	754-91-6	PFOSA	BSD	REC	119	%	67-137
OP96962-BSD	754-91-6	PFOSA	BSD	RPD	5	%	30
OP96962-BSD	31506-32-8	MeFOSA	BSD	REC	153	%	68-141
OP96962-BSD	31506-32-8	MeFOSA	BSD	RPD	10	%	30
OP96962-BSD	2355-31-9	MeFOSAA	BSD	REC	114	%	65-136
OP96962-BSD	2355-31-9	MeFOSAA	BSD	RPD	1	%	30
OP96962-BSD	2991-50-6	EtFOSAA	BSD	REC	118	%	61-135
OP96962-BSD	2991-50-6	EtFOSAA	BSD	RPD	4	%	30
OP96962-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	REC	113	%	63-143
OP96962-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	RPD	4	%	30
OP96962-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	REC	118	%	64-140
OP96962-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	RPD	3	%	30
OP96962-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	REC	118	%	67-138
OP96962-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	RPD	2	%	30
OP97045	EPA 537M QSM5.3 B-15						
OP97045-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	73-129
OP97045-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	98	%	73-129
OP97045-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	101	%	72-129

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97045-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	97	%	72-129
OP97045-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	102	%	72-129
OP97045-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP97045-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	96	%	72-130
OP97045-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	101	%	72-130
OP97045-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	101	%	71-133
OP97045-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP97045-BS	375-95-1	Perfluorononanoic acid	BSP	REC	95	%	69-130
OP97045-BS	375-95-1	Perfluorononanoic acid	BSP	REC	100	%	69-130
OP97045-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	103	%	71-129
OP97045-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	97	%	71-129
OP97045-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP97045-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	69-133
OP97045-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	102	%	72-134
OP97045-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	100	%	72-134
OP97045-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	75	%	65-144
OP97045-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	87	%	65-144
OP97045-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	102	%	71-132
OP97045-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	100	%	71-132
OP97045-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	105	%	72-130
OP97045-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	99	%	72-130
OP97045-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	110	%	71-127
OP97045-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	95	%	71-127
OP97045-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	97	%	68-131
OP97045-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	95	%	68-131
OP97045-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	104	%	69-134
OP97045-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	95	%	69-134
OP97045-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	95	%	65-140
OP97045-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	98	%	65-140
OP97045-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	106	%	69-127
OP97045-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	112	%	69-127
OP97045-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	92	%	53-142
OP97045-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	87	%	53-142
OP97045-BS	2355-31-9	MeFOSAA	BSP	REC	97	%	65-136
OP97045-BS	2355-31-9	MeFOSAA	BSP	REC	100	%	65-136
OP97045-BS	2991-50-6	EtFOSAA	BSP	REC	100	%	61-135
OP97045-BS	2991-50-6	EtFOSAA	BSP	REC	103	%	61-135
OP97045-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	99	%	63-143
OP97045-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	103	%	63-143
OP97045-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP97045-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	106	%	64-140
OP97045-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	98	%	67-138
OP97045-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	106	%	67-138
OP97045-BSD	375-22-4	Perfluorobutanoic acid	BSD	REC	91	%	73-129
OP97045-BSD	375-22-4	Perfluorobutanoic acid	BSD	REC	94	%	73-129

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97045-BSD	375-22-4	Perfluorobutanoic acid	BSD	RPD	6	%	30
OP97045-BSD	375-22-4	Perfluorobutanoic acid	BSD	RPD	7	%	30
OP97045-BSD	2706-90-3	Perfluoropentanoic acid	BSD	REC	91	%	72-129
OP97045-BSD	2706-90-3	Perfluoropentanoic acid	BSD	REC	90	%	72-129
OP97045-BSD	2706-90-3	Perfluoropentanoic acid	BSD	RPD	7	%	30
OP97045-BSD	2706-90-3	Perfluoropentanoic acid	BSD	RPD	10	%	30
OP97045-BSD	307-24-4	Perfluorohexanoic acid	BSD	REC	93	%	72-129
OP97045-BSD	307-24-4	Perfluorohexanoic acid	BSD	REC	91	%	72-129
OP97045-BSD	307-24-4	Perfluorohexanoic acid	BSD	RPD	10	%	30
OP97045-BSD	307-24-4	Perfluorohexanoic acid	BSD	RPD	7	%	30
OP97045-BSD	375-85-9	Perfluoroheptanoic acid	BSD	REC	90	%	72-130
OP97045-BSD	375-85-9	Perfluoroheptanoic acid	BSD	REC	90	%	72-130
OP97045-BSD	375-85-9	Perfluoroheptanoic acid	BSD	RPD	11	%	30
OP97045-BSD	375-85-9	Perfluoroheptanoic acid	BSD	RPD	6	%	30
OP97045-BSD	335-67-1	Perfluorooctanoic acid	BSD	REC	94	%	71-133
OP97045-BSD	335-67-1	Perfluorooctanoic acid	BSD	REC	90	%	71-133
OP97045-BSD	335-67-1	Perfluorooctanoic acid	BSD	RPD	7	%	30
OP97045-BSD	335-67-1	Perfluorooctanoic acid	BSD	RPD	8	%	30
OP97045-BSD	375-95-1	Perfluorononanoic acid	BSD	REC	92	%	69-130
OP97045-BSD	375-95-1	Perfluorononanoic acid	BSD	REC	91	%	69-130
OP97045-BSD	375-95-1	Perfluorononanoic acid	BSD	RPD	8	%	30
OP97045-BSD	375-95-1	Perfluorononanoic acid	BSD	RPD	5	%	30
OP97045-BSD	335-76-2	Perfluorodecanoic acid	BSD	REC	91	%	71-129
OP97045-BSD	335-76-2	Perfluorodecanoic acid	BSD	REC	100	%	71-129
OP97045-BSD	335-76-2	Perfluorodecanoic acid	BSD	RPD	6	%	30
OP97045-BSD	335-76-2	Perfluorodecanoic acid	BSD	RPD	3	%	30
OP97045-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	REC	90	%	69-133
OP97045-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	REC	95	%	69-133
OP97045-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	RPD	1	%	30
OP97045-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	RPD	7	%	30
OP97045-BSD	307-55-1	Perfluorododecanoic acid	BSD	REC	95	%	72-134
OP97045-BSD	307-55-1	Perfluorododecanoic acid	BSD	REC	94	%	72-134
OP97045-BSD	307-55-1	Perfluorododecanoic acid	BSD	RPD	5	%	30
OP97045-BSD	307-55-1	Perfluorododecanoic acid	BSD	RPD	9	%	30
OP97045-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	REC	71	%	65-144
OP97045-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	REC	79	%	65-144
OP97045-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	RPD	10	%	30
OP97045-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	RPD	6	%	30
OP97045-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	REC	94	%	71-132
OP97045-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	REC	97	%	71-132
OP97045-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	RPD	6	%	30
OP97045-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	RPD	6	%	30
OP97045-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	REC	92	%	72-130
OP97045-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	REC	95	%	72-130
OP97045-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	RPD	7	%	30

* Sample used for QC is not from job FC5812

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5812
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/02/23 thru 05/03/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97045-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	RPD	10	%	30
OP97045-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	REC	100	%	71-127
OP97045-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	REC	89	%	71-127
OP97045-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	RPD	9	%	30
OP97045-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	RPD	7	%	30
OP97045-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	REC	93	%	68-131
OP97045-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	REC	88	%	68-131
OP97045-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	RPD	5	%	30
OP97045-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	RPD	7	%	30
OP97045-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	REC	89	%	69-134
OP97045-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	REC	106	%	69-134
OP97045-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	RPD	6	%	30
OP97045-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	RPD	1	%	30
OP97045-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	REC	85	%	65-140
OP97045-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	REC	87	%	65-140
OP97045-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	RPD	9	%	30
OP97045-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	RPD	14	%	30
OP97045-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	REC	101	%	69-127
OP97045-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	REC	102	%	69-127
OP97045-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	RPD	4	%	30
OP97045-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	RPD	10	%	30
OP97045-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	REC	93	%	53-142
OP97045-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	REC	86	%	53-142
OP97045-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	RPD	1	%	30
OP97045-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	RPD	2	%	30
OP97045-BSD	2355-31-9	MeFOSAA	BSD	REC	95	%	65-136
OP97045-BSD	2355-31-9	MeFOSAA	BSD	REC	109	%	65-136
OP97045-BSD	2355-31-9	MeFOSAA	BSD	RPD	2	%	30
OP97045-BSD	2355-31-9	MeFOSAA	BSD	RPD	8	%	30
OP97045-BSD	2991-50-6	EtFOSAA	BSD	REC	109	%	61-135
OP97045-BSD	2991-50-6	EtFOSAA	BSD	REC	95	%	61-135
OP97045-BSD	2991-50-6	EtFOSAA	BSD	RPD	5	%	30
OP97045-BSD	2991-50-6	EtFOSAA	BSD	RPD	6	%	30
OP97045-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	REC	102	%	63-143
OP97045-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	REC	95	%	63-143
OP97045-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	RPD	5	%	30
OP97045-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	RPD	1	%	30
OP97045-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	REC	103	%	64-140
OP97045-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	REC	97	%	64-140
OP97045-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	RPD	7	%	30
OP97045-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	RPD	3	%	30
OP97045-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	REC	94	%	67-138
OP97045-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	REC	103	%	67-138
OP97045-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	RPD	4	%	30
OP97045-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	RPD	3	%	30

* Sample used for QC is not from job FC5812

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q225-IBLK	5Q14353.D	1	05/15/23	LR	n/a	n/a	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	96%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q225-IBLK	5Q14353.D	1	05/15/23	LR	n/a	n/a	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	98%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	92%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	97%	50-150%
	13C2-4:2FTS	92%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	93%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q226-IBLK	5Q14417.D	1	05/16/23	LR	n/a	n/a	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-24, FC5812-26, FC5812-27, FC5812-29, FC5812-30, FC5812-31

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	94%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	95%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	93%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	94%	50-150%
	d5-EtFOSAA	93%	50-150%
	13C2-4:2FTS	89%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q226-IBLK	5Q14417.D	1	05/16/23	LR	n/a	n/a	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-24, FC5812-26, FC5812-27, FC5812-29, FC5812-30, FC5812-31

CAS No.	ID Standard Recoveries		Limits
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	96%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1543-IBLK	2Q109505.D	1	05/19/23	LR	n/a	n/a	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	115%	50-150%
	13C5-PFPeA	117%	50-150%
	13C5-PFHxA	118%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1543-IBLK	2Q109505.D	1	05/19/23	LR	n/a	n/a	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	116%	50-150%
	13C8-PFOA	114%	50-150%
	13C9-PFNA	115%	50-150%
	13C6-PFDA	116%	50-150%
	13C7-PFUnDA	117%	50-150%
	13C2-PFDoDA	115%	50-150%
	13C2-PFTeDA	107%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	114%	50-150%
	13C8-PFOS	117%	50-150%
	13C8-FOSA	120%	50-150%
	d3-MeFOSA	127%	50-150%
	d3-MeFOSAA	92%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	103%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	110%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1064-IBLK	3Q77027.D	1	05/23/23	AL	n/a	n/a	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	99%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q1064-IBLK	3Q77027.D	1	05/23/23	AL	n/a	n/a	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	101%	50-150%
	13C8-PFOA	104%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	101%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q658-IBLK	4Q45263.D	1	05/31/23	AL	n/a	n/a	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	102%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q658-IBLK	4Q45263.D	1	05/31/23	AL	n/a	n/a	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	101%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	107%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	101%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	110%	50-150%
	d3-MeFOSA	108%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	107%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	103%	50-150%
	13C3-HFPO-DA	100%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MB	2Q109464.D	1	05/18/23	LR	05/10/23	OP96823	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	105%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MB	2Q109464.D	1	05/18/23	LR	05/10/23	OP96823	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	97%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	94%	50-150%
	d3-MeFOSAA	88%	50-150%
	d5-EtFOSAA	84%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	95%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	85%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MB	2Q109510.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	98%	50-150%
	13C5-PFPeA	100%	50-150%
	13C5-PFHxA	100%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MB	2Q109510.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	98%	50-150%
	13C9-PFNA	99%	50-150%
	13C6-PFDA	105%	50-150%
	13C7-PFUnDA	98%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	78%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	93%	50-150%
	d3-MeFOSA	71%	50-150%
	d3-MeFOSAA	77%	50-150%
	d5-EtFOSAA	73%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	108%	50-150%
	13C3-HFPO-DA	91%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-MB	5Q14385.D	1	05/15/23	LR	05/10/23	OP96824	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0011	0.0040	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	80%	50-150%
	13C5-PFHxA	81%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-MB	5Q14385.D	1	05/15/23	LR	05/10/23	OP96824	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	82%	50-150%
	13C8-PFOA	83%	50-150%
	13C9-PFNA	85%	50-150%
	13C6-PFDA	86%	50-150%
	13C7-PFUnDA	83%	50-150%
	13C2-PFDoDA	74%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	82%	50-150%
	13C3-PFHxS	81%	50-150%
	13C8-PFOS	83%	50-150%
	13C8-FOSA	71%	50-150%
	d3-MeFOSA	58%	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	79%	50-150%
	13C2-4:2FTS	80%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	88%	50-150%
	13C3-HFPO-DA	70%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-MB	3Q77044.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	76%	50-150%
	13C5-PFHxA	75%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-MB	3Q77044.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	79%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	77%	50-150%
	13C6-PFDA	85%	50-150%
	13C7-PFUnDA	77%	50-150%
	13C2-PFDoDA	69%	50-150%
	13C2-PFTeDA	52%	50-150%
	13C3-PFBS	76%	50-150%
	13C3-PFHxS	78%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	56%	50-150%
	d3-MeFOSAA	75%	50-150%
	d5-EtFOSAA	65%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	76%	50-150%
	13C2-8:2FTS	78%	50-150%
	13C3-HFPO-DA	69%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-MB	4Q45271.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	111%	50-150%
	13C5-PFPeA	111%	50-150%
	13C5-PFHxA	112%	50-150%
	13C4-PFHpA	113%	50-150%
	13C8-PFOA	114%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-MB	4Q45271.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	113%	50-150%
	13C6-PFDA	126%	50-150%
	13C7-PFUnDA	119%	50-150%
	13C2-PFDoDA	106%	50-150%
	13C2-PFTeDA	83%	50-150%
	13C3-PFBS	112%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	103%	50-150%
	d3-MeFOSA	18%* [a]	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	115%	50-150%
	13C3-HFPO-DA	107%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-MB	Q103205.D	1	05/31/23	JL	05/24/23	OP97045	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	86%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	90%	50-150%
	13C4-PFHpA	93%	50-150%
	13C8-PFOA	97%	50-150%

Method Blank Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-MB	Q103205.D	1	05/31/23	JL	05/24/23	OP97045	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	99%	50-150%
	13C6-PFDA	104%	50-150%
	13C7-PFUnDA	100%	50-150%
	13C2-PFDoDA	94%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	87%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	88%	50-150%
	13C8-FOSA	79%	50-150%
	d3-MeFOSA	13%* [a]	50-150%
	d3-MeFOSAA	93%	50-150%
	d5-EtFOSAA	86%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	116%	50-150%
	13C3-HFPO-DA	88%	50-150%

(a) Outside control limits.

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1542-IBLK	2Q109429.D	1	05/18/23	LR	n/a	n/a	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP96823-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	99%	50-150%
	13C5-PFHxA	99%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1542-IBLK	2Q109429.D	1	05/18/23	LR	n/a	n/a	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP96823-BS

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	96%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	97%	50-150%
	13C2-PFDoDA	96%	50-150%
	13C2-PFTeDA	87%	50-150%
	13C3-PFBS	96%	50-150%
	13C3-PFHxS	96%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	82%	50-150%
	d5-EtFOSAA	78%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	86%	50-150%
	13C2-8:2FTS	89%	50-150%
	13C3-HFPO-DA	95%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2198-IBLK	Q103190.D	1	05/31/23	JL	n/a	n/a	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97045-BSD, OP97045-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	0.0023	0.0080	0.0020	ug/l	J
2991-50-6	EtFOSAA	0.0022	0.0080	0.0020	ug/l	J
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	104%	50-150%
	13C8-PFOA	106%	50-150%

Instrument Blank

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ2198-IBLK	Q103190.D	1	05/31/23	JL	n/a	n/a	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP97045-BSD, OP97045-BS

CAS No.	ID Standard Recoveries		Limits
	13C9-PFNA	104%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	101%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	101%	50-150%
	13C8-PFOS	96%	50-150%
	13C8-FOSA	102%	50-150%
	d3-MeFOSAA	97%	50-150%
	d5-EtFOSAA	90%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	97%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	109%	50-150%

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-BS	2Q109463.D	1	05/18/23	LR	05/10/23	OP96823	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.101	126	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0969	121	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0964	121	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0951	119	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.101	126	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0965	121	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0952	119	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0983	123	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.102	128	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0935	117	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.100	125	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0991	124	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0998	125	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0972	122	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0998	125	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0975	122	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0950	119	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.103	129	53-142
754-91-6	PFOSA	0.08	0.0989	124	67-137
31506-32-8	MeFOSA	0.08	0.107	134	68-141
2355-31-9	MeFOSAA	0.08	0.102	128	65-136
2991-50-6	EtFOSAA	0.08	0.102	128	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0966	121	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.102	128	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0962	120	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0941	118	60-140
919005-14-4	ADONA	0.08	0.0922	115	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0942	118	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0987	123	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	92%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-BS	2Q109463.D	1	05/18/23	LR	05/10/23	OP96823	S2Q1542

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	88%	50-150%
	13C9-PFNA	89%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	84%	50-150%
	13C2-PFDoDA	85%	50-150%
	13C2-PFTeDA	76%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	81%	50-150%
	d3-MeFOSAA	75%	50-150%
	d5-EtFOSAA	70%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	93%	50-150%
	13C2-8:2FTS	107%	50-150%
	13C3-HFPO-DA	77%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-BS	2Q109509.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0995	124	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0979	122	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0970	121	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0956	120	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.101	126	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0985	123	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0976	122	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0980	123	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.101	126	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0941	118	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.102	128	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0955	119	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0957	120	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0941	118	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0983	123	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.101	126	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0988	124	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0953	119	53-142
754-91-6	PFOSA	0.08	0.100	125	67-137
31506-32-8	MeFOSA	0.08	0.113	141	68-141
2355-31-9	MeFOSAA	0.08	0.103	129	65-136
2991-50-6	EtFOSAA	0.08	0.0984	123	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0954	119	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.101	126	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0968	121	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0968	121	60-140
919005-14-4	ADONA	0.08	0.0923	115	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0948	119	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.100	125	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	87%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	89%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-BS	2Q109509.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	87%	50-150%
	13C8-PFOA	85%	50-150%
	13C9-PFNA	86%	50-150%
	13C6-PFDA	91%	50-150%
	13C7-PFUnDA	87%	50-150%
	13C2-PFDoDA	83%	50-150%
	13C2-PFTeDA	70%	50-150%
	13C3-PFBS	91%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSA	60%	50-150%
	d3-MeFOSAA	66%	50-150%
	d5-EtFOSAA	65%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	84%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-BS	5Q14384.D	1	05/15/23	LR	05/10/23	OP96824	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.100	125	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.102	128	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.103	129	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.101	126	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.101	126	71-133
375-95-1	Perfluorononanoic acid	0.08	0.102	128	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.104	130*	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.101	126	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.104	130	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0966	121	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.108	135*	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.102	128	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.101	126	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.103	129	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.106	133	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.104	130	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.103	129*	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0869	109	53-142
754-91-6	PFOSA	0.08	0.103	129	67-137
31506-32-8	MeFOSA	0.08	0.0985	123	68-141
2355-31-9	MeFOSAA	0.08	0.104	130	65-136
2991-50-6	EtFOSAA	0.08	0.102	128	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0964	121	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0995	124	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0942	118	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.104	130	60-140
919005-14-4	ADONA	0.08	0.104	130	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0975	122	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0998	125	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	72%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	72%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-BS	5Q14384.D	1	05/15/23	LR	05/10/23	OP96824	S5Q225

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	72%	50-150%
	13C8-PFOA	73%	50-150%
	13C9-PFNA	75%	50-150%
	13C6-PFDA	74%	50-150%
	13C7-PFUnDA	71%	50-150%
	13C2-PFDoDA	58%	50-150%
	13C2-PFTeDA	52%	50-150%
	13C3-PFBS	71%	50-150%
	13C3-PFHxS	72%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	62%	50-150%
	d3-MeFOSA	51%	50-150%
	d3-MeFOSAA	69%	50-150%
	d5-EtFOSAA	63%	50-150%
	13C2-4:2FTS	78%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	84%	50-150%
	13C3-HFPO-DA	62%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-BS	3Q77042.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064
OP96962-BSD	3Q77043.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0958	120	0.0916	115	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0937	117	0.0902	113	4	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0942	118	0.0909	114	4	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0938	117	0.0903	113	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0937	117	0.0894	112	5	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0911	114	0.0874	109	4	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0932	117	0.0902	113	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0954	119	0.0907	113	5	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0964	121	0.0912	114	6	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0895	112	0.0870	109	3	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0979	122	0.0916	115	7	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0952	119	0.0895	112	6	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0953	119	0.0899	112	6	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0943	118	0.0928	116	2	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0983	123	0.0942	118	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0918	115	0.0886	111	4	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0922	115	0.0968	121	5	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0821	103	0.0896	112	9	53-142/30
754-91-6	PFOSA	0.08	0.0996	125	0.0948	119	5	67-137/30
31506-32-8	MeFOSA	0.08	0.110	138	0.122	153*	10	68-141/30
2355-31-9	MeFOSAA	0.08	0.0925	116	0.0912	114	1	65-136/30
2991-50-6	EtFOSAA	0.08	0.0983	123	0.0943	118	4	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0942	118	0.0903	113	4	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0974	122	0.0943	118	3	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0955	119	0.0940	118	2	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0969	121	0.0940	118	3	60-140/30
919005-14-4	ADONA	0.08	0.0921	115	0.0886	111	4	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0799	100	0.0773	97	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0923	115	0.0869	109	6	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	75%	77%	50-150%
	13C5-PFPeA	78%	81%	50-150%
	13C5-PFHxA	78%	80%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96962-BS	3Q77042.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064
OP96962-BSD	3Q77043.D	1	05/23/23	AL	05/18/23	OP96962	S3Q1064

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-21, FC5812-23, FC5812-25

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFHpA	80%	82%	50-150%
	13C8-PFOA	78%	82%	50-150%
	13C9-PFNA	75%	82%	50-150%
	13C6-PFDA	87%	97%	50-150%
	13C7-PFUnDA	76%	87%	50-150%
	13C2-PFDoDA	67%	89%	50-150%
	13C2-PFTeDA	56%	72%	50-150%
	13C3-PFBS	77%	83%	50-150%
	13C3-PFHxS	80%	82%	50-150%
	13C8-PFOS	74%	82%	50-150%
	13C8-FOSA	59%	42%* [a]	50-150%
	d3-MeFOSAA	70%	79%	50-150%
	d5-EtFOSAA	60%	70%	50-150%
	13C2-4:2FTS	84%	88%	50-150%
	13C2-6:2FTS	84%	87%	50-150%
	13C2-8:2FTS	89%	94%	50-150%
	13C3-HFPO-DA	73%	76%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-BS [a]	4Q45269.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658
OP97045-BSD	4Q45270.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0783	98	0.0730	91	7	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0773	97	0.0723	90	7	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0785	98	0.0730	91	7	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0764	96	0.0723	90	6	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0784	98	0.0723	90	8	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0763	95	0.0725	91	5	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0775	97	0.0728	91	6	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0773	97	0.0718	90	7	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0797	100	0.0758	95	5	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0601	75	0.0565	71	6	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0796	100	0.0752	94	6	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0791	99	0.0734	92	7	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0761	95	0.0712	89	7	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0758	95	0.0704	88	7	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0758	95	0.0711	89	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0761	95	0.0693	87	9	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0849	106	0.0819	102	4	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0697	87	0.0684	86	2	53-142/30
2355-31-9	MeFOSAA	0.08	0.0776	97	0.0757	95	2	65-136/30
2991-50-6	EtFOSAA	0.08	0.0803	100	0.0758	95	6	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0794	99	0.0756	95	5	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0827	103	0.0772	97	7	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0787	98	0.0754	94	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0833	104	0.0812	102	3	60-140/30
919005-14-4	ADONA	0.08	0.0763	95	0.0710	89	7	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0713	89	0.0680	85	5	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0782	98	0.0755	94	4	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	94%	99%	50-150%
	13C5-PFPeA	93%	99%	50-150%
	13C5-PFHxA	94%	99%	50-150%
	13C4-PFHpA	97%	100%	50-150%
	13C8-PFOA	93%	99%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-BS [a]	4Q45269.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658
OP97045-BSD	4Q45270.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C9-PFNA	91%	96%	50-150%
	13C6-PFDA	93%	97%	50-150%
	13C7-PFUnDA	89%	97%	50-150%
	13C2-PFDoDA	80%	89%	50-150%
	13C2-PFTeDA	71%	77%	50-150%
	13C3-PFBS	93%	100%	50-150%
	13C3-PFHxS	95%	101%	50-150%
	13C8-PFOS	94%	100%	50-150%
	13C8-FOSA	73%	79%	50-150%
	d3-MeFOSA	25%* [b]	20%* [b]	50-150%
	d3-MeFOSAA	87%	91%	50-150%
	d5-EtFOSAA	80%	87%	50-150%
	13C2-4:2FTS	98%	103%	50-150%
	13C2-6:2FTS	93%	100%	50-150%
	13C2-8:2FTS	95%	99%	50-150%
	13C3-HFPO-DA	93%	96%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-BS [a]	4Q45269.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658
OP97045-BSD	Q103204.D	1	05/31/23	JL	05/24/23	OP97045	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0783	98	0.0749	94	6	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0773	97	0.0731	91	10	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0785	98	0.0741	93	10	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0764	96	0.0722	90	11	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0784	98	0.0749	94	7	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0763	95	0.0736	92	8	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0775	97	0.0799	100	3	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0773	97	0.0760	95	1	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0797	100	0.0751	94	9	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0601	75	0.0632	79	10	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0796	100	0.0772	97	6	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0791	99	0.0758	95	10	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0761	95	0.0799	100	9	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0758	95	0.0740	93	5	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0758	95	0.0844	106	1	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0761	95	0.0682	85	14	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0849	106	0.0810	101	10	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0697	87	0.0747	93	1	53-142/30
2355-31-9	MeFOSAA	0.08	0.0776	97	0.0869	109	8	65-136/30
2991-50-6	EtFOSAA	0.08	0.0803	100	0.0873	109	5	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0794	99	0.0817	102	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0827	103	0.0821	103	3	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0787	98	0.0822	103	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0833	104	0.0832	104	10	60-140/30
919005-14-4	ADONA	0.08	0.0763	95	0.0684	86	9	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0713	89	0.0757	95	7	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0782	98	0.0617	77	7	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	94%	87%	50-150%
	13C5-PFPeA	93%	87%	50-150%
	13C5-PFHxA	94%	89%	50-150%
	13C4-PFHpA	97%	90%	50-150%
	13C8-PFOA	93%	88%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97045-BS [a]	4Q45269.D	1	05/31/23	AL	05/24/23	OP97045	S4Q658
OP97045-BSD	Q103204.D	1	05/31/23	JL	05/24/23	OP97045	SQ2198

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C9-PFNA	91%	92%	50-150%
	13C6-PFDA	93%	95%	50-150%
	13C7-PFUnDA	89%	90%	50-150%
	13C2-PFDoDA	80%	93%	50-150%
	13C2-PFTeDA	71%	91%	50-150%
	13C3-PFBS	93%	88%	50-150%
	13C3-PFHxS	95%	86%	50-150%
	13C8-PFOS	94%	90%	50-150%
	13C8-FOSA	73%	72%	50-150%
	d3-MeFOSA	25%* [b]	23%* [b]	50-150%
	d3-MeFOSAA	87%	77%	50-150%
	d5-EtFOSAA	80%	68%	50-150%
	13C2-4:2FTS	98%	86%	50-150%
	13C2-6:2FTS	93%	87%	50-150%
	13C2-8:2FTS	95%	121%	50-150%
	13C3-HFPO-DA	93%	86%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MS	2Q109522.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
OP96823-MSD	2Q109523.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
FC5812-7	2Q109521.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
FC5812-7 [a]	2Q109564.D	5	05/20/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	Compound	FC5812-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.038 U [b]		0.0755	0.0911	121	0.0755	0.0900	119	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0038 U		0.0755	0.0955	127	0.0755	0.0929	123	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.0016	J	0.0755	0.0948	123	0.0755	0.0933	122	2	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0038 U		0.0755	0.0944	125	0.0755	0.0924	122	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.0038 U		0.0755	0.100	133	0.0755	0.0973	129	3	71-133/30
375-95-1	Perfluorononanoic acid	0.0038 U		0.0755	0.0928	123	0.0755	0.0909	120	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0038 U		0.0755	0.0914	121	0.0755	0.0900	119	2	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0038 U		0.0755	0.0966	128	0.0755	0.0937	124	3	69-133/30
307-55-1	Perfluorododecanoic acid	0.0038 U		0.0755	0.0973	129	0.0755	0.0953	126	2	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0038 U		0.0755	0.0911	121	0.0755	0.0873	116	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0038 U		0.0755	0.0953	126	0.0755	0.0941	125	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0023	J	0.0755	0.0972	126	0.0755	0.0954	123	2	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0022	J	0.0755	0.0953	123	0.0755	0.0939	122	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0234		0.0755	0.114	120	0.0755	0.113	119	1	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U		0.0755	0.106	140*	0.0755	0.101	134	5	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0156		0.0755	0.108	122	0.0755	0.102	114	6	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0038 U		0.0755	0.0904	120	0.0755	0.0837	111	8	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0038 U		0.0755	0.0876	116	0.0755	0.0780	103	12	53-142/30
754-91-6	PFOSA	0.0038 U		0.0755	0.0931	123	0.0755	0.0954	126	2	67-137/30
31506-32-8	MeFOSA	0.0075 U		0.0755	0.0961	127	0.0755	0.0919	122	4	68-141/30
2355-31-9	MeFOSAA	0.0075 U		0.0755	0.101	134	0.0755	0.0940	125	7	65-136/30
2991-50-6	EtFOSAA	0.0075 U		0.0755	0.0937	124	0.0755	0.0921	122	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0075 U		0.0755	0.0925	123	0.0755	0.0930	123	1	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0075 U		0.0755	0.0982	130	0.0755	0.0943	125	4	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0075 U		0.0755	0.0929	123	0.0755	0.0894	118	4	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0075 U		0.0755	0.0909	120	0.0755	0.0883	117	3	60-140/30
919005-14-4	ADONA	0.0075 U		0.0755	0.0842	112	0.0755	0.0821	109	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0075 U		0.0755	0.0843	112	0.0755	0.0817	108	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0075 U		0.0755	0.0920	122	0.0755	0.0870	115	6	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5812-7	FC5812-7	Limits
	13C4-PFBA	38%* [c]	38%* [c]	41%* [c]	49%* [c]	50-150%
	13C5-PFPeA	52%	56%	57%	70%	50-150%
	13C5-PFHxA	64%	69%	68%	78%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96823-MS	2Q109522.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
OP96823-MSD	2Q109523.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
FC5812-7	2Q109521.D	1	05/19/23	LR	05/10/23	OP96823	S2Q1543
FC5812-7 [a]	2Q109564.D	5	05/20/23	LR	05/10/23	OP96823	S2Q1543

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-1, FC5812-2, FC5812-3, FC5812-4, FC5812-5, FC5812-6, FC5812-7, FC5812-8, FC5812-9, FC5812-10, FC5812-11, FC5812-12, FC5812-13, FC5812-14, FC5812-15, FC5812-16

CAS No.	ID Standard Recoveries	MS	MSD	FC5812-7	FC5812-7	Limits
	13C4-PFHpA	70%	75%	74%	79%	50-150%
	13C8-PFOA	75%	82%	83%	82%	50-150%
	13C9-PFNA	81%	88%	86%	80%	50-150%
	13C6-PFDA	86%	94%	90%	75%	50-150%
	13C7-PFUnDA	72%	78%	78%	70%	50-150%
	13C2-PFDoDA	71%	76%	74%	65%	50-150%
	13C2-PFTeDA	56%	56%	57%	52%	50-150%
	13C3-PFBS	64%	69%	69%	77%	50-150%
	13C3-PFHxS	69%	78%	75%	78%	50-150%
	13C8-PFOS	76%	86%	82%	73%	50-150%
	13C8-FOSA	65%	69%	71%	87%	50-150%
	d3-MeFOSA	48%* [c]	67%	56%	67%	50-150%
	d3-MeFOSAA	61%	69%	65%	69%	50-150%
	d5-EtFOSAA	62%	68%	64%	60%	50-150%
	13C2-4:2FTS	68%	72%	65%	73%	50-150%
	13C2-6:2FTS	85%	94%	83%	78%	50-150%
	13C2-8:2FTS	96%	115%	98%	79%	50-150%
	13C3-HFPO-DA	59%	63%	64%	73%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-MS	5Q14398.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
OP96824-MSD	5Q14399.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
FC5812-26	5Q14397.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
FC5812-26 [a]	5Q14391A.D	5	05/16/23	LR	05/10/23	OP96824	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	Compound	FC5812-26 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0220		0.0851	0.128	125	0.0889	0.133	125	4	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0023	J	0.0851	0.107	123	0.0889	0.112	123	5	72-129/30
307-24-4	Perfluorohexanoic acid	0.0021	J	0.0851	0.109	126	0.0889	0.116	128	6	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0020	J	0.0851	0.108	125	0.0889	0.115	127	6	72-130/30
335-67-1	Perfluorooctanoic acid	0.0150		0.0851	0.121	125	0.0889	0.127	126	5	71-133/30
375-95-1	Perfluorononanoic acid	0.0040 U		0.0851	0.106	125	0.0889	0.113	127	6	69-130/30
335-76-2	Perfluorodecanoic acid	0.0040 U		0.0851	0.107	126	0.0889	0.115	129	7	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0040 U		0.0851	0.107	126	0.0889	0.114	128	6	69-133/30
307-55-1	Perfluorododecanoic acid	0.0040 U		0.0851	0.107	126	0.0889	0.111	125	4	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0040 U		0.0851	0.106	125	0.0889	0.110	124	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0040 U		0.0851	0.114	134*	0.0889	0.114	128	0	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.020 U [b]		0.0851	0.108	127	0.0889	0.114	128	5	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.020 U [b]		0.0851	0.120	141*	0.0889	0.129	145*	7	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0174		0.0851	0.125	126	0.0889	0.134	131	7	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0182		0.0851	0.132	134	0.0889	0.138	135*	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.158		0.0851	0.282	146*	0.0889	0.282	140	0	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0040 U		0.0851	0.100	117	0.0889	0.106	119	6	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0040 U		0.0851	0.0991	116	0.0889	0.104	117	5	53-142/30
754-91-6	PFOSA	0.020 U [b]		0.0851	0.112	132	0.0889	0.116	131	4	67-137/30
31506-32-8	MeFOSA	0.0080 U		0.0851	0.0895	105	0.0889	0.102	115	13	68-141/30
2355-31-9	MeFOSAA	0.0080 U		0.0851	0.111	130	0.0889	0.115	129	4	65-136/30
2991-50-6	EtFOSAA	0.0080 U		0.0851	0.104	122	0.0889	0.110	124	6	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0080 U		0.0851	0.0993	117	0.0889	0.105	118	6	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0080 U		0.0851	0.104	122	0.0889	0.108	122	4	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0080 U		0.0851	0.0975	115	0.0889	0.106	119	8	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0080 U		0.0851	0.111	130	0.0889	0.120	135	8	60-140/30
919005-14-4	ADONA	0.0080 U		0.0851	0.0983	116	0.0889	0.113	127	14	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0080 U		0.0851	0.104	122	0.0889	0.105	118	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.040 U [b]		0.0851	0.110	129	0.0889	0.116	131	5	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FC5812-26	FC5812-26	Limits
	13C4-PFBA	35%* [c]	45%* [c]	41%* [c]	48%* [c]	50-150%
	13C5-PFPeA	41%* [c]	50%	42%* [c]	53%	50-150%
	13C5-PFHxA	50%	61%	51%	56%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC5812
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96824-MS	5Q14398.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
OP96824-MSD	5Q14399.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
FC5812-26	5Q14397.D	1	05/16/23	LR	05/10/23	OP96824	S5Q225
FC5812-26 [a]	5Q14391A.D	5	05/16/23	LR	05/10/23	OP96824	S5Q226

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC5812-17, FC5812-18, FC5812-19, FC5812-20, FC5812-21, FC5812-22, FC5812-24, FC5812-26, FC5812-27, FC5812-28, FC5812-29, FC5812-30, FC5812-31

CAS No.	ID Standard Recoveries	MS	MSD	FC5812-26	FC5812-26	Limits
	13C4-PFHpA	53%	65%	54%	58%	50-150%
	13C8-PFOA	56%	72%	57%	58%	50-150%
	13C9-PFNA	56%	72%	58%	58%	50-150%
	13C6-PFDA	52%	69%	58%	56%	50-150%
	13C7-PFUnDA	47%* [c]	60%	52%	53%	50-150%
	13C2-PFDoDA	42%* [c]	55%	44%* [c]	49%* [c]	50-150%
	13C2-PFTeDA	39%* [c]	51%	45%* [c]	46%* [c]	50-150%
	13C3-PFBS	48%* [c]	56%	46%* [c]	57%	50-150%
	13C3-PFHxS	58%	66%	56%	60%	50-150%
	13C8-PFOS	53%	66%	54%	59%	50-150%
	13C8-FOSA	46%* [c]	45%* [c]	43%* [c]	45%* [c]	50-150%
	d3-MeFOSA			10%* [c]	15%* [c]	50-150%
	d3-MeFOSAA	52%	67%	57%	53%	50-150%
	d5-EtFOSAA	48%* [c]	61%	52%	48%* [c]	50-150%
	13C2-4:2FTS	61%	74%	54%	56%	50-150%
	13C2-6:2FTS	68%	84%	61%	60%	50-150%
	13C2-8:2FTS	63%	78%	59%	54%	50-150%
	13C3-HFPO-DA	43%* [c]	52%	43%* [c]	45%* [c]	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run #2.
(c) Outside control limits.

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FC6405

Sampling Dates: 05/23/23 - 05/25/23

Report to:

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Total number of pages in report: **170**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

Test results relate only to samples analyzed.

Table of Contents

Table of Contents

Sample Summary

AECOM, Inc

Job No: FC6405

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC6405-1	05/25/23	09:21	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0001-025.0-20230525
FC6405-2	05/23/23	14:02	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0002-007.0-20230523
FC6405-3	05/23/23	13:10	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0003-007.0-20230523
FC6405-4	05/23/23	11:52	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0004-007.0-20230523
FC6405-5	05/25/23	10:44	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0005-007.0-20230525
FC6405-6	05/25/23	10:14	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0006-025.0-20230525
FC6405-7	05/25/23	09:27	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0007-025.0-20230525
FC6405-8	05/25/23	10:52	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0008-025.0-20230525
FC6405-9	05/24/23	11:53	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0009-025.0-20230524
FC6405-10	05/24/23	13:32	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0010-004.5-20230524
FC6405-11	05/24/23	11:58	BFGK	05/25/23	AQ	Ground Water	A3RB-FD-20230524-02
FC6405-12	05/24/23	13:05	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0011-056.5-20230524
FC6405-13	05/24/23	12:25	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0012-040.0-20230524

Sample Summary
(continued)

AECOM, Inc

Job No: FC6405

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC6405-14	05/24/23	11:53	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0013-025.0-20230524
FC6405-15	05/24/23	11:22	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0014-007.0-20230524
FC6405-16	05/24/23	09:50	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0015-025.0-20230524
FC6405-17	05/24/23	09:19	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0016-007.0-20230524
FC6405-18	05/23/23	13:28	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0017-056.5-20230523
FC6405-19	05/23/23	12:45	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0018-040.0-20230523
FC6405-20	05/23/23	12:01	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0019-035.0-20230523
FC6405-21	05/23/23	11:11	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0020-007.0-20230523
FC6405-21D	05/23/23	11:11	BFGK	05/25/23	AQ	Water Dup/MSD	A3RB-MW0020-007.0-20230523
FC6405-21S	05/23/23	11:11	BFGK	05/25/23	AQ	Water Matrix Spike	A3RB-MW0020-007.0-20230523
FC6405-22	05/23/23	11:30	BFGK	05/25/23	AQ	Ground Water	A3RB-FD-20230523-01
FC6405-23	05/23/23	14:10	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0021-025.0-20230523
FC6405-24	05/23/23	12:45	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0022-056.5-20230523

Sample Summary
(continued)

AECOM, Inc

Job No: FC6405

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC6405-25	05/23/23	11:27	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0023-056.5-20230523
FC6405-26	05/24/23	09:17	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0024-040.0-20230524
FC6405-27	05/24/23	12:55	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0025-040.0-20230524
FC6405-28	05/25/23	10:07	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0026-040.0-20230525
FC6405-29	05/24/23	13:59	BFGK	05/25/23	AQ	Ground Water	A3RB-MW0027-056.5-20230524
FC6405-29D	05/24/23	13:59	BFGK	05/25/23	AQ	Water Dup/MSD	A3RB-MW0027-056.5-20230524
FC6405-29S	05/24/23	13:59	BFGK	05/25/23	AQ	Water Matrix Spike	A3RB-MW0027-056.5-20230524
FC6405-30	05/23/23	13:00	BFGK	05/25/23	AQ	Ground Water	A3RB-FD-20230523-03
FC6405-31	05/23/23	10:30	BFGK	05/25/23	AQ	Equipment Blank	A3RB-EB-20230523
FC6405-32	05/24/23	12:03	BFGK	05/25/23	AQ	Equipment Blank	A3RB-EB-20230524-02
FC6405-33	05/24/23	13:05	BFGK	05/25/23	AQ	Equipment Blank	A3RB-EB-20230524-03
FC6405-34	05/23/23	08:00	BFGK	05/25/23	AQ	Field Blank Water	A3RB-FB-20230523-01
FC6405-35	05/23/23	08:00	BFGK	05/25/23	AQ	Field Blank Water	A3RB-FB-20230523-02

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FC6405

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 6/23/2023 9:25:31 AM

On 05/25/2023, 33 Sample(s), 0 Trip Blank(s) and 2 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC6405 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97259

Sample(s) FC6405-21MS, FC6405-21MSD, OP97259-MSMSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Perfluorotridecanoic acid are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC6405-1, FC6405-10, FC6405-11, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-19, FC6405-2, FC6405-21, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-9 have surrogates outside control limits.

OP97259-BS for 13C8-FOSA: Outside control limits.

OP97259-BS for d3-MeFOSA: Outside control limits.

OP97259-MB for d3-MeFOSA: Outside control limits.

FC6405-1 for MeFOSA: Associated ID Standard outside control limits.

FC6405-1: Confirmation run.

FC6405-1: Dilution required (ID recovery standard failure).

FC6405-3: Confirmation run.

FC6405-4 for MeFOSA: Associated ID Standard outside control limits.

FC6405-4: Confirmation run.

FC6405-4: Dilution required (ID recovery standard failure).

FC6405-5 for MeFOSA: Associated ID Standard outside control limits.

FC6405-5: Confirmation run.

FC6405-5: Dilution required (ID recovery standard failure).

FC6405-6 for 13C2-4:2FTS: Outside control limits.

FC6405-6 for 13C2-PFTeDA: Outside control limits.

FC6405-6 for 13C3-HFPO-DA: Outside control limits.

FC6405-6 for 13C3-PFBS: Outside control limits.

FC6405-6 for 13C4-PFBA: Outside control limits.

FC6405-6 for 13C5-PFHxA: Outside control limits.

FC6405-6 for 13C5-PFPeA: Outside control limits.

FC6405-6 for 13C8-FOSA: Outside control limits.

FC6405-6 for d3-MeFOSA: Outside control limits.

FC6405-6 for MeFOSA: Associated ID Standard outside control limits.

FC6405-6 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC6405-6: Dilution required (ID recovery standard failure).

FC6405-7 for MeFOSA: Associated ID Standard outside control limits.

FC6405-7: Confirmation run.

FC6405-7: Dilution required (ID recovery standard failure).

FC6405-8 for MeFOSA: Associated ID Standard outside control limits.

FC6405-8: Confirmation run.

FC6405-8: Dilution required (ID recovery standard failure).

FC6405-9 for 13C2-4:2FTS: Outside control limits.

FC6405-9 for 13C3-HFPO-DA: Outside control limits.

FC6405-9 for 13C3-HFPO-DA: Outside control limits.

FC6405-9 for 13C3-PFBS: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97259

FC6405-9 for 13C4-PFBA: Outside control limits.
FC6405-9 for 13C4-PFBA: Outside control limits.
FC6405-9 for 13C5-PFHxA: Outside control limits.
FC6405-9 for 13C5-PFPeA: Outside control limits.
FC6405-9 for 13C5-PFPeA: Outside control limits.
FC6405-9 for 13C8-FOSA: Outside control limits.
FC6405-9 for d3-MeFOSA: Outside control limits.
FC6405-9 for d3-MeFOSA: Outside control limits.
FC6405-9 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC6405-9 for MeFOSA: Associated ID Standard outside control limits.
FC6405-9 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC6405-9 for Perfluoropentanoic acid: Associated ID Standard outside control limits.
FC6405-10 for 13C2-PFTeDA: Outside control limits.
FC6405-10 for d3-MeFOSA: Outside control limits.
FC6405-10 for MeFOSA: Associated ID Standard outside control limits.
FC6405-10: Confirmation run.
FC6405-11: Confirmation run.
FC6405-12 for 13C4-PFBA: Outside control limits.
FC6405-12 for 13C8-FOSA: Outside control limits.
FC6405-12 for d3-MeFOSA: Outside control limits.
FC6405-12 for MeFOSA: Associated ID Standard outside control limits.
FC6405-12: Dilution required (ID recovery standard failure).
FC6405-13 for 13C3-HFPO-DA: Outside control limits.
FC6405-13 for 13C4-PFBA: Outside control limits.
FC6405-13 for 13C5-PFPeA: Outside control limits.
FC6405-13 for 13C8-FOSA: Outside control limits.
FC6405-13 for d3-MeFOSA: Outside control limits.
FC6405-13 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC6405-13 for MeFOSA: Associated ID Standard outside control limits.
FC6405-13: Dilution required (ID recovery standard failure).
FC6405-14 for 13C3-HFPO-DA: Outside control limits.
FC6405-14 for 13C4-PFBA: Outside control limits.
FC6405-14 for 13C5-PFPeA: Outside control limits.
FC6405-14 for d3-MeFOSA: Outside control limits.
FC6405-14 for HFPO-DA (GenX): Associated ID Standard outside control limits.
FC6405-14 for MeFOSA: Associated ID Standard outside control limits.
FC6405-14: Dilution required (ID recovery standard failure).
FC6405-15 for 13C8-FOSA: Outside control limits.
FC6405-15 for d3-MeFOSA: Outside control limits.
FC6405-15 for MeFOSA: Associated ID Standard outside control limits.
FC6405-15: Dilution required (ID recovery standard failure).
FC6405-16 for MeFOSA: Associated ID Standard outside control limits.
FC6405-16: Confirmation run.
FC6405-16: Dilution required (ID recovery standard failure).
FC6405-17 for 13C4-PFBA: Outside control limits.
FC6405-17 for d3-MeFOSA: Outside control limits.
FC6405-17 for MeFOSA: Associated ID Standard outside control limits.
FC6405-17 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC6405-17: Dilution required (ID recovery standard failure).
FC6405-18 for MeFOSA: Associated ID Standard outside control limits.
FC6405-18: Confirmation run.
FC6405-18: Dilution required (ID recovery standard failure).
FC6405-19 for MeFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97259

FC6405-19: Confirmation run.

FC6405-19: Dilution required (ID recovery standard failure).

FC6405-2 for MeFOSA: Associated ID Standard outside control limits.

FC6405-2: Dilution required (ID recovery standard failure).

FC6405-21 for MeFOSA: Associated ID Standard outside control limits.

FC6405-21: Confirmation run.

FC6405-21: Dilution required (ID recovery standard failure).

Matrix: AQ **Batch ID:** OP97260

Sample(s) FC6405-29MS, FC6405-29MSD, OP97260-MSMSD were used as the QC samples indicated.

Blank Spike Recovery(s) for MeFOSA are outside control limits.

Sample(s) FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-35 have surrogates outside control limits.

OP97260-BS for 13C8-FOSA: Outside control limits.

OP97260-BS for 13C8-FOSA: Outside control limits.

OP97260-BS for d3-MeFOSA: Outside control limits.

OP97260-BS for d3-MeFOSA: Outside control limits.

FC6405-20 for 13C2-PFTeDA: Outside control limits.

FC6405-20 for 13C4-PFBA: Outside control limits.

FC6405-20 for 13C5-PFPeA: Outside control limits.

FC6405-20 for d3-MeFOSA: Outside control limits.

FC6405-20 for MeFOSA: Associated ID Standard outside control limits.

FC6405-20: Confirmation run.

FC6405-22 for MeFOSA: Associated ID Standard outside control limits.

FC6405-22: Confirmation run.

FC6405-22: Dilution required (ID recovery standard failure).

FC6405-23 for MeFOSA: Associated ID Standard outside control limits.

FC6405-23: Confirmation run.

FC6405-23: Dilution required (ID recovery standard failure).

FC6405-24 for 13C2-4:2FTS: Outside control limits.

FC6405-24 for 13C2-6:2FTS: Outside control limits.

FC6405-24 for 13C2-8:2FTS: Outside control limits.

FC6405-24 for 13C2-PFDoDA: Outside control limits.

FC6405-24 for 13C2-PFTeDA: Outside control limits.

FC6405-24 for 13C3-HFPO-DA: Outside control limits.

FC6405-24 for 13C3-PFBS: Outside control limits.

FC6405-24 for 13C3-PFHxS: Outside control limits.

FC6405-24 for 13C4-PFBA: Outside control limits.

FC6405-24 for 13C4-PFHpA: Outside control limits.

FC6405-24 for 13C5-PFHxA: Outside control limits.

FC6405-24 for 13C5-PFPeA: Outside control limits.

FC6405-24 for 13C7-PFUnDA: Outside control limits.

FC6405-24 for 13C8-PFOA: Outside control limits.

FC6405-24 for 13C9-PFNA: Outside control limits.

FC6405-24 for d3-MeFOSA: Outside control limits.

FC6405-24 for d5-EtFOSAA: Outside control limits.

FC6405-24 for MeFOSA: Associated ID Standard outside control limits.

FC6405-24: Confirmation run.

FC6405-25 for MeFOSA: Associated ID Standard outside control limits.

FC6405-25: Confirmation run.

FC6405-25: Dilution required (ID recovery standard failure).

FC6405-26 for 13C2-PFTeDA: Outside control limits.

FC6405-26 for d3-MeFOSA: Outside control limits.

FC6405-26 for MeFOSA: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97260

FC6405-26: Confirmation run.

FC6405-27 for MeFOSA: Associated ID Standard outside control limits.

FC6405-27: Confirmation run.

FC6405-27: Dilution required (ID recovery standard failure).

FC6405-28 for MeFOSA: Associated ID Standard outside control limits.

FC6405-28: Confirmation run.

FC6405-28: Dilution required (ID recovery standard failure).

FC6405-29 for MeFOSA: Associated ID Standard outside control limits.

FC6405-29: Confirmation run.

FC6405-29: Dilution required (ID recovery standard failure).

FC6405-30 for MeFOSA: Associated ID Standard outside control limits.

FC6405-30: Confirmation run.

FC6405-30: Dilution required (ID recovery standard failure).

FC6405-31 for d3-MeFOSA: Outside control limits.

FC6405-31 for MeFOSA: Associated BS outside control limits high, sample was ND.

FC6405-33 for d3-MeFOSA: Outside control limits.

FC6405-33 for MeFOSA: Associated BS outside control limits high, sample was ND.

FC6405-34 for MeFOSA: Associated BS outside control limits high, sample was ND.

FC6405-35 for d3-MeFOSA: Outside control limits.

FC6405-35 for MeFOSA: Associated BS outside control limits high, sample was ND.

Matrix: AQ **Batch ID:** OP97366

OP97366-BS: Insufficient sample for MS/MSD.

Sample(s) FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30 have surrogates outside control limits.

OP97366-BS for d3-MeFOSA: Outside control limits.

FC6405-20 for 13C4-PFBA: Outside control limits.

FC6405-20 for 13C8-FOSA: Outside control limits.

FC6405-20 for d3-MeFOSA: Outside control limits.

FC6405-20 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-20 for PFOSA: Associated ID Standard outside control limits.

FC6405-22 for 13C8-FOSA: Outside control limits.

FC6405-22 for d3-MeFOSA: Outside control limits.

FC6405-23 for 13C8-FOSA: Outside control limits.

FC6405-23 for d3-MeFOSA: Outside control limits.

FC6405-24 for 13C4-PFBA: Outside control limits.

FC6405-24 for 13C8-FOSA: Outside control limits.

FC6405-24 for d3-MeFOSA: Outside control limits.

FC6405-24 for MeFOSA: Associated ID Standard outside control limits.

FC6405-24 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-24 for PFOSA: Associated ID Standard outside control limits.

FC6405-25 for 13C8-FOSA: Outside control limits.

FC6405-25 for d3-MeFOSA: Outside control limits.

FC6405-26 for 13C4-PFBA: Outside control limits.

FC6405-26 for 13C8-FOSA: Outside control limits.

FC6405-26 for d3-MeFOSA: Outside control limits.

FC6405-26 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-26 for PFOSA: Associated ID Standard outside control limits.

FC6405-27 for 13C4-PFBA: Outside control limits.

FC6405-27 for 13C8-FOSA: Outside control limits.

FC6405-27 for d3-MeFOSA: Outside control limits.

FC6405-27 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-28 for 13C4-PFBA: Outside control limits.

FC6405-28 for 13C5-PFPeA: Outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97366

FC6405-28 for 13C8-FOSA: Outside control limits.

FC6405-28 for d3-MeFOSA: Outside control limits.

FC6405-29 for 13C4-PFBA: Outside control limits.

FC6405-29 for 13C8-FOSA: Outside control limits.

FC6405-29 for d3-MeFOSA: Outside control limits.

FC6405-29 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

Matrix: AQ **Batch ID:** OP97383

Sample(s) FC6405-1, FC6405-10, FC6405-11, FC6405-12, FC6405-13, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-19, FC6405-2, FC6405-21, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8 have surrogates outside control limits.

OP97383-BS for d3-MeFOSA: Outside control limits.

OP97383-BS: Insufficient sample for MS/MSD.

OP97383-BSD for d3-MeFOSA: Outside control limits.

OP97383-MB for 13C8-FOSA: Outside control limits.

OP97383-MB for d3-MeFOSA: Outside control limits.

FC6405-1 for 13C8-FOSA: Outside control limits.

FC6405-1 for d3-MeFOSA: Outside control limits.

FC6405-2 for 13C2-PFTeDA: Outside control limits.

FC6405-2 for 13C8-FOSA: Outside control limits.

FC6405-2 for 13C8-FOSA: Outside control limits.

FC6405-2 for d3-MeFOSA: Outside control limits.

FC6405-2 for d3-MeFOSA: Outside control limits.

FC6405-2 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC6405-2 for 13C2-PFTeDA: Outside control limits.

FC6405-3 for 13C2-PFTeDA: Outside control limits.

FC6405-3 for 13C8-FOSA: Outside control limits.

FC6405-3 for d3-MeFOSA: Outside control limits.

FC6405-3 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC6405-3 for MeFOSA: Associated ID Standard outside control limits.

FC6405-3 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC6405-3 for PFOSA: Associated ID Standard outside control limits.

FC6405-3: Dilution required (ID recovery standard failure).

FC6405-4 for 13C2-4:2FTS: Outside control limits.

FC6405-4 for 13C2-PFTeDA: Outside control limits.

FC6405-4 for 13C3-HFPO-DA: Outside control limits.

FC6405-4 for 13C3-PFBS: Outside control limits.

FC6405-4 for 13C4-PFBA: Outside control limits.

FC6405-4 for 13C5-PFHxA: Outside control limits.

FC6405-4 for 13C5-PFPeA: Outside control limits.

FC6405-4 for 13C8-FOSA: Outside control limits.

FC6405-4 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.

FC6405-4 for d3-MeFOSA: Outside control limits.

FC6405-4 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC6405-4 for Perfluorobutanesulfonic acid: Associated ID Standard outside control limits.

FC6405-4 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-4 for Perfluorohexanoic acid: Associated ID Standard outside control limits.

FC6405-4 for Perfluoropentanesulfonic acid: Associated ID Standard outside control limits.

FC6405-4 for Perfluoropentanoic acid: Associated ID Standard outside control limits.

FC6405-4 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

FC6405-5 for 13C2-PFTeDA: Outside control limits.

FC6405-5 for 13C8-FOSA: Outside control limits.

FC6405-5 for d3-MeFOSA: Outside control limits.

FC6405-5 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97383

FC6405-5 for PFOSA: Associated ID Standard outside control limits.
FC6405-6 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.
FC6405-6 for 13C2-PFDoDA: Outside control limits.
FC6405-6 for 13C2-PFTeDA: Outside control limits.
FC6405-6 for 13C8-FOSA: Outside control limits.
FC6405-6 for d3-MeFOSA: Outside control limits.
FC6405-6 for Perfluorododecanoic acid: Associated ID Standard outside control limits.
FC6405-6 for Perfluorotridecanoic acid: Associated ID Standard outside control limits.
FC6405-6 for PFOSA: Associated ID Standard outside control limits.
FC6405-7 for 13C2-PFTeDA: Outside control limits.
FC6405-7 for 13C8-FOSA: Outside control limits.
FC6405-7 for d3-MeFOSA: Outside control limits.
FC6405-7 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC6405-7 for PFOSA: Associated ID Standard outside control limits.
FC6405-8 for 13C4-PFBA: Outside control limits.
FC6405-8 for d3-MeFOSA: Outside control limits.
FC6405-8 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC6405-10 for d3-MeFOSA: Outside control limits.
FC6405-10 for MeFOSA: Associated ID Standard outside control limits.
FC6405-11 for 13C2-PFDoDA: Outside control limits.
FC6405-11 for 13C2-PFTeDA: Outside control limits.
FC6405-11 for 13C2-PFTeDA: Outside control limits.
FC6405-11 for 13C4-PFBA: Outside control limits.
FC6405-11 for 13C5-PFPeA: Outside control limits.
FC6405-11 for 13C8-FOSA: Outside control limits.
FC6405-11 for 13C8-FOSA: Outside control limits.
FC6405-11 for d3-MeFOSA: Outside control limits.
FC6405-11 for d3-MeFOSA: Outside control limits.
FC6405-11 for MeFOSA: Associated ID Standard outside control limits.
FC6405-11 for Perfluorobutanoic acid: Associated ID Standard outside control limits.
FC6405-11 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC6405-11 for PFOSA: Associated ID Standard outside control limits.
FC6405-12: Confirmation run.
FC6405-13: Confirmation run.
FC6405-15: Confirmation run.
FC6405-16 for 13C2-PFTeDA: Outside control limits.
FC6405-16 for 13C8-FOSA: Outside control limits.
FC6405-16 for d3-MeFOSA: Outside control limits.
FC6405-16 for Perfluorotetradecanoic acid: Associated ID Standard outside control limits.
FC6405-17: Confirmation run.
FC6405-18 for 13C8-FOSA: Outside control limits.
FC6405-18 for d3-MeFOSA: Outside control limits.
FC6405-19 for d3-MeFOSA: Outside control limits.
FC6405-21 for 13C2-4:2FTS: Outside control limits.
FC6405-21 for 13C2-PFTeDA: Outside control limits.
FC6405-21 for 13C3-HFPO-DA: Outside control limits.
FC6405-21 for 13C4-PFBA: Outside control limits.
FC6405-21 for 13C5-PFHxA: Outside control limits.
FC6405-21 for 13C5-PFPeA: Outside control limits.
FC6405-21 for 13C8-FOSA: Outside control limits.
FC6405-21 for 4:2 Fluorotelomer sulfonate: Associated ID Standard outside control limits.
FC6405-21 for d3-MeFOSA: Outside control limits.
FC6405-21 for HFPO-DA (GenX): Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP97383

FC6405-21 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC6405-21 for Perfluorohexanoic acid: Associated ID Standard outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Client Services *(Signature on File)*

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC6405-1	**A3RB-MW0001-025.0-20230525**					
No hits reported in this sample.						
FC6405-2	**A3RB-MW0002-007.0-20230523**					
Perfluorobutanoic acid		0.0036 J	0.0085	0.0043	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0037 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0134	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0021 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0061	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0163	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0276	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.389	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0087	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.880	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.104	0.0085	0.0043	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.837	0.021	0.011	ug/l	EPA 537M QSM5.3 B-15
FC6405-3	**A3RB-MW0003-007.0-20230523**					
Perfluorobutanoic acid [a]		0.0364 J	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0484 J	0.093	0.046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [a]		0.175	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [a]		0.0297	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [a]		0.0872	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid [b]		0.0049 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [a]		0.173	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.283	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		5.10	0.093	0.046	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid [a]		0.106	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		7.15	0.093	0.046	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.476	0.037	0.019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		6.70	0.093	0.046	ug/l	EPA 537M QSM5.3 B-15
FC6405-4	**A3RB-MW0004-007.0-20230523**					
Perfluorobutanoic acid [c]		0.0061 J	0.0082	0.0041	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0040 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]		0.0043	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0015 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0030 J	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid [c]		0.0265	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [c]		0.0290	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.288	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluoroheptanesulfonic acid		0.0051	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0456	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0199	0.0016	0.00082	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0248	0.0041	0.0020	ug/l	EPA 537M QSM5.3 B-15
FC6405-5	**A3RB-MW0005-007.0-20230525**					
Perfluorobutanoic acid		0.0089	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0012 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0052	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0035 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0025	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
FC6405-6	**A3RB-MW0006-025.0-20230525**					
Perfluorohexanesulfonic acid		0.0021 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0041 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0019	0.0017	0.00087	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0023 J	0.0043	0.0022	ug/l	EPA 537M QSM5.3 B-15
FC6405-7	**A3RB-MW0007-025.0-20230525**					
Perfluorobutanoic acid		0.0024 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0028 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0090	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0016 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0037	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0086	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0152	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.251	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0047	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.263	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0408	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.242	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-8	**A3RB-MW0008-025.0-20230525**					
Perfluoropentanoic acid		0.0019 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0058	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0011 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0020 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0066	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0102	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.120	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0023 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorooctanesulfonic acid		0.156	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0305	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.135	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-9	**A3RB-MW0009-025.0-20230524**					
Perfluorobutanoic acid [c]		0.0077	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [c]		0.0091 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0280	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0047	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0095	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0013 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0332	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0441	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.680	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0128	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.858	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.146	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.753	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC6405-10	**A3RB-MW0010-004.5-20230524**					
Perfluorobutanoic acid		0.0035 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0017 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0042	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0012 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0021 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0039	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0059	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0854	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0021 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.174	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0291	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.158	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-11	**A3RB-FD-20230524-02**					
Perfluorobutanoic acid [c]		0.0070 J	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0086 J	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0261	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0045	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0094	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorononanoic acid		0.0012 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0309	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0491	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		0.633	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0140	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.795	0.019	0.0093	ug/l	EPA 537M QSM5.3 B-15
FC6405-12	**A3RB-MW0011-056.5-20230524**					
No hits reported in this sample.						
FC6405-13	**A3RB-MW0012-040.0-20230524**					
No hits reported in this sample.						
FC6405-14	**A3RB-MW0013-025.0-20230524**					
Perfluorohexanesulfonic acid		0.0028 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0062	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0020	0.0017	0.00085	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0038 J	0.0043	0.0021	ug/l	EPA 537M QSM5.3 B-15
FC6405-15	**A3RB-MW0014-007.0-20230524**					
Perfluorooctanesulfonic acid		0.0026 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00095 J	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0014 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-16	**A3RB-MW0015-025.0-20230524**					
Perfluorohexanoic acid		0.0014 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0013 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0032 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid		0.0031 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0182	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0017 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0122	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0074	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0040	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-17	**A3RB-MW0016-007.0-20230524**					
Perfluorobutanoic acid [c]		0.0087	0.0083	0.0042	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid		0.0015 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid		0.0017 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0017 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0110	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorobutanesulfonic acid		0.0013 J	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
Perfluorohexanesulfonic acid		0.0127	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanesulfonic acid		0.0140	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.133	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0576	0.0017	0.00083	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.0579	0.0042	0.0021	ug/l	EPA 537M QSM5.3 B-15

FC6405-18 A3RB-MW0017-056.5-20230523

No hits reported in this sample.

FC6405-19 A3RB-MW0018-040.0-20230523

No hits reported in this sample.

FC6405-20 A3RB-MW0019-035.0-20230523

No hits reported in this sample.

FC6405-21 A3RB-MW0020-007.0-20230523

Perfluorobutanoic acid [c]	0.0081	0.0074	0.0037	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [c]	0.0010 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid	0.00099 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid	0.0011 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid	0.0028 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)	0.0013 J	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)	0.0016 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15

FC6405-22 A3RB-FD-20230523-01

No hits reported in this sample.

FC6405-23 A3RB-MW0021-025.0-20230523

No hits reported in this sample.

FC6405-24 A3RB-MW0022-056.5-20230523

No hits reported in this sample.

FC6405-25 A3RB-MW0023-056.5-20230523

No hits reported in this sample.

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC6405-26	**A3RB-MW0024-040.0-20230524**					
No hits reported in this sample.						
FC6405-27	**A3RB-MW0025-040.0-20230524**					
Perfluorohexanesulfonic acid		0.0026 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0013 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.00055 J	0.0015	0.00074	ug/l	EPA 537M QSM5.3 B-15
FC6405-28	**A3RB-MW0026-040.0-20230525**					
No hits reported in this sample.						
FC6405-29	**A3RB-MW0027-056.5-20230524**					
No hits reported in this sample.						
FC6405-30	**A3RB-FD-20230523-03**					
Perfluorohexanesulfonic acid		0.0030 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0016 J	0.0037	0.0019	ug/l	EPA 537M QSM5.3 B-15
FC6405-31	**A3RB-EB-20230523**					
No hits reported in this sample.						
FC6405-32	**A3RB-EB-20230524-02**					
No hits reported in this sample.						
FC6405-33	**A3RB-EB-20230524-03**					
No hits reported in this sample.						
FC6405-34	**A3RB-FB-20230523-01**					
No hits reported in this sample.						
FC6405-35	**A3RB-FB-20230523-02**					
No hits reported in this sample.						

(a) Dilution required (ID recovery standard failure).
(b) Dilution required (ID recovery standard failure). Associated ID Standard outside control limits.

Summary of Hits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method

(c) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	A3RB-MW0001-025.0-20230525		
Lab Sample ID:	FC6405-1	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46243.D	1	06/19/23 12:25	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45854.D	1	06/12/23 14:49	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46003.D	5	06/14/23 19:21	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0001-025.0-20230525		
Lab Sample ID:	FC6405-1	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	53%	42% [e]	56%	50-150%
	13C5-PFPeA	53%	45% [e]	62%	50-150%
	13C5-PFHxA	68%	57%	71%	50-150%
	13C4-PFHpA	84%	70%	80%	50-150%
	13C8-PFOA	97%	80%	87%	50-150%
	13C9-PFNA	93%	82%	88%	50-150%
	13C6-PFDA	90%	84%	96%	50-150%
	13C7-PFUnDA	84%	81%	86%	50-150%
	13C2-PFDoDA	74%	75%	75%	50-150%
	13C2-PFTeDA	65%	68%	63%	50-150%
	13C3-PFBS	59%	53%	68%	50-150%
	13C3-PFHxS	84%	74%	79%	50-150%
	13C8-PFOS	82%	76%	93%	50-150%
	13C8-FOSA	40% [e]	54%	77%	50-150%
	d3-MeFOSA	1% [e]	1% [e]	3% [e]	50-150%
	d3-MeFOSAA	101%	87%	105%	50-150%
	d5-EtFOSAA	90%	82%	93%	50-150%
	13C2-4:2FTS	67%	53%	69%	50-150%
	13C2-6:2FTS	101%	82%	86%	50-150%
	13C2-8:2FTS	90%	80%	87%	50-150%
	13C3-HFPO-DA	72%	56%	64%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0001-025.0-20230525		
Lab Sample ID:	FC6405-1	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0002-007.0-20230523		
Lab Sample ID:	FC6405-2	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46244.D	1	06/19/23 12:40	AL	06/16/23 15:34	OP97383	S4Q676
Run #2	4Q46245.D	5	06/19/23 12:56	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [a]	4Q46004.D	5	06/14/23 19:37	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml
Run #3	245 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0036	0.0085	0.0043	0.0021	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0037	0.0043	0.0021	0.0011	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0134	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021	0.0043	0.0021	0.0011	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0061	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0163	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0276	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.389 [c]	0.021	0.011	0.0053	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0087	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.880 [c]	0.021	0.011	0.0053	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.010 U [d]	0.020	0.010	0.0051	ug/l	
31506-32-8	MeFOSA [b]	0.020 U [d]	0.041	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0002-007.0-20230523		
Lab Sample ID:	FC6405-2	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.104 [c]	0.0085	0.0043	0.0021	ug/l	
	PFOS (Linear Isomer)	0.837 [c]	0.021	0.011	0.0053	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	61%	76%	36% [e]	50-150%
	13C5-PFPeA	57%	74%	37% [e]	50-150%
	13C5-PFHxA	73%	82%	40% [e]	50-150%
	13C4-PFHpA	83%	88%	45% [e]	50-150%
	13C8-PFOA	97%	99%	50%	50-150%
	13C9-PFNA	74%	92%	48% [e]	50-150%
	13C6-PFDA	83%	104%	55%	50-150%
	13C7-PFUnDA	87%	90%	54%	50-150%
	13C2-PFDoDA	74%	75%	43% [e]	50-150%
	13C2-PFTeDA	49% [e]	44% [e]	29% [e]	50-150%
	13C3-PFBS	65%	85%	46% [e]	50-150%
	13C3-PFHxS	87%	99%	57%	50-150%
	13C8-PFOS	75%	90%	53%	50-150%
	13C8-FOSA	19% [e]	24% [e]	43% [e]	50-150%
	d3-MeFOSA	1% [e]	1% [e]	6% [e]	50-150%
	d3-MeFOSAA	89%	106%	63%	50-150%
	d5-EtFOSAA	83%	93%	56%	50-150%
	13C2-4:2FTS	69%	73%	37% [e]	50-150%
	13C2-6:2FTS	92%	84%	43% [e]	50-150%
	13C2-8:2FTS	79%	94%	48% [e]	50-150%
	13C3-HFPO-DA	69%	81%	33% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0002-007.0-20230523		
Lab Sample ID:	FC6405-2	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0003-007.0-20230523
Lab Sample ID: FC6405-3
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/23/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Q46382.D	5	06/21/23 19:02	AL	06/16/23 15:34	OP97383	S4Q678
Run #2	4Q46247.D	25	06/19/23 13:27	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [b]	4Q46005.D	25	06/14/23 19:53	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0364	0.037	0.019	0.0093	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0484 [c]	0.093	0.046	0.023	ug/l	J
307-24-4	Perfluorohexanoic acid	0.175	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0297	0.019	0.0093	0.0046	ug/l	
335-67-1	Perfluorooctanoic acid	0.0872	0.019	0.0093	0.0046	ug/l	
375-95-1	Perfluorononanoic acid [d]	0.0049	0.019	0.0093	0.0046	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid [d]	0.046 U [c]	0.093	0.046	0.023	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.173	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.283	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	5.10 [c]	0.093	0.046	0.023	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.106	0.019	0.0093	0.0046	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	7.15 [c]	0.093	0.046	0.023	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0093 U	0.019	0.0093	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.046 U [c]	0.093	0.046	0.023	ug/l	
31506-32-8	MeFOSA [d]	0.093 U [c]	0.19	0.093	0.046	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.019 U	0.037	0.019	0.0093	ug/l	
2991-50-6	EtFOSAA	0.019 U	0.037	0.019	0.0093	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0003-007.0-20230523		
Lab Sample ID:	FC6405-3	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U	0.037	0.019	0.0093	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.037	0.019	0.0093	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.037	0.019	0.0093	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [d]	0.019 U	0.037	0.019	0.0093	ug/l	
919005-14-4	ADONA	0.019 U	0.037	0.019	0.0093	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.019 U	0.037	0.019	0.0093	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.019 U	0.037	0.019	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.476 [c]	0.037	0.019	0.0093	ug/l	
	PFOS (Linear Isomer)	6.70 [c]	0.093	0.046	0.023	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	63%	52%	50-150%
	13C5-PFPeA	46% [e]	61%	48% [e]	50-150%
	13C5-PFHxA	53%	63%	51%	50-150%
	13C4-PFHpA	57%	65%	54%	50-150%
	13C8-PFOA	65%	65%	60%	50-150%
	13C9-PFNA	49% [e]	63%	57%	50-150%
	13C6-PFDA	58%	77%	63%	50-150%
	13C7-PFUnDA	76%	76%	73%	50-150%
	13C2-PFDoDA	57%	63%	66%	50-150%
	13C2-PFTeDA	20% [e]	30% [e]	39% [e]	50-150%
	13C3-PFBS	54%	73%	60%	50-150%
	13C3-PFHxS	68%	79%	61%	50-150%
	13C8-PFOS	54%	68%	61%	50-150%
	13C8-FOSA	39% [e]	45% [e]	58%	50-150%
	d3-MeFOSA	0% [e]	2% [e]	8% [e]	50-150%
	d3-MeFOSAA	74%	92%	90%	50-150%
	d5-EtFOSAA	72%	102%	82%	50-150%
	13C2-4:2FTS	50%	58%	45% [e]	50-150%
	13C2-6:2FTS	60%	62%	52%	50-150%
	13C2-8:2FTS	50%	66%	58%	50-150%
	13C3-HFPO-DA	44% [e]	55%	34% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0003-007.0-20230523		
Lab Sample ID:	FC6405-3	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution required (ID recovery standard failure).
(b) Confirmation run.
(c) Result is from Run# 2
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0004-007.0-20230523		
Lab Sample ID:	FC6405-4	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46249.D	1	06/19/23 13:58	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q46007.D	1	06/14/23 20:24	AL	06/08/23 13:36	OP97259	S4Q670
Run #3 [b]	4Q46008.D	5	06/14/23 20:39	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	245 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0061	0.0082	0.0041	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid [c]	0.0040	0.0041	0.0020	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid [c]	0.0043	0.0041	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0015	0.0041	0.0020	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0030	0.0041	0.0020	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid [c]	0.0265	0.0041	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid [c]	0.0290	0.0041	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.288	0.0041	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0051	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0456	0.0041	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0004-007.0-20230523		
Lab Sample ID:	FC6405-4	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.0041 U	0.0082	0.0041	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0041 U	0.0082	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0199	0.0016	0.00082	0.00041	ug/l	
	PFOS (Linear Isomer)	0.0248	0.0041	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	35% [e]	25% [e]	37% [e]	50-150%
	13C5-PFPeA	35% [e]	25% [e]	35% [e]	50-150%
	13C5-PFHxA	46% [e]	32% [e]	38% [e]	50-150%
	13C4-PFHpA	56%	39% [e]	44% [e]	50-150%
	13C8-PFOA	65%	47% [e]	47% [e]	50-150%
	13C9-PFNA	64%	48% [e]	52%	50-150%
	13C6-PFDA	63%	52%	58%	50-150%
	13C7-PFUnDA	65%	56%	56%	50-150%
	13C2-PFDoDA	60%	53%	50%	50-150%
	13C2-PFTeDA	33% [e]	33% [e]	29% [e]	50-150%
	13C3-PFBS	45% [e]	32% [e]	43% [e]	50-150%
	13C3-PFHxS	64%	47% [e]	53%	50-150%
	13C8-PFOS	66%	52%	58%	50-150%
	13C8-FOSA	18% [e]	28% [e]	39% [e]	50-150%
	d3-MeFOSA	1% [e]	1% [e]	2% [e]	50-150%
	d3-MeFOSAA	75%	65%	66%	50-150%
	d5-EtFOSAA	73%	61%	60%	50-150%
	13C2-4:2FTS	42% [e]	31% [e]	36% [e]	50-150%
	13C2-6:2FTS	63%	45% [e]	42% [e]	50-150%
	13C2-8:2FTS	60%	46% [e]	49% [e]	50-150%
	13C3-HFPO-DA	40% [e]	24% [e]	27% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0004-007.0-20230523		
Lab Sample ID:	FC6405-4	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0005-007.0-20230525		
Lab Sample ID:	FC6405-5	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46252.D	1	06/19/23 14:45	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45858.D	1	06/12/23 15:51	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46009.D	5	06/14/23 20:55	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0089	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0012	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0052	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0035	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0005-007.0-20230525		
Lab Sample ID:	FC6405-5	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0025	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	58%	47% [e]	62%	50-150%
	13C5-PFPeA	56%	48% [e]	64%	50-150%
	13C5-PFHxA	69%	58%	71%	50-150%
	13C4-PFHpA	82%	70%	80%	50-150%
	13C8-PFOA	90%	80%	87%	50-150%
	13C9-PFNA	86%	82%	90%	50-150%
	13C6-PFDA	80%	84%	96%	50-150%
	13C7-PFUnDA	73%	81%	84%	50-150%
	13C2-PFDoDA	59%	65%	64%	50-150%
	13C2-PFTeDA	41% [e]	49% [e]	40% [e]	50-150%
	13C3-PFBS	64%	55%	71%	50-150%
	13C3-PFHxS	84%	80%	90%	50-150%
	13C8-PFOS	79%	76%	89%	50-150%
	13C8-FOSA	38% [e]	39% [e]	63%	50-150%
	d3-MeFOSA	1% [e]	1% [e]	1% [e]	50-150%
	d3-MeFOSAA	98%	90%	109%	50-150%
	d5-EtFOSAA	86%	79%	88%	50-150%
	13C2-4:2FTS	67%	54%	64%	50-150%
	13C2-6:2FTS	93%	77%	82%	50-150%
	13C2-8:2FTS	88%	83%	95%	50-150%
	13C3-HFPO-DA	68%	53%	58%	50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0005-007.0-20230525		
Lab Sample ID:	FC6405-5	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0006-025.0-20230525		
Lab Sample ID:	FC6405-6	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46253.D	1	06/19/23 15:00	AL	06/16/23 15:34	OP97383	S4Q676
Run #2	4Q45859.D	1	06/12/23 16:07	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [a]	4Q46010.D	5	06/14/23 21:10	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	235 ml	1.0 ml
Run #3	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0021 U [c]	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021	0.0043	0.0022	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0041	0.0043	0.0022	0.0011	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [d]	0.021	0.011	0.0053	ug/l	
754-91-6	PFOSA [b]	0.0022 U	0.0043	0.0022	0.0011	ug/l	
31506-32-8	MeFOSA [b]	0.021 U [d]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0006-025.0-20230525		
Lab Sample ID:	FC6405-6	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino	[b] 0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0019	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0023	0.0043	0.0022	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	54%	35% [e]	45% [e]	50-150%
	13C5-PFPeA	55%	39% [e]	52%	50-150%
	13C5-PFHxA	73%	49% [e]	60%	50-150%
	13C4-PFHpA	84%	59%	67%	50-150%
	13C8-PFOA	95%	67%	73%	50-150%
	13C9-PFNA	82%	68%	73%	50-150%
	13C6-PFDA	66%	71%	75%	50-150%
	13C7-PFUnDA	51%	66%	66%	50-150%
	13C2-PFDoDA	39% [e]	58%	54%	50-150%
	13C2-PFTeDA	8% [e]	46% [e]	35% [e]	50-150%
	13C3-PFBS	65%	46% [e]	62%	50-150%
	13C3-PFHxS	79%	64%	70%	50-150%
	13C8-PFOS	54%	68%	72%	50-150%
	13C8-FOSA	39% [e]	45% [e]	63%	50-150%
	d3-MeFOSA	1% [e]	1% [e]	2% [e]	50-150%
	d3-MeFOSAA	73%	75%	92%	50-150%
	d5-EtFOSAA	64%	68%	75%	50-150%
	13C2-4:2FTS	69%	45% [e]	56%	50-150%
	13C2-6:2FTS	99%	67%	69%	50-150%
	13C2-8:2FTS	76%	67%	72%	50-150%
	13C3-HFPO-DA	68%	47% [e]	47% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0006-025.0-20230525		
Lab Sample ID:	FC6405-6	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Dilution required (ID recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0007-025.0-20230525
Lab Sample ID: FC6405-7
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/25/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46254.D	1	06/19/23 15:16	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45860.D	1	06/12/23 16:22	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46011.D	5	06/14/23 21:26	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0024	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0028	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0090	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0016	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0037	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0086	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0152	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.251	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0047	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.263	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0007-025.0-20230525		
Lab Sample ID:	FC6405-7	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0408	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.242	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	38% [e]	55%	50-150%
	13C5-PFPeA	52%	41% [e]	58%	50-150%
	13C5-PFHxA	68%	54%	67%	50-150%
	13C4-PFHpA	84%	67%	74%	50-150%
	13C8-PFOA	96%	81%	76%	50-150%
	13C9-PFNA	83%	75%	73%	50-150%
	13C6-PFDA	84%	70%	72%	50-150%
	13C7-PFUnDA	79%	44% [e]	52%	50-150%
	13C2-PFDoDA	54%	15% [e]	20% [e]	50-150%
	13C2-PFTeDA	12% [e]	1% [e]	1% [e]	50-150%
	13C3-PFBS	62%	50%	67%	50-150%
	13C3-PFHxS	82%	73%	82%	50-150%
	13C8-PFOS	73%	72%	75%	50-150%
	13C8-FOSA	29% [e]	7% [e]	19% [e]	50-150%
	d3-MeFOSA	1% [e]	0% [e]	0% [e]	50-150%
	d3-MeFOSAA	104%	52%	72%	50-150%
	d5-EtFOSAA	90%	40% [e]	54%	50-150%
	13C2-4:2FTS	68%	51%	65%	50-150%
	13C2-6:2FTS	103%	81%	76%	50-150%
	13C2-8:2FTS	89%	71%	71%	50-150%
	13C3-HFPO-DA	68%	52%	54%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0007-025.0-20230525		
Lab Sample ID:	FC6405-7	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0008-025.0-20230525		
Lab Sample ID:	FC6405-8	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46255.D	1	06/19/23 15:31	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45861.D	1	06/12/23 16:38	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46012.D	5	06/14/23 21:41	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0058	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0011	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0020	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0066	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0102	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.120	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.156	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0008-025.0-20230525		
Lab Sample ID:	FC6405-8	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0305	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.135	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	49% e	32% e	43% e	50-150%
	13C5-PFPeA	51%	36% e	50%	50-150%
	13C5-PFHxA	68%	46% e	58%	50-150%
	13C4-PFHpA	82%	57%	65%	50-150%
	13C8-PFOA	94%	66%	69%	50-150%
	13C9-PFNA	86%	64%	70%	50-150%
	13C6-PFDA	89%	69%	73%	50-150%
	13C7-PFUnDA	85%	73%	63%	50-150%
	13C2-PFDoDA	74%	69%	51%	50-150%
	13C2-PFTeDA	59%	47% e	24% e	50-150%
	13C3-PFBS	62%	43% e	59%	50-150%
	13C3-PFHxS	83%	62%	72%	50-150%
	13C8-PFOS	76%	66%	73%	50-150%
	13C8-FOSA	51%	31% e	35% e	50-150%
	d3-MeFOSA	2% e	1% e	1% e	50-150%
	d3-MeFOSAA	105%	80%	76%	50-150%
	d5-EtFOSAA	93%	76%	71%	50-150%
	13C2-4:2FTS	64%	43% e	56%	50-150%
	13C2-6:2FTS	100%	65%	65%	50-150%
	13C2-8:2FTS	90%	67%	68%	50-150%
	13C3-HFPO-DA	64%	44% e	49% e	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0008-025.0-20230525		
Lab Sample ID:	FC6405-8	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0009-025.0-20230524
Lab Sample ID: FC6405-9
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/24/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45864.D	1	06/12/23 17:25	AL	06/08/23 13:36	OP97259	S4Q667
Run #2	4Q46015.D	5	06/14/23 22:28	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [a]	0.0077	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [a]	0.0091 [b]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0280 [b]	0.019	0.0093	0.0046	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0047	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0095	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0013	0.0037	0.0019	0.00093	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0332 [b]	0.019	0.0093	0.0046	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0441 [b]	0.019	0.0093	0.0046	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.680 [b]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0128	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.858 [b]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [b]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [a]	0.019 U [b]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.019 U [b]	0.037	0.019	0.0093	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0009-025.0-20230524		
Lab Sample ID:	FC6405-9	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.146 [b]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Linear Isomer)	0.753 [b]	0.019	0.0093	0.0046	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	31% [c]	40% [c]	50-150%
	13C5-PFPeA	34% [c]	47% [c]	50-150%
	13C5-PFHxA	46% [c]	56%	50-150%
	13C4-PFHpA	56%	63%	50-150%
	13C8-PFOA	66%	70%	50-150%
	13C9-PFNA	55%	69%	50-150%
	13C6-PFDA	63%	76%	50-150%
	13C7-PFUnDA	68%	73%	50-150%
	13C2-PFDoDA	66%	66%	50-150%
	13C2-PFTeDA	62%	60%	50-150%
	13C3-PFBS	44% [c]	54%	50-150%
	13C3-PFHxS	58%	69%	50-150%
	13C8-PFOS	56%	66%	50-150%
	13C8-FOSA	42% [c]	70%	50-150%
	d3-MeFOSA	18% [c]	28% [c]	50-150%
	d3-MeFOSAA	73%	89%	50-150%
	d5-EtFOSAA	70%	82%	50-150%
	13C2-4:2FTS	42% [c]	50%	50-150%
	13C2-6:2FTS	66%	65%	50-150%
	13C2-8:2FTS	62%	72%	50-150%
	13C3-HFPO-DA	42% [c]	46% [c]	50-150%

(a) Associated ID Standard outside control limits.
(b) Result is from Run# 2
(c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0010-004.5-20230524		
Lab Sample ID:	FC6405-10	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46256.D	1	06/19/23 15:47	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45865.D	1	06/12/23 17:40	AL	06/08/23 13:36	OP97259	S4Q667
Run #3	4Q46017.D	5	06/14/23 22:59	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0035	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0017	0.0037	0.0019	0.00093	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0042	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0012	0.0037	0.0019	0.00093	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0021	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0039	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0059	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0854	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.174	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0010-004.5-20230524		
Lab Sample ID:	FC6405-10	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0291	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.158	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	64%	51%	70%	50-150%
	13C5-PFPeA	63%	50%	69%	50-150%
	13C5-PFHxA	79%	61%	77%	50-150%
	13C4-PFHpA	91%	72%	83%	50-150%
	13C8-PFOA	103%	82%	88%	50-150%
	13C9-PFNA	93%	78%	90%	50-150%
	13C6-PFDA	89%	84%	94%	50-150%
	13C7-PFUnDA	76%	85%	85%	50-150%
	13C2-PFDoDA	66%	77%	71%	50-150%
	13C2-PFTeDA	59%	57%	41% d	50-150%
	13C3-PFBS	69%	55%	78%	50-150%
	13C3-PFHxS	95%	75%	88%	50-150%
	13C8-PFOS	75%	79%	88%	50-150%
	13C8-FOSA	58%	46% d	64%	50-150%
	d3-MeFOSA	1% d	1% d	1% d	50-150%
	d3-MeFOSAA	99%	90%	109%	50-150%
	d5-EtFOSAA	84%	88%	98%	50-150%
	13C2-4:2FTS	75%	57%	73%	50-150%
	13C2-6:2FTS	107%	83%	84%	50-150%
	13C2-8:2FTS	92%	80%	94%	50-150%
	13C3-HFPO-DA	76%	55%	63%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0010-004.5-20230524		
Lab Sample ID:	FC6405-10	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230524-02		
Lab Sample ID:	FC6405-11	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46257.D	1	06/19/23 16:02	AL	06/16/23 15:34	OP97383	S4Q676
Run #2	4Q46258.D	5	06/19/23 16:18	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [a]	4Q46018.D	5	06/14/23 23:14	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0070	0.0074	0.0037	0.0019	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0086 [c]	0.019	0.0093	0.0046	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0261	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0045	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0094	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0012	0.0037	0.0019	0.00093	ug/l	J
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0309	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0491	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.633 [c]	0.019	0.0093	0.0046	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0140	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.795 [c]	0.019	0.0093	0.0046	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230524-02		
Lab Sample ID:	FC6405-11	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	43% [d]	59%	50%	50-150%
	13C5-PFPeA	47% [d]	65%	52%	50-150%
	13C5-PFHxA	64%	79%	61%	50-150%
	13C4-PFHpA	76%	87%	66%	50-150%
	13C8-PFOA	89%	95%	73%	50-150%
	13C9-PFNA	70%	87%	67%	50-150%
	13C6-PFDA	72%	90%	70%	50-150%
	13C7-PFUnDA	70%	67%	55%	50-150%
	13C2-PFDoDA	60%	45% [d]	35% [d]	50-150%
	13C2-PFTeDA	27% [d]	23% [d]	10% [d]	50-150%
	13C3-PFBS	59%	76%	61%	50-150%
	13C3-PFHxS	75%	94%	75%	50-150%
	13C8-PFOS	60%	87%	71%	50-150%
	13C8-FOSA	26% [d]	42% [d]	25% [d]	50-150%
	d3-MeFOSA	1% [d]	0% [d]	1% [d]	50-150%
	d3-MeFOSAA	79%	89%	74%	50-150%
	d5-EtFOSAA	72%	77%	62%	50-150%
	13C2-4:2FTS	61%	71%	58%	50-150%
	13C2-6:2FTS	92%	89%	70%	50-150%
	13C2-8:2FTS	76%	86%	67%	50-150%
	13C3-HFPO-DA	60%	73%	51%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0011-056.5-20230524		
Lab Sample ID:	FC6405-12	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45867.D	1	06/12/23 18:11	AL	06/08/23 13:36	OP97259	S4Q667
Run #2 [a]	4Q46259.D	1	06/19/23 16:33	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [b]	4Q46019.D	5	06/14/23 23:30	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	230 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.022 U [c]	0.043	0.022	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0022 U	0.0043	0.0022	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.011 U [c]	0.022	0.011	0.0054	ug/l	
31506-32-8	MeFOSA [d]	0.022 U [c]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0087	0.0043	0.0022	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0011-056.5-20230524		
Lab Sample ID:	FC6405-12	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0087	0.0043	0.0022	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
919005-14-4	ADONA	0.0043 U	0.0087	0.0043	0.0022	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0087	0.0043	0.0022	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00087 U	0.0017	0.00087	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0022 U	0.0043	0.0022	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	42% e	51%	53%	50-150%
	13C5-PFPeA	52%	60%	71%	50-150%
	13C5-PFHxA	63%	74%	77%	50-150%
	13C4-PFHpA	71%	85%	81%	50-150%
	13C8-PFOA	79%	93%	83%	50-150%
	13C9-PFNA	78%	83%	83%	50-150%
	13C6-PFDA	77%	77%	84%	50-150%
	13C7-PFUnDA	73%	64%	71%	50-150%
	13C2-PFDoDA	70%	42% e	59%	50-150%
	13C2-PFTeDA	57%	8% e	33% e	50-150%
	13C3-PFBS	57%	70%	76%	50-150%
	13C3-PFHxS	74%	86%	81%	50-150%
	13C8-PFOS	74%	73%	78%	50-150%
	13C8-FOSA	24% e	24% e	36% e	50-150%
	d3-MeFOSA	0% e	0% e	1% e	50-150%
	d3-MeFOSAA	82%	89%	92%	50-150%
	d5-EtFOSAA	77%	76%	81%	50-150%
	13C2-4:2FTS	58%	71%	75%	50-150%
	13C2-6:2FTS	81%	100%	82%	50-150%
	13C2-8:2FTS	76%	85%	83%	50-150%
	13C3-HFPO-DA	57%	71%	69%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0011-056.5-20230524		
Lab Sample ID:	FC6405-12	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0012-040.0-20230524		
Lab Sample ID:	FC6405-13	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45868.D	1	06/12/23 18:27	AL	06/08/23 13:36	OP97259	S4Q667
Run #2 [a]	4Q46260.D	1	06/19/23 16:49	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [b]	4Q46020.D	5	06/14/23 23:46	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	250 ml	1.0 ml
Run #3	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.021 U [d]	0.043	0.021	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [d]	0.021	0.011	0.0053	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.011 U [d]	0.021	0.011	0.0053	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [d]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0012-040.0-20230524		
Lab Sample ID:	FC6405-13	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00085 U	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0021 U	0.0043	0.0021	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	39% [e]	59%	48% [e]	50-150%
	13C5-PFPeA	45% [e]	62%	59%	50-150%
	13C5-PFHxA	55%	78%	64%	50-150%
	13C4-PFHpA	62%	88%	70%	50-150%
	13C8-PFOA	69%	96%	73%	50-150%
	13C9-PFNA	68%	89%	75%	50-150%
	13C6-PFDA	69%	86%	74%	50-150%
	13C7-PFUnDA	68%	82%	72%	50-150%
	13C2-PFDoDA	66%	73%	65%	50-150%
	13C2-PFTeDA	62%	39% [e]	56%	50-150%
	13C3-PFBS	50%	70%	66%	50-150%
	13C3-PFHxS	67%	86%	73%	50-150%
	13C8-PFOS	67%	80%	77%	50-150%
	13C8-FOSA	49% [e]	33% [e]	77%	50-150%
	d3-MeFOSA	3% [e]	1% [e]	5% [e]	50-150%
	d3-MeFOSAA	79%	102%	88%	50-150%
	d5-EtFOSAA	74%	98%	85%	50-150%
	13C2-4:2FTS	52%	74%	63%	50-150%
	13C2-6:2FTS	71%	103%	70%	50-150%
	13C2-8:2FTS	68%	89%	75%	50-150%
	13C3-HFPO-DA	49% [e]	75%	53%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0012-040.0-20230524		
Lab Sample ID:	FC6405-13	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0013-025.0-20230524
Lab Sample ID: FC6405-14
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/24/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45869.D	1	06/12/23 18:42	AL	06/08/23 13:36	OP97259	S4Q667
Run #2 [a]	4Q46021.D	5	06/15/23 00:01	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	235 ml	1.0 ml
Run #2	235 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.021 U [b]	0.043	0.021	0.011	ug/l	
2706-90-3	Perfluoropentanoic acid	0.011 U [b]	0.021	0.011	0.0053	ug/l	
307-24-4	Perfluorohexanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0028	0.0043	0.0021	0.0011	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0062	0.0043	0.0021	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0043	0.0021	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0043	0.0021	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [b]	0.043	0.021	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0013-025.0-20230524		
Lab Sample ID:	FC6405-14	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0043 U	0.0085	0.0043	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0043 U	0.0085	0.0043	0.0021	ug/l	
919005-14-4	ADONA	0.0043 U	0.0085	0.0043	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0043 U	0.0085	0.0043	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0020	0.0017	0.00085	0.00043	ug/l	
	PFOS (Linear Isomer)	0.0038	0.0043	0.0021	0.0011	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	46% [d]	53%	50-150%
	13C5-PFPeA	48% [d]	59%	50-150%
	13C5-PFHxA	55%	63%	50-150%
	13C4-PFHpA	63%	68%	50-150%
	13C8-PFOA	70%	72%	50-150%
	13C9-PFNA	71%	76%	50-150%
	13C6-PFDA	72%	77%	50-150%
	13C7-PFUnDA	74%	74%	50-150%
	13C2-PFDoDA	72%	70%	50-150%
	13C2-PFTeDA	67%	64%	50-150%
	13C3-PFBS	51%	66%	50-150%
	13C3-PFHxS	68%	72%	50-150%
	13C8-PFOS	71%	71%	50-150%
	13C8-FOSA	53%	75%	50-150%
	d3-MeFOSA	7% [d]	14% [d]	50-150%
	d3-MeFOSAA	82%	97%	50-150%
	d5-EtFOSAA	80%	88%	50-150%
	13C2-4:2FTS	53%	63%	50-150%
	13C2-6:2FTS	72%	68%	50-150%
	13C2-8:2FTS	71%	74%	50-150%
	13C3-HFPO-DA	48% [d]	56%	50-150%

(a) Dilution required (ID recovery standard failure).
(b) Result is from Run# 2
(c) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0013-025.0-20230524		
Lab Sample ID:	FC6405-14	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0014-007.0-20230524		
Lab Sample ID:	FC6405-15	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45870.D	1	06/12/23 18:58	AL	06/08/23 13:36	OP97259	S4Q667
Run #2 [a]	4Q46261.D	1	06/19/23 17:05	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [b]	4Q46022.D	5	06/15/23 00:17	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0026	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0014-007.0-20230524		
Lab Sample ID:	FC6405-15	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00095	0.0015	0.00074	0.00037	ug/l	J
	PFOS (Linear Isomer)	0.0014	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	49% [e]	76%	50-150%
	13C5-PFPeA	51%	51%	75%	50-150%
	13C5-PFHxA	63%	67%	85%	50-150%
	13C4-PFHpA	76%	80%	95%	50-150%
	13C8-PFOA	87%	88%	104%	50-150%
	13C9-PFNA	87%	78%	105%	50-150%
	13C6-PFDA	90%	71%	105%	50-150%
	13C7-PFUnDA	88%	50%	100%	50-150%
	13C2-PFDoDA	80%	23% [e]	81%	50-150%
	13C2-PFTeDA	68%	6% [e]	54%	50-150%
	13C3-PFBS	57%	62%	81%	50-150%
	13C3-PFHxS	82%	78%	99%	50-150%
	13C8-PFOS	83%	58%	100%	50-150%
	13C8-FOSA	32% [e]	29% [e]	61%	50-150%
	d3-MeFOSA	1% [e]	1% [e]	1% [e]	50-150%
	d3-MeFOSAA	102%	73%	126%	50-150%
	d5-EtFOSAA	91%	60%	107%	50-150%
	13C2-4:2FTS	60%	65%	86%	50-150%
	13C2-6:2FTS	93%	97%	105%	50-150%
	13C2-8:2FTS	91%	76%	100%	50-150%
	13C3-HFPO-DA	57%	65%	73%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0014-007.0-20230524		
Lab Sample ID:	FC6405-15	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0015-025.0-20230524		
Lab Sample ID:	FC6405-16	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46265.D	1	06/19/23 18:07	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45871.D	1	06/12/23 19:13	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46023.D	5	06/15/23 00:32	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0014	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0013	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0032	0.0037	0.0019	0.00093	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0031	0.0037	0.0019	0.00093	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.0182	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0017	0.0037	0.0019	0.00093	ug/l	J
1763-23-1	Perfluorooctanesulfonic acid	0.0122	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0015-025.0-20230524		
Lab Sample ID:	FC6405-16	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0074	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0040	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	56%	38% [e]	46% [e]	50-150%
	13C5-PFPeA	61%	43% [e]	56%	50-150%
	13C5-PFHxA	77%	51%	60%	50-150%
	13C4-PFHpA	88%	58%	65%	50-150%
	13C8-PFOA	95%	65%	70%	50-150%
	13C9-PFNA	87%	66%	73%	50-150%
	13C6-PFDA	86%	68%	77%	50-150%
	13C7-PFUnDA	82%	66%	70%	50-150%
	13C2-PFDoDA	78%	63%	64%	50-150%
	13C2-PFTeDA	48% [e]	59%	57%	50-150%
	13C3-PFBS	71%	46% [e]	63%	50-150%
	13C3-PFHxS	86%	63%	66%	50-150%
	13C8-PFOS	76%	64%	69%	50-150%
	13C8-FOSA	33% [e]	48% [e]	68%	50-150%
	d3-MeFOSA	1% [e]	3% [e]	3% [e]	50-150%
	d3-MeFOSAA	103%	77%	86%	50-150%
	d5-EtFOSAA	94%	74%	83%	50-150%
	13C2-4:2FTS	75%	48% [e]	60%	50-150%
	13C2-6:2FTS	102%	67%	67%	50-150%
	13C2-8:2FTS	88%	67%	68%	50-150%
	13C3-HFPO-DA	71%	44% [e]	50%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0015-025.0-20230524		
Lab Sample ID:	FC6405-16	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0016-007.0-20230524		
Lab Sample ID:	FC6405-17	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45872.D	1	06/12/23 19:29	AL	06/08/23 13:36	OP97259	S4Q667
Run #2 [a]	4Q46266.D	1	06/19/23 18:22	AL	06/16/23 15:34	OP97383	S4Q676
Run #3 [b]	4Q46024.D	5	06/15/23 00:48	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2	240 ml	1.0 ml
Run #3	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0087	0.0083	0.0042	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0015	0.0042	0.0021	0.0010	ug/l	J
307-24-4	Perfluorohexanoic acid	0.0017	0.0042	0.0021	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0017	0.0042	0.0021	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.0110	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0013	0.0042	0.0021	0.0010	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0127	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0140	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.133	0.0042	0.0021	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [d]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
2991-50-6	EtFOSAA	0.0042 U	0.0083	0.0042	0.0021	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0016-007.0-20230524		
Lab Sample ID:	FC6405-17	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
919005-14-4	ADONA	0.0042 U	0.0083	0.0042	0.0021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0042 U	0.0083	0.0042	0.0021	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0576	0.0017	0.00083	0.00042	ug/l	
	PFOS (Linear Isomer)	0.0579	0.0042	0.0021	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	47% e	70%	55%	50-150%
	13C5-PFPeA	52%	69%	65%	50-150%
	13C5-PFHxA	60%	81%	70%	50-150%
	13C4-PFHpA	67%	91%	74%	50-150%
	13C8-PFOA	74%	100%	78%	50-150%
	13C9-PFNA	72%	91%	78%	50-150%
	13C6-PFDA	76%	90%	82%	50-150%
	13C7-PFUnDA	68%	81%	72%	50-150%
	13C2-PFDoDA	58%	78%	59%	50-150%
	13C2-PFTeDA	52%	79%	49% e	50-150%
	13C3-PFBS	56%	74%	74%	50-150%
	13C3-PFHxS	73%	91%	79%	50-150%
	13C8-PFOS	71%	78%	72%	50-150%
	13C8-FOSA	56%	60%	74%	50-150%
	d3-MeFOSA	3% e	2% e	6% e	50-150%
	d3-MeFOSAA	75%	99%	90%	50-150%
	d5-EtFOSAA	66%	94%	72%	50-150%
	13C2-4:2FTS	58%	78%	66%	50-150%
	13C2-6:2FTS	74%	104%	75%	50-150%
	13C2-8:2FTS	72%	86%	74%	50-150%
	13C3-HFPO-DA	51%	76%	62%	50-150%

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Report of Analysis

Client Sample ID:	A3RB-MW0016-007.0-20230524		
Lab Sample ID:	FC6405-17	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0017-056.5-20230523		
Lab Sample ID:	FC6405-18	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46267.D	1	06/19/23 18:38	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45873.D	1	06/12/23 19:44	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46028.D	5	06/15/23 01:50	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	245 ml	1.0 ml
Run #2	250 ml	1.0 ml
Run #3	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0041 U	0.0082	0.0041	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0041	0.0020	0.0010	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.010 U [c]	0.020	0.010	0.0050	ug/l	
31506-32-8	MeFOSA [d]	0.020 U [c]	0.040	0.020	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
2991-50-6	EtFOSAA	0.0041 U	0.0082	0.0041	0.0020	ug/l	

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0017-056.5-20230523		
Lab Sample ID:	FC6405-18	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0041 U	0.0082	0.0041	0.0020	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
919005-14-4	ADONA	0.0041 U	0.0082	0.0041	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0041 U	0.0082	0.0041	0.0020	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00082 U	0.0016	0.00082	0.00041	ug/l	
	PFOS (Linear Isomer)	0.0020 U	0.0041	0.0020	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	53%	41% [e]	52%	50-150%
	13C5-PFPeA	54%	43% [e]	60%	50-150%
	13C5-PFHxA	67%	54%	68%	50-150%
	13C4-PFHpA	80%	66%	75%	50-150%
	13C8-PFOA	87%	74%	80%	50-150%
	13C9-PFNA	82%	74%	82%	50-150%
	13C6-PFDA	79%	75%	83%	50-150%
	13C7-PFUnDA	66%	75%	75%	50-150%
	13C2-PFDoDA	63%	71%	62%	50-150%
	13C2-PFTeDA	55%	60%	43% [e]	50-150%
	13C3-PFBS	61%	51%	67%	50-150%
	13C3-PFHxS	83%	71%	81%	50-150%
	13C8-PFOS	67%	72%	79%	50-150%
	13C8-FOSA	25% [e]	38% [e]	60%	50-150%
	d3-MeFOSA	1% [e]	1% [e]	1% [e]	50-150%
	d3-MeFOSAA	89%	90%	104%	50-150%
	d5-EtFOSAA	79%	82%	87%	50-150%
	13C2-4:2FTS	65%	51%	68%	50-150%
	13C2-6:2FTS	97%	76%	79%	50-150%
	13C2-8:2FTS	88%	78%	80%	50-150%
	13C3-HFPO-DA	63%	48% [e]	59%	50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0017-056.5-20230523		
Lab Sample ID:	FC6405-18	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0018-040.0-20230523		
Lab Sample ID:	FC6405-19	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46268.D	1	06/19/23 18:53	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45876.D	1	06/12/23 20:31	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46029.D	5	06/15/23 02:05	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	220 ml	1.0 ml
Run #2	230 ml	1.0 ml
Run #3	230 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
307-24-4	Perfluorohexanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-67-1	Perfluorooctanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-95-1	Perfluorononanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-76-2	Perfluorodecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
307-55-1	Perfluorododecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0023 U	0.0045	0.0023	0.0011	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0023 U	0.0045	0.0023	0.0011	ug/l	
31506-32-8	MeFOSA [c]	0.022 U [d]	0.043	0.022	0.011	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
2991-50-6	EtFOSAA	0.0045 U	0.0091	0.0045	0.0023	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0018-040.0-20230523		
Lab Sample ID:	FC6405-19	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0045 U	0.0091	0.0045	0.0023	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
919005-14-4	ADONA	0.0045 U	0.0091	0.0045	0.0023	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0045 U	0.0091	0.0045	0.0023	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0043 U [d]	0.0087	0.0043	0.0022	ug/l	
	PFOS (Branched Isomers)	0.00091 U	0.0018	0.00091	0.00045	ug/l	
	PFOS (Linear Isomer)	0.011 U [d]	0.022	0.011	0.0054	ug/l	
	PFOS (Linear Isomer)	0.0023 U	0.0045	0.0023	0.0011	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	57%	38% [e]	49% [e]	50-150%
	13C5-PFPeA	56%	42% [e]	57%	50-150%
	13C5-PFHxA	71%	52%	65%	50-150%
	13C4-PFHpA	85%	64%	70%	50-150%
	13C8-PFOA	95%	70%	77%	50-150%
	13C9-PFNA	85%	70%	78%	50-150%
	13C6-PFDA	78%	69%	76%	50-150%
	13C7-PFUnDA	73%	67%	70%	50-150%
	13C2-PFDoDA	71%	66%	67%	50-150%
	13C2-PFTeDA	69%	60%	61%	50-150%
	13C3-PFBS	64%	49% [e]	62%	50-150%
	13C3-PFHxS	87%	69%	78%	50-150%
	13C8-PFOS	67%	68%	72%	50-150%
	13C8-FOSA	55%	39% [e]	57%	50-150%
	d3-MeFOSA	2% [e]	1% [e]	1% [e]	50-150%
	d3-MeFOSAA	91%	74%	89%	50-150%
	d5-EtFOSAA	87%	71%	82%	50-150%
	13C2-4:2FTS	68%	49% [e]	63%	50-150%
	13C2-6:2FTS	101%	73%	70%	50-150%
	13C2-8:2FTS	79%	67%	72%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0018-040.0-20230523		
Lab Sample ID:	FC6405-19	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C3-HFPO-DA	66%	45% [e]	59%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0019-035.0-20230523		
Lab Sample ID:	FC6405-20	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46147.D	1	06/16/23 20:11	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45949.D	1	06/13/23 19:31	AL	06/08/23 13:36	OP97260	S4Q669
Run #3	4Q46033.D	5	06/15/23 03:08	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0019-035.0-20230523		
Lab Sample ID:	FC6405-20	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	47% d	34% d	45% d	50-150%
	13C5-PFPeA	50%	36% d	49% d	50-150%
	13C5-PFHxA	68%	46% d	56%	50-150%
	13C4-PFHpA	85%	55%	63%	50-150%
	13C8-PFOA	97%	63%	66%	50-150%
	13C9-PFNA	92%	64%	69%	50-150%
	13C6-PFDA	97%	67%	72%	50-150%
	13C7-PFUnDA	95%	71%	73%	50-150%
	13C2-PFDoDA	94%	61%	62%	50-150%
	13C2-PFTeDA	62%	41% d	41% d	50-150%
	13C3-PFBS	65%	41% d	56%	50-150%
	13C3-PFHxS	95%	58%	70%	50-150%
	13C8-PFOS	86%	61%	70%	50-150%
	13C8-FOSA	30% d	40% d	57%	50-150%
	d3-MeFOSA	3% d	1% d	2% d	50-150%
	d3-MeFOSAA	112%	78%	85%	50-150%
	d5-EtFOSAA	103%	69%	73%	50-150%
	13C2-4:2FTS	66%	44% d	54%	50-150%
	13C2-6:2FTS	105%	64%	64%	50-150%
	13C2-8:2FTS	97%	63%	69%	50-150%
	13C3-HFPO-DA	54%	39% d	51%	50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0019-035.0-20230523		
Lab Sample ID:	FC6405-20	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0020-007.0-20230523		
Lab Sample ID:	FC6405-21	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46269.D	1	06/19/23 19:09	AL	06/16/23 15:34	OP97383	S4Q676
Run #2 [a]	4Q45877.D	1	06/12/23 20:47	AL	06/08/23 13:36	OP97259	S4Q667
Run #3 [b]	4Q46030.D	5	06/15/23 02:21	AL	06/08/23 13:36	OP97259	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0081	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid [c]	0.0010	0.0037	0.0019	0.00093	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.00099	0.0037	0.0019	0.00093	ug/l	J
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0011	0.0037	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0028	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0020-007.0-20230523		
Lab Sample ID:	FC6405-21	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX) [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0013	0.0015	0.00074	0.00037	ug/l	J
	PFOS (Linear Isomer)	0.0016	0.0037	0.0019	0.00093	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	40% [e]	32% [e]	45% [e]	50-150%
	13C5-PFPeA	38% [e]	31% [e]	43% [e]	50-150%
	13C5-PFHxA	48% [e]	41% [e]	49% [e]	50-150%
	13C4-PFHpA	58%	49% [e]	55%	50-150%
	13C8-PFOA	64%	58%	59%	50-150%
	13C9-PFNA	63%	60%	64%	50-150%
	13C6-PFDA	65%	65%	66%	50-150%
	13C7-PFUnDA	64%	70%	65%	50-150%
	13C2-PFDoDA	54%	62%	53%	50-150%
	13C2-PFTeDA	17% [e]	15% [e]	21% [e]	50-150%
	13C3-PFBS	53%	41% [e]	53%	50-150%
	13C3-PFHxS	67%	63%	72%	50-150%
	13C8-PFOS	66%	68%	74%	50-150%
	13C8-FOSA	29% [e]	28% [e]	37% [e]	50-150%
	d3-MeFOSA	1% [e]	0% [e]	1% [e]	50-150%
	d3-MeFOSAA	75%	77%	74%	50-150%
	d5-EtFOSAA	67%	73%	68%	50-150%
	13C2-4:2FTS	46% [e]	38% [e]	45% [e]	50-150%
	13C2-6:2FTS	64%	57%	56%	50-150%
	13C2-8:2FTS	62%	62%	63%	50-150%
	13C3-HFPO-DA	39% [e]	31% [e]	37% [e]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0020-007.0-20230523		
Lab Sample ID:	FC6405-21	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-01		
Lab Sample ID:	FC6405-22	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46148.D	1	06/16/23 20:26	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45950.D	1	06/13/23 19:47	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46034.D	5	06/15/23 03:23	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-01		
Lab Sample ID:	FC6405-22	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	50%	40% [e]	54%	50-150%
	13C5-PFPeA	52%	41% [e]	57%	50-150%
	13C5-PFHxA	69%	52%	65%	50-150%
	13C4-PFHpA	88%	62%	74%	50-150%
	13C8-PFOA	97%	71%	78%	50-150%
	13C9-PFNA	93%	73%	79%	50-150%
	13C6-PFDA	93%	74%	84%	50-150%
	13C7-PFUnDA	93%	67%	69%	50-150%
	13C2-PFDoDA	95%	44% [e]	45% [e]	50-150%
	13C2-PFTeDA	79%	28% [e]	28% [e]	50-150%
	13C3-PFBS	65%	47% [e]	63%	50-150%
	13C3-PFHxS	94%	66%	79%	50-150%
	13C8-PFOS	85%	71%	77%	50-150%
	13C8-FOSA	24% [e]	60%	85%	50-150%
	d3-MeFOSA	5% [e]	26% [e]	35% [e]	50-150%
	d3-MeFOSAA	110%	77%	84%	50-150%
	d5-EtFOSAA	102%	63%	65%	50-150%
	13C2-4:2FTS	69%	50%	62%	50-150%
	13C2-6:2FTS	106%	75%	74%	50-150%
	13C2-8:2FTS	95%	70%	77%	50-150%
	13C3-HFPO-DA	55%	46% [e]	53%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-01		
Lab Sample ID:	FC6405-22	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0021-025.0-20230523		
Lab Sample ID:	FC6405-23	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46149.D	1	06/16/23 20:42	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45951.D	1	06/13/23 20:02	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46035.D	5	06/15/23 03:39	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0021-025.0-20230523		
Lab Sample ID:	FC6405-23	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	51%	35% e	47% e	50-150%
	13C5-PFPeA	54%	35% e	48% e	50-150%
	13C5-PFHxA	72%	43% e	53%	50-150%
	13C4-PFHpA	90%	51%	58%	50-150%
	13C8-PFOA	99%	57%	61%	50-150%
	13C9-PFNA	95%	58%	62%	50-150%
	13C6-PFDA	97%	61%	67%	50-150%
	13C7-PFUnDA	95%	63%	61%	50-150%
	13C2-PFDoDA	91%	60%	57%	50-150%
	13C2-PFTeDA	60%	38% e	34% e	50-150%
	13C3-PFBS	69%	38% e	51%	50-150%
	13C3-PFHxS	95%	52%	61%	50-150%
	13C8-PFOS	90%	55%	61%	50-150%
	13C8-FOSA	26% e	49% e	57%	50-150%
	d3-MeFOSA	3% e	0% e	1% e	50-150%
	d3-MeFOSAA	114%	70%	77%	50-150%
	d5-EtFOSAA	103%	64%	68%	50-150%
	13C2-4:2FTS	71%	42% e	52%	50-150%
	13C2-6:2FTS	110%	59%	59%	50-150%
	13C2-8:2FTS	97%	56%	63%	50-150%
	13C3-HFPO-DA	56%	38% e	46% e	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0021-025.0-20230523		
Lab Sample ID:	FC6405-23	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0022-056.5-20230523		
Lab Sample ID:	FC6405-24	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46150.D	1	06/16/23 20:57	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45952.D	1	06/13/23 20:18	AL	06/08/23 13:36	OP97260	S4Q669
Run #3	4Q46036.D	5	06/15/23 03:54	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
31506-32-8	MeFOSA [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0022-056.5-20230523		
Lab Sample ID:	FC6405-24	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0037 U [c]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	47% [d]	26% [d]	31% [d]	50-150%
	13C5-PFPeA	56%	30% [d]	37% [d]	50-150%
	13C5-PFHxA	76%	35% [d]	40% [d]	50-150%
	13C4-PFHpA	91%	38% [d]	43% [d]	50-150%
	13C8-PFOA	99%	42% [d]	45% [d]	50-150%
	13C9-PFNA	91%	43% [d]	44% [d]	50-150%
	13C6-PFDA	89%	44% [d]	50%	50-150%
	13C7-PFUnDA	82%	41% [d]	43% [d]	50-150%
	13C2-PFDoDA	79%	34% [d]	35% [d]	50-150%
	13C2-PFTeDA	56%	32% [d]	36% [d]	50-150%
	13C3-PFBS	75%	31% [d]	42% [d]	50-150%
	13C3-PFHxS	98%	41% [d]	41% [d]	50-150%
	13C8-PFOS	81%	41% [d]	50%	50-150%
	13C8-FOSA	34% [d]	37% [d]	50%	50-150%
	d3-MeFOSA	6% [d]	5% [d]	9% [d]	50-150%
	d3-MeFOSAA	113%	49% [d]	56%	50-150%
	d5-EtFOSAA	98%	43% [d]	44% [d]	50-150%
	13C2-4:2FTS	73%	34% [d]	37% [d]	50-150%
	13C2-6:2FTS	109%	43% [d]	43% [d]	50-150%
	13C2-8:2FTS	97%	43% [d]	45% [d]	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0022-056.5-20230523		
Lab Sample ID:	FC6405-24	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C3-HFPO-DA	60%	31% [d]	35% [d]	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0023-056.5-20230523		
Lab Sample ID:	FC6405-25	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46151.D	1	06/16/23 21:13	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45953.D	1	06/13/23 20:33	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46037.D	5	06/15/23 04:10	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	240 ml	1.0 ml
Run #3	240 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.010 U [d]	0.021	0.010	0.0052	ug/l	
31506-32-8	MeFOSA [c]	0.021 U [d]	0.042	0.021	0.010	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0023-056.5-20230523		
Lab Sample ID:	FC6405-25	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	57%	44% [e]	56%	50-150%
	13C5-PFPeA	61%	48% [e]	65%	50-150%
	13C5-PFHxA	75%	56%	70%	50-150%
	13C4-PFHpA	90%	64%	73%	50-150%
	13C8-PFOA	98%	71%	78%	50-150%
	13C9-PFNA	90%	70%	76%	50-150%
	13C6-PFDA	92%	68%	73%	50-150%
	13C7-PFUnDA	92%	60%	60%	50-150%
	13C2-PFDoDA	95%	44% [e]	43% [e]	50-150%
	13C2-PFTeDA	80%	18% [e]	21% [e]	50-150%
	13C3-PFBS	71%	52%	68%	50-150%
	13C3-PFHxS	95%	67%	79%	50-150%
	13C8-PFOS	87%	67%	74%	50-150%
	13C8-FOSA	24% [e]	28% [e]	41% [e]	50-150%
	d3-MeFOSA	7% [e]	1% [e]	2% [e]	50-150%
	d3-MeFOSAA	118%	77%	75%	50-150%
	d5-EtFOSAA	108%	66%	64%	50-150%
	13C2-4:2FTS	74%	54%	67%	50-150%
	13C2-6:2FTS	109%	74%	76%	50-150%
	13C2-8:2FTS	98%	68%	72%	50-150%
	13C3-HFPO-DA	59%	49% [e]	60%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0023-056.5-20230523		
Lab Sample ID:	FC6405-25	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0024-040.0-20230524		
Lab Sample ID:	FC6405-26	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46152.D	1	06/16/23 21:28	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45954.D	1	06/13/23 20:49	AL	06/08/23 13:36	OP97260	S4Q669
Run #3	4Q46040.D	5	06/15/23 04:56	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [b]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [b]	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [b]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0024-040.0-20230524		
Lab Sample ID:	FC6405-26	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.0037 U [c]	0.0074	0.0037	0.0019	ug/l	
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	47% [d]	38% [d]	54%	50-150%
	13C5-PFPeA	51%	42% [d]	63%	50-150%
	13C5-PFHxA	68%	55%	72%	50-150%
	13C4-PFHpA	87%	68%	81%	50-150%
	13C8-PFOA	97%	79%	88%	50-150%
	13C9-PFNA	90%	78%	88%	50-150%
	13C6-PFDA	88%	82%	91%	50-150%
	13C7-PFUnDA	86%	83%	83%	50-150%
	13C2-PFDoDA	86%	70%	62%	50-150%
	13C2-PFTeDA	60%	34% [d]	29% [d]	50-150%
	13C3-PFBS	65%	51%	70%	50-150%
	13C3-PFHxS	93%	72%	83%	50-150%
	13C8-PFOS	82%	75%	85%	50-150%
	13C8-FOSA	24% [d]	42% [d]	61%	50-150%
	d3-MeFOSA	4% [d]	1% [d]	1% [d]	50-150%
	d3-MeFOSAA	112%	103%	110%	50-150%
	d5-EtFOSAA	99%	93%	94%	50-150%
	13C2-4:2FTS	67%	53%	69%	50-150%
	13C2-6:2FTS	107%	83%	86%	50-150%
	13C2-8:2FTS	95%	81%	84%	50-150%

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LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0024-040.0-20230524		
Lab Sample ID:	FC6405-26	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C3-HFPO-DA	55%	47% [d]	65%	50-150%

(a) Confirmation run.
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 3
(d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0025-040.0-20230524		
Lab Sample ID:	FC6405-27	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46153.D	1	06/16/23 21:44	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45955.D	1	06/13/23 21:04	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46041.D	5	06/15/23 05:12	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0026	0.0037	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0013	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0025-040.0-20230524		
Lab Sample ID:	FC6405-27	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00055	0.0015	0.00074	0.00037	ug/l	J
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	47% e	32% e	43% e	50-150%
	13C5-PFPeA	51%	33% e	47% e	50-150%
	13C5-PFHxA	69%	42% e	52%	50-150%
	13C4-PFHpA	89%	51%	57%	50-150%
	13C8-PFOA	99%	58%	63%	50-150%
	13C9-PFNA	96%	60%	66%	50-150%
	13C6-PFDA	93%	61%	68%	50-150%
	13C7-PFUnDA	93%	58%	61%	50-150%
	13C2-PFDoDA	96%	48% e	49% e	50-150%
	13C2-PFTeDA	80%	37% e	37% e	50-150%
	13C3-PFBS	67%	38% e	50%	50-150%
	13C3-PFHxS	99%	57%	63%	50-150%
	13C8-PFOS	90%	58%	70%	50-150%
	13C8-FOSA	37% e	39% e	60%	50-150%
	d3-MeFOSA	8% e	1% e	2% e	50-150%
	d3-MeFOSAA	117%	71%	86%	50-150%
	d5-EtFOSAA	104%	64%	71%	50-150%
	13C2-4:2FTS	68%	41% e	52%	50-150%
	13C2-6:2FTS	110%	62%	60%	50-150%
	13C2-8:2FTS	101%	59%	65%	50-150%
	13C3-HFPO-DA	54%	37% e	48% e	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0025-040.0-20230524		
Lab Sample ID:	FC6405-27	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-MW0026-040.0-20230525
Lab Sample ID: FC6405-28
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/25/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46156.D	1	06/16/23 22:30	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45956.D	1	06/13/23 21:20	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46042.D	5	06/15/23 05:27	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.019 U [c]	0.037	0.019	0.0093	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [d]	0.0093 U [c]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [d]	0.019 U [c]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0026-040.0-20230525		
Lab Sample ID:	FC6405-28	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	44% [e]	47% [e]	70%	50-150%
	13C5-PFPeA	47% [e]	47% [e]	71%	50-150%
	13C5-PFHxA	65%	61%	81%	50-150%
	13C4-PFHpA	84%	77%	92%	50-150%
	13C8-PFOA	94%	89%	98%	50-150%
	13C9-PFNA	88%	87%	103%	50-150%
	13C6-PFDA	84%	87%	101%	50-150%
	13C7-PFUnDA	81%	78%	92%	50-150%
	13C2-PFDoDA	78%	52%	63%	50-150%
	13C2-PFTeDA	58%	11% [e]	20% [e]	50-150%
	13C3-PFBS	62%	55%	75%	50-150%
	13C3-PFHxS	92%	83%	93%	50-150%
	13C8-PFOS	75%	82%	93%	50-150%
	13C8-FOSA	27% [e]	23% [e]	42% [e]	50-150%
	d3-MeFOSA	5% [e]	1% [e]	2% [e]	50-150%
	d3-MeFOSAA	103%	102%	117%	50-150%
	d5-EtFOSAA	88%	85%	101%	50-150%
	13C2-4:2FTS	65%	60%	81%	50-150%
	13C2-6:2FTS	104%	94%	98%	50-150%
	13C2-8:2FTS	88%	89%	103%	50-150%
	13C3-HFPO-DA	51%	55%	69%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0026-040.0-20230525		
Lab Sample ID:	FC6405-28	**Date Sampled:**	05/25/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run# 3
(d) Associated ID Standard outside control limits.
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0027-056.5-20230524		
Lab Sample ID:	FC6405-29	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46157.D	1	06/16/23 22:46	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45959.D	1	06/13/23 22:06	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46043.D	5	06/15/23 05:43	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid [c]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0027-056.5-20230524		
Lab Sample ID:	FC6405-29	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION							
	PFOS (Branched Isomers)	0.00074 U	0.0015	0.00074	0.00037	ug/l	
	PFOS (Linear Isomer)	0.0019 U	0.0037	0.0019	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	41% [e]	31% [e]	39% [e]	50-150%
	13C5-PFPeA	51%	40% [e]	54%	50-150%
	13C5-PFHxA	67%	49% [e]	62%	50-150%
	13C4-PFHpA	80%	56%	68%	50-150%
	13C8-PFOA	88%	63%	70%	50-150%
	13C9-PFNA	81%	62%	71%	50-150%
	13C6-PFDA	80%	62%	72%	50-150%
	13C7-PFUnDA	79%	62%	67%	50-150%
	13C2-PFDoDA	79%	58%	61%	50-150%
	13C2-PFTeDA	56%	52%	52%	50-150%
	13C3-PFBS	65%	46% [e]	60%	50-150%
	13C3-PFHxS	89%	61%	70%	50-150%
	13C8-PFOS	73%	63%	73%	50-150%
	13C8-FOSA	30% [e]	41% [e]	68%	50-150%
	d3-MeFOSA	6% [e]	2% [e]	2% [e]	50-150%
	d3-MeFOSAA	107%	78%	86%	50-150%
	d5-EtFOSAA	93%	71%	77%	50-150%
	13C2-4:2FTS	66%	47% [e]	58%	50-150%
	13C2-6:2FTS	98%	67%	68%	50-150%
	13C2-8:2FTS	88%	62%	68%	50-150%
	13C3-HFPO-DA	51%	42% [e]	54%	50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-MW0027-056.5-20230524		
Lab Sample ID:	FC6405-29	**Date Sampled:**	05/24/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3
(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-03		
Lab Sample ID:	FC6405-30	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46158.D	1	06/16/23 23:01	AL	06/15/23 11:30	OP97366	S4Q674
Run #2 [a]	4Q45962.D	1	06/13/23 22:53	AL	06/08/23 13:36	OP97260	S4Q669
Run #3 [b]	4Q46046.D	5	06/15/23 06:29	AL	06/08/23 13:36	OP97260	S4Q670

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml
Run #3	270 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0030	0.0037	0.0019	0.00093	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0016	0.0037	0.0019	0.00093	ug/l	J
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA [c]	0.0093 U [d]	0.019	0.0093	0.0046	ug/l	
31506-32-8	MeFOSA [c]	0.019 U [d]	0.037	0.019	0.0093	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-03		
Lab Sample ID:	FC6405-30	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Run# 3	Limits
	13C4-PFBA	37%	37% [e]	52%	50-150%
	13C5-PFPeA	40%	37% [e]	55%	50-150%
	13C5-PFHxA	54%	46% [e]	63%	50-150%
	13C4-PFHpA	69%	58%	71%	50-150%
	13C8-PFOA	77%	65%	76%	50-150%
	13C9-PFNA	74%	66%	79%	50-150%
	13C6-PFDA	73%	69%	81%	50-150%
	13C7-PFUnDA	74%	71%	80%	50-150%
	13C2-PFDoDA	75%	64%	68%	50-150%
	13C2-PFTeDA	58%	40% [e]	40% [e]	50-150%
	13C3-PFBS	53%	43% [e]	58%	50-150%
	13C3-PFHxS	76%	62%	73%	50-150%
	13C8-PFOS	69%	62%	72%	50-150%
	13C8-FOSA	32%	27% [e]	43% [e]	50-150%
	d3-MeFOSA	6%	1% [e]	2% [e]	50-150%
	d3-MeFOSAA	91%	88%	97%	50-150%
	d5-EtFOSAA	84%	80%	85%	50-150%
	13C2-4:2FTS	53%	46% [e]	60%	50-150%
	13C2-6:2FTS	85%	70%	74%	50-150%
	13C2-8:2FTS	78%	69%	78%	50-150%
	13C3-HFPO-DA	42%	41% [e]	57%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Associated ID Standard outside control limits.
(d) Result is from Run# 3

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FD-20230523-03		
Lab Sample ID:	FC6405-30	**Date Sampled:**	05/23/23
Matrix:	AQ - Ground Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q

(e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20230523
Lab Sample ID: FC6405-31
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/23/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45963.D	1	06/13/23 23:09	AL	06/08/23 13:36	OP97260	S4Q669
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20230523		
Lab Sample ID:	FC6405-31	**Date Sampled:**	05/23/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	79%		50-150%
	13C5-PFPeA	79%		50-150%
	13C5-PFHxA	80%		50-150%
	13C4-PFHpA	80%		50-150%
	13C8-PFOA	84%		50-150%
	13C9-PFNA	86%		50-150%
	13C6-PFDA	91%		50-150%
	13C7-PFUnDA	88%		50-150%
	13C2-PFDoDA	79%		50-150%
	13C2-PFTeDA	65%		50-150%
	13C3-PFBS	81%		50-150%
	13C3-PFHxS	84%		50-150%
	13C8-PFOS	85%		50-150%
	13C8-FOSA	77%		50-150%
	d3-MeFOSA	31% b		50-150%
	d3-MeFOSAA	97%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	71%		50-150%
	13C2-6:2FTS	76%		50-150%
	13C2-8:2FTS	84%		50-150%
	13C3-HFPO-DA	68%		50-150%

(a) Associated BS outside control limits high, sample was ND.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20230524-02
Lab Sample ID: FC6405-32
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/24/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q46159.D	1	06/16/23 23:17	AL	06/15/23 11:30	OP97366	S4Q674
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20230524-02
Lab Sample ID: FC6405-32
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/24/23
Date Received: 05/25/23
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		50-150%
	13C5-PFPeA	93%		50-150%
	13C5-PFHxA	95%		50-150%
	13C4-PFHpA	99%		50-150%
	13C8-PFOA	90%		50-150%
	13C9-PFNA	71%		50-150%
	13C6-PFDA	63%		50-150%
	13C7-PFUnDA	60%		50-150%
	13C2-PFDoDA	69%		50-150%
	13C2-PFTeDA	69%		50-150%
	13C3-PFBS	100%		50-150%
	13C3-PFHxS	80%		50-150%
	13C8-PFOS	56%		50-150%
	13C8-FOSA	65%		50-150%
	d3-MeFOSA	51%		50-150%
	d3-MeFOSAA	73%		50-150%
	d5-EtFOSAA	64%		50-150%
	13C2-4:2FTS	86%		50-150%
	13C2-6:2FTS	90%		50-150%
	13C2-8:2FTS	63%		50-150%
	13C3-HFPO-DA	76%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-EB-20230524-03
Lab Sample ID: FC6405-33
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/24/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45965.D	1	06/13/23 23:40	AL	06/08/23 13:36	OP97260	S4Q669
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-EB-20230524-03		
Lab Sample ID:	FC6405-33	**Date Sampled:**	05/24/23
Matrix:	AQ - Equipment Blank	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	84%		50-150%
	13C5-PFPeA	84%		50-150%
	13C5-PFHxA	84%		50-150%
	13C4-PFHpA	86%		50-150%
	13C8-PFOA	88%		50-150%
	13C9-PFNA	90%		50-150%
	13C6-PFDA	97%		50-150%
	13C7-PFUnDA	92%		50-150%
	13C2-PFDoDA	83%		50-150%
	13C2-PFTeDA	72%		50-150%
	13C3-PFBS	89%		50-150%
	13C3-PFHxS	88%		50-150%
	13C8-PFOS	90%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSA	48% b		50-150%
	d3-MeFOSAA	98%		50-150%
	d5-EtFOSAA	89%		50-150%
	13C2-4:2FTS	75%		50-150%
	13C2-6:2FTS	80%		50-150%
	13C2-8:2FTS	90%		50-150%
	13C3-HFPO-DA	73%		50-150%

(a) Associated BS outside control limits high, sample was ND.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20230523-01
Lab Sample ID: FC6405-34
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/23/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45966.D	1	06/13/23 23:55	AL	06/08/23 13:36	OP97260	S4Q669
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20230523-01		
Lab Sample ID:	FC6405-34	**Date Sampled:**	05/23/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	102%		50-150%
	13C5-PFPeA	103%		50-150%
	13C5-PFHxA	104%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	108%		50-150%
	13C9-PFNA	112%		50-150%
	13C6-PFDA	118%		50-150%
	13C7-PFUnDA	110%		50-150%
	13C2-PFDoDA	94%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	105%		50-150%
	13C3-PFHxS	104%		50-150%
	13C8-PFOS	107%		50-150%
	13C8-FOSA	93%		50-150%
	d3-MeFOSA	70%		50-150%
	d3-MeFOSAA	116%		50-150%
	d5-EtFOSAA	104%		50-150%
	13C2-4:2FTS	92%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	108%		50-150%
	13C3-HFPO-DA	91%		50-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: A3RB-FB-20230523-02
Lab Sample ID: FC6405-35
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 05/23/23
Date Received: 05/25/23
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q45967.D	1	06/14/23 00:11	AL	06/08/23 13:36	OP97260	S4Q669
Run #2							

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-24-4	Perfluorohexanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
307-55-1	Perfluorododecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0019 U	0.0037	0.0019	0.00093	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.0019 U	0.0037	0.0019	0.00093	ug/l	
31506-32-8	MeFOSA [a]	0.0037 U	0.0074	0.0037	0.0019	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
2991-50-6	EtFOSAA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	A3RB-FB-20230523-02		
Lab Sample ID:	FC6405-35	**Date Sampled:**	05/23/23
Matrix:	AQ - Field Blank Water	**Date Received:**	05/25/23
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.0037 U	0.0074	0.0037	0.0019	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
919005-14-4	ADONA	0.0037 U	0.0074	0.0037	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0037 U	0.0074	0.0037	0.0019	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0037 U	0.0074	0.0037	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	74%		50-150%
	13C5-PFPeA	74%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	76%		50-150%
	13C8-PFOA	79%		50-150%
	13C9-PFNA	81%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	83%		50-150%
	13C2-PFDoDA	75%		50-150%
	13C2-PFTeDA	67%		50-150%
	13C3-PFBS	79%		50-150%
	13C3-PFHxS	81%		50-150%
	13C8-PFOS	80%		50-150%
	13C8-FOSA	80%		50-150%
	d3-MeFOSA	47% b		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	85%		50-150%
	13C2-4:2FTS	67%		50-150%
	13C2-6:2FTS	71%		50-150%
	13C2-8:2FTS	79%		50-150%
	13C3-HFPO-DA	64%		50-150%

(a) Associated BS outside control limits high, sample was ND.
(b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FC6405

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

SGS

Project Name: NASA KSC		COC No.	Page: 1 of 3
Site Location: Site Assessment and Mitigation (SA&M)		PO No. 142581	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236	Greg Kusel/ 772-631-7426	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS Orlando	Turnaround Time(specify): Standard 14 day	Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-2

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) 4 DEG Total No. of Containers	Select PFAS by 537 DoD Table B-15 compliant	Branch/Linear PFOS	Comments
1	A3RB-MW0001-025.0-20230525	A3RB-MW0001	20230525	0921	WG	N	G	2	2	Y	
2	A3RB-MW0002-007.0-20230523	A3RB-MW0002	20230523	1402	WG	N	G	2	2	Y	
3	A3RB-MW0003-007.0-20230523	A3RB-MW0003	20230523	1310	WG	N	G	2	2	Y	
4	A3RB-MW0004-007.0-20230523	A3RB-MW0004	20230523	1152	WG	N	G	2	2	Y	
5	A3RB-MW0005-007.0-20230525	A3RB-MW0005	20230525	1044	WG	N	G	2	2	Y	
6	A3RB-MW0006-025.0-20230525	A3RB-MW0006	20230525	1014	WG	N	G	2	2	Y	
7	A3RB-MW0007-025.0-20230525	A3RB-MW0007	20230525	0927	WG	N	G	2	2	Y	
8	A3RB-MW0008-025.0-20230525	A3RB-MW0008	20230525	1052	WG	N	G	2	2	Y	
9	A3RB-MW0009-025.0-20230524	A3RB-MW0009	20230524	1153	WG	N	G	2	2	Y	
10	A3RB-MW0010-004.5-20230524	A3RB-MW0010	20230524	1332	WG	N	G	2	2	Y	
11	A3RB-FD01-20230524-02	A3RB-FD01	20230524	1158	WG	FD	G	2	2	N	
12	A3RB-MW0011-056.5-20230524	A3RB-MW0011	20230524	1305	WG	N	G	2	2	Y	

INITIAL ASSESSMENT ZB

LABEL VERIFICATION ZB

1.0IR1, 1.4IR1, 0.6IR1 1.0IR1

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD. Branch/linear PFOS not required for MS, MSD, FD, or EB.

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	05/23/23	0700
2	05/25/23	1510	2 SGS	25MAY23	1510
3			3		

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

5.1 5

FC6405: Chain of Custody
Page 1 of 4

FC6405

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

Project Name: NASA KSC			COC No.	Page: 2 of 3	
Site Location: Site Assessment and Mitigation (SA&M)			PO No. 142581	Project No. 60667657.4	Phase:
TO No.: 80KSC021F0096	AECOM Project Manager:	**Jennifer Gootee cc: Megan Garcia**	Send Invoice To: Instructions in MSA # 19S-24548-GV03		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
			Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236	Greg Kusel/ 772-631-7426		Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-2
Lab Name: SGS Orlando	Turnaround Time(specify):	Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)		

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537 DOD Table B-15 compliant	Branch/Linear PFOS										Comments
13	A3RB-MW0012-040.0-20230524	A3RB-MW0012	20230524	1225	WG	N	G	2	2	Y										
14	A3RB-MW0013-025.0-20230524	A3RB-MW0013	20230524	1153	WG	N	G	2	2	Y										
15	A3RB-MW0014-007.0-20230523	A3RB-MW0014	20230524	1122	WG	N	G	2	2	Y										
16	A3RB-MW0015-025.0-20230524	A3RB-MW0015	20230524	0950	WG	N	G	2	2	Y										
17	A3RB-MW0016-007.0-20230524	A3RB-MW0016	20230524	0919	WG	N	G	2	2	Y										
18	A3RB-MW0017-056.5-20230523	A3RB-MW0017	20230523	1328	WG	N	G	2	2	Y										
19	A3RB-MW0018-040.0-20230523	A3RB-MW0018	20230523	1245	WG	N	G	2	2	Y										
20	A3RB-MW0019-035.0-20230523	A3RB-MW0019	20230523	1201	WG	N	G	2	2	Y										
21	A3RB-MW0020-0070-20230523	A3RB-MW0020	20230523	1111	WG	N	G	6	6	Y										MS/MSD
22	A3RB-FD~~03~~ 20230523	A3RB-FD02	20230523	1136	WG	FD	G	2	2	N										
23	A3RB-MW0021-025.0-20230523	A3RB-MW0021	20230523	1410	WG	N	G	2	2	Y										
24	A3RB-MW0022-056.5-20230523	A3RB-MW0022	20230523	1245	WG	N	G	2	2	Y										

***Field* Comments:**
Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD. Branch/linear PFOS not required for MS, MSD, FD, or EB.

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	05/23/23	0700
2	05/23/23	1510	2 SGS	25 MAY 23	1510
3			3		

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

FC6405: Chain of Custody
Page 2 of 4

SGS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 3 of 3

Project Name: NASA KSC | PO No. 142581 | Project No. 60667657.4 | Phase:

Site Location: Site Assessment and Mitigation (SA&M) | Send Invoice To: Instructions in MSA # 19S-24548-GV03 | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC021F0096 | AECOM Project Manager: **Jennifer Gootee cc: Megan Garcia** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # Brittany Follet/ 419-302-0236 Greg Kusel/ 772-631-7426 | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-2

Lab Name: SGS Orlando | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested (*Enter number of containers for each test*)**

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	4 DEG Select PFAS by 537 DoD Table B-15 compliant	Branch/Linear PFOS									Comments
25	A3RB-MW0023-0056.5-20230523	A3RB-MW0023	20230523	1127	WG	N	G	2	2	Y									
26	A3RB-MW0024-0040.0-20230524	A3RB-MW0024	20230524	0917	WG	N	G	2	2	Y									
27	A3RB-MW0025-0040.0-20230524	A3RB-MW0025	20230524	1255	WG	N	G	2	2	Y									
28	A3RB-MW0026-0040.0-20230525	A3RB-MW0026	20230525	1007	WG	N	G	2	2	Y									
29	A3RB-MW0027-0056.5-20230524	A3RB-MW0027	20230524	1359	WG	N	G	6	6	Y									MS/MSD
30	A3RB-FD~~03~~ 20230523-03	A3RB-FD03	202305	1300	WG	FD	G	2	2	N									
31	A3RB-EB~~01~~ 20230523	A3RB-EB01	20230523	1030	WQ	EB	G	2	2	N									
32	A3RB-EB~~02~~ 20230524-02	A3RB-EB02	20230524	1203	WQ	EB	G	2	2	N									
33	A3RB-EB~~03~~ 20230524-03	A3RB-EB03	20230524	1305	WQ	EB	G	2	2	N									
34	A3RB-FB-20230523-01	A3RB-FB01	20230523	0800	WQ	FB	G	2	2	N									
35	A3RB-FB-20230523-02	A3RB-FB02	20230523	0800	WQ	FB	G	2	2	N									

***Field* Comments:**

Report only per QAPP WS #15-2. Additional sample volume provide for MS/MSD. Branch/linear PFOS not required for MS, MSD, FD, or EB.

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	05/23/23	0700
2	05/25/23	1570	2	25 MAY 23	1510
3			3		

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

SGS Sample Receipt Summary

Job Number: FC6405 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 5/25/2023 3:10:00 PM **Delivery Method:** DROP OFF **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.1; **# of Coolers:** N/A

Cooler Temps (Raw Measured) °C: Cooler 1: (1.1); Cooler 2: (1.5); Cooler 3: (0.7); Cooler 4: (1.1);

Cooler Temps (Corrected) °C: Cooler 1: (1.0); Cooler 2: (1.4); Cooler 3: (0.6); Cooler 4: (1.0);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☐		☐
4. Cooler temp verification	N/A		
5. Cooler media	N/A		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320 pH 10-12 _____ Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 5/25/2023 3:10:00 PM Reviewer: _____ Date: _____

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97259	EPA 537M QSM5.3 B-15						
OP97259-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	95	%	73-129
OP97259-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	96	%	72-129
OP97259-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129
OP97259-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	94	%	72-130
OP97259-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	96	%	71-133
OP97259-BS	375-95-1	Perfluorononanoic acid	BSP	REC	95	%	69-130
OP97259-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	97	%	71-129
OP97259-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	95	%	69-133
OP97259-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	98	%	72-134
OP97259-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	75	%	65-144
OP97259-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	104	%	71-132
OP97259-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-130
OP97259-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	87	%	71-127
OP97259-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP97259-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	99	%	69-134
OP97259-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	92	%	65-140
OP97259-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	105	%	69-127
OP97259-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	85	%	53-142
OP97259-BS	754-91-6	PFOSA	BSP	REC	100	%	67-137
OP97259-BS	31506-32-8	MeFOSA	BSP	REC	97	%	68-141
OP97259-BS	2355-31-9	MeFOSAA	BSP	REC	97	%	65-136
OP97259-BS	2991-50-6	EtFOSAA	BSP	REC	97	%	61-135
OP97259-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	100	%	63-143
OP97259-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	100	%	64-140
OP97259-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	100	%	67-138
OP97259-MS	375-22-4	Perfluorobutanoic acid	MS	REC	94	%	73-129
OP97259-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	102	%	72-129
OP97259-MS	307-24-4	Perfluorohexanoic acid	MS	REC	95	%	72-129
OP97259-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	96	%	72-130
OP97259-MS	335-67-1	Perfluorooctanoic acid	MS	REC	98	%	71-133
OP97259-MS	375-95-1	Perfluorononanoic acid	MS	REC	98	%	69-130
OP97259-MS	335-76-2	Perfluorodecanoic acid	MS	REC	94	%	71-129
OP97259-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	96	%	69-133
OP97259-MS	307-55-1	Perfluorododecanoic acid	MS	REC	96	%	72-134
OP97259-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	61	%	65-144
OP97259-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	97	%	71-132
OP97259-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	96	%	72-130
OP97259-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	118	%	71-127
OP97259-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	95	%	68-131
OP97259-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	95	%	69-134
OP97259-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	89	%	65-140
OP97259-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	103	%	69-127

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97259-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	86	%	53-142
OP97259-MS	754-91-6	PFOSA	MS	REC	97	%	67-137
OP97259-MS	31506-32-8	MeFOSA	MS	REC	104	%	68-141
OP97259-MS	2355-31-9	MeFOSAA	MS	REC	89	%	65-136
OP97259-MS	2991-50-6	EtFOSAA	MS	REC	94	%	61-135
OP97259-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	99	%	63-143
OP97259-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	100	%	64-140
OP97259-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	100	%	67-138
OP97259-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	97	%	73-129
OP97259-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	1	%	30
OP97259-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	102	%	72-129
OP97259-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	2	%	30
OP97259-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	96	%	72-129
OP97259-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP97259-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	97	%	72-130
OP97259-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	0	%	30
OP97259-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	98	%	71-133
OP97259-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	1	%	30
OP97259-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	97	%	69-130
OP97259-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	4	%	30
OP97259-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	95	%	71-129
OP97259-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	1	%	30
OP97259-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	98	%	69-133
OP97259-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	0	%	30
OP97259-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	95	%	72-134
OP97259-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	3	%	30
OP97259-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	61	%	65-144
OP97259-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	1	%	30
OP97259-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	97	%	71-132
OP97259-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP97259-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	97	%	72-130
OP97259-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP97259-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	120	%	71-127
OP97259-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP97259-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	96	%	68-131
OP97259-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	0	%	30
OP97259-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	97	%	69-134
OP97259-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	0	%	30
OP97259-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	90	%	65-140
OP97259-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP97259-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	107	%	69-127
OP97259-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	2	%	30
OP97259-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	87	%	53-142
OP97259-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	0	%	30
OP97259-MSD	754-91-6	PFOSA	MSD	REC	91	%	67-137

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97259-MSD	754-91-6	PFOSA	MSD	RPD	8	%	30
OP97259-MSD	31506-32-8	MeFOSA	MSD	REC	109	%	68-141
OP97259-MSD	31506-32-8	MeFOSA	MSD	RPD	3	%	30
OP97259-MSD	2355-31-9	MeFOSAA	MSD	REC	94	%	65-136
OP97259-MSD	2355-31-9	MeFOSAA	MSD	RPD	3	%	30
OP97259-MSD	2991-50-6	EtFOSAA	MSD	REC	97	%	61-135
OP97259-MSD	2991-50-6	EtFOSAA	MSD	RPD	2	%	30
OP97259-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	100	%	63-143
OP97259-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30
OP97259-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	100	%	64-140
OP97259-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	1	%	30
OP97259-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	99	%	67-138
OP97259-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP97260	EPA 537M QSM5.3 B-15						
OP97260-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	96	%	73-129
OP97260-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	96	%	73-129
OP97260-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	95	%	72-129
OP97260-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	95	%	72-129
OP97260-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	97	%	72-129
OP97260-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	97	%	72-129
OP97260-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	94	%	72-130
OP97260-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	96	%	72-130
OP97260-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP97260-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	71-133
OP97260-BS	375-95-1	Perfluorononanoic acid	BSP	REC	96	%	69-130
OP97260-BS	375-95-1	Perfluorononanoic acid	BSP	REC	95	%	69-130
OP97260-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	95	%	71-129
OP97260-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	96	%	71-129
OP97260-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP97260-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	96	%	69-133
OP97260-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	98	%	72-134
OP97260-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	98	%	72-134
OP97260-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	74	%	65-144
OP97260-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	72	%	65-144
OP97260-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	104	%	71-132
OP97260-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	103	%	71-132
OP97260-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-130
OP97260-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	98	%	72-130
OP97260-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	87	%	71-127
OP97260-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP97260-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	97	%	68-131
OP97260-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	96	%	68-131
OP97260-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	97	%	69-134

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97260-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	97	%	69-134
OP97260-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	92	%	65-140
OP97260-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP97260-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	101	%	69-127
OP97260-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	102	%	69-127
OP97260-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	86	%	53-142
OP97260-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	85	%	53-142
OP97260-BS	754-91-6	PFOSA	BSP	REC	105	%	67-137
OP97260-BS	754-91-6	PFOSA	BSP	REC	102	%	67-137
OP97260-BS	31506-32-8	MeFOSA	BSP	REC	94	%	68-141
OP97260-BS	31506-32-8	MeFOSA	BSP	REC	160	%	68-141
OP97260-BS	2355-31-9	MeFOSAA	BSP	REC	95	%	65-136
OP97260-BS	2355-31-9	MeFOSAA	BSP	REC	97	%	65-136
OP97260-BS	2991-50-6	EtFOSAA	BSP	REC	98	%	61-135
OP97260-BS	2991-50-6	EtFOSAA	BSP	REC	102	%	61-135
OP97260-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	100	%	63-143
OP97260-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	99	%	63-143
OP97260-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	103	%	64-140
OP97260-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	101	%	64-140
OP97260-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	103	%	67-138
OP97260-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	101	%	67-138
OP97260-MS	375-22-4	Perfluorobutanoic acid	MS	REC	90	%	73-129
OP97260-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	92	%	72-129
OP97260-MS	307-24-4	Perfluorohexanoic acid	MS	REC	88	%	72-129
OP97260-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	89	%	72-130
OP97260-MS	335-67-1	Perfluorooctanoic acid	MS	REC	91	%	71-133
OP97260-MS	375-95-1	Perfluorononanoic acid	MS	REC	89	%	69-130
OP97260-MS	335-76-2	Perfluorodecanoic acid	MS	REC	88	%	71-129
OP97260-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	90	%	69-133
OP97260-MS	307-55-1	Perfluorododecanoic acid	MS	REC	91	%	72-134
OP97260-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	69	%	65-144
OP97260-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	91	%	71-132
OP97260-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	90	%	72-130
OP97260-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	106	%	71-127
OP97260-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	93	%	68-131
OP97260-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	96	%	69-134
OP97260-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	88	%	65-140
OP97260-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	95	%	69-127
OP97260-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	75	%	53-142
OP97260-MS	754-91-6	PFOSA	MS	REC	90	%	67-137
OP97260-MS	31506-32-8	MeFOSA	MS	REC	79	%	68-141
OP97260-MS	2355-31-9	MeFOSAA	MS	REC	84	%	65-136
OP97260-MS	2991-50-6	EtFOSAA	MS	REC	89	%	61-135
OP97260-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	95	%	63-143
OP97260-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	95	%	64-140

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97260-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	93	%	67-138
OP97260-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	86	%	73-129
OP97260-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	5	%	30
OP97260-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	88	%	72-129
OP97260-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	5	%	30
OP97260-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	87	%	72-129
OP97260-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	1	%	30
OP97260-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	85	%	72-130
OP97260-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	4	%	30
OP97260-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	88	%	71-133
OP97260-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	3	%	30
OP97260-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	87	%	69-130
OP97260-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	2	%	30
OP97260-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	86	%	71-129
OP97260-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	2	%	30
OP97260-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	88	%	69-133
OP97260-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP97260-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	88	%	72-134
OP97260-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	3	%	30
OP97260-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	69	%	65-144
OP97260-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	0	%	30
OP97260-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	89	%	71-132
OP97260-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	1	%	30
OP97260-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	89	%	72-130
OP97260-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP97260-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	103	%	71-127
OP97260-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	3	%	30
OP97260-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	89	%	68-131
OP97260-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	4	%	30
OP97260-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	91	%	69-134
OP97260-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	5	%	30
OP97260-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	87	%	65-140
OP97260-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	1	%	30
OP97260-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	95	%	69-127
OP97260-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	0	%	30
OP97260-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	77	%	53-142
OP97260-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	3	%	30
OP97260-MSD	754-91-6	PFOSA	MSD	REC	88	%	67-137
OP97260-MSD	754-91-6	PFOSA	MSD	RPD	2	%	30
OP97260-MSD	31506-32-8	MeFOSA	MSD	REC	90	%	68-141
OP97260-MSD	31506-32-8	MeFOSA	MSD	RPD	12	%	30
OP97260-MSD	2355-31-9	MeFOSAA	MSD	REC	89	%	65-136
OP97260-MSD	2355-31-9	MeFOSAA	MSD	RPD	5	%	30
OP97260-MSD	2991-50-6	EtFOSAA	MSD	REC	89	%	61-135
OP97260-MSD	2991-50-6	EtFOSAA	MSD	RPD	0	%	30

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97260-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	91	%	63-143
OP97260-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	4	%	30
OP97260-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	92	%	64-140
OP97260-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP97260-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	91	%	67-138
OP97260-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	3	%	30
OP97366	EPA 537M QSM5.3 B-15						
OP97366-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	92	%	73-129
OP97366-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	88	%	72-129
OP97366-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	89	%	72-129
OP97366-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	89	%	72-130
OP97366-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	95	%	71-133
OP97366-BS	375-95-1	Perfluorononanoic acid	BSP	REC	93	%	69-130
OP97366-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	92	%	71-129
OP97366-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	93	%	69-133
OP97366-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	91	%	72-134
OP97366-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	67	%	65-144
OP97366-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	94	%	71-132
OP97366-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	91	%	72-130
OP97366-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	88	%	71-127
OP97366-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	94	%	68-131
OP97366-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	90	%	69-134
OP97366-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	89	%	65-140
OP97366-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	105	%	69-127
OP97366-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	89	%	53-142
OP97366-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP97366-BS	31506-32-8	MeFOSA	BSP	REC	105	%	68-141
OP97366-BS	2355-31-9	MeFOSAA	BSP	REC	90	%	65-136
OP97366-BS	2991-50-6	EtFOSAA	BSP	REC	93	%	61-135
OP97366-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	96	%	63-143
OP97366-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	95	%	64-140
OP97366-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	97	%	67-138
OP97366-BSD	375-22-4	Perfluorobutanoic acid	BSD	REC	95	%	73-129
OP97366-BSD	375-22-4	Perfluorobutanoic acid	BSD	RPD	3	%	30
OP97366-BSD	2706-90-3	Perfluoropentanoic acid	BSD	REC	90	%	72-129
OP97366-BSD	2706-90-3	Perfluoropentanoic acid	BSD	RPD	3	%	30
OP97366-BSD	307-24-4	Perfluorohexanoic acid	BSD	REC	92	%	72-129
OP97366-BSD	307-24-4	Perfluorohexanoic acid	BSD	RPD	2	%	30
OP97366-BSD	375-85-9	Perfluoroheptanoic acid	BSD	REC	91	%	72-130
OP97366-BSD	375-85-9	Perfluoroheptanoic acid	BSD	RPD	2	%	30
OP97366-BSD	335-67-1	Perfluorooctanoic acid	BSD	REC	97	%	71-133
OP97366-BSD	335-67-1	Perfluorooctanoic acid	BSD	RPD	1	%	30
OP97366-BSD	375-95-1	Perfluorononanoic acid	BSD	REC	97	%	69-130

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97366-BSD	375-95-1	Perfluorononanoic acid	BSD	RPD	4	%	30
OP97366-BSD	335-76-2	Perfluorodecanoic acid	BSD	REC	92	%	71-129
OP97366-BSD	335-76-2	Perfluorodecanoic acid	BSD	RPD	1	%	30
OP97366-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	REC	96	%	69-133
OP97366-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	RPD	3	%	30
OP97366-BSD	307-55-1	Perfluorododecanoic acid	BSD	REC	93	%	72-134
OP97366-BSD	307-55-1	Perfluorododecanoic acid	BSD	RPD	3	%	30
OP97366-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	REC	70	%	65-144
OP97366-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	RPD	4	%	30
OP97366-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	REC	95	%	71-132
OP97366-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	RPD	2	%	30
OP97366-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	REC	93	%	72-130
OP97366-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	RPD	1	%	30
OP97366-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	REC	89	%	71-127
OP97366-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	RPD	2	%	30
OP97366-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	REC	94	%	68-131
OP97366-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	RPD	0	%	30
OP97366-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	REC	92	%	69-134
OP97366-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	RPD	2	%	30
OP97366-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	REC	87	%	65-140
OP97366-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	RPD	2	%	30
OP97366-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	REC	105	%	69-127
OP97366-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	RPD	0	%	30
OP97366-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	REC	91	%	53-142
OP97366-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	RPD	3	%	30
OP97366-BSD	754-91-6	PFOSA	BSD	REC	94	%	67-137
OP97366-BSD	754-91-6	PFOSA	BSD	RPD	1	%	30
OP97366-BSD	31506-32-8	MeFOSA	BSD	REC	115	%	68-141
OP97366-BSD	31506-32-8	MeFOSA	BSD	RPD	9	%	30
OP97366-BSD	2355-31-9	MeFOSAA	BSD	REC	93	%	65-136
OP97366-BSD	2355-31-9	MeFOSAA	BSD	RPD	3	%	30
OP97366-BSD	2991-50-6	EtFOSAA	BSD	REC	99	%	61-135
OP97366-BSD	2991-50-6	EtFOSAA	BSD	RPD	5	%	30
OP97366-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	REC	97	%	63-143
OP97366-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	RPD	2	%	30
OP97366-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	REC	96	%	64-140
OP97366-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	RPD	1	%	30
OP97366-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	REC	95	%	67-138
OP97366-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	RPD	2	%	30
OP97383	EPA 537M QSM5.3 B-15						
OP97383-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	97	%	73-129
OP97383-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	100	%	72-129
OP97383-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	98	%	72-129

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97383-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	99	%	72-130
OP97383-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	96	%	71-133
OP97383-BS	375-95-1	Perfluorononanoic acid	BSP	REC	93	%	69-130
OP97383-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	96	%	71-129
OP97383-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	99	%	69-133
OP97383-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	104	%	72-134
OP97383-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	95	%	65-144
OP97383-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	111	%	71-132
OP97383-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	100	%	72-130
OP97383-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	97	%	71-127
OP97383-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	97	%	68-131
OP97383-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	94	%	69-134
OP97383-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	92	%	65-140
OP97383-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	104	%	69-127
OP97383-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	88	%	53-142
OP97383-BS	754-91-6	PFOSA	BSP	REC	105	%	67-137
OP97383-BS	31506-32-8	MeFOSA	BSP	REC	115	%	68-141
OP97383-BS	2355-31-9	MeFOSAA	BSP	REC	97	%	65-136
OP97383-BS	2991-50-6	EtFOSAA	BSP	REC	103	%	61-135
OP97383-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	103	%	63-143
OP97383-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	104	%	64-140
OP97383-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	105	%	67-138
OP97383-BSD	375-22-4	Perfluorobutanoic acid	BSD	REC	92	%	73-129
OP97383-BSD	375-22-4	Perfluorobutanoic acid	BSD	RPD	5	%	30
OP97383-BSD	2706-90-3	Perfluoropentanoic acid	BSD	REC	95	%	72-129
OP97383-BSD	2706-90-3	Perfluoropentanoic acid	BSD	RPD	5	%	30
OP97383-BSD	307-24-4	Perfluorohexanoic acid	BSD	REC	94	%	72-129
OP97383-BSD	307-24-4	Perfluorohexanoic acid	BSD	RPD	5	%	30
OP97383-BSD	375-85-9	Perfluoroheptanoic acid	BSD	REC	93	%	72-130
OP97383-BSD	375-85-9	Perfluoroheptanoic acid	BSD	RPD	6	%	30
OP97383-BSD	335-67-1	Perfluorooctanoic acid	BSD	REC	92	%	71-133
OP97383-BSD	335-67-1	Perfluorooctanoic acid	BSD	RPD	4	%	30
OP97383-BSD	375-95-1	Perfluorononanoic acid	BSD	REC	91	%	69-130
OP97383-BSD	375-95-1	Perfluorononanoic acid	BSD	RPD	2	%	30
OP97383-BSD	335-76-2	Perfluorodecanoic acid	BSD	REC	92	%	71-129
OP97383-BSD	335-76-2	Perfluorodecanoic acid	BSD	RPD	4	%	30
OP97383-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	REC	93	%	69-133
OP97383-BSD	2058-94-8	Perfluoroundecanoic acid	BSD	RPD	6	%	30
OP97383-BSD	307-55-1	Perfluorododecanoic acid	BSD	REC	96	%	72-134
OP97383-BSD	307-55-1	Perfluorododecanoic acid	BSD	RPD	8	%	30
OP97383-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	REC	87	%	65-144
OP97383-BSD	72629-94-8	Perfluorotridecanoic acid	BSD	RPD	9	%	30
OP97383-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	REC	99	%	71-132
OP97383-BSD	376-06-7	Perfluorotetradecanoic acid	BSD	RPD	12	%	30
OP97383-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	REC	95	%	72-130

* Sample used for QC is not from job FC6405

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6405
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 05/23/23 thru 05/25/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP97383-BSD	375-73-5	Perfluorobutanesulfonic acid	BSD	RPD	4	%	30
OP97383-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	REC	95	%	71-127
OP97383-BSD	2706-91-4	Perfluoropentanesulfonic acid	BSD	RPD	3	%	30
OP97383-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	REC	94	%	68-131
OP97383-BSD	355-46-4	Perfluorohexanesulfonic acid	BSD	RPD	2	%	30
OP97383-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	REC	89	%	69-134
OP97383-BSD	375-92-8	Perfluoroheptanesulfonic acid	BSD	RPD	6	%	30
OP97383-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	REC	87	%	65-140
OP97383-BSD	1763-23-1	Perfluorooctanesulfonic acid	BSD	RPD	6	%	30
OP97383-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	REC	97	%	69-127
OP97383-BSD	68259-12-1	Perfluorononanesulfonic acid	BSD	RPD	7	%	30
OP97383-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	REC	85	%	53-142
OP97383-BSD	335-77-3	Perfluorodecanesulfonic acid	BSD	RPD	3	%	30
OP97383-BSD	754-91-6	PFOSA	BSD	REC	97	%	67-137
OP97383-BSD	754-91-6	PFOSA	BSD	RPD	8	%	30
OP97383-BSD	31506-32-8	MeFOSA	BSD	REC	120	%	68-141
OP97383-BSD	31506-32-8	MeFOSA	BSD	RPD	5	%	30
OP97383-BSD	2355-31-9	MeFOSAA	BSD	REC	94	%	65-136
OP97383-BSD	2355-31-9	MeFOSAA	BSD	RPD	3	%	30
OP97383-BSD	2991-50-6	EtFOSAA	BSD	REC	95	%	61-135
OP97383-BSD	2991-50-6	EtFOSAA	BSD	RPD	8	%	30
OP97383-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	REC	99	%	63-143
OP97383-BSD	757124-72-4	4:2 Fluorotelomer sulfonate	BSD	RPD	4	%	30
OP97383-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	REC	100	%	64-140
OP97383-BSD	27619-97-2	6:2 Fluorotelomer sulfonate	BSD	RPD	5	%	30
OP97383-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	REC	100	%	67-138
OP97383-BSD	39108-34-4	8:2 Fluorotelomer sulfonate	BSD	RPD	5	%	30

* Sample used for QC is not from job FC6405

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q667-IBLK	4Q45846.D	1	06/12/23	AL	n/a	n/a	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-17

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%
	13C5-PFPeA	95%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q667-IBLK	4Q45846.D	1	06/12/23	AL	n/a	n/a	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-17

CAS No.	ID Standard Recoveries		Limits
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	101%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	95%	50-150%
	13C8-FOSA	104%	50-150%
	d3-MeFOSA	107%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	96%	50-150%
	13C3-HFPO-DA	94%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q669-IBLK	4Q45943.D	1	06/13/23	AL	n/a	n/a	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	97%	50-150%
	13C5-PFPeA	98%	50-150%
	13C5-PFHxA	97%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q669-IBLK	4Q45943.D	1	06/13/23	AL	n/a	n/a	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	99%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	112%	50-150%
	13C7-PFUnDA	109%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	101%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	108%	50-150%
	d3-MeFOSA	110%	50-150%
	d3-MeFOSAA	118%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	86%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	87%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q670-IBLK	4Q45990.D	1	06/14/23	AL	n/a	n/a	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-20, FC6405-21, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	109%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	92%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	95%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q670-IBLK	4Q45990.D	1	06/14/23	AL	n/a	n/a	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-20, FC6405-21, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30

CAS No.	ID Standard Recoveries		Limits
	13C3-HFPO-DA	89%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q674-IBLK	4Q46140.D	1	06/16/23	AL	n/a	n/a	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q674-IBLK	4Q46140.D	1	06/16/23	AL	n/a	n/a	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	106%	50-150%
	13C7-PFUnDA	105%	50-150%
	13C2-PFDoDA	104%	50-150%
	13C2-PFTeDA	97%	50-150%
	13C3-PFBS	98%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	99%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSA	106%	50-150%
	d3-MeFOSAA	114%	50-150%
	d5-EtFOSAA	109%	50-150%
	13C2-4:2FTS	82%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	99%	50-150%
	13C3-HFPO-DA	75%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q676-IBLK	4Q46236.D	1	06/19/23	AL	n/a	n/a	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	111%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q676-IBLK	4Q46236.D	1	06/19/23	AL	n/a	n/a	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	111%	50-150%
	13C5-PFHxA	111%	50-150%
	13C4-PFHpA	109%	50-150%
	13C8-PFOA	114%	50-150%
	13C9-PFNA	116%	50-150%
	13C6-PFDA	118%	50-150%
	13C7-PFUnDA	119%	50-150%
	13C2-PFDoDA	107%	50-150%
	13C2-PFTeDA	108%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	104%	50-150%
	13C8-PFOS	110%	50-150%
	13C8-FOSA	121%	50-150%
	d3-MeFOSA	133%	50-150%
	d3-MeFOSAA	126%	50-150%
	d5-EtFOSAA	123%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	106%	50-150%
	13C3-HFPO-DA	121%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q678-IBLK	4Q46354.D	1	06/21/23	AL	n/a	n/a	S4Q678

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	104%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	104%	50-150%
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	105%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	113%	50-150%
	13C7-PFUnDA	113%	50-150%
	13C2-PFDoDA	101%	50-150%

Instrument Blank

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q678-IBLK	4Q46354.D	1	06/21/23	AL	n/a	n/a	S4Q678

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-3

CAS No.	ID Standard Recoveries		Limits
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	104%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	105%	50-150%
	d3-MeFOSAA	115%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	90%	50-150%
	13C2-6:2FTS	91%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	110%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-MB	4Q45853.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	100%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-MB	4Q45853.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	113%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	77%	50-150%
	13C3-PFBS	103%	50-150%
	13C3-PFHxS	100%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	76%	50-150%
	d3-MeFOSA	5%* [a]	50-150%
	d3-MeFOSAA	106%	50-150%
	d5-EtFOSAA	88%	50-150%
	13C2-4:2FTS	89%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	105%	50-150%
	13C3-HFPO-DA	98%	50-150%

(a) Outside control limits.

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MB	4Q45948.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	95%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MB	4Q45948.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	103%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	89%	50-150%
	13C2-PFTeDA	61%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	100%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSA	51%	50-150%
	d3-MeFOSAA	111%	50-150%
	d5-EtFOSAA	100%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	100%	50-150%
	13C3-HFPO-DA	83%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MB	4Q45996.D	1	06/14/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MB	4Q45996.D	1	06/14/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	95%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	97%	50-150%
	13C8-PFOA	99%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	111%	50-150%
	13C7-PFUnDA	104%	50-150%
	13C2-PFDoDA	90%	50-150%
	13C2-PFTeDA	59%	50-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	94%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	80%	50-150%
	d3-MeFOSA	52%	50-150%
	d3-MeFOSAA	119%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	87%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97366-MB	4Q46146.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97366-MB	4Q46146.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	102%	50-150%
	13C5-PFHxA	104%	50-150%
	13C4-PFHpA	109%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	121%	50-150%
	13C7-PFUnDA	116%	50-150%
	13C2-PFDoDA	116%	50-150%
	13C2-PFTeDA	96%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	113%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	96%	50-150%
	d3-MeFOSA	58%	50-150%
	d3-MeFOSAA	125%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	104%	50-150%
	13C2-8:2FTS	113%	50-150%
	13C3-HFPO-DA	85%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97383-MB	4Q46242.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0020	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	96%	50-150%

Method Blank Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97383-MB	4Q46242.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	ID Standard Recoveries		Limits
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	70%	50-150%
	13C2-PFTeDA	58%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	89%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	37%* [a]	50-150%
	d3-MeFOSA	1%* [a]	50-150%
	d3-MeFOSAA	87%	50-150%
	d5-EtFOSAA	72%	50-150%
	13C2-4:2FTS	83%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	91%	50-150%
	13C3-HFPO-DA	100%	50-150%

(a) Outside control limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-BS	4Q45852.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0763	95	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0767	96	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0780	98	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0753	94	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0771	96	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0758	95	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0772	97	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0762	95	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0782	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0599	75	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0832	104	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0786	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0697	87	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0741	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0790	99	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0734	92	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0842	105	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0679	85	53-142
754-91-6	PFOSA	0.08	0.0803	100	67-137
31506-32-8	MeFOSA	0.08	0.0776	97	68-141
2355-31-9	MeFOSAA	0.08	0.0777	97	65-136
2991-50-6	EtFOSAA	0.08	0.0776	97	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0800	100	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0799	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0799	100	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0767	96	60-140
919005-14-4	ADONA	0.08	0.0835	104	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0623	78	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0701	88	60-140
	PFOS (Branched Isomers)		0.0167		50-150 [a]
	PFOS (Linear Isomer)		0.0574		50-150 [a]

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	96%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-BS	4Q45852.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	ID Standard Recoveries	BSP	Limits
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	81%	50-150%
	13C6-PFDA	77%	50-150%
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	70%	50-150%
	13C2-PFTeDA	55%	50-150%
	13C3-PFBS	92%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	71%	50-150%
	13C8-FOSA	39%* [b]	50-150%
	d3-MeFOSA	1%* [b]	50-150%
	d3-MeFOSAA	74%	50-150%
	d5-EtFOSAA	64%	50-150%
	13C2-4:2FTS	95%	50-150%
	13C2-6:2FTS	90%	50-150%
	13C2-8:2FTS	83%	50-150%
	13C3-HFPO-DA	95%	50-150%

(a) Advisory control limits.
(b) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-BS	4Q45947.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0768	96	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0758	95	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0774	97	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0770	96	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0781	98	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0767	96	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0757	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0771	96	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0787	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0594	74	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0835	104	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0783	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0698	87	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0769	96	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0778	97	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0712	89	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0809	101	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0685	86	53-142
754-91-6	PFOSA	0.08	0.0812	102	67-137
31506-32-8	MeFOSA	0.08	0.128	160*	68-141
2355-31-9	MeFOSAA	0.08	0.0763	95	65-136
2991-50-6	EtFOSAA	0.08	0.0782	98	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0791	99	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0821	103	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0824	103	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0762	95	60-140
919005-14-4	ADONA	0.08	0.0839	105	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0628	79	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0709	89	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	96%	50-150%
	13C5-PFPeA	97%	50-150%
	13C5-PFHxA	95%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-BS	4Q45947.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	85%	50-150%
	13C9-PFNA	81%	50-150%
	13C6-PFDA	79%	50-150%
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	70%	50-150%
	13C2-PFTeDA	53%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	39%* [a]	50-150%
	d3-MeFOSA	1%* [a]	50-150%
	d3-MeFOSAA	81%	50-150%
	d5-EtFOSAA	68%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	82%	50-150%
	13C3-HFPO-DA	84%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-BS	4Q45995.D	1	06/14/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0764	96	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0762	95	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0774	97	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0753	94	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0783	98	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0762	95	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0767	96	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0769	96	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0785	98	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0579	72	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0827	103	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0785	98	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0704	88	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0772	97	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0778	97	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0735	92	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0819	102	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0678	85	53-142
754-91-6	PFOSA	0.08	0.0838	105	67-137
31506-32-8	MeFOSA	0.08	0.0753	94	68-141
2355-31-9	MeFOSAA	0.08	0.0778	97	65-136
2991-50-6	EtFOSAA	0.08	0.0812	102	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0797	100	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0808	101	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0811	101	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0778	97	60-140
919005-14-4	ADONA	0.08	0.0843	105	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0626	78	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0703	88	60-140
	PFOS (Branched Isomers)		0.0166		50-150 [a]
	PFOS (Linear Isomer)		0.0576		50-150 [a]

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	96%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-BS	4Q45995.D	1	06/14/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries	BSP	Limits
	13C5-PFPeA	96%	50-150%
	13C5-PFHxA	95%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	86%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	78%	50-150%
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	71%	50-150%
	13C2-PFTeDA	52%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	83%	50-150%
	13C8-PFOS	73%	50-150%
	13C8-FOSA	39%* [b]	50-150%
	d3-MeFOSA	1%* [b]	50-150%
	d3-MeFOSAA	80%	50-150%
	d5-EtFOSAA	70%	50-150%
	13C2-4:2FTS	98%	50-150%
	13C2-6:2FTS	92%	50-150%
	13C2-8:2FTS	82%	50-150%
	13C3-HFPO-DA	86%	50-150%

(a) Advisory control limits.
(b) Outside control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97366-BS [a]	4Q46144.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674
OP97366-BSD	4Q46145.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0735	92	0.0761	95	3	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0705	88	0.0723	90	3	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0715	89	0.0733	92	2	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0712	89	0.0729	91	2	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0761	95	0.0772	97	1	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0745	93	0.0773	97	4	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0732	92	0.0736	92	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0747	93	0.0767	96	3	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0726	91	0.0747	93	3	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0539	67	0.0561	70	4	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0750	94	0.0762	95	2	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0731	91	0.0740	93	1	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0704	88	0.0715	89	2	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0748	94	0.0749	94	0	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0720	90	0.0738	92	2	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0709	89	0.0697	87	2	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0838	105	0.0841	105	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0708	89	0.0727	91	3	53-142/30
754-91-6	PFOSA	0.08	0.0743	93	0.0751	94	1	67-137/30
31506-32-8	MeFOSA	0.08	0.0841	105	0.0922	115	9	68-141/30
2355-31-9	MeFOSAA	0.08	0.0721	90	0.0745	93	3	65-136/30
2991-50-6	EtFOSAA	0.08	0.0747	93	0.0789	99	5	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0764	96	0.0776	97	2	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0763	95	0.0768	96	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0774	97	0.0761	95	2	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0726	91	0.0751	94	3	60-140/30
919005-14-4	ADONA	0.08	0.0711	89	0.0716	90	1	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0714	89	0.0747	93	5	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0717	90	0.0736	92	3	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	100%	113%	50-150%
	13C5-PFPeA	100%	114%	50-150%
	13C5-PFHxA	101%	115%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97366-BS [a]	4Q46144.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674
OP97366-BSD	4Q46145.D	1	06/16/23	AL	06/15/23	OP97366	S4Q674

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-32

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFHpA	105%	120%	50-150%
	13C8-PFOA	101%	117%	50-150%
	13C9-PFNA	102%	114%	50-150%
	13C6-PFDA	102%	114%	50-150%
	13C7-PFUnDA	104%	117%	50-150%
	13C2-PFDoDA	110%	123%	50-150%
	13C2-PFTeDA	89%	101%	50-150%
	13C3-PFBS	105%	121%	50-150%
	13C3-PFHxS	107%	124%	50-150%
	13C8-PFOS	105%	121%	50-150%
	13C8-FOSA	85%	98%	50-150%
	d3-MeFOSA	44%* [b]	58%	50-150%
	d3-MeFOSAA	107%	118%	50-150%
	d5-EtFOSAA	98%	106%	50-150%
	13C2-4:2FTS	101%	116%	50-150%
	13C2-6:2FTS	107%	123%	50-150%
	13C2-8:2FTS	104%	118%	50-150%
	13C3-HFPO-DA	84%	93%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97383-BS [a]	4Q46240.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676
OP97383-BSD	4Q46241.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.08	0.0775	97	0.0737	92	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.08	0.0800	100	0.0762	95	5	72-129/30
307-24-4	Perfluorohexanoic acid	0.08	0.0786	98	0.0751	94	5	72-129/30
375-85-9	Perfluoroheptanoic acid	0.08	0.0789	99	0.0746	93	6	72-130/30
335-67-1	Perfluorooctanoic acid	0.08	0.0765	96	0.0738	92	4	71-133/30
375-95-1	Perfluorononanoic acid	0.08	0.0745	93	0.0727	91	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.08	0.0768	96	0.0736	92	4	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.08	0.0794	99	0.0746	93	6	69-133/30
307-55-1	Perfluorododecanoic acid	0.08	0.0833	104	0.0771	96	8	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.08	0.0758	95	0.0693	87	9	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.08	0.0887	111	0.0788	99	12	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0797	100	0.0763	95	4	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0776	97	0.0756	95	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0772	97	0.0754	94	2	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0751	94	0.0710	89	6	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0737	92	0.0693	87	6	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0833	104	0.0775	97	7	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0705	88	0.0683	85	3	53-142/30
754-91-6	PFOSA	0.08	0.0838	105	0.0776	97	8	67-137/30
31506-32-8	MeFOSA	0.08	0.0918	115	0.0962	120	5	68-141/30
2355-31-9	MeFOSAA	0.08	0.0772	97	0.0749	94	3	65-136/30
2991-50-6	EtFOSAA	0.08	0.0822	103	0.0758	95	8	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0823	103	0.0791	99	4	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0835	104	0.0796	100	5	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0836	105	0.0798	100	5	67-138/30
13252-13-6	HFPO-DA (GenX)	0.08	0.0793	99	0.0782	98	1	60-140/30
919005-14-4	ADONA	0.08	0.0805	101	0.0768	96	5	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0739	92	0.0710	89	4	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0871	109	0.0793	99	9	60-140/30

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFBA	102%	103%	50-150%
	13C5-PFPeA	103%	103%	50-150%
	13C5-PFHxA	101%	103%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97383-BS [a]	4Q46240.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676
OP97383-BSD	4Q46241.D	1	06/19/23	AL	06/16/23	OP97383	S4Q676

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-4, FC6405-5, FC6405-6, FC6405-7, FC6405-8, FC6405-10, FC6405-11, FC6405-16, FC6405-18, FC6405-19, FC6405-21

CAS No.	ID Standard Recoveries	BSP	BSD	Limits
	13C4-PFHpA	99%	101%	50-150%
	13C8-PFOA	102%	103%	50-150%
	13C9-PFNA	101%	101%	50-150%
	13C6-PFDA	98%	99%	50-150%
	13C7-PFUnDA	93%	97%	50-150%
	13C2-PFDoDA	80%	86%	50-150%
	13C2-PFTeDA	68%	74%	50-150%
	13C3-PFBS	99%	98%	50-150%
	13C3-PFHxS	97%	98%	50-150%
	13C8-PFOS	98%	100%	50-150%
	13C8-FOSA	66%	74%	50-150%
	d3-MeFOSA	14%* [b]	25%* [b]	50-150%
	d3-MeFOSAA	91%	94%	50-150%
	d5-EtFOSAA	80%	85%	50-150%
	13C2-4:2FTS	99%	99%	50-150%
	13C2-6:2FTS	99%	101%	50-150%
	13C2-8:2FTS	97%	99%	50-150%
	13C3-HFPO-DA	110%	108%	50-150%

(a) Insufficient sample for MS/MSD.
(b) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-MS	4Q45878.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
OP97259-MSD	4Q45879.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
FC6405-21 [a]	4Q45877.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
FC6405-21 [b]	4Q46030.D	5	06/15/23	AL	06/08/23	OP97259	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	Compound	FC6405-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0088		0.0755	0.0796	94	0.0741	0.0808	97	1	73-129/30
2706-90-3	Perfluoropentanoic acid	0.019 U	[c]	0.0755	0.0768	102	0.0741	0.0755	102	2	72-129/30
307-24-4	Perfluorohexanoic acid	0.0037 U		0.0755	0.0720	95	0.0741	0.0714	96	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0037 U		0.0755	0.0721	96	0.0741	0.0720	97	0	72-130/30
335-67-1	Perfluorooctanoic acid	0.0011	J	0.0755	0.0747	98	0.0741	0.0738	98	1	71-133/30
375-95-1	Perfluorononanoic acid	0.0037 U		0.0755	0.0742	98	0.0741	0.0715	97	4	69-130/30
335-76-2	Perfluorodecanoic acid	0.0037 U		0.0755	0.0710	94	0.0741	0.0701	95	1	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0037 U		0.0755	0.0726	96	0.0741	0.0724	98	0	69-133/30
307-55-1	Perfluorododecanoic acid	0.0037 U		0.0755	0.0727	96	0.0741	0.0705	95	3	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0037 U		0.0755	0.0460	61*	0.0741	0.0455	61*	1	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.019 U	[c]	0.0755	0.0729	97	0.0741	0.0716	97	2	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0037 U		0.0755	0.0724	96	0.0741	0.0717	97	1	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0037 U		0.0755	0.0893	118	0.0741	0.0887	120	1	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0011	J	0.0755	0.0725	95	0.0741	0.0723	96	0	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U		0.0755	0.0714	95	0.0741	0.0717	97	0	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0027	J	0.0755	0.0699	89	0.0741	0.0694	90	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0037 U		0.0755	0.0779	103	0.0741	0.0794	107	2	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0037 U		0.0755	0.0648	86	0.0741	0.0645	87	0	53-142/30
754-91-6	PFOSA	0.019 U	[c]	0.0755	0.0732	97	0.0741	0.0676	91	8	67-137/30
31506-32-8	MeFOSA	0.037 U	[c]	0.0755	0.0785	104	0.0741	0.0805	109	3	68-141/30
2355-31-9	MeFOSAA	0.0074 U		0.0755	0.0675	89	0.0741	0.0694	94	3	65-136/30
2991-50-6	EtFOSAA	0.0074 U		0.0755	0.0707	94	0.0741	0.0718	97	2	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0074 U		0.0755	0.0744	99	0.0741	0.0744	100	0	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0074 U		0.0755	0.0751	100	0.0741	0.0740	100	1	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0074 U		0.0755	0.0753	100	0.0741	0.0733	99	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0074 U		0.0755	0.0756	100	0.0741	0.0761	103	1	60-140/30
919005-14-4	ADONA	0.0074 U		0.0755	0.0602	80	0.0741	0.0571	77	5	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0074 U		0.0755	0.0732	97	0.0741	0.0726	98	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0074 U		0.0755	0.0777	103	0.0741	0.0735	99	6	60-140/30
	PFOS (Branched Isomers)	0.00091	J		0.0154			0.0154		0	50-150/30 [d]
	PFOS (Linear Isomer)	0.0016	J		0.0555			0.0549		1	50-150/30 [d]

CAS No.	ID Standard Recoveries	MS	MSD	FC6405-21	FC6405-21	Limits
	13C4-PFBA	36%* [e]	31%* [e]	32%* [e]	45%* [e]	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97259-MS	4Q45878.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
OP97259-MSD	4Q45879.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
FC6405-21 [a]	4Q45877.D	1	06/12/23	AL	06/08/23	OP97259	S4Q667
FC6405-21 [b]	4Q46030.D	5	06/15/23	AL	06/08/23	OP97259	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-1, FC6405-2, FC6405-3, FC6405-9, FC6405-12, FC6405-13, FC6405-14, FC6405-15, FC6405-16, FC6405-17, FC6405-18, FC6405-21

CAS No.	ID Standard Recoveries	MS	MSD	FC6405-21	FC6405-21	Limits
	13C5-PFPeA	35%* [e]	29%* [e]	31%* [e]	43%* [e]	50-150%
	13C5-PFHxA	45%* [e]	37%* [e]	41%* [e]	49%* [e]	50-150%
	13C4-PFHpA	54%	44%* [e]	49%* [e]	55%	50-150%
	13C8-PFOA	60%	50%	58%	59%	50-150%
	13C9-PFNA	61%	52%	60%	64%	50-150%
	13C6-PFDA	62%	54%	65%	66%	50-150%
	13C7-PFUnDA	63%	56%	70%	65%	50-150%
	13C2-PFDoDA	57%	51%	62%	53%	50-150%
	13C2-PFTeDA	25%* [e]	24%* [e]	15%* [e]	21%* [e]	50-150%
	13C3-PFBS	45%* [e]	38%* [e]	41%* [e]	53%	50-150%
	13C3-PFHxS	66%	56%	63%	72%	50-150%
	13C8-PFOS	69%	59%	68%	74%	50-150%
	13C8-FOSA	41%* [e]	38%* [e]	28%* [e]	37%* [e]	50-150%
	d3-MeFOSA			0%* [e]	1%* [e]	50-150%
	d3-MeFOSAA	73%	61%	77%	74%	50-150%
	d5-EtFOSAA	69%	59%	73%	68%	50-150%
	13C2-4:2FTS	48%* [e]	38%* [e]	38%* [e]	45%* [e]	50-150%
	13C2-6:2FTS	67%	53%	57%	56%	50-150%
	13C2-8:2FTS	67%	56%	62%	63%	50-150%
	13C3-HFPO-DA	35%* [e]	27%* [e]	31%* [e]	37%* [e]	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Advisory control limits.
(e) Outside control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MS	4Q45960.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
OP97260-MSD	4Q45961.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
FC6405-29 [a]	4Q45959.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
FC6405-29 [b]	4Q46043.D	5	06/15/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	Compound	FC6405-29 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0074	U	0.0833	0.0751	90	0.0833	0.0717	86	5	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0037	U	0.0833	0.0765	92	0.0833	0.0731	88	5	72-129/30
307-24-4	Perfluorohexanoic acid	0.0037	U	0.0833	0.0730	88	0.0833	0.0722	87	1	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0037	U	0.0833	0.0738	89	0.0833	0.0712	85	4	72-130/30
335-67-1	Perfluorooctanoic acid	0.0037	U	0.0833	0.0755	91	0.0833	0.0734	88	3	71-133/30
375-95-1	Perfluorononanoic acid	0.0037	U	0.0833	0.0739	89	0.0833	0.0722	87	2	69-130/30
335-76-2	Perfluorodecanoic acid	0.0037	U	0.0833	0.0731	88	0.0833	0.0720	86	2	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.0037	U	0.0833	0.0748	90	0.0833	0.0736	88	2	69-133/30
307-55-1	Perfluorododecanoic acid	0.0037	U	0.0833	0.0756	91	0.0833	0.0735	88	3	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.0037	U	0.0833	0.0576	69	0.0833	0.0574	69	0	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.0037	U	0.0833	0.0755	91	0.0833	0.0745	89	1	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.0037	U	0.0833	0.0750	90	0.0833	0.0745	89	1	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.0037	U	0.0833	0.0883	106	0.0833	0.0858	103	3	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0037	U	0.0833	0.0773	93	0.0833	0.0741	89	4	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0037	U	0.0833	0.0797	96	0.0833	0.0757	91	5	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0037	U	0.0833	0.0730	88	0.0833	0.0721	87	1	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0037	U	0.0833	0.0791	95	0.0833	0.0791	95	0	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.0037	U	0.0833	0.0622	75	0.0833	0.0638	77	3	53-142/30
754-91-6	PFOSA	0.019	U [c]	0.0833	0.0748	90	0.0833	0.0735	88	2	67-137/30
31506-32-8	MeFOSA	0.037	U [c]	0.0833	0.0660	79	0.0833	0.0747	90	12	68-141/30
2355-31-9	MeFOSAA	0.0074	U	0.0833	0.0704	84	0.0833	0.0741	89	5	65-136/30
2991-50-6	EtFOSAA	0.0074	U	0.0833	0.0743	89	0.0833	0.0741	89	0	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.0074	U	0.0833	0.0790	95	0.0833	0.0756	91	4	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0074	U	0.0833	0.0789	95	0.0833	0.0763	92	3	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.0074	U	0.0833	0.0778	93	0.0833	0.0757	91	3	67-138/30
13252-13-6	HFPO-DA (GenX)	0.0074	U	0.0833	0.0753	90	0.0833	0.0722	87	4	60-140/30
919005-14-4	ADONA	0.0074	U	0.0833	0.0737	88	0.0833	0.0712	85	3	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0074	U	0.0833	0.0653	78	0.0833	0.0635	76	3	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0074	U	0.0833	0.0721	87	0.0833	0.0714	86	1	60-140/30
	PFOS (Branched Isomers)	0.0015	U		0.0169			0.0166		2	50-150/30 [d]
	PFOS (Linear Isomer)	0.0037	U		0.0566			0.0560		1	50-150/30 [d]

CAS No.	ID Standard Recoveries	MS	MSD	FC6405-29	FC6405-29	Limits
	13C4-PFBA	52%	44%* [e]	31%* [e]	39%* [e]	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC6405
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97260-MS	4Q45960.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
OP97260-MSD	4Q45961.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
FC6405-29 [a]	4Q45959.D	1	06/13/23	AL	06/08/23	OP97260	S4Q669
FC6405-29 [b]	4Q46043.D	5	06/15/23	AL	06/08/23	OP97260	S4Q670

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FC6405-20, FC6405-22, FC6405-23, FC6405-24, FC6405-25, FC6405-26, FC6405-27, FC6405-28, FC6405-29, FC6405-30, FC6405-31, FC6405-33, FC6405-34, FC6405-35

CAS No.	ID Standard Recoveries	MS	MSD	FC6405-29	FC6405-29	Limits
	13C5-PFPeA	55%	49%* [e]	40%* [e]	54%	50-150%
	13C5-PFHxA	67%	59%	49%* [e]	62%	50-150%
	13C4-PFHpA	75%	67%	56%	68%	50-150%
	13C8-PFOA	82%	73%	63%	70%	50-150%
	13C9-PFNA	82%	73%	62%	71%	50-150%
	13C6-PFDA	78%	71%	62%	72%	50-150%
	13C7-PFUnDA	73%	67%	62%	67%	50-150%
	13C2-PFDoDA	64%	63%	58%	61%	50-150%
	13C2-PFTeDA	47%* [e]	45%* [e]	52%	52%	50-150%
	13C3-PFBS	61%	53%	46%* [e]	60%	50-150%
	13C3-PFHxS	77%	69%	61%	70%	50-150%
	13C8-PFOS	77%	70%	63%	73%	50-150%
	13C8-FOSA	43%* [e]	41%* [e]	41%* [e]	68%	50-150%
	d3-MeFOSA	1%* [e]	1%* [e]	2%* [e]	2%* [e]	50-150%
	d3-MeFOSAA	95%	84%	78%	86%	50-150%
	d5-EtFOSAA	82%	77%	71%	77%	50-150%
	13C2-4:2FTS	71%	62%	47%* [e]	58%	50-150%
	13C2-6:2FTS	96%	85%	67%	68%	50-150%
	13C2-8:2FTS	88%	78%	62%	68%	50-150%
	13C3-HFPO-DA	58%	52%	42%* [e]	54%	50-150%

(a) Confirmation run.
(b) Dilution required (ID recovery standard failure).
(c) Result is from Run #2.
(d) Advisory control limits.
(e) Outside control limits.

* = Outside of Control Limits.

National Aeronautics and
Space Administration

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Caitlin Brice, M.S. — Signature

12/27/18 — Date

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APPENDIX E
KSCRT MEETING MINUTES AND ACTION ITEMS – OCTOBER 2022 AND JUNE 2023

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Revision 1 Meeting Minutes for October 5th and 6th, 2022

Attendees:

1. Bruce Moore/FDEP
2. Mike Deliz/NASA
3. Ryan O'Meara/NASA
4. Deda Johansen/NASA
5. Anne Chrest/NASA
6. Natasha Darre/NASA
7. Chris Adkison/NASA
8. Tim Appleman/NASA
9. Michelle Moore/NEMCON
10. Mark Jonnet/Tetra Tech
11. Alex Murphy/Tetra Tech
12. Chris Pike/ Tetra Tech
13. Mark Speranza/Tetra Tech
14. Andrew Walters/Tetra Tech
15. Jennifer Gootee/AECOM
16. Linnea King Clark/AECOM
17. Richard Smith/HGL
18. Howard Fowler/HGL
19. James (Jim) Montague/HGL

2210-M01 Bruce Moore/FDEP

Program Update

Discussion: The #1 issue at the Florida Department of Environmental Protection (FDEP) is the staffing situation. There are fourteen positions in the federal facilities program currently available. Some hires are imminent. Environmental Administrator Laura Barrett resigned. The goal is to fill the Environmental Administrator position by the end of October. Billy Hessman joined in May as a professional geologist (PG) II position. A variety of positions are open and need to be filled. If there is an urgent matter, please call Bruce directly and he can talk in the moment about it. The routine review process may take a while.

NASA inquired if funding was the issue or just not enough people were applying. FDEP stated it has been hard to attract and retain staff. FDEP is still using the three contractors for outside review and will lean heavily on them in the short term.

2210-M02 Howard Fowler/HGL

C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan

Objective:

The objective of the advance data package (ADP) is to summarize the site background, discuss post system shutdown monitoring results, biennial sampling results, per- and polyfluoroalkyl substances (PFAS) sampling results, present the proposed long term monitoring work plan and obtain consensus for the C-5 Electrical Substation (SWMU 066).

Discussion:

Environmental investigations have been ongoing at the C-5 Electrical Substation (C5ES) since 1992, with long-term groundwater monitoring ongoing since 2001. Supplemental groundwater investigations were conducted in July 2007, between August 2014 and June 2015, and during December 2019. Based on the results of the December 2019 supplemental groundwater sampling, an Interim Measure Work Plan for the installation of an air sparge system was prepared and subsequently approved by the FDEP. The air sparge system operated from July 2020 until January 2021. Following system shutdown in January 2021, the first quarter post-shutdown sampling was conducted in April 2021.

2021-2022 Activities

The second through fourth quarters of post system shutdown monitoring occurred on July 27, 2021; October 21, 2021; and January 19, 2022. Quarterly monitoring consisted of the sampling of three shallow monitoring wells screened 5'-15': MW0020, MW0021, and MW0022. Vinyl chloride (VC) concentrations generally increased through the first 3 quarters and decreased during the 4th quarter.

Biennial sampling consisted of the collection of groundwater samples on April 28 and May 2, 2022, from 14 monitoring wells (MW0001S, MW0001I, MW0004S, MW0004I, MW0005S, MW0009S, MW0017S, MW0018S, MW0019I, MW0020, MW0021, MW0022, MW0023 and MW0025) and the collection of water level data. VC exceeded the groundwater cleanup target level (GCTL) of 1 µg/L at

MW0019I (4.2 µg/L), MW0021 (4 µg/L) and MW0023 (3 µg/L). Groundwater flow was generally towards the west in the shallow zone and towards the west and south in the intermediate zone. Historically, groundwater flow has been towards the west.

Two monitoring wells (MW005S and MW0018S) were sampled for PFAS compounds on October 21, 2021, as a screening effort. There are no known PFAS sources at C5ES. Twenty-four PFAS compounds were analyzed. Two PFAS compounds were detected perfluorooctanesulfonic acid (PFOS) and perfluorobutanoic acid (PFBA). PFOS was detected at 5.5 J ng/L in MW0018S which is above the Environmental Protection Agency (EPA) Regional Screening Level (RSL) of 4 ng/L. No other results were above an EPA RSL.

Proposed Long Term Monitoring Plan

In 2024, conduct long-term biennial monitoring event to include additional site wells that have not attained two consecutive events with results below the GCTLs. Continue biennial sampling of MW0004S, MW0004I, MW0018S, MW0019I, MW0023, and MW0025. Add biennial sampling of MW0021, MW0022 and MW0024. Discontinue biennial sampling of MW0001S, MW0001I, MW0005S, MW0009S, and MW0017S since each of these has at least two consecutive sampling events with results below GCTLs. Collect water level measurements from all on-site wells. Prepare biennial long-term monitoring letter report. Transition this site back into the Vehicle Assembly Building (VAB) area long-term monitoring program until the GCTLs are reached for two consecutive events at each location.

NASA requested clarification from FDEP. Previous regulators in referencing 62-780, interpreted that there needs to be two samples that with clean results within a year of each other for a clean determination. Reading the rule, NASA doesn't see that as the case. If NASA performs biennial sampling, would that be accepted to provide clean results for two cycles at a given location? FDEP stated there is room for interpretation and did not think that frequency of sampling between obtaining the two clean samples would be a problem. FDEP suggested to proceed and will verify the acceptability.

NASA noted that the well with the PFOS result above the RSL is the downgradient well and was an estimated (J-qualified) value. There was not a detection in the upgradient well. There may be surface water and groundwater interaction at that well location, which is adjacent to a borrow pit. Perhaps under the Center-wide PFAS investigation, we can do a co-located sample at this location. This will be an action item for NASA and AECOM (the Center-wide PFAS contractor) to discuss **(2210-A01).**

FDEP requested an east/west cross-section of the plume to show vertical delineation of the site and include data points on the figure. HGL said a figure like this already exists and was developed during the site characterization. NASA will send this figure to FDEP (**2210-A02).**

The Team reached consensus to conduct Biennial Long-Term Monitoring in 2024 for target CVOCs at the former hot spot location (MW0021), downgradient of the former hot spot (MW0019I, MW0023 and MW0025) and at wells that have not attained two consecutive events below the GCTLs (MW0004S, MW0004I, MW0018S, MW0022 and MW0024) **(2210-D01).**

The Team reached consensus to transition site back into the VAB area long-term monitoring program until the GCTLs are attained for two consecutive events at each location **(2210-D02).**

The Team reached consensus that the PFOS detection above the RSL should be addressed through a separate PFAS investigation **(2210-D03).**

Results: Decision Items: 2210-D01, D02, and D03
Action Items: 2210-A01, A02

2210-M03 Andrew Walters/Tetra Tech

LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022

Objective:

The objective of this briefing is to provide a summary of the air sparge system operation and maintenance; baseline and performance monitoring results; provide conclusions and recommendations; and test consensus on the path forward.

Discussion:

An air sparge system was installed at AOSB to treat chlorinated volatile organic compounds (VOCs). The plume is being treated throughout its footprint to mitigate discharge to the adjacent Pintail Creek, which is part of the Banana River Lagoon Outstanding Florida Water (OFW). The Year One operational reporting period was July 2021 through June 2022. System was down approximately 33% of the reporting period due to associated power outages, maintenance events, and planned sampling events.

Performance monitoring included sampling 11 wells each quarterly event. AOSB-MW0009 is the only well with groundwater cleanup target level (GCTL) exceedances since October 2021. The 2018 RCRA Facility Investigation (RFI) direct push technology (DPT) groundwater samples outside the air sparge treatment zone were less than GCTLs.

The air sparge system is operating as designed. The interim measure is meeting its objective. In baseline sampling (May 2021), target VOCs (trichloroethene, cis-1,2-DCE and/or vinyl chloride) exceeded groundwater cleanup target levels (GCTL) in four monitoring wells. In the three most recent monitoring events, target VOCs exceeded GCTLs in only one well, MW09.

The Team reached consensus to transition operation of air sparge system to operate air sparge wells (ASWs) 6, 8, 14, 15, 16, 17, 26 in the MW09 Area for a longer duration and ASWs 1, 2, 3, 5, 11, 12, 19, 20, 21, 24, 25 along the edge of the former low concentration plume (LCP) to continue being protective of OFW; and to shut down ASWs 4, 7, 9, 10, 13, 18, 22, 23 based on the area around them being less than GCTLs **(2210-D04).**

The Team reached consensus to reduce sampling frequency for all wells to semi-annual **(2210-D05).**

The Team reached consensus to conduct a DPT investigation to determine if any contamination exists beyond MW09 and the influence of the sparging treatment zone **(2210-D06).**

FDEP inquired what this would look like. Would there be four or ten points around MW0009? Tetra Tech responded there should only be a few points based on the 2018 DPT results. We will step off 25ft

from MW0009 to the north and to the east, and to the northwest. Plan to start there and if we encounter contamination at those points, we will step out again as needed. FDEP agreed with this approach.

Monitoring wells MW0009, MW0010, and MW0011 were analyzed for PFAS. Eight PFAS compounds were detected between MW0010 and MW0011. Recommendation was made for PFAS analysis for MW0010 and MW0011. The Team reached consensus to include PFAS analyses for MWs 10 and 11 during the semi-annual sampling events **(2210-D07).**

FDEP inquired if PFAS sampling was going to be an effort included under a larger investigation eventually? NASA observed that the two wells with detections are close to Pintail Creek, part of the lagoon system, and the results could be due to surface water/groundwater interaction. There is a PFAS source associated with a former STP at Pad A, but that is not nearby. A surface water sample to this area might be appropriate. NASA will consider the Center-wide PFAS investigation first and how this might tie in **(2210-A03).** NASA noted the Remediation Project Managers are conducting monthly PFAS meetings internally to discuss sites with PFAS so as not to duplicate efforts where there is potential overlap such as this.

Tetra Tech noted the path forward for monitoring the VOC plume is to skip sampling this month (October 2022), and sample again in January 2023, as the next event. FDEP agreed with this.

Results: Decision Items 2210-D04 through D07
Action Item: 2210-A03

2210-M04 Mark Jonnet/Tetra Tech

Fire Station #3 PFAS Site Assessment Update, October 2022

Objective:

The briefing presents the overview of results from 2018-2021 confirmatory sampling for per- and polyfluorinated alkyl substances (PFAS) performed by Geosyntec and AECOM. It also presents data generated by Tetra Tech through the PFAS Soil Evaluation, PFAS Sediment Evaluation, and PFAS Groundwater Evaluation, as well as the path forward for the site.

Discussion:

Samples collected during the site assessment and results from earlier samples were screened against the 2022 EPA Regional Screening Levels (RSL). There are six PFAS with RSLs.

Surficial (0-0.5 feet below land surface [ft. bls] and 0.5-2 ft. bls) soil samples were collected from 7 locations, and 6 deeper samples were collected from a lithologic boring at one of those locations. No soil result exceeded its RSL. NASA noted that one of the deeper samples was collected from a gray clay layer to investigate whether PFAS is sorbing to clay. There was a high total organic carbon result but no PFAS were detected.

Sediment samples were collected from 4 locations. Perfluorooctane sulfonic acid (PFOS) was detected in all four samples. Four other PFAS were detected in one or more of the samples: perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorobutanesulfonic acid (PFBS), and perfluorohexanesulfonic acid (PFHxS). There are no State or Federal screening levels for PFAS in sediment.

The lithologic boring was used to select screen intervals for Tetra Tech's groundwater sampling by direct push technology (DPT). Out of 100 samples, the detected result was greater than the RSL for PFOS in 60 samples, for PFOA in 45 samples, for PFNA in 30 samples, for PFBS in 3 samples and for PFHxS in 43 samples. Fifty-two samples were analyzed for hexafluoropropylene oxide dimer acid (HFPO-DA; trade name GenX); there were no detections.

Results for 11 surface water samples were compared to the State of Florida Surface Water Screening Levels (SWSL), which are available for PFOA and PFOS. There were no results greater than the SWSL for PFOA, and all results exceeded the PFOS SWSL. Other PFAS were also detected in surface water samples.

Site assessment will proceed in phases. The next phase will continue delineation of PFAS in groundwater and look at surface water/groundwater interaction. Delineation is constrained by the wetlands and surface water surrounding Fire Station #3. Sixteen proposed DPT locations were shown. Deeper samples will be

collected at some prior DPT locations for vertical delineation purposes.

Monitoring wells will be installed adjacent to some surface water sample locations, and staff gauges installed in the surface water. Water levels will be measured and both surface water and groundwater samples collected periodically to determine if there is discharge from groundwater to surface water or vice versa. NASA noted there is a goal for the Remediation program is to perform quarterly sampling across the active PFAS assessment sites.

Rather than take measurements of surface water elevation and groundwater elevation, the suggestion was made to put transducers and water level recorders in wells and surface water to check whether groundwater is receiving stormwater runoff or discharging to surface waters. NASA mentioned this is done at the Hydrocarbon Burn Facility (SWMU #007) site, and HGL stated this was on the wish list to implement at the Fire Station #2 (SWMU #114) site.

First flush samples will be collected after a rain event. Once the monitoring well installation locations are determined, does FDEP want to know where those are? FDEP responded that they would like to know for information purposes. NASA will provide these locations to FDEP prior to installation **(2210-A04).**

Results: Action Item 2210-A04

2210-M05 Chris Pike/Tetra Tech

LC39B (SWMU 009) LOX Area DPT Investigations and Air Sparging

Objective:

The purpose of the briefing is to present the results of direct push technology (DPT) investigations conducted in the Liquid Oxygen (LOX) Area at Launch Complex 39B (LC39B) and to propose a system optimization.

Discussion:

Chlorinated volatile organic compounds (VOCs) are being treated by air sparging at LC39B. The presentation documented investigations conducted between November 2021 and January 2022, with some 2019 results also used in groundwater contouring. The

investigations focused on an area of persistent VOCs on the southwest side of the LOX sphere. Recent groundwater data document a small plume where trichloroethene (TCE) exceeds its groundwater cleanup target level and cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC) above their natural attenuation default concentrations (NADC). A large part of the plume, including the more highly contaminated portion, is under or partially under concrete. Soil samples were also collected and analyzed for VOCs and total organic carbon. No results indicative of sorbed source material were observed.

Based on data assessment, it was recommended to optimize the existing air sparging system with the addition of five new air sparging wells in the Hot Spot 2 area, located adjacent to the LOX sphere. The air sparging wells were proposed to be installed to address contamination in the 8- to 16-foot zone. The installation of one monitoring well was also recommended.

FDEP noted the report of potential petroleum odors/staining in soil, referring to Slide 26, and that the soil samples were analyzed only for chlorinated compounds. The suggested path forward is to send soil cores collected during sparge system installation to be analyzed for petroleum compounds if staining or odor are observed. Tetra Tech stated that would be an easy addition to sample for. FDEP requested that a sample be collected from the suspect intervals and sent the samples to the lab, versus performing a visual inspection only (**2210-A05).**

The Team reached consensus to expand air sparging network by installing three wells screened 11 to 13 feet below land surface and two wells screened 15 to 17 feet below land surface. Final depths will be confirmed by soil cores **(2210-D08).**

The Team reached consensus to collect soil samples for analysis of polynuclear aromatic hydrocarbons (PAHs) and total recoverable petroleum hydrocarbons (TRPH) (**2210-D09).**

The Team reached consensus to install one monitoring well downgradient of the treatment area and add it to the air sparge system performance monitoring program on a semi-annual sampling frequency (**2210-D10).**

FDEP referred to the limitations created by the concrete pad and stated we do not know how much of the plume extends under the path. At some point this may need to be revisited. Tetra Tech responded that the new monitoring well is close to the pad and theoretically would show whether diffusion comes back from underneath. FDEP suggested there could be a statement in the work plan that sampling is constrained by the pad. If a residual plume remains under the pad despite the additional air sparge well, it will be reevaluated at a later time.

Results: Decision Items 2210-D08 through D10
Action Item 2210-A05

2210-M06 Chris Pike/Tetra Tech

Launch Complex 39B (SWMU #009) Weir Evaluation

Objective:

The purpose of the advance data package (ADP) is to present the results of Outstanding Florida Waters (OFW) monitoring and weir evaluation at Launch Complex 39B and to propose a path forward.

Discussion:

This ADP documents a sampling event conducted in August 2022, that included collection of monitoring well and surface water samples in the vicinity of the proposed weir. A weir was originally recommended in 2016 to mitigate potential discharge of groundwater impacted with volatile organic compounds (VOCs) from Hot Spot 2 to a pond that connects to the OFW. Hot Spot 2 encompasses the area near the LOX sphere. The weir installation was suspended in 2018 due to performance monitoring results from Hot Spot 2 indicating chlorinated VOC concentrations adjacent to the pond were below groundwater cleanup target levels (GCTLs). An action item was established in 2018 to revisit the weir installation prior to the St. Johns River Water Management District (SJRWMD) and United States Army Corps of Engineers (USACE) permit expirations in July 2023. No detections of VOCs were observed in the August 2022 sampling results.

FDEP inquired if there were ever documented VOC concentrations in the pond? Tetra Tech responded there were previous samples with results below practical quantitation limits.

FDEP inquired if the concern was that the contaminated groundwater would discharge to the pond that could then overflow into the OFW? Tetra Tech confirmed that was the concern.

The Team reached consensus that based on groundwater and surface water sampling results, the groundwater plume is not impacting the OFW and, therefore, a weir is not warranted **(2210-D11).**

NASA is treating the Hot Spot that is upgradient of the pond. Tetra Tech will continue monitoring downgradient of the Hot Spot area for anything that may again approach the pond.

Results: Decision Item 2210-D11

2210-M07 Jennifer Gootee/AECOM

PFAS Confirmatory Sampling Activities Summary for the South Repeater Building (SWMU #121)

Objective:

The goal of this briefing is to describe confirmatory sampling (CS) activities and methodology for per- and polyfluorinated alkyl substances (PFAS), discuss results and make recommendations for site assessment.

Discussion:

The South Repeater Building and Multiple Object Tracking Radar are the two facilities at this location, and were constructed in 1964 and 2003, respectively. No potential PFAS use or storage activities were identified at either facility. However, a September 2021 sample from a monitoring well installed at a former generator location was analyzed for PFAS for completeness in advance of planned site closure. Perfluorooctane sulfonic acid (PFOS) was detected above the then-current groundwater screening level of 70 nanograms per liter (ng/L), which is also the State of Florida provisional groundwater cleanup target level (pGCTL). Inquiries led to a KSC Fire Chief who recalled having applied aqueous film-

forming foam (AFFF) near the Repeater Building to stop the advance of a wildfire in 1998.

NASA was concerned by the proximity of a residential area to the southwest of the South Repeater Building. In October 2021, direct push technology (DPT) groundwater samples were collected at three locations on the west side of B Avenue Southwest (also called Tel-4 Road); one to the west of the Repeater Building, one at the corner of KSC property and the residential area, and one further south between B Avenue and the residential area. The point furthest north had results above the PFOS pGCTL; the two southerly points did not have results above the pGCTL.

NASA initiated PFAS confirmatory sampling activities for the South Repeater Building area. In May 2022, EPA issued Regional Screening Levels (RSLs) for six PFAS compounds for water and soil. CS results for those media were compared to those values for perfluorooctanoic acid (PFOA), PFOS, perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS) and hexafluoropropylene oxide dimer acid (HFPO-DA; also known as GenX).

Lithologic borings were made at two locations and observations were used to guide selection of DPT groundwater sampling intervals. Three soil samples collected from clayey interval were analyzed to evaluate whether PFAS had sorbed into the organics. There were no detections of the PFAS with RSLs.

DPTs were advanced at 16 locations and a total of 70 groundwater samples were collected at up to five intervals. Eight new monitoring wells were installed in the shallow and shallow-intermediate intervals. Groundwater samples were collected from those wells and two existing wells. PFOA, PFOS and PFHxS were detected in concentrations above their respective RSLs: 6 ng/L, 4 ng/L and 39 ng/L. The highest concentrations of each were observed near the northeast corner of the Repeater Building, which is where AFFF is said to have been applied. For both PFOS and PFHxS, a secondary area of higher concentrations was observed in the western DPT locations.

Monitoring well water level measurements were made for evaluation of the groundwater flow direction. In the 2-12 foot below land

surface (ft. bls) and the 20-30 ft. bls intervals, groundwater flow was toward the west.

FDEP inquired how far is the western edge of the plume was from where the AFFF was applied. AECOM responded the distance is about 1000 ft. FDEP inquired about the groundwater velocity in this location. AECOM responded that the currently inferred plume edge suggests about 50ft/year for the average velocity, which is comparatively fast. FDEP asked if the reason for the secondary high concentration area on the west is understood.

AECOM said that the fire chief stated that AFFF was only applied on the east side of the road. NASA noted that a fire truck may have parked there and possibly leaked foam mixture. Did they test foam? We asked and they said no but it's been so long it could be inaccurate. FDEP noted that overspray could have occurred. There is one center-wide investigation DPT point out near State Road (SR) 3 that had a result above current RSLs. There is a former orange grove between the Repeater Building and SR3, and we considered it as a potential source. To date the forensic evaluation of sample results near the Repeater Building and in the western higher concentration area appear to be AFFF-related, though. There might also be surface water transport when the area floods. The drainage overall is toward the south and east.

FDEP inquired why the eastern side of the plume is depicted as having a limited extent. AECOM noted that the plume is inferred and there are plans to sample further east. NASA noted the east side of the buildings are prime scrub jay habitat. Sampling will be performed but we have to be sensitive on how to proceed, demonstrating the data dictates sampling further east before requesting clearing. The focus to date has been on the potential for off-site migration.

In summary, PFOA, PFOS and PFHxS are present in groundwater at concentrations above their respective RSLs. Forensics did not find a marked difference between the PFAS patterns on the west and east sides of the plume. There are no apparent sources other than the AFFF applied during the wildfire. The path forward is to begin Site Assessment, with a work plan to be submitted Soil samples will be collected to determine if there is a residual source of groundwater contamination or a potential direct contact risk. Surface water

samples will be collected from drainage ditches. Additional DPT groundwater samples will be collected, and more monitoring wells installed and sampled.

NASA is preparing to notify nearby residents of potential off-site migration. Information sessions are being planned for early 2023. discussed the process for getting authorization for possible sampling on neighboring property. FDEP asked whether NASA has reached out to the Department of Health yet? NASA has not. FDEP will initiate contact at the State level.

2210-M08 Mark Jonnet/ Tetra Tech

Fire Station #1 (SWMU #116), Sewage Treatment Plant #1 and Sludge Disposal Area (SWMU #117) PFAS Sites Assessment Update

Objective:

Present results to date for per- and polyfluorinated alkyl substances (PFAS) soil evaluation, soil cores, PFAS sediment evaluation, PFAS groundwater evaluation, PFAS surface water evaluation and path forward.

Discussion:

Fire Station #1(FS1) was constructed in 1964, housed crews and served as a maintenance and storage location for spent or expired fire extinguishers. It was formerly known as Fire Station #4. The Sewage Treatment Plant #1 (STP1) encompasses approximately 40 acres and includes STP1, Former Polishing Pond, Former Sludge Disposal Area, Former Spray Field, and the Paint and Oil Locker (POL) SWMU 067.

Tetra Tech presented the PFAS sampling results to date of the Fire Station #1, STP #1 and Sludge Disposal Area sites. Data for the Base Support Building (SWMU #014) was included since the PFAS plumes appear to be commingled.

Data generated by Site Assessment activities to date and prior results were screened against EPA's May 2022 tap water Regional Screening Levels (RSLs) for groundwater, resident RSL for soil, and

against the State of Florida human health Surface Water Screening Levels for surface water. There are currently no screening criteria for sediment. RSLs are available for 6 PFAS compounds: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), perfluorobutanesulfonic acid (PFBS), perfluorohexane sulfonic acid (PFHxS) and hexafluoropropylene oxide dimer acid (HFPO-DA; trade name GenX).

Data summaries include all samples collected to date in the area of FS1 and STP1. Samples collected prior to 12/2021 were collected by others. Field activities were performed in accordance with FDEP Standard Operating Procedures, PFAS sampling guidelines (Michigan Department of Environmental Quality) and the KSC Sampling and Analysis Plan. Global Positioning System coordinates were collected for each sample location. Quality assurance/quality control samples were collected due to the ubiquitous nature of PFAS. Pace Analytical Services analyzed PFAS samples and reported 28 PFAS compounds.

Shallow soil samples (0-0.5 and 0.5-2 feet below land surface [ft. bls]) were collected at five locations at FS1 and nine STP1/Sludge Disposal locations. Results exceeded the residential PFOS RSL in 6 of the 28 samples. Deeper soil samples were collected from one soil boring each at FS1 and STP1. Two intervals at FS1 had PFOS detections exceeding the residential RSL. Results from the STP1 boring were less than the residential RSL. There are no soil results with a PFAS result greater than the commercial RSL. The lithologic descriptions from the soil cores were used in selection of depth intervals for direct push technology (DPT) groundwater sampling.

Sediment samples were collected from nine locations at STP1/ Sludge Disposal Area and one location in the Region 1 (Industrial Area) Stormwater Pond (also called the Gator Pond). There were detections of PFOS in seven of the ten samples, and one detection of PFHxS. There are currently no State or Federal screening criteria for sediment.

For FS1, of the 126 groundwater samples from varying depths, 44 detected results were greater than the PFOA RSL, 60 detected results exceeded the PFOS RSL, 17 detected results exceeded the PFNA RSL, 13 detected results exceeded the PFBS RSL, and 38 detected

results exceeded the PFHxS RSL. Seventy-six samples were analyzed for HFPO-DA and there were no detections.

For STP1/Sludge Disposal Area, of the 218 groundwater samples from varying depths, 115 detected results exceeded the PFOA RSL, 122 detected results exceeded the PFOS RSL, 41 detected results exceeded the PFNA RSL, 2 detected results exceeded the PFBS RSL, and 86 detected results exceeded the PFHxS RSL. One hundred seventy-six samples were analyzed for HFPO-DA and there were no detections.

Twenty-four surface water samples were collected from stormwater ditches around FS1, STP1 and the Sludge Disposal Area. A sample was collected at the northwest corner of the Gator Pond in both August 2021 and March 2022. PFOA, PFOS and PFHxS were detected in all 26 samples, PFBS was detected in 24 samples, and PFNA in 18 samples. HFPO-DA was analyzed in 19 samples and detected in none. The State of Florida has surface water screening levels (SWSLs) for PFOA and PFOS. One PFOA sample result exceeded its SWSL (500 ng/L) and 24 PFOS results exceeded its SWSL (10 ng/L). The two results for the Gator Pond did not indicate a significant seasonal difference.

The Site Assessment for FS1 and STP1 will continue in phases. The upcoming phase emphasizes understanding groundwater and surface water interaction, as well as the extent of PFAS-affected groundwater. Potential human health risk by exposure to PFAS-affected soil is being managed by interim Land Use Control Implementation Plans (LUCIPs).

To show the correlation between proposed groundwater and surface water sampling locations, the image on Slide 34 displays PFOS groundwater sample locations less than 10 ft bls compared to PFOS RSL and surface water PFOS results compared to PFOS SWSL. The Team will continue plume delineation using DPT groundwater sampling based on RSLs. Monitoring wells will be installed adjacent to surface water locations with staff gauges. The co-located wells and surface water points will be sampled periodically. Groundwater level measurements and staff gauges will be read, and data evaluated to determine discharge from groundwater to surface water or from surface water to groundwater.

The image on Slide 35 displays surface water PFOS results. Future sampling will be focused on the flow path for Region 1 stormwater to discharge to the Banana River Lagoon and nearby points in the lagoon. Sample locations will include influent into the Gator Pond, effluent from the Gator Pond, associated borrow pits that are part of the stormwater management system, tributaries into Buck Creek, locations within Buck Creek, junction of Buck Creek and Banana River Lagoon with offsets north and south, isolated borrow pits northeast of Gator Pond to determine impacts, and four locations along Banana River Lagoon that will correspond to DPT locations on the shore.

Tetra Tech will email FDEP the drawing showing the proposed monitoring well locations **(2210-A06).**

Results: Action Item 2210-A06

DAY 2

2210-M09 Michelle Moore/NEMCON

Meeting Minutes and Miscellaneous Items

Team consensus was reached that Revision 1 of the meeting minutes and action/decision items for the September 2022 Team meeting will become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date **(2210-D12).**

Open action items were reviewed and closed at the October 2022 KSCRT meeting:

Launch Complex 39B (LC39B) (SWMU 009) - Revisit Team consensus (Decision 1810-D13) on weir installation based on permits date expiration and Year 2 performance monitoring results. Team consensus had been reached to suspend the weir installation since chlorinated volatile organic compound (CVOC) concentrations adjacent to the pond were below their respective groundwater cleanup target levels (GCTLs) and to re-evaluate the need for the weir prior to expiration of permits from the St. Johns River Water Management District (SJRWMD) and U.S. Army Corps of Engineers (USACE)on 11 July 2023.

The Team reached consensus in 2018 to re-evaluate the need for a weir near the Banana River Lagoon System Outstanding Florida Water (OFW) (Action Item 1810-M04, 1810-A02). Tetra Tech resampled in 2022 and evaluated lines of evidence. Upon reviewing the results (presented in this meeting (Minute 2210-M06), this action was closed out.

Contractors Road Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advance Data Package (ADP), March 2022: The ADP depicted direct push technology (DPT) groundwater vinyl chloride (VC) results from 46-60 feet below land surface (ft bls) in a single figure, which incorrectly suggested that there are results above the GCTL as deep as 60ft bls. FDEP inquired about VC results below 60 ft bls? NASA and HGL explained that DPT results achieved GCTLs at the 56-60 ft depth level. FDEP requested that this information be provided on separate figures (46-56 ft bls and a 56-60 ft bls), to show there is vertical delineation. This information was provided in the report submitted to FDEP on August 23, 2022.

Contractors Road Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advance Data Package, March 2022: FDEP requested a copy of the proposed 2021-2022 DPT sample points. FDEP referenced the 2020 DPT in the Hot Spot 1 area, noting some additional points on the southern side of the plume might be needed in the deeper interval. NASA responded they agree there exists a data gap on the southeast edge. In 2021, HGL collected more data to close those gaps but HGL and NASA will look to see if more data is needed in that locale. FDEP would also like to see the additional proposed points in the northwest area for defining the high concentration plumes. NASA will get FDEP their initial plan when it is prepared. The proposed DPT sampling locations were provided to FDEP on July 1, 2022.

Annual Update on the Interim Measure Operation, Maintenance, and Monitoring at Area South of K7-516 and Interim Groundwater Monitoring of 516S and Eastern Components Cleaning Facility, May 2022: FDEP recommended a monitoring well with results showing that the groundwater plume is not having an impact on the adjacent Barge Canal, which is an OFW. Along with the two surface water samples, the monitoring well sample would provide a reasonable

assessment. A screen interval similar to the other side of the air sparge curtain (27-37ft bls) seems appropriate. HGL suggested placing the new monitoring well closer to the barge canal, similar to MW36. Tetra Tech will come up with a recommendation and provide a map to FDEP. NASA provided a map with the suggested well locations to FDEP on June 19, 2022.

Annual Update on Launch Complex 34 (LC34): A brief site history and background were provided on LC34. FDEP inquired if the part of the plume that is above GCTLs discharges to the Atlantic Ocean. Tetra Tech stated they had temporary wells along the ocean. They can go back and pull together the data if this would be helpful. FDEP agreed this would be helpful to understand the history of the site. NASA provided this information by email to FDEP on August 2, 2022.

Annual Update on Launch Complex 34 : FDEP referenced Slide 15, which gives an overview of the hydraulic containment system (HCS). Are there groundwater flow maps available that present the depth to groundwater and groundwater flow within the capture zone? NASA requested this be captured as an action item to follow up on. NASA provided this information by email to FDEP on August 2, 2022.

FDEP noted that the information provided was capture modeling and FDEP would like to see water level measurements to support the capture zone. NASA and Tetra Tech will provide that data **(2210-A07).**

Annual Update on Launch Complex 34 : FDEP inquired if it was possible the northeasterly DNAPL Source Zone (DSZ) finger had been present prior to the 2019 recharacterization, but had been missed by earlier DPT points? Tetra Tech stated that it is possible and they took an action item to look at the 2019 recharacterization for DPT coverage in that area. Whether it was missed or moved, sampling indicates the plume has not come out from under the blockhouse. NASA provided the earlier sampling location and results information by email to FDEP on August 2, 2022.

Fluid Servicing Road Area Interim Groundwater Monitoring Summary, June 2022: The action item from June 2022 was for HGL to provide the 2020 DPT groundwater results for the Propellants

Support Building Area to the Team at the next meeting. Due to standing water, the planned DPT sampling had to be delayed. The results will be presented in a future meeting.

Results: Decision Items 2210-D12
Action Item 2210-A07

2210-M10 Howard Fowler/HGL

Base Support Building (SWMU 014) and KARS Park II (SWMU #118) PFAS Site Assessment Report

Objective:

The objective of the briefing is to summarize the site history and PFAS Site Assessment activities and results for the Base Support Building (SWMU 014) and Kennedy Athletic Recreation and Social (KARS) Park II (SWMU 118).

Discussion:

SWMU 014 Site History Overview

The Base Support Building (previously known as Maintenance and Operations [M&O] Building) is located southeast of the intersection of NASA Parkway and Kennedy Parkway in the Industrial Area. The building was constructed in 1964 and has been used to support space flight efforts including painting, carpentry, electrical work, vehicle and heavy equipment maintenance, fuel storage and dispensing, metal work, steam cleaning, and battery maintenance and storage. All KSC air rescue firefighting vehicles were maintained at the Base Support Building. Multiple environmental assessments and actions have been performed at the Base Support Building including underground storage tank (UST) removals, soil, groundwater, surface water and sediment sampling for volatile organic compounds, polynuclear aromatic hydrocarbons, and metals. No active groundwater remediation has been performed at the site. The site was in the KSC Industrial Area Long-Term Monitoring Program through 2018, when the groundwater cleanup target levels were attained for volatile organic compounds.

On November 2, 2006, a spill of Aqueous Film-Forming Form (AFFF) was reported to have occurred at the south tarmac of the

Base Support Building (M6-0486). Reportedly, a mixture of water and foam agent discharged from the fire engine plumbing when a mechanic opened the system for repairs. The mechanic contained the liquid on the pavement with spill socks and boom. The spill was reported to be approximately 20 gallons. During the Center-wide Per- and Polyfluorinated Alkyl Substances (PFAS) SWMU Assessment and Confirmatory Sampling project, perfluorooctane sulfonic acid (PFOS) concentrations were detected in groundwater and surface water samples above the State of Florida Provisional Groundwater Cleanup Level (pGCTL) and Surface Water Screening Level (SWSL) near the spill location and throughout the western Industrial Area. Two locations adjacent to the Base Support Building yielded samples with PFOS concentrations greater than 10,000 nanograms per liter (ng/L); reference Slide 16.

SWMU 118 Site History Overview

SWMU 118, KARS Park II, is located southwest of the intersection of NASA Parkway and Kennedy Parkway and west of SWMU 014. The area was developed as a recreational facility beginning in the late 1980s through 1990. The site has been used to stage construction materials and waste containers and includes two borrow pits used for road construction. It previously contained underground storage tanks. A spill of an unknown volume of AFFF reportedly occurred on May 17, 1993; however, additional details are not known. During the Center-Wide PFAS investigation, PFOS concentrations were detected in groundwater and surface water samples above the pGCTL and SWSL throughout the northern portion of KARS Park II including one location (PFAS-DPT0175) where PFOS concentrations were greater than 10,000 ng/L.

2022 Investigation Objectives

The initial objectives of the 2022 investigation were to delineate perfluorooctanoic acid (PFOA) and PFOS laterally and vertically to the pGCTL (70 ng/L separately or combined) and to develop a general understanding of the surface water and groundwater interactions at this area of KSC. The objective of the groundwater investigation was soon changed to delineating PFOS in groundwater to the SWSL of 10 ng/L. Following EPA's issuance of Regional Screening Levels (RSLs) in May 2022, the objective of the groundwater investigation was changed again to delineating to the RSLs of 4 ng/L for PFOS; 6

ng/L for PFOA, perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA; trade name GenX); 40 ng/L for perfluorohexanesulfonic acid (PFHxS); and 600 ng/L for perfluorobutanesulfonic acid (PFBS).

2022 Site Assessment Activities

The 2022 Site Assessment Activities included advancing two lithologic borings at SWMU 014 and one lithologic boring at SWMU 118 to a depth of 60 feet using a rotosonic drill rig. There were 105 direct push technology (DPT) groundwater samples collected from 22 locations at SWMU 014 and 57 DPT groundwater samples were collected from 11 locations at SWMU 118. Samples were collected with screen centerpoints at 5', 15', 256', 35', and 45' with and 55' samples added at 3 locations. Eleven surface water samples were collected from 11 locations at SWMU 014 and 17 surface water samples were collected from 8 locations at SWMU 118 using a dipper sampler. At 3 surface water locations at SWMU 118, 4 sets of surface water samples were collected between 5/16/22 and 6/23/2022 to evaluate temporal fluctuations in PFAS concentrations.

Between SWMU 014 and SWMU 118, 46 equipment and field blanks were collected. All results were below detection limits. Between SWMU 014 and SWMU 118, 26 field duplicate samples were collected. Two duplicate groundwater samples exceeded criteria for relative percent difference or limit of quantification for multiple compounds.

Lithologic Borings

Two lithologic borings were advanced at SWMU 014 and 1 lithologic boring was advanced at SWMU 118 to a depth of 60 feet using a rotosonic drill rig. The space between boring locations are 1,200 feet and 1,800 feet. The lithology of the three borings was highly variable. In general sand and shell was observed from land surface to a depth of 46 to 57 feet. The sand and shell layers were underlain by silt, shell and/or clay to a depth of 60 feet. The silt, shell and/or clay layer may serve as a retarding unit. Soil samples were not collected for laboratory analysis since the borings were placed in locations where deep PFAS impacts were not expected.

DPT Groundwater Sampling

Including the samples collected during the Center-wide PFAS investigation, 116 DPT groundwater samples collected at SWMU 014 and 65 DPT samples were collected at SWMU 118. Ninety-six samples exceeded the RSL for PFOS, 44 exceeded the RSL for PFHxS, 53 exceeded the RSL for PFOA, 12 exceeded the RSL for PFNA and 14 exceeded the RSL for PFBS. The estimated areal extent of groundwater with PFAS concentrations above the RSLs is 852 acres. The estimated areal extent of groundwater with PFAS concentrations 1000 times the RSLs is 19 acres.

To the north the plume is generally delineated along NASA Parkway. The plume is undelineated to the east and intermingled with multiple PFAS plumes from other SWMUs. The plume is partially delineated to the south and remains undelineated to the west. Vertical delineation still needed at 27 of 57 DPT sample locations below 45 feet. Three DPT samples were collected at 55' at 3 locations where PFOS concentrations at 45' ranged from 78.4 to 540 ng/L. PFAS concentrations were below RSLs in 2 samples (PFAS-DPT074 and PFAS-DPT0180). The PFOS concentration was 4.7J ng/L in the 3rd location (PFAS-DPT0183).

Surface Water Sampling

Between SWMU 014 and 118, 35 surface water samples were collected. Thirty-four results exceeded the FDEP SWSL for PFOS.

Four surface water samples were collected at 3 locations over a period of 5 weeks to observe the effect of precipitation on PFAS concentrations. In general, PFOS concentrations increased steadily during the study except for a slight decrease during the 2nd sampling event. Real time rain data was not available during the study. Staff gauges have not been installed in the study area. The study was inconclusive with respect to the effect of precipitation on PFAS concentrations.

In the vicinity of SWMU 014, all sampled surface water bodies have exceeded the SWSL (10 ng/L) for PFOS. PFOS concentrations exceed the SWSL at the point that connects to the stormwater system.

The canal on the east side of SWMU 118 is below the SWSL south of contact with the PFOS groundwater plume. PFOS concentrations

exceed the SWSL north of the contact point and west along the south side of Kennedy Parkway to the KSC Visitor Center. Before reaching the KSC Visitor Center, PFOS in surface water appears to be discharging back to groundwater based on similarities between the PFAS ratios in the two media.

The data to date suggests a source area at the Base Support Building with a resulting plume that underlies KARS II. A separate source area at KARS Park has not yet been found, although there was an AFFF release reported. Details on the release are lacking.

There was a question about the symbology on the slides that depict ratios of the PFAS compounds. HGL took an action to add a note to clarify for the reports **(2210-A08).** NASA would like to maintain consistency throughout all the PFAS presentations (e.g., triangle symbol for surface water, etc.). The NASA RPMs will get together and issue guidance to the A&E firms on the use of identifiers in presentations for consistency **(2210-A09).**

NASA noted for FDEP's information that the solar panel area north of the badging office was only recently developed (shown on Slide 35).

Summary

A single PFAS groundwater plume covers SWMU 014 and SWMU 118. To date, one source area has been identified. Other potential sources may exist. The PFAS plume appears commingled with other PFAS plumes to the east and remains undefined to the south and east. The plume has not been delineated vertically and extends to a depth of at least 55 feet. Boring logs indicate that the silt, shell and/or clay extends to a depth of at least 60 feet. This layer may serve as a retarding unit.

Nearly all sampled surface water bodies in the vicinity of SWMUs 014 and 118 have exceeded the SWSL for PFOS. PFOS concentrations exceed the SWSLs at points that connect to multiple stormwater canals in the western Industrial Area and at the canal on the east and north sides of KARS Park II. The PFOS groundwater plume appears to be discharging PFOS to the canal on the east and north sides of KARS Park II. Evidence of PFOS in groundwater discharging to surface water and PFOS in surface water discharging

to groundwater has been observed through the comparison of the ratios of PFAS analytes.

2023 Investigation Focus

The 2023 SLF PFAS investigation will treat KARS Park II and the Base Support Building a single study area (Western Industrial Area). The primary focus of the 2023 investigation will be on groundwater/surface water interactions. 2023 activities will include DPT groundwater sampling, monitoring well installation and sampling, staff gauge installations and surface water sampling. Water level measurements, staff gauge readings, surface water and groundwater samples will be collected on a quarterly basis from select locations.

FDEP inquired if we are sampling the water body north of the borrow pit? HGL responded that there is not a sample there. FDEP inquired if the water body is intermittent?

HGL stated that there is a surface water body. It was a difficult area to reach. NASA stated that clearing is an option if necessary. NASA took an action item to add a surface water sample there **(2210-A10).**

Regarding the overall Industrial Area, HGL did see a hydraulic divide between the Base Support Building and the Fire Station1/Sewage Treatment Plant 1 area. NASA added that there is commingling and we will likely have one Industrial Area program eventually.

Results: Action Items 2210-A08, A09, A10

2210-M11 Howard Fowler/HGL

<u>Fire Station #2, Former Sewage Treatment Plant #17, and Towway Area (SWMU 114)</u>

Goal:

The objective of the advance data package (ADP) is to summarize the site history and per- and polyfluoroalkyl substances (PFAS) Site Assessment activities and results for the Fire Station #2, Former Sewage Treatment Plant #17, and Towway Area. These locations are in the Shuttle Landing Facility (SLF) area.

Discussion:

Space Florida is building a road on the east side of the SLF which required dewatering. The dewatering plan was coordinated with FDEP. FDEP inquired if dewatering from the construction operations encroach on the SWMU boundary?

NASA called attention to the site layout on Slide 4. North of the apron area is where the dewatering occurred previously, and the effluent discharge locations are shown. Further north, at Sharkey Road, there is a PFAS release location where construction is planned. NASA will provide a dewatering plan for that area to FDEP in the near future. The dewatering of PFAS-containing groundwater is not affecting any area that FDEP is not already aware of.

NASA added there were sample locations with PFAS results above screening levels further to the east and west. This group of sites may eventually become one site under the SLF.

Site History Overview

Solid Waste Management Unit (SWMU) 114 is located at the southern end of the SLF near Banana Creek. SWMU 114 includes Fire Station #2 (Center-wide PFAS Investigation Location of Concern [LOC] 2), Former Sewage Treatment Plant (STP) #17 (LOC 12), the southern portion of the SLF Runway (LOC 14), Remote Launch Vehicle (RLV) Hangar (LOC 15) and Towway area.

Fire Station #2 was constructed in 2008 and has been active since. As of 2019, the building housed fire station personnel and equipment, including aqueous film-forming foam (AFFF). AFFF was reportedly discharged into the stormwater pond west of Fire Station #2 during annual equipment testing.

STP #17 was built around 1975 and demolished around 1998. STP #17 consisted of a small package treatment plant and percolation pond used for effluent disposal.

The SLF Runway consists of a 15,000-foot-long concrete runway. The runway was built in 1975 and serves as the primary end-of-mission landing site for the space shuttle orbiter. It is a fully functional airport. Potential uses of AFFF along the SLF Runway may have occurred during fire response efforts. On February 6, 2020, a spill of 5 to 8

gallons of AFFF was reported on the SLF apron area tarmac during a fire training exercise. The spill was reportedly rinsed off the tarmac with water and impacted two areas southeast and northwest of the tarmac.

The RLV Hangar-Flight Vehicle Facility was built in 2000 and is a 52,000 square foot (ft^2) active facility that currently houses Starfighters, Inc. aircraft. Anecdotal information was obtained that indicated a foam suppression system inside the hangar discharged; however, information obtained from the Landing Aids Control Building Confirmatory Sampling Report indicated that the fire suppression system at the RLV Hangar is water-based.

Groundwater and surface water sampling during the Center-wide PFAS investigation indicated widespread PFAS impacts to groundwater and surface water at SWMU 114 with the greatest concentrations detected behind Fire Station #2.

2022 Investigation Objectives

Investigation objectives were modified as PFAS screening levels evolved. The initial objectives of the 2022 investigation were to delineate perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) laterally and vertically to the State of Florida provisional groundwater cleanup level (pGCTL) (70 ng/L separately or combined) and to develop a general understanding of the surface water and groundwater interactions at this area of KSC. The objective of the groundwater investigation was changed to delineating PFAS compounds in groundwater to the Surface Water Screening Level (SWSL) of 10 ng/L for PFOS. When EPA released Regional Screening Levels (RSLs) in May 2022, the objective of the groundwater investigation was changed again to delineating to the RSLs of 4 ng/L for PFOS; 6 ng/L for PFOA, perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPF-DA, trade name GenX); 40 ng/L for perfluorohexanesulfonic acid (PFHxS); and 600 ng/L for perfluorobutanesulfonic acid (PFBS).

2022 Site Assessment Activities

The 2022 Site Assessment Activities included: advancing 2 lithologic borings to a depth of 60 feet using a rotosonic drill rig; collecting 114 DPT groundwater samples from 27 locations at screen centerpoint

depths of 5', 15', 25', and 35', with 45' samples also collected at 6 locations; collecting 15 surface water samples from 15 locations using a dipper sampler; collecting 4 concrete samples and 1 asphalt sample from known release locations with a hammer and chisel (0 to 2 inches); installing 18 shallow water table monitoring wells and 19 intermediate wells screened 25'-35' using a direct push technology (DPT) drill rig; installing 10 staff gauges; and collecting 1 round of water level measurements.

Twenty-five equipment and field blanks were collected. All results were below detection limits. Thirteen field duplicate samples were collected. Two analytes exceeded the relative percent difference (RPD) goal of 30% in the one duplicate synthetic precipitation leaching procedure (SPLP) concrete sample. All analytes met the RPD goal in all of the groundwater and surface water duplicate samples.

Lithologic Borings

Two lithologic borings were advanced to a depth of 60 feet using a rotosonic drill rig. The space between boring locations is 3,300 feet. The lithology of the two borings was highly variable. In general sand and shell was observed from land surface to a depth of 43 to 48 feet. The sand and shell layers were underlain by silt, shell and/or clay to a depth of 60 feet. The silt, shell and/or clay layer may serve as a retarding unit. Soil samples were not collected for laboratory analysis since the borings were placed in locations where deep PFAS impacts were not expected.

Monitoring Well and Staff Gauge Installations

Eighteen shallow monitoring wells (screened to intersect the water table) and 19 intermediate monitoring wells (screened 25'-35') were installed using a DPT drill rig. Ten staff gauges were installed in canals and ponds across the site. Water level measurements were made on August 3, 2022. Groundwater flow is similar between the shallow and intermediate depths. In general, groundwater flows from the northern corner of the site radially towards the west, southwest, south, and southeast. A groundwater divide appears to be present in the central portion of the towway.

Concrete and Asphalt Sampling

Four concrete samples and 1 asphalt sample were collected. PFOS concentrations in SPLP samples exceeded 4 ng/L in all of the samples. A PFOS concentration of 5,340 ng/L was detected in asphalt sample S114-AS0005.

NASA noted this is the only asphalt sample collected on center to date.

DPT Groundwater Sampling

Including center-wide PFAS investigation samples, 124 DPT groundwater samples were collected. Forty-nine exceeded the RSL for PFOS, 38 exceeded the RSL for PFHxS, 26 exceeded the RSL for PFOA and 1 exceeded the RSL for PFNA. The estimated areal extent of groundwater with PFAS concentrations above the RSLs is 704 acres. The estimated areal extent of groundwater with PFAS concentrations 1000 times the RSLs is 11 acres.

It is assumed the groundwater plume extends to Banana Creek to the east and south. To the north the plume remains undelineated. To the west it is generally delineated except for southwest and northwest areas. Vertical delineation still needed at 22 of 63 DPT sample locations. Vertical delineation is needed below 35 feet at 7 locations and below 45 feet at 15 locations. No samples have been collected below 45 feet.

Space Florida sampled their effluent as dewatering to the north of the apron area progressed (referencing slide 25). PFOS was not detected until last week or two of the effort. Effluent was discharged to the east along Astronaut Road, which will be kept in mind in future sampling efforts DPTs along Astronaut Road predate the discharge so there is a baseline. Will have to investigate south of the new road, which is parallel to and east of the SLF runway. The effluent discharge area didn't have connectivity to the SLF ditches NASA and HGL took an action to make a figure to show where all the effluent sample locations are **(2210-A11).**

Surface Water Sampling

Seventeen surface water samples were collected. Sixteen exceeded the FDEP SWSL for PFOS. Nearly all sampled surface water bodies have

exceeded the SWSL (10 ng/L) for PFOS, including at points that connect to Banana Creek.

Summary

In summary, multiple PFAS groundwater plumes have been identified at SWMU 114. As-yet unidentified source areas may exist. In general, groundwater flows from the northern corner of the site radially towards the west, southwest, south, and southeast. The PFAS groundwater plume is assumed to extend to Banana Creek to the south and east. The plume remains undefined to the north and west. The plume has not been delineated vertically and extends to a depth of at least 45 feet. A silt, shell and/or clay layer is present from a depth of 43 to 48 feet to at least 60 feet. This layer may serve as a retarding unit.

Nearly all sampled surface water bodies exceeded the SWSL for PFOS and concentrations exceed the SWSL at points that connect to Banana Creek. The highest surface water PFOS concentrations were detected in the pond behind Fire Station #2. There may be tidal influence on surface water.

All concrete and asphalt SPLP samples exceeded the PFOS RSL.

There are currently large distances between some sampling points. With more data, we will get a better resolution of groundwater and surface water interaction.

2023 Investigation Focus

The 2023 SLF PFAS investigation will include the Morpheus Test Site on the North End of the SLF and the Former SLF Rescue Building Site located on Sharkey Road in the midfield area, combining the entire SLF Area into a single study area. The primarily focus of the 2023 investigation will be on groundwater/surface water interactions. 2023 activities will include soil sampling, DPT groundwater sampling, monitoring well installation and sampling, staff gauge installations and surface water sampling. Water level measurements and staff gauge readings will be made, and surface water and groundwater samples will be collected from select locations on a quarterly basis.

FDEP agrees with the focus on the 2023 focus on hydraulics. NASA observed that there are now quite a few wells in the area and are starting to see the groundwater flow patterns.

Results: Action Item 2209-A11

2210-M12 Alex Murphy/Tetra Tech

SWMU 067 POL and SWMU #088 SW3 ADP

Objective:
Present site history, sampling results, and present path forward for Team consensus for chlorinated volatile organic compounds (CVOCs) at the Paint and Oil Locker (POL) SWMU #067 and Storage Warehouse #3 (SW3) SWMU #088. There is active treatment via air sparging in the POL Southern Treatment Area. The northern portion of POL and all of SW3 are in long-term monitoring (LTM).

Discussion:

FDEP had some initial questions regarding surface water bodies in the general area. There is a canal at the southern end of the POL southern treatment area sparge wells and below the southern edge of the SW3 low concentration plume. Is discharge to surface water a concern? Tetra Tech noted that sampling has been conducted across the canal in the past with clean results on the other side to confirm there is no migration. Further, the air sparge wells serve as a sparge barrier in front of the canal to for the POL plume. Tetra Tech formerly collected surface water samples at two locations in the canal with no detections. NOTE: Following the meeting, surface water results for the southern ditch (POL-SW0001 and POL-SW0002) were reviewed. There were no detections of VOCs in the 2017 semi-annual sampling events, after which surface water sampling was suspended. Prior to 2017, vinyl chloride was detected periodically above its surface water cleanup target level (2.4 ug/L).

The canal is part of the permitted stormwater management system for much of the Industrial Area.

FDEP pointed out that it looks like the POL low concentration plume (LCP) intersects a surface water body north of the canal. NASA

identified the water body as an old polishing pond formerly associated with Sewage Treatment Plant 1.

FDEP inquired if the Team has data specifically from that pond if someone were to ever request its environmental status? Tetra Tech stated the pond only contains water after a really hard rain. FDEP stated that the pond looks like a lake on some aerial photographs, but NASA clarified that it was more like a marsh or slough. Tetra Tech added that they collected groundwater samples around the 2014 timeframe where they utilized a drill rig in around the pond location and collected some discrete samples.

Operations, Maintenance and Performance Monitoring

The POL Southern Treatment Area air sparge system was started up in late January 2021 with the objective of reducing VOCs below natural attenuation default concentrations (NADCs). It consists of 145 air sparge wells spaced at a 15-foot radius of influence (ROI) in the suspected source area and a 20-foot ROI in the high concentration plume (VOCs in concentrations above NADCs). During Year 1 of operations (January 2021 to August 2022), the run-time was 67%. The primary factors for downtime were performance monitoring and troubleshooting short circuits of air into the ditch south of 5th Street.

Shallow Groundwater Plume (5-20 feet below land surface [ft bls])

Results from the October 2019 baseline direct push technology (DPT) sampling event indicated CVOCs greater than (>) 10XNADC within the 10 to 20 feet bls interval. During the baseline and operational period, only slight groundwater cleanup target level (GCTL) exceedances were observed. It is possible that the existing monitoring well network is not capturing any residual CVOCs within the shallow interval.

Intermediate Groundwater Plume (20-40 ft bls)

- Results from the October 2019 baseline DPT sampling event indicated trichloroethene in source zone concentrations (11,000 ug/L or higher) within the 20 to 30 feet bls interval. During the baseline event, only >10XNADC exceedances were observed.

- During the first quarterly sampling event, concentrations significantly reduced to less than (<) NADC values, with only 11 of the monitoring wells containing CVOCs >GCTLs during the reporting period.

- It is possible that the existing monitoring well network is not capturing any residual CVOCs within the intermediate interval.

Deep Groundwater Plume (>40ft bls)

Only slight GCTL exceedances were observed during the baseline sampling event. All monitoring wells were observed to have non-detect values of CVOCs throughout the operational period.

POL/SW3 DPT Groundwater Sampling

In support of the POL Southern Treatment Area performance monitoring and SW3 annual long-term monitoring, DPT groundwater sampling was conducted in October 2021 for SW3 and August 2022 for POL to evaluate the low-concentration plume boundaries and ensure plume migration off site is not occurring. For the POL Southern Treatment Area, DPT sampling also evaluated whether there was high concentration CVOCs that were not addressed by the existing well network. The SW3 results are discussed below in the LTM section.

The maximum TCE result in the Southern Treatment Area source zone was 4.3 ug/L in the 2022 DPT samples. All TCE, cis-1,2-dichloroethene and vinyl chloride results were below NADCs in the former high concentration areas and points on the fringe of the former high concentration areas. Cis- and trans-1,2-dichloroethene were not detected in concentrations above their respective GCTLs. The highest vinyl chloride result was 3.1 ug/L.

Based on performance monitoring and the October 2021 DPT results, the Team reached consensus to continue operation, maintenance, and monitoring (OM&M) of the air sparge interim measure to include:

Maintaining operation and maintenance of AS system through the period currently under contract (March 2023); transition the following 15 wells to semi-annual sampling: MW0008I, MW0012S, MW0014ID, MW0026S, MW0026I, MW0028S, MW0028I, MW0035SI, MW0036SI, MW0036I, MW0041SI, MW0042SI,

MW0043I, MW0044D, and MW0045I; transition the following 6 wells to annual sampling: MW0012I, MW0014SI, MW0014I, MW0017S, MW0022I, and MW0022D; remove the following 22 wells from performance sampling: MW0008S, MW0011S, MW0011I, MW0014S, MW0016S, MW0016I, MW0016D, MW0018S, MW0018I, MW0018D, MW0035S, MW0039ID, MW0043S, MW0043D, MW0044I, MW0045S, MW0045D, MW0046D, MW0046DD, MW0047I, MW0047D, and MW0047DD; and conduct one annual round of ambient air sampling (5 samples) **(2210-D13).**

Tetra Tech will prepare a Year 2 Performance Monitoring Report and submit to FDEP through NASA.

Based on attainment of treatment objectives, recommend discontinuing AS system operation at the end of the currently contracted period and transitioning to LTM for the Southern Treatment Area.

LTM

DPT was conducted in Oct 2021 targeting the LCP. In 2020, Tetra Tech performed DPT sampling around MW28 that led them to go more south. MW28 was inconsistent with the results and they wanted to know if it was isolated so they went south more and it warranted additional LCP delineation. The northernmost monitoring well was sampled in 2019 and it was all non-detect. There was consistently potentiometric flow to the SE in this location.

Slide 69 shows where it peaked at MW34S in Oct 2018. Right before that in March we shut down the air sparge trailer. Additional sampling seems to be isolated around MW34S. It is clean around there from a DPT perspective. We sample this location on a quarterly basis. It matches seasonal events and seems to be impacted by the water flow but not migrating anywhere. It is now consistently below NADC.

NASA inquired if the hard pan is at 7ft here and if we are screened 5-15ft? Tetra Tech stated the water table is 5-6 ft here.

FDEP inquired if the Team had a downgradient monitoring well at the same interval? MW31S is south and MW9S is a little further south. Tetra Tech has a shallow monitoring well associated with the

LCP. As time progresses, FDEP inquired if we would keep monitoring those wells, to which Tetra Tech responded yes.

FDEP inquired regarding Slide 45 if the green plume is north of the blowout? Is this migrating south into the sparge field? Tetra Tech stated that MW34s had exceedances of VC with variable concentrations and they wanted to confirm some things. The sampled the soil in the hardpan that might contribute to the organic layer based on spikes. They found TCE above leachability that could have been impacting the location.

NASA added that they discontinued air sparging in that area in March 2018. Aside from that one well, everything else was below the Corrective Action Objective. Monitoring well 31s is located in the middle of the road. Tetra Tech stated there was a chem-ox injection in the road and they had to perform road closures to support.

NASA inquired with regards to Slide 47 if we need to add additional monitoring well to the north. Let's look at it when we get to the LTM portion and discuss.

The Team reached consensus to transition POL-MW0034S and POL-MW0031S to a semi-annual sampling frequency **(2210-D14).**

The Team reached consensus to remove SW3-MW0001 and SW3-MW0006 from the LTM program. Results were less than GCTLs in November 2020 and October 2021 **(2210-D15).**

FDEP inquired if NASA has thought to abandon and reinstall MW34s? Tetra Tech stated they have used cameras to scope the interior of the well and there is no readily observed issue. FDEP inquired if this was a real TCE source? Tetra responded they believe the TCE is caught up in the organic hard pan and that is the location of the former drum storage of TCE. Sampling this location in the past showed some in the hard pan directly around the (10x10ft).

The SW3 monitoring network consists of performance monitoring wells along the plume axis. DPT groundwater sampling has been used to define the plume perimeter. The addition and locations of monitoring wells on the west, east, downgradient edge of the plume and south of the southern canal was discussed. The new well to the east may have a dual purpose of monitoring per- and polyfluorinated

alkyl substances in the former sludge disposal area and VOCs for SW3. FDEP requested that NASA have a single figure in the report that shows all the wells being sampled.?

Tetra Tech will create a figure of the proposed monitoring well locations, which will include the plume acreage **(2210-A12).**

For the path forward, FDEP inquired if NASA would be submitting an LTM work plan for the site. NASA stated they would. They will also add on contract this year an update of the Land Use Control Implementation Plans (LUCIPs) for POL and SW3.

Results: Decision Items 2210-D13 through D15
Action Items 2210-A12

2210-M13 Anne Chrest/NASA

CAMP Look-Ahead

The most recent Corrective Action Management Plan (CAMP) was sent out prior to the meeting. NASA received some changes from team members and that will be captured in the next CAMP that is sent out.

NASA has some Site Rehabilitation Completion Requests (SRCRs) in Strives at this time. In November, NASA has a handful they will be submitting.

2210-M14 KSCRT

Miscellaneous Discussion

November/December KSCRT Meeting Potential Topics:

1. False Cape Data Collection Annex (former PRL 217) Monitoring Well locations Howard Fowler (30 minutes)
2. GSA Reclamation Yard West Tim Jellet (45 minutes)
3. Q6 Radar Station (30 minutes) Chad Lee
4. PFAS update VAB North and FFS #2 (90 minutes)
5. MLPV HS3 IMWP (60 minutes)
6. VAB LTM LC39 OGA DPT results (30 minutes)
7. LC 34 DNAPL SZ RAE Mark Jonnet & Others (4 hours)
8. CHP DPT (potentially) Alex Murphy

Remaining 2022 Meeting Dates
November 30th-December 1st, 2022

2023 Meeting Dates (continues to be hybrid option in 2023)
February 9th and 10th
April 5th and 6th
June 8th and 9th
August 3rd and 4th
October 5th and 6th
November 30th and December 1st

FDEP
15-20-minute FDEP update by Program Manager

Ryan O'Meara is the team leader next meeting so email topics to this individual after the meeting is over.

October 2022 Decision Items		Decision
Decision No.	**Minutes Reference**	
2210-D01	2210-M02	**C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan:** The Team reached consensus to conduct Biennial Long-Term Monitoring in 2024 for target CVOCs at the former hot spot location (MW0021), downgradient of the former hot spot (MW0019I, MW0023 and MW0025) and at wells that have not attained two consecutive events below the GCTLs (MW0004S, MW0004I, MW0018S, MW0022 and MW0024).
2210-D02	2210-M02	**C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan:** The Team reached consensus to transition site back into the VAB area long-term monitoring program until the GCTLs are attained for two consecutive events at each location.
2210-D03	2210-M02	**C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan:** The Team reached consensus that the PFOS detection above the RSL should be addressed through a separate PFAS investigation.
2210-D04	2210-M03	**LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022:** The Team reached consensus to transition operation of air sparge system to operate air sparge wells (ASWs) 6, 8, 14, 15, 16, 17, 26 in the MW09 Area for a longer duration and ASWs 1, 2, 3, 5, 11, 12, 19, 20, 21, 24, 25 along the edge of the former low concentration plume (LCP) to continue being protective of OFW; and to shut down ASWs 4, 7, 9, 10, 13, 18, 22, 23 based on the area around them being less than GCTLs.
2210-D05	2210-M03	**LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022:** The Team reached consensus to reduce sampling frequency for all wells to semi-annual.
2210-D06	2210-M03	**LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022:** The Team reached consensus to conduct a DPT investigation to determine if any contamination exists beyond MW09 and the influence of the sparging treatment zone.
2210-D07	2210-M03	**LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022:** The Team reached consensus to include PFAS analyses for MWs 10 and 11 during the semi-annual sampling events.
2210-D08	2210-M05	**LC39B (SWMU 009) LOX Area DPT Investigations and Air Sparging:** The Team reached consensus to expand air sparging network by installing three wells screened 11 to 13 feet below land surface and two wells screened 15 to 17 feet below land surface. Final depths will be confirmed by soil cores.
2210-D09	2210-M05	**LC39B (SWMU 009) LOX Area DPT Investigations and Air Sparging:** The Team reached consensus to collect soil samples for analysis of polynuclear aromatic hydrocarbons (PAHs) and total recoverable petroleum hydrocarbons (TRPH).
2210-D10	2210-M05	**LC39B (SWMU 009) LOX Area DPT Investigations and Air Sparging:** The Team reached consensus to install one monitoring well downgradient of the treatment area and add it to the air sparge system performance monitoring program on a semi-annual sampling frequency.
2210-D11	2210-M06	**Launch Complex 39B (SWMU #009) Weir Evaluation:** The Team reached consensus that based on groundwater and surface water sampling results, the groundwater plume is not impacting the OFW and, therefore, a weir is not warranted.
2210-D12	2210-M09	**Meeting Minutes and Miscellaneous Items:** Team consensus was reached that Revision 1 of the meeting minutes and action/decision items for the September 2022 Team meeting will become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date.
2210-D13	2210-M12	**SWMU 067 POL and SWMU #088 SW3 ADP:** Maintaining operation and maintenance of AS system through the period currently under contract (March 2023); transition the following 15 wells to semi-annual sampling: MW0008I, MW0012S, MW0014ID, MW0026S, MW0026I, MW0028S, MW0028I, MW0035SI, MW0036SI, MW0036I, MW0041SI, MW0042SI, MW0043I, MW0044D, and MW0045I; transition the following 6 wells to annual sampling: MW0012I, MW0014SI, MW0014I, MW0017S, MW0022I, and MW0022D; remove the following 22 wells from performance sampling: MW0008S, MW0011S, MW0011I, MW0014S, MW0016S, MW0016I, MW0016D, MW0018S, MW0018I, MW0018D, MW0035S, MW0039ID, MW0043S, MW0043D, MW0044I, MW0045S, MW0045D, MW0046D, MW0046DD, MW0047I, MW0047D, and MW0047DD; and conduct one annual round of ambient air sampling (5 samples).

October 2022 Decision Items		Decision
Decision No.	**Minutes Reference**	
2210-D14	2210-M12	**SWMU 067 POL and SWMU #088 SW3 ADP:** The Team reached consensus to transition POL-MW0034S and POL-MW0031S to a semi-annual sampling frequency.
2210-D15	2210-M12	**SWMU 067 POL and SWMU #088 SW3 ADP:** The Team reached consensus to remove SW3-MW0001 and SW3-MW0006 from the LTM program. Results were less than GCTLs in November 2020 and October 2021.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Comments
1712-A01	1712-M07	Team	If a document contains materials controlled under EAR99 (as determined by Export Control), the following clause shall be included on the first page (Action item): "EAR99 – NO LICENSE REQUIRED This information or item is controlled under the Export Administration Regulations (EAR) as EAR99. It may be exported without a license, expect to embargoed/designated countries (General Provision Six) or entities of concern. The designation of EAR99 does not constitute public release. Per Lori Ray, Reference STI TN#### NASA KSC Export Control Office, 321-867-9209."	Open	Standing Open Item
1810-A01	1810-M01	Team	NASA legal is concerned about copyright infringement regarding the inclusion of lab reports in documents. Reach out to labs to get release statements from them for the lab reports.	Open	Standing Open Item
2002-A03	2002-M10	A&Es	NASA requests that all A&E firms please large file transfer the .pdf and PowerPoint versions of the ADPs being presented so they can be uploaded to the folder and utilized for the team meeting. Cover letters should summarize the goal of the ADPs and the consensus statements should be provided for the minutes.	Open	Standing Open Item
2102-A09	2102-M13	Team	General Comment: FDEP observed that, based on the current monitoring network and plume depiction, one could think the plume is not delineated. Trepidations exist about making decisions without understanding how MNA has progressed. For clarity moving forward, the NASA lead requested that future documents include the end point assessment map that shows that we have plume delineation at a site, as well as a cross-section reference (e.g., what was the last map that brought us to the point of LTM, and where are we now [all the circa data circa]).	Open	Standing Open Item
2102-A07	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (ORSY Site):** FDEP inquired about past results for monitoring well ORSY-DRM-MW0001I. NASA stated they will look into the historical sampling results and get back with the Team.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A08	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (EHF Site):** FDEP and NASA discussed the site. NASA stated that the MNA program is routinely optimized, but this site was never included in an engineering evaluation process. Mounding takes place at this location, and a building was removed in the past few years. NASA took an action item to review the sampling data in the RFI for this location.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A10	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (M7-505 Site):** NASA took an action item to investigate if there are deeper data points around the location of MW0033.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A11	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (GSSP Site)**: FDEP inquired if this site was delineated to the northwest of the lake, and if we have vertical delineation at this location. NASA stated a site characterization was performed in 2012. In 2009, DPT55 was placed on the west side of the pond (west of MW0035) and DPT56 was located on the east side of the pond (20ft NW of the location of monitoring wells MW0033, MW0034, and MW0035). On the west side there were no detections, and on the east side there were low detections. Surface water was also sampled here. NASA took an action item to provide this data to FDEP for reference following the meeting.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A12	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (KARS Park 1 Site):** FDEP inquired if this was a skeet range previously? NASA stated there was a rifle/pistol range with a skeet range to the west (reference slide 154). FDEP inquired on the groundwater in the rifle/pistol range area? NASA stated that the groundwater was not monitored in that area. Tetra Tech pulled up the old wells in a previous presentation figure during the meeting. The only well shown in the area of discussion was in the lead shot area (KP1-MW0007). FDEP stated they would like to know what happened west of LOC 9 if NASA can provide that data. NASA took an action item to look into this.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2106-A01	2106-M03	NASA/FDEP	**NASA Remediation Program Updates, June 2021:** FDEP stated that, regarding the existing Statement of Basis template being acceptable, it would be best for FDEP and NASA to have a follow up meeting to review the current template. FDEP and NASA can decide from there.	Open	
2106-A02	2106-M03	NASA/FDEP	**NASA Remediation Program Updates, June 2021:** Regarding updating the Statement of Basis (SB) for a site after an IM has taken place (post initial SB publication), FDEP agrees that this is an administrative item and it does have significance. For the Federal Facilities Branch, it may not be critical to see the change in SB post IM, but the RCRA Program may have a different perspective. We need an understanding of what are considered significant changes on the permit, what triggers public notification, etc. That is a conversation NASA and FDEP should have to provide firmer ground on what is required going forward.	Open	Most of this has been addressed in the current permit modification, but still need a follow up meeting with FDEP to discuss the SB requirements.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
1906-A01	1906-M01	NASA (Ryan O'Meara)	Per FDEP correspondence letter dated (March 22, 2019) RPM Ryan O'Meara will provide a site history of the Visitor Center Maintenance Area (SWMU 099) at a future team meeting.	Closed	10/2/2019	Discussion earlier this month with FDEP
1906-A02	1906-M11	FDEP	Discuss with FDEP Management to ensure Alternative Soil Cleanup Target Levels approved for use by Cape Canaveral Air Force Station for barium and copper may be applies to Kennedy Space Center sites.	Closed	8/8/2019	FDEP indicated that the ASCTLs that have been approved for use at CCAFS by the University of Florida can be referenced and applied to KSC sites. FDEP sent the Team an email on this subject on 6/27/19.
1908-A01	1908-M03	NASA Remediation Program wide	An action item was added for the NASA Remediation Program to begin adding a references section in all new and revised LUCIP documents moving forward.	Closed	2/6/2020	FDEP approved the use of a site-specific document reference within the NASA LUCIPs that states, "Site-specific documentation is available for review by contacting the Environmental Assurance Branch at telephone number (321)867-6971", moving forward.
1908-A02	1908-M04	FDEP	FDEP will check with their records department to add language that requires the preferred submission method of a report cover page with the CD only for report submittals moving forward.	Closed	10/23/2019	No FDEP mentioned record - this submittal method is acceptable.
1910-A01	1910-M02	NASA & TetraTech	Launch Complex (LC) 34 (SWMU CC054): DNAPL Source Zone Site Characterization Engineering Evaluation and Remedial Alternatives Evaluation (RAE) for the DSZ discussed the MWs in Layer 8 vertically delineating the TCE (four existing and four newly installed wells were sampled). The Team discussed the Layer 8 wells and recommended they be sampled as part of the next annual plume-wide sampling event scheduled in Dec 2020. An action item for NASA was added to work with Tetra Tech to make sure the deep wells get incorporated into the sampling program accordingly.	Closed	4/16/2020	These wells have been incorporated
2002-A01	2002-M07	A&Es	NASA requests that any updates to the PFAS six questionnaires be provided to Mark Speranza with Tetra Tech so he can utilize those same questions at other sites where Tetra Tech is investigating PFAS.	Closed	4/16/2020	No updates to questionnaires
2002-A02	2002-M07	FDEP	FDEP to look into the review and responses of the following document "White Paper: Development of Surface Water Criteria for PFOA and PFOS based on the protection of aquatic receptors" published by the Center for Environmental & Human Toxicology at the University of Florida , and provide input back to the Team.	Closed	6/18/2020	John Winters looked into and provided response on 05/22/2020 to the Team.
2008-A01	2008-M02	AECOM	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: There seems to be a gap of treatment with regards to wells IS1, 1D and 6IR and if the HS2 area is turned off, is there a concern of contaminants slipping through? AECOM clarified that these sparge wells are spaced closely but not operating at the same time. The ROI distance and spacing in the expansion was based on what was learned from the original system design. Looking at DO and ORP, and performance monitoring, AECOM is not seeing data that this area is not being treated. NASA inquired if the wells 1S, 1D, and 6IR are being sampled? AECOM stated these are not being sampled, but they will take an action to research why and come back with an explanation to FDEP.	Closed	10/8/2020	Teams meeting with AECOM on 8/27/20 - The recently observed ROI of the BS system overlaps at the space between treatment barrier walls, therefore there is not gap in treatment. IW0006IR was not sampled because collective data from previous DPT investigations indicated VOCs > 100 ug/L was not present at the 6IR location and that the ROI of treatment wells was treating the targeted >100 VC plume as designed. IW0001S was not sampled because it is not within the treatment interval. Conclusion: IW0001D and IW0006IR will be included in the upcomming September 2020 sampling event. IW0006IR will continue to be monitored for VOC and dissolved oxygen (DO) during OM&M events.
2008-A03	2008-M02	AE Firms	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: NASA asked the AE firms to query their teams to find out what sites are sampling using PDBs.	Closed	10/8/2020	HGL and Tetra Tech are not using PDBs at any of their sites. AECOM to look into the sites where this may be used and will report back to NASA. AECOM followed up with NASA that two sites were planned for use of PDBs to include Wilson Corners and the VAB LTM. Per NASA's request, PDBs will no longer be used in sampling moving forward, but the preferred "low-flow" sampling will be used from this point on.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2008-A04	2008-M03	AECOM	GSRY Reclamation Yard (SWMU #0010) - An April 2020 approval letter from FDEP regarding UIC at the site statied that since Provect-OX was applied to the saturated subsurface in multiple LDA/caisson excavation cells, monitoring for appropriate Underground Injection Control (UIC) parameters was recommended for a subset of wells, and should be analyzed for the iron, manganese, and sodium. After one year, sampling frequency and locations should be assessed. This means that the Team would need one additional sampling round to meet that year timeframe. AECOM will take an action to update the presentation prior to uploading to RIS for the records	Closed	10/8/2020	AECOM's Jennifer Joyal confirmed this presentation was updated prior to uploading to RIS.
2008-A05	2008-M07	FDEP	FDEP stated that the department has been doing a pilot project beginning with listing out dry cleaner and other cleanup sites. This PFAS tracking spreadsheet has minimal data and link to the reports associated with them, and the state is really trying to identify the max concentrations by media type. It is interesting to see what is coming up. AECOM inquired if the state has a list issued for the hazardous waste sites? AECOM did locate the dry-cleaning list. FDEP stated there are links in the spreadsheet to all different facilities to include landfills and electroplaters. There is an updated version of the tracking sheet, and FDEP will send out a copy to the Team.	Closed	10/8/2020	Laura Barrett (FDEP) provided the latest version of the tracking sheet to the Team.
1906-A03	1906-M09	NASA (Deda Johansen)	Component Refurbishment and Chemical Analysis (CRCA) facility (SWMU 041) Follow-up with NASA Compliance to determine if piping/sumps within the main CRCA building (K6-1696) and adjacent hazardous storage building are double-lined and compliant with Spill Prevention, Control, and Countermeasure (SPCC) requirements.	Closed	12/10/2020	NASA reached out to Jeff Bobersky (NASA Compliance SPCC) on this topic, and was referred to Albert Gibson (NASA Compliance Haz Materials/ Haz Waste) for answers. This piping is not subjec to SPCC double-lined requirements, and should be discussed from a hazardous materials/haz waste compliance standpoint. Project has been reassigned from Ryan O'Meara to Deda Johansen
2010-A01	2010-M02	NASA	Components Refurbishment and Chemical Analysis (CRCA) Solid Waste Management Unit (SWMU) #041, Year 1 Operations Maintenance and Monitoring: NASA took an action item to transition MW0032 to quarterly monitoring.	Closed	12/10/2020	MW0032 has been transitioned to quarterly monitoring
2010-A02	2010-M02	NASA (Deda Johansen)	Components Refurbishment and Chemical Analysis (CRCA) Solid Waste Management Unit (SWMU) #041, Year 1 Operations Maintenance and Monitoring: NASA took the action to present a basket item after the next two rounds of quarterly groundwater data, which will take place in October 2020 and January 2021	Closed	12/10/2020	Tetra Tech presented groundwater data in a basket item at the 12/10/2020 KSCRT meeting to update FDEP on the October sample results for monitoring well CRCA-MW0032, and propose installation of MW0033 to monitor the downgradient plume edge west of MW0032
2010-A03	2010-M3	NASA (Anne Chrest)	KSC Headquarters Building Area (KHQA) (SWMU #104) Perimeter Soil IM Completion: NASA will provide a copy of the Interim Measure Work Plan for LOC 2D and 2E to FDEP	Closed	12/10/2020	Anne provided after meeting - FYI only and previously submitted and approved by FDEP earlier regime.
2010-A04	2010-M04	Tetra Tech	LC34 DNAPL Source Zone Remediation Alternative Evaluation (RAE) Discussion and Proposed Pilot Study, October 2020: Aquifer testing was conducted in 2019 for Layer 7. During the test, an upward gradient was observed in well pairs screened in Layers 6 and 8, suggesting an upward gradient. FDEP inquired if the Team recalls how much of a gradient was observe? TetraTech will take an action to provide that information following the meeting to FDEP.	Closed	12/10/2020	Mark Jonnet (Tetra Tech) provided the requested information to Kirk Johnson (FDEP) by email on 10/9/2020. Water level elevations at the paired wells differed by 0.7 to 0.8 ft and the average vertical gradient was 0.02 ft/ft.
2008-A02	2008-M02	AECOM & NASA	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: An action item was assigned to NASA and AECOM to convene and review past data and devise a plan to present to the state regarding the data gap in the northwest portion of the site, and the downgradient wells that serve as the points of compliance, where the vinyl chloride results have recently exceeded its groundwater cleanup target level (1 µg/L) and show signs of increasing.	Closed	2/17/2021	AECOM is under contract to conduct additional groundwater assessment and installation of wells to the east of the biosparge barrier and railroad tracks. Up to 10 monitoring wells will be installed based on the results of the groundwater assessment.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2012-A01	2012-M02	NASA (Deda Johansen)	Maintenance and Operations (M&O) Building (SWMU #014) Confirmation Sampling Work Plan for Soil Land Use Control Implementation Plan (LUCIP) Removal, December 2020: NASA (Deda Johansen) took an action item to look more into the site history for data from the prior investigation	Closed	2/17/2021	A bibliography with brief descriptions of document content was prepared. It will be included in HGL's upcoming Confirmatory Sampling Work Plan for Soil LUCIP Close-out
2012-A02	2012-M03	NASA (Mike Deliz)	Review of Site Status and Deliverables, December 2020: FDEP inquired if NASA will be going over the outstanding CAMP documents later on, or if a list could be provided. NASA (Mike Deliz) took an action item to consolidate and send the outstanding document summary to FDEP	Closed	2/17/2021	A consolidation of the outstanding CAMP documents was provided to FDEP following the meeting
2102-A01	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP asked about the TDS and sodium results in the bioremediation area that are above Class GII groundwater standards. NASA responded that the sodium and TDS are compared to the KSC background levels, and took an action to provide the approved plan and data to FDEP for future reference.	Closed	4/28/2021	Completed - NASA sent both the background study and the approval letter to FDEP on 2/19/2021. A follow-up meeting was held between NASA, FDEP and HGL on 3/1/2021. FDEP requested a copy of the Decision Process Document, and as a follow-on later requested a copy of the actual background study. On 4/18/2021, FDEP recommended that NASA identify a suite of wells at the site that can be used to generate site-specific background information. NASA will follow that recommendation.
2102-A02	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP inquired if NASA has an UIC approval order to identify what NASA is using? NASA stated UIC monitoring was approved as part of the IM work plans that will be provided to FDEP .	Closed	4/28/2021	NASA provided FDEP with the 2016 and 2018 Bioremediation Work Plans that included the UIC Notifications as an appendix in each.
2102-A03	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP inquired if the Team resampled for benzene and chloroform at the site, and found these not to be a risk? NASA performed a real-time investigation during the KSCRT meeting of past data and did not find resampling of benzene. Since no soil benzene source was identified in soil or groundwater, and the detections did not exceed the commercial level, NASA submitted these sampling results to the NASA Industrial Hygiene Office for review. FDEP would like to see the email to help understand the resampling and rationale of the dropping of these chemicals off the sampling list. NASA will provide this benzene data to FDEP and have a discussion to review the data and also the UIC information from May/June 2014.	Closed	4/28/2021	NASA sent the Vapor Intrusion Memorandum to FDEP on 2/19/2021. A follow-up meeting was held between NASA, FDEP and HGL on 3/1/2021. FDEP's primary concern was that the sub-slab vapor results would be acted on if needed. NASA explained that KSC's Industrial Hygienist was consulted about the findings which FDEP had concerns about and found no need for action, and that vapor sampling results will continue to be provided to KSC's Environmental and Occupational Health organization.
2102-A04	2102-M10	NASA (DJ)	GSA Reclamation Yard (SWMU#010), DPT Results, February 2021: FDEP pointed out that the iron in monitoring well MW0071 exceeded the secondary standard. What is the basis for not including monitoring well MW0071? NASA responded that the results for iron were within the range of background values for KSC, and will provide documentation. FDEP stated that site-specific background data may be needed at some point. NASA took an action item to look at the RFI for that data, and provide to FDEP.	Closed	4/28/2021	The RFI and CMS groundwater metals data for GSRY were reviewed. The majority of the data are from the upper horizon of the aquifer (30 ft. or shallower), while the zone treated with Provect-OX™ was 40-50 ft below ground surface. In the 2021 wet season groundwater sampling event, samples for iron will be collected from a site well outside the treated area.
2102-A05	2102-M13	NASA (RO)	needs to be a downgradient well establishing the extent of the plume at FSA1 (PRL #157). Do we have one? AECOM took an action item to look into that request	Closed	4/28/2021	NASA will be installing a downgradient well.
2102-A06	2102-M13	NASA (RO)	Industrial Area LTM, February 2021 (FSA1 Site): NASA stated they will take a look into the prior DPT data to see if we need to install that well and provide the Team with an update and make a recommendation	Closed	4/28/2021	NASA will be installing a downgradient well.
2104-A01	2104-M04	NASA (AMC)	Area South of K7-0516 and Eastern Component Cleaning Facility (SWMU #030) Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: An action item to incorporate surface water sampling into the CCF monitoring program was assigned to NASA and Tetra Tech	Closed	6/22/2021	This surface water sampling was incorporated in the barge canal sampling program moving forward.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2012-A03	2012-M03	NASA (MD)	Review of Site Status and Deliverables, December 2020: Mike will summarize the look ahead and send a detailed version to FDEP that will provide site histories, what NASA has completed, and where they are going (plume maps, the works). FDEP inquired if they could also obtain a copy of the slides being presented today. NASA confirmed they would provide the slides via large file transfer	Closed	9/15/2021	Look ahead and maps have been provided to FDEP by NASA
2104-A02	2104-M04	NASA (AMC)	Area South of K7-0516 and Eastern Component Cleaning Facility (SWMU #030) Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: FDEP requested that the sampling plans for 2021 be documented in a letter since there will not be a report submitted this year for this site. NASA stated they would put a memo together and provide the work plan for the next year of monitoring	Closed	9/15/2021	FDEP referenced the April 2021 advance data package (ADP) in their review letters dated May 11, 2021 (for CCF, SWMU #030) and May 12, 2021 (for 516S, SWMU #100). Both letters state additional groundwater assessment activities will be conducted in 2021. This work has been delayed and will now occur in early 2022. The proposed sampling plans were presented in the April 2021 ADP. Revisions to the CCF East sampling plan will be presented at the September Team meeting. This meets the intent of this action item.
2106-A03	2106-M03	NASA	NASA Remediation Program Updates, June 2021: FDEP received a request from Florida Today requesting documents associated with PFAS on KSC. NASA stated they will provide the Oculus document/report names to FDEP to assist with the inquiry.	Closed	9/15/2021	NASA assisted FDEP with this inquiry
2012-A04	2012-M04	NASA (MD)	Firex Water Tank (SWMU #069) Confirmation Sampling Work Plan for Soil LUCIP Removal, December 2020: NASA (Mike Deliz) took an action item to see what NASA can find out on these discharge reports	Closed	11/9/2021	Internal discharge records were located and saved to the NASA shared drive. No additional spill records have been located for the release(s). The site entered the RCRA process through a SWMU Assessment and was added to KSC's RCRA Permit Appendix A. A Discharge Report Form does not appear to have been filed.
2109-A02	2109-M09	NASA (MJD)	KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021: NASA has conducted sampling in the Indian River for PFAS. NASA to provide FDEP with the surface water sample results from the Indian River	Closed	11/9/2021	Sample results provided to FDEP
2109-A01	2109-M09	NASA (AC)	Wilson Corners (SWMU 001) High Concentration Plume Site Characterization and Revised AS System Layout, September 2021: NASA will send historic groundwater sampling data to FDEP.	Closed	1/11/2022	This data was provided to FDEP on November 9, 2021, during the KSCRT meeting.
2109-A03	2109-M14	NASA (DJ)	General Services Administration Reclamation Yard (GSRY) SWMU 010, May/June Groundwater Monitoring Results September 2021: NASA asked that the pre-Interim Measure UIC sample results be added to the applicable figure and requested that AECOM update the table with pre-treatment results in the ADP and get that back to the Team for the records.	Closed	1/11/2022	The pre-Interim Measure UIC results were included in the UIC discussion in the annual groundwater monitoring report that was submitted in November 2021.
2201-A02	2201-M04	NASA	Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022: NASA will update the summary table for KARS Park I and email back out to the Team.	Closed	5/3/2022	addressed in the meeting minutes
2203-A01	2203-M03	NASA	Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022: FDEP requested that HGL provide information regarding the number of sample points necessary for Mann-Kendall statistical analysis	Closed	5/3/2022	HGL provided the requested information to FDEP in a follow up email on March 8, 2022 to FDEP.
2203-A04	2203-M06	NASA	GSA Reclamation Yard (SWMU 010) Groundwater Monitoring Update, March 2022: FDEP requested a synoptic figure of the last two clean sampling events of the two wells.	Closed	5/3/2022	AECOM provided figure to FDEP on March 9, 2022
2203-A06	2203-M09	NASA	CAMP Deliverables Look-Ahead and Document Requirements, March 2022: FDEP inquired if the CAMP document being presented is the document sent around March 1? NASA confirmed that it was, but that it was revised since then. For PRL 237, there were two errors on dates (inadvertently switched), but will send this after the meeting.	Closed	5/3/2022	NASA provided the updated CAMP to team members
2201-A03	2201-M04	NASA	Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022: NASA owes FDEP an update on Q6 Radar Station (SWMU #112), so they will put together an ADP to review the RFI they completed.	Closed	6/28/2022	contract was modified and NASA will present results for this in a future presentation

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2205-A02	2205-M08	NASA	**Wilson Corners (SWMU #001) 2021 Annual Long-Term Monitoring Update, May 2022:** FDEP stated that VOC concentrations are increasing to the west but the natural attenuation default concentrations (NADC) footprint hasn't changed much. AECOM confirmed that was correct. Based predominantly on DPT data, the existing wells are appropriate for the extent of the low-concentration plume (LCP). The performance monitoring wells are more on the interior of the plume and will give us a better idea of what is going on with the high concentration plume (HCP). FDEP inquired what the vertical head difference of the zones are that are being referred to. AECOM will look into this question and provide the information.	Closed	6/28/2022	AECOM provided vertical head data for 2019, 2020 and 2021 to FDEP on May 5, 2022.
1810-A02	1810-M04	NASA	**Launch Complex 39B (LC39B) (SWMU 009)** - revisit team consensus 1810-D13 on weir installation based on permits date expiration and Year 2 PM results. (Team consensus reached to suspend the weir installation since CVOC concentrations adjacent to the pond are below their respective GCTLs and to re-evaluate the need for the weir prior to the SJRWMD and USACE permit expiration (11 July 2023).	Closed	10/6/2022	The Team reached consensus to evaluate Action Item 1810-M04, 1810-A02 in 2022 to re-evaluate the need for a weir near OFW. Tetra Tech resampled for line of evidence and upon reviewing the results presented in an ADP on October 6, 2022, this action was closed out.
2201-A01	2201-M04	NASA	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** NASA stated that the red boundary (PFAS LOC) in the figure on slide 90 is for the fire station, and not for Central Supply. NASA will gather together the figures they are investigating, and provide to FDEP.	Closed	10/6/2022	This was addressed in the submittal of the Center-wide report.
2203-A02	2203-M03	NASA	**Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022:** FDEP inquired if there is still extensive VC present in the 46-60ft bls interval, which is depicted on a single figure What is below 60 ft bls? NASA responded that below 60 ft bls is clean and there were no exceedances at that interval. HGL added that DPT results achieved GCTLs at the 56-60 ft depth level. FDEP requested that this information be provided on separate figures (46-56 ft bls and a 56-60 ft bls), to show there is vertical delineation.	Closed	10/6/2022	This information was provided in the report submitted to FDEP on August 23, 2022.
2203-A03	2203-M03	NASA	**Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022:** FDEP requested a copy of the proposed DPT sample points. FDEP referenced the 2020 DPT in the HS1 area, noting some additional points on the southern side of the plume might be needed in the deeper interval. NASA responded they agree there exists a data gap on the southeast edge. In 2021, HGL collected more data to close those gaps. HGL and NASA will look to see if more data is needed in that locale. FDEP would also like to see the additional proposed points in the northwest area for defining the HC plumes NASA will get FDEP their initial plan when it is prepared.	Closed	10/6/2022	The proposed sampling locations were provided to FDEP on July 1, 2022.
2205-A01	2205-M03	NASA	**Annual Update on the Interim Measure Operation, Maintenance, and Monitoring at Area South of K7-516 and Interim Groundwater Monitoring of 516S and Eastern Components Cleaning Facility, May 2022:** FDEP recommended e a monitoring well with results showing that the groundwater plume is not having an impact on the OFW. Along with the two surface water samples, the monitoring well sample would provide a reasonable assessment. A screen interval similar to the other side of the air sparge curtain (27-37 bls) seems appropriate. HGL suggested consideration with placing the new monitoring well closer to the barge canal, similar to MW36. Tetra Tech will come up with a recommendation and provide a map to FDEP.	Closed	10/6/2022	NASA provided a map with the suggested well locations to FDEP on 06/19/2022. Close out.
2206-A02	2206-M04	NASA	**Annual Update on Launch Complex 34 :** A brief site history and background were provided on LC34. FDEP inquired if the part of the plume that is above GCTLs discharges to the Atlantic Ocean. Tetra Tech stated they had temporary wells along the ocean. They can go back and pull together the data if this would be helpful. FDEP agreed this would be helpful to understand the history of the site.	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.
2206-A03	2206-M04	NASA	**Annual Update on Launch Complex 34 :** FDEP referenced Slide 15, which gives an overview of the HCS. Are there groundwater flow maps available that present the depth to groundwater and groundwater flow within the capture zone? NASA requested this be captured as an action item to follow up on .	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2206-A04	2206-M04	NASA	**Annual Update on Launch Complex 34 :** FDEP inquired if it was possible the northeasterly DSZ finger had been present prior to the 2019 recharacterization, but had been missed by earlier DPT points? Tetra Tech stated that it is possible and they will take an action item to look at the 2019 recharacterization for DPT coverage in that area. Whether it was missed or moved, sampling indicates the plume has not come out from under the blockhouse.	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.
2206-A05	2206-M05	NASA	**Fluid Servicing Road Area Interim Groundwater Monitoring Summary, June 2022:** HGL will provide the 2020 DPT results for this site to the Team at the next meeting.	Closed	10/6/2022	This information was included in the ADP dated September 13, 2022.

Revision 2 Meeting Minutes for June 28th & 29th, 2023

Attendees:

1. Evan Miller/FDEP
2. Jason French/FDEP
3. TJ Touran/FDEP
4. Ryan O'Meara/NASA
5. Deda Johansen/NASA
6. Natasha Darre/NASA
7. Anne Chrest/NASA
8. Michelle Moore/NEMCON
9. Mark Jonnet/Tetra Tech
10. Mark Speranza/Tetra Tech
11. Andrew Walters/Tetra Tech
12. Sarah Damphousse/Tetra Tech
13. Chris Pike/Tetra Tech
14. Scott Anderson/Tetra Tech
15. Jennifer Gootee/AECOM
16. Chris Marshall/AECOM
17. Chad Lee/AECOM
18. Linnea King Clark/AECOM
19. Megan Garcia/AECOM
20. Jennifer Buel/AECOM
21. Richard Smith/HGL
22. Howard Fowler/HGL
23. Robert Lynch/HGL
24. Bruce Moore/HGL

2306-M01 Michelle Moore/NEMCON

Meeting Minutes and Miscellaneous Items

Objective:

Reviewed the outstanding consensus items. Obtained consensus that Revision 1 of the April 2023 KSCRT meeting minutes and action items are final. Team members are aware and do not object that meeting minutes and decision/action items may become public as part of a report at a later date **(2306-D01).**

Discussion:

Open action items were reviewed and the following were closed out:

Launch Complex 39A (SWMU 008) and Launch Complex 39B (SWMU 009) Performance Monitoring, February 2023: Action item for NASA to provide a list of wells that will be sampled for PFAS at LC39A to FDEP prior to conducting the sampling.

The list of wells were provided to FDEP to close this action item out **(2302-A01).**

Launch Complex 39A (SWMU 008) and Launch Complex 39B (SWMU 009) Performance Monitoring, February 2023: Action item for NASA to provide a list of wells that will be sampled for PFAS at LC39B to FDEP prior to conducting the sampling.

The list of wells were provided to FDEP to close this action item out **(2302-A02).**

GSA Reclamation Yard (GSRY) 2022 Groundwater Monitoring Results: NASA to provide FDEP approval emails or correspondence regarding lack of pre-injection data at the site and the selection of MW0002IS as a site-specific background well.

NASA provided emails to FDEP on this topic **(2304-A01).**

Results: Decision Items 2306-D01

2306-M02 Jason French & Evan Miller/FDEP

Program Update:

Prefaced the meeting with addressing the current process of obtaining test consensus at the Kennedy Space Center (KSC) Remediation Team (KSCRT) meetings. The Florida Department of Environmental Protection (FDEP) caveats their approvals with the fact that they reserve the right to request additional information or revise their stance based upon later reviews of site reports issued post-meetings. To be clear, the FDEP doesn't want NASA to incur additional costs based on potential decisional changes once reports are received.

NASA replied with their understanding, adding that they use this preliminary concurrence for a more definitive path forward when investigating the sites. NASA understands there is a level of risk associated with proceeding in this way.

No new Per- and Polyfluoroalkyl Substances (PFAS) regulations have passed yet per FDEP. They are in the process of cleaning up the institutional control layers in their records. May reach out to the Remediation Program if there are any NASA specific sites that FDEP needs more information on.

FDEP is working on their site geographic information system (GIS) information. If inaccuracies are noted, please reach out and let FDEP know. They would like to keep this data as accurate as possible.

FDEP will try to work out a visit to KSC in the near future and may be present in person for the July KSCRT meeting.

NASA stated their focus is the upcoming public PFAS meeting. Those dates are set for July 13 and 25th 2023. NASA had to adjust some Correction Action Management Plan (CAMP) dates due to NASA's document export control review that delayed the delivery of these reports. This export control review can take up to six weeks sometimes. The note sections of the CAMP spreadsheet sent out to the Team for review will make references to these changes when these dates have to get moved around a little bit.

2306-M03 Megan Garcia & Jennifer Gootee/AECOM

South Repeater Building (SWMU #121) Per- and Polyfluoroalkyl Substances (PFAS) Site Assessment and Mitigation; Assessment Update and Pilot Study Work Plan, June 2023

Objective:

The objective of the advance data package (ADP) is to summarize PFAS sampling activities completed to date and propose a pilot study.

Discussion:

Center-Wide SWMU Assessment and Confirmatory Sampling (CS) of Per- and Polyfluoroalkyl Substances (PFAS) was completed in 2018-2022. One South Repeater Building monitoring well was sampled for PFAS in 2021, at in advance of the site closure (A3RB-MW0002). PFAS analytes were detected at the site. Interviews and research during the PFAS preliminary assessment did not identify South Repeater Building as a potential PFAS usage or storage location. Based on the monitoring well data, the former Kennedy Space Center (KSC) fire chief was contacted to ask about any potential fires in the area. The fire chief recalled a wildfire at this location during which an unknown volume of Aqueous Film-Forming Foam (AFFF) was used to extinguish the fire.

The AFFF applied during the 1998 wildfire in the vicinity of the South Repeater Building occurred to the north-northeast of building N6-1118. An unknown amount of AFFF was used to extinguish the fire. The fire did not cross Tel-IV Road, and the fire chief reported no equipment was stored in the sandy area to the west of the site.

Following receipt of MW0002 PFAS results, three direct push technology (DPT) locations were completed in October 2021. Sampling intervals included 6-10, 21-25, 31-35, and 41-45 feet below land surface (bls). At the time, the results were compared to State of Florida provisional Groundwater Cleanup Target Levels (GCTLs). Exceedances for perfluorooctanesulfonic acid (PFOS) and for the sum of perfluorooctanoic acid (PFOA) and PFOS at a single location west of N6-1118 were detected. Three DPT locations near the residential area on the west side of Tel-IV Road yielded results below the provisional GCTLs. NASA initiated PFAS confirmatory sampling activities at the site as a result.

Previous Confirmatory Sampling activities included 70 DPT groundwater samples collected from 16 locations from January 2022 through March 2022. Samples were collected from screen centerpoints of 4, 10, 25, 42, 57 feet bls. Eight monitoring wells were installed at the South Repeater Building area in May 2022. Ten monitoring well samples were collected from South Repeater Building in May 2022 (two existing wells plus the new wells). Three soil samples were collected from two locations in January 2022 and June 2022. The samples were collected during soil core activities at varying depths.

Sampling locations were constrained by scrub jay habitat and nesting season, particularly to the east and north of the reported source area. A total of 55 DPT groundwater samples were collected from 10 locations in December 2022. Samples were collected from screen centerpoints of 4, 10, 25, 42, and 57 bls or at 4, 10, 18, 25, 42, and 57 feet bls. A total of 8 surface water samples were collected from 8 locations in December 2022. A total of 24 soil samples were collected from 12 locations in December 2022. All other soil samples were collected from 0-0.5 and 0.5-2 feet bls. Samples were analyzed by USEPA Method 537 Modified Department of Defense (DOD) Quality Systems Manual (QSM) 5.3 in the Orlando, Florida SGS North America, Inc. Laboratory for a 29-compound PFAS list.

In summary, PFOS, PFOA, and perfluorohexanesulfonic acid (PFHxS) are present at concentrations exceeding the May 2023 EPA Regional Screening Levels (RSLs) for tap water. The plume is not delineated horizontally in any direction or vertically. The AFFF applied during the wildfire appears to be the major PFAS source, however, the possibility of a secondary source associated with former citrus groves is being evaluated.

Path Forward

The path forward for assessment will include collection of additional shallow soil samples, delineation of the PFOS residential soil RSL exceedance in A3RB-SB0057, and evaluation of a possible residual source of groundwater contamination.

Additional monitoring wells for horizontal and vertical delineation of PFAS will be installed. Additional DPT groundwater sampling north of D'albora Road and northwest of South Repeater Building will be conducted. Additional surface water samples will be taken northwest of South Repeater Building along Tel-IV Road. Further evaluation of groundwater flow direction will be conducted, and additional sample collection off-Center to the west/southwest is proposed. NASA will seek owner consent for sampling access on private property.

Pilot Study Objectives

NASA is planning a pumping test as part of a pilot study for hydraulic control of groundwater. Objectives of the pilot study are to provide information on aquifer characteristics and to aid in future modeling and remedial design activities to prevent further off-Center migration of PFAS compounds

Specific Goals

Develop information on characteristics of the surficial aquifer system, specifically transmissivity (T), storage coefficient (S), hydraulic conductivity (K), and vertical hydraulic conductivity (K') (unconfined only). Obtain data to support construction and calibration of a groundwater flow model. Acquire design parameters necessary for future remedial design activities, specifically radius of influence (r), drawdown (s), flow rates (Q), and pump settings.

In addition to gathering data on aquifer hydraulics, water quality samples will be collected during each test to provide data for future groundwater treatment design. The Pilot Study will include slug testing, step testing, and extraction testing. Slug testing will provide an estimate of the spatial distribution of the hydraulic properties of the aquifer. Step testing will be performed to estimate the pumping rate that can be sustained for the 72-hour extraction test. NASA plans to use the mobile treatment system for PFAS-affected investigative derived waste (IDW) to treat water generated by the pilot study.

Current FDEP representatives were not aware of the PFAS on-site IDW treatment system. They inquired what the system included. Tetra Tech stated the system includes holding tanks, air strippers, granulated activated charcoal (GAC) tanks and an effluent holding tank, where once non-detect is achieved from sampling the effluent, the processed water is discharged to the Hydrocarbon Burn Facility (HBF) area.

FDEP inquired if this was a full-scale pump and treat or hydraulic containment. NASA stated it is both. If PFAS has migrated off KSC, we will take action to reverse or limit the flow direction of the plume.

2306-M04 Howard Fowler/HGL

False Cape Data Collection Annex (SWMU 113) Monitoring Well Network, June 2023

Objective: This advance data package (ADP) provides a brief background for the referenced areas, summarizes the recent directional push technology (DPT) groundwater sampling and lithologic boring data, and proposes locations for monitoring well installations.

Discussion:

False Cape Data Collection Annex (SWMU #113) is located on the west side of Cape Road, approximately 1 mile north of the Cape Canaveral Space Force Station boundary. It is approximately 6.45 acres in size. It was developed by the U.S. Air Force (USAF) in 1958 and included five buildings. The main function of the complex

was to collect photographic trajectory data during launches. The site was acquired by NASA in 1962. Buildings were demolished in 1978; the site has been unused since. Electrical substations were built at the site in 1998. The site contains ecological habitat.

SWMU Assessment of SWMU #113 was completed in 2013 and identified 6 locations of concern (LOCs). Soil and groundwater sampling was performed at all 6 LOCs between October 2018 and May 2019, and a Confirmatory Sampling Report (CSR) and Interim Measure Work Plan (IMWP) was submitted in September 2019 and approved by the Florida Department of Environmental Protection (FDEP).

No Further Action was recommended for LOC 1 (Former Warehouse underground storage tank [UST]) based on 4 direct push technology (DPT) groundwater samples collected at 1 location. Samples were analyzed for volatile organic compounds (VOCs), and the shallow interval was also analyzed for polynuclear aromatic hydrocarbons (PAHs) and total recoverable petroleum hydrocarbons (TRPH). All results were below groundwater cleanup target levels (GCTLs).

No Further Action was also recommended for LOC 4 (Electrical Substations K8-0841 and K8-0843) based on 8 soil samples collected around the 2 transformer pads. Samples were analyzed for polychlorinated biphenyls (PCBs) and TRPH and were below industrial and residential soil cleanup target levels (SCTLs).

At LOC 5 (Dry Well), an Interim Measure (IM) was recommended to remove the dry well contents (<1 cubic yard) based on an elevated lead concentration detected in a sample collected from within the dry well. Lead concentrations in soil adjacent to the dry well were below FDEP SCTLs. The IM was conducted in April 2023.

Soil sampling at LOC 2 and LOC 3 revealed widespread PAH concentrations above SCTLs and 1 soil sample location with lead concentrations above the residential SCTL. A soil removal IM was recommended for LOC 2 and LOC 3 to reduce PAH and lead concentrations below residential SCTLs. Based on the presence of identified data gaps, additional soil sampling was performed between June 2020 and June 2021. The results of the soil sampling were summarized in a CSR Addendum (CSRA) which included a revised

IMWP. The Florida DEP approved the CSRA and IMWP on July 22, 2022. A soil IM was conducted in April 2023.

At LOC 6 (Site Groundwater), further investigation of groundwater was recommended to assess the extent of low level chlorinated volatile organic compounds (CVOCs) identified above GCTLs. Groundwater contamination at LOC 6 is being addressed in this RCRA Facility Investigation (RFI).

DPT Groundwater Sampling Activities at LOC 6

Between July 2020 and June 2022, DPT groundwater samples were collected from 52 locations and analyzed for VOCs. In general, samples were collected from the 8'-12', 23'-27', 33'-37' and 43'-47' intervals. Vinyl chloride exceeded the GCTL of 1 ug/L in 20 samples at 14 locations. The maximum concentration was 27.1 ug/L in DPT0029 at 25 feet bls. Cis-1,2-dichloroethene (cis-1,2-DCE) exceeded the GCTL of 70 ug/L in 2 samples at 2 locations. The maximum concentration was 103 ug/L in DPT0043 at 35 feet bls. Vinyl chloride and cis-1,2-DCE GCTL exceedances are confined to the 25' depth interval (eastern and western portions of the plume) and 35' interval (central portion of plume). Trans-1,2-DCE did not exceed the GCTL of 100 ug/L in any of the samples. Trichloroethene (TCE) was not detected in any of the samples. The source of VOC impacts has not been identified.

Lithologic Boring

One lithologic boring was advanced in April 2023 to a depth of 40 feet using a sonic drilling rig. The lithology consisted of fine to medium sand and shell fragments from land surface to 25 feet and grey silt from 25 to 40 feet below land surface.

Proposed Monitoring Wells

Nine monitoring wells are proposed to confirm the extent of CVOCs above GCTLs and for Long-Term Monitoring. Monitoring wells are proposed to be screened 20' to 30' (three wells), 25' to 35', (three wells) and 30' to 40' (three wells).

Path Forward

The path forward includes obtaining Team consensus on proposed monitoring well locations, installing and sampling monitoring wells

for VOCs, preparing a RCRA Facility Investigation Report, preparing a Long-Term Monitoring Plan, and preparing a Land Use Control Implementation Plan (LUCIP) for the site.

FDEP inquired if there are any wells proposed deeper than what is on Slide 21 (40 feet). The concern is that there is no clay confining layer at that depth. DPT samples alone are not sufficient to establish vertical extent at the site. The Rule (Chapter 62-780, Florida Administrative Code) requires a permanent well to verify vertical extent of impacts. Just one well is required for verification.

HGL stated they could install a well and asked where it should be located. NASA asked where the deepest DPT was located at the site. Slide 18 was referenced and reviewed; FDEP recommended the well installation at the MW-F location as shown on Slide 18.

Team consensus was reached to install monitoring wells at the recommended locations on Slide 21, with the addition of a well installed for vertical delineation at location MW-F **(2306-D02).** NASA will confirm the depth in an email to FDEP, too **(2306-A01).**

Results: Decision Item 2306-D02
Action Item 2306-A01

2306-M05 Chad Lee/AECOM

<u>Soil Interim Measures at Various Sites (South Water Pump Station [PRL 213]), June 2023</u>

Objective: The goal of this Advance Data Package (ADP) is to provide a summary of the activities performed for the Soil Interim Measures (IM) Implementation at the South Water Pump Station, Potential Release Location (PRL) 213 LOC 2 Site Assessment.

Discussion:

<u>South Water Pump Station – PRL 213</u>

At SWPS, an IM for polychlorinated biphenyl (PCB) contaminated soil had been planned for LOC 2 (electrical substation SS-145) at the time the substation was taken out of service following construction of a new pump station. Demolition of the former pump station disturbed the substation area. To determine current PCB soil

concentrations, two soil samples were collected from two locations SWPS-SB0005 (single point of soil cleanup target level (SCTL) exceedance) and SWPS-SB0018 (beneath the former slab near SB0005) at 0 to 0.5 feet bls for analysis of PCBs; installation of one new monitoring well SWPS-MW0001 immediately adjacent to SWPS-SB0005, and collection of a groundwater sample from monitoring well SWPS-MW0001 for analysis of PCBs.

Analytical results indicate that PCB concentrations in the soils and groundwater were below the State of Florida SCTLs in the soil samples collected, and below State of Florida Groundwater Cleanup Target Levels in the groundwater sample collected.

The Team reached consensus for No Further Action (NFA) for soil and groundwater at the site **(2306-D03).**

The Team reached consensus that a Site Rehabilitation Completion Order Request Letter will be prepared **(2306-D04).**

Results: Decision Items 2306-D03, D04)

2306-M06 Mark Jonnet/Tetra Tech

Convertor/Compressor Building (SWMU 089) Annual Performance Monitoring Update, June 2023

Objective: The objective of the advance data package (ADP) is to summarize the annual performance monitoring and groundwater results for 2022, and test consensus on a path forward.

Discussion:

In 2022, Year 2 of Performance Monitoring (PM) was conducted at the site. Excluding the MW0021 area, the interim measure (IM) objective has been achieved with all volatile organic compound (VOC) concentrations below their respective natural attenuation default concentrations (NADC).

Water levels were collected at the site in November 2022. Flow north of the railroad tracks is to the northeast; flow south of the railroad tracks is to the south-southeast, which is similar to the historic sitewide groundwater study conducted in 2019.

2022 Performance Monitoring Plan

December 2022 sampling was planned to include 25 wells (sampled annually) and 23 wells (sampled biennially), with all 48 wells analyzed for VOCs. Twenty-four of the wells are located in former Hot Spots 1, 2, and 5. Twenty wells are located in former Hot Spots 3 and 4. Four wells are located downgradient.

Sampling Summary

Forty-one wells were sampled in December 2022. There were seven inaccessible wells at that time that were subsequently sampled in February 2023. Twenty-five annual wells located in interior portions of plume have the highest concentrations. Twenty-three biennial wells are located around plume boundaries. All results were below NADCs except trichloroethene (TCE) at 2,300 µg/L in MW0021. An IM Work Plan (IMWP) was presented to the KSC Remediation Team during April 2023 meeting. TCE exceeded its groundwater cleanup target level (GCTL) in 11 wells, cis-1,2-dichloroethene (cDCE) exceeded its GCTL in 3 wells, and vinyl chloride (VC) exceeded its GCTL in 15 wells.

2022 Groundwater Results for Hot Spots 1, 2, and 5

At Hot Spot 1, groundwater Site Characterization maximum direct push technology (DPT) detections for TCE, cDCE, and VC were 191,000, 8,200, and 2,800 µg/L. Groundwater flows from Hot Spot 1 into Hot Spot 2. In Hot Spot 1, MW0026 current results for TCE, cDCE, and VC are 80, 0.84 I, and 0.64 U µg/L.

At Hot Spot 2, Site Characterization maximum groundwater DPT detections for TCE, cDCE, and VC were 46,800, 24,900, and 2,200 µg/L. Current maximum results for TCE, cDCE, and VC are 56 (MW61), 110 (MW67), and 43 (MW67) µg/L. Downgradient well MW0114 results have been less than GCTLs since April 2016.

At Hot Spot 5, Site Characterization maximum DPT groundwater detections for TCE, cDCE, and VC were 52, 4,000, and 1,800 µg/L in the 40 to 50 ft bls zone. Current maximum results for TCE, cDCE, and VC are 0.79 U, 0.88 I, and 1.3 I µg/L in MW0025. Note the proposed IM for the MW0021 area is to address VOCs in the 8 to 16 ft bls zone.

For the Hot Spots 1, 2 and 5 plume, propose adding existing wells for vertical monitoring in areas with highest TCE, cDCE, and/or VC concentrations. An IM is planned at MW21, which had the maximum TCE and cDCE concentrations of 2,300 and 570 µg/L; a sampling program will follow the IM.

Propose adding MW62 screened 30 to 40 ft bls to monitor beneath MW26 screened 13 to 23 ft bls. MW26 currently has the second highest TCE detection of 80 µg/L. Air sparging occurred beneath MW62 since the last sample results of TCE, cDCE, VC of 10 U, 110, and 2,000 µg/L in February 2012. MW29 currently sampled annually is screened 40 to 50 ft bls to monitor beneath MW61 (screened 25 to 35 ft bls), that currently has third highest TCE detection of 56 µg/L and cDCE of 93 µg/L. Air sparging occurred beneath MW61; MW29 is located 40 feet from MW61, most recent MW29 sample results of TCE, cDCE, VC of 1.1 I, 2.6, and 8.2 µg/L in December 2022.

Propose adding MW64 screened 40 to 50 ft bls to monitor beneath MW34 screened 20 to 30 ft bls that currently has sixth highest TCE detection of 10 µg/L in this area. MW64 recent sample results of TCE, cDCE, VC of 0.22 U, 1.8, and 0.71 J µg/L in 12/2020. MW67 screened 20 to 30 ft bls has cDCE and VC of 110 and 43 µg/L, MW68 screened 40 to 50 ft bls has cDCE and VC of 4.4 and 21 µg/L. Propose continued monitoring of MW68 to vertically assess MW67.

FDEP inquired if there was still sparging at this location. Tetra Tech responded that air sparging ended in 2019, which was noted on previous slides of ADP.

FDEP inquired if the goal for the site is to reach FDEP groundwater cleanup target levels (GCTLs). Tetra Tech responded they will continue annual or biennial monitoring until the site achieves GCTLs. There is no plan to close this site out with conditions.

FDEP is concern with increasing VC trends since VC doesn't tend to achieve below GCTLs without some help. Tetra Tech will continue to monitor and won’t be surprised if there is not a lot of movement in the results.

FDEP noted that it is proposed to replace a well with a 5ft screen with a 10ft screen. DPT results were clean all the way down to 50ft.

Is there a clay layer (retarding unit) across the Fluid Servicing Road area? Tetra Tech stated that for the most part this material is present throughout the site and acts like a retarding unit, but noted that some VC has made its way through.

The Team reached consensus to transition from PM to LTM with next reporting period (January 2023 – December 2023) as Year 1 of LTM **(2306-D05).**

The Team reached consensus to continue sampling 25 wells plus MW62 and MW64 annually in December 2023 and 23 wells biennially in December 2024 to monitor VOC contaminant trends; well IDs and sampling frequency are shown on Slide 18 of the presentation. Sampling results will be presented to the KSCRT prior to submittal of 2023 Annual LTM Report **(2306-D06).**

Results: Decision Items 2306-D05, D06

2306-M07 Chris Marshall/AECOM

Industrial Area (IA) Long-Term Monitoring (LTM) Update, June 2023

Objective: The purpose of this advance data package (ADP) is to present activities and data associated with eleven IA LTM sites: Ransom Road Landfill (RRLF) (Solid Waste Management Unit [SWMU] 003), Building M7-0505 Treatment Tank Area (M505) (SWMU 039), Operations and Checkout Building (O&C) (SWMU 076), Vertical Processing Facility (VPF) (SWMU 077), Environmental Health Facility (EHF) (SWMU 079), Kennedy Athletic, Recreation, and Social Park 1 LOC 9 (KARS Park 1) (SWMU 084), Engineering Development Laboratory (EDL) (SWMU 085), Mobil Service Station (MOBIL) (SWMU 093), General Services Administration Seized Property (GSSP) (SWMU 095), Space Station Processing Facility (SSPF) (SWMU 098), and Fuel Storage Area #1 Underground Storage Tank [Building 1044] (FS1) (Potential Release Location [PRL] 157).

Discussion:

Field efforts summarized in this ADP include LTM sampling from May 2022 through November 2022 and Direct Push Technology (DPT) groundwater assessment activities in January 2023 and March 2023. The objective of this ADP is to evaluate the groundwater quality based on current data and trends in order to determine if modifications to the sampling schedule and/or additional measures are warranted.

Fourteen sites are currently in the IA LTM Program and are sampled at various frequencies. These sites were grouped together for convenience in order to combine field efforts and reduce quantities of ADPs and reports.

RRLF

Vinyl chloride (VC) is the contaminant of concern (COC) at RRLF. Groundwater elevation measurements from 14 monitoring wells (MWs) and groundwater samples collected from four MWs in May 2022. Flow direction toward the west-southwest for shallow and toward the west for intermediate groundwater.

Vinyl chloride (VC) was below its Florida groundwater cleanup target level (GCTL) at three MWs (RRLF-MW0033, RRLF-MW0038I, and RRLF-MW0040I) in May 2022. It was recommended to continue monitored natural attenuation (MNA) in the LTM program. The next sampling event at RRLF will be completed in November 2024.

The Team reached consensus to install a new monitoring well with a screen interval of 15 to 25 feet bls at the RRLF-DPT0024 location for RRLF **(2306-D07).**

The Team reached consensus to continue biennial LTM sampling frequency at the RRLF with now five monitoring wells for vinyl chloride (VC) and collection of 16 water level measurements in November 2024. **(2306-D08).**

M505

Trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE) and VC are the COCs at M505. Groundwater samples were collected from 8 MWs in May 2022. TCE and cis-1,2-DCE results are below GCTLs at the site. VC was greater than GCTL at three MWs (M505-

MW0013, M505-MW0032, and M505-MW0055) in May 2022. M505 is scheduled for a sampling event in November 2024. It was recommended to continue MNA of the site in the LTM program and adding downgradient monitoring well M505-MW0029 for analysis of TCE, cis-1,2-DCE, and VC.

The Team reached consensus to continue biennial LTM sampling of now nine monitoring wells (which includes addition of M505-MW0029) for trichloroethylene (TCE), cis-1,2-dichloroethene (DCE, and VC and collection of 35 water level measurements in November 2024 at Building M505 (SWMU 039) **(2306-D09).**

FDEP noted they would like to continue reviewing the data for this site.

O&C

(Note: The sample prefix for this site is O_C.) VC is the COC at O&C. Groundwater samples were collected from two monitoring wells in May 2022. VC was greater than GCTLs at both MWs (O_C-MW0005I and O_C-MW0007I) in May 2022. The O&C is scheduled for a sampling event in November 2024. Recommend continuing MNA in the LTM program and adding downgradient O_C-MW0006I to the water level measurements and sampling schedule.

The Team reached consensus to continue biennial LTM sampling with now three monitoring wells (which includes addition of O_C-MW0006I) for vinyl chloride and collection of five water level measurements in November 2024 for the O&C site (SWMU 076) **(2306-D10).**

FDEP inquired when was last time water level was gauged in MW06I? How downgradient is this? AECOM stated this well is a distance away and we would like to get one more set of data for MW07I. FDEP contemplated if MW06I data will be meaningful but stated to go ahead and sample as proposed and we will discuss whether MW06I should be added to the monitoring network when results are available.

VPF

TCE, cis-1,2-DCE and VC are the COCs at VPF. Groundwater samples were collected from 6 MWs in May 2022. TCE was greater than GCTLs at three MWs (VPF-MW0021, VPF-MW0025, and VPF-MW0027) in May 2022. Cis-1,2-DCE remains less than GCTLs. VC was greater than GCTLs at two MWs (VPF-IW0018I and VPF-MW0022) in May 2022. The VPF is scheduled for a sampling event in November 2024. Recommend continuing MNA in the LTM program and adding monitoring wells VPF-IW0008D and VPF-IW0010I to the sampling schedule. Recommend installing a shallow monitoring well downgradient of VPF-MW0022 adjacent to VPF-MW0023 with a screen interval of 3-13 feet bls.

The Team reached consensus to install a new monitoring well with a screen interval of 3 to 13 feet bls adjacent to VPF-MW0023 at the VPF site (SWMU 077) **(2306-D11).**

Test consensus to continue biennial LTM sampling with now nine monitoring wells for TCE, cis-1,2-DCE, and VC and collection of 35 water level measurements in November 2024 at the VPF site (SWMU 077) **(2306-D12).**

EHF

VC is the COC at EHF. Groundwater samples were collected from 3 MWs in November 2022. VC was greater than its GCTL at EHF-MW0004 in November 2022 and below GCTL at EHF-MW0001 and EHF-MW005. The EHF is scheduled for a sampling event in November 2024. Recommend continuing MNA in the LTM program.

DPT groundwater sampling was conducted earlier this year at three locations outside the LTM monitoring well locations. VC was detected above it GCTL at EHF-DPT005 to the west of MW04. The Team reached consensus to install a new monitoring well with a screen interval of 15 to 25 feet bls at EHF-DPT0005 location (SWMU 079) **(2306-D13).**

The Team reached consensus to continue biennial LTM sampling frequency with now four monitoring wells for VC and collection of seven water level measurements in November 2024 at the EHF site (SWMU 079) **(2306-D14).**

KARS Park 1 Location of Concern 9 (LOC 9)

Lead is the COC at KARS Park 1 LOC 9. LOC 9 groundwater is on a 5-year monitoring frequency. In 2021, an atypical increase in the lead result for the downgradient well (KP1-MW0022) was observed. The sampling team also noted a slight blockage in the MW. For those reasons, MW0022 was re-developed in May 2022 and sampled. Lead was not detected.

This briefing was originally schedule for April 2023 but the meeting was abbreviated. There was a recommendation to accelerate the next sample for MW0022 to May 2023 in that briefing. NASA decided to proceed at risk. Lead was not detected in the May 2023 sample. The May 2023 sampling event details are to be presented in the 2024 ADP and LTM Report.

Monitoring wells KP1-MW0003 and KP1-MW0035 had two consecutive sampling events with lead results below GCTL in November 2020 and September 2021. The total lead concentrations dropped to non-detect at KP1-MW0022 in May 2022 and May 2023. Therefore, recommend discontinuing MNA of groundwater for KARS Park I LOC 9, which will result in all groundwater monitoring at KARS Park I being complete. Other LOCs with groundwater concerns have achieved GCTLs, and soils have been remediated to the residential soil cleanup target levels.

KP1-MW0017 was found destroyed during the May 2023 sampling event. Recommend proper abandonment of this well. FDEP asked whether there was there an exceedance at MW17? AECOM stated it had two consecutive clean events in 2005 and 2006.

The Team reached consensus to discontinue MNA of groundwater at KARS Park I (SWMU 084) **(2306-D15).** FDEP will review the report before formal approval.

The Team reached consensus to abandon monitoring well KP1-MW0017 at KARS Park I (SWMU 084) **(2306-D16).**

EDL

VC is the COC at EDL. DPT groundwater sampling at three locations along the south side of the site to evaluate adequacy of the current monitoring well network. VC was not detected above its GCTL at any location. VC horizontal delineation is complete with recent DPT sampling along the southern boundary.

VC is greater than GCTL at the two MWs (EDL-MW0004 and EDL-MW0006R) currently in the LTM program in November 2022. The EDL is scheduled for a sampling event in November 2024. Recommend continuing MNA in the LTM program.

The Team reached consensus to continue current sampling schedule, which includes November 2024 LTM sampling of two monitoring wells (EDL-MW0004 and EDL-MW0006R) for VC and collection of four water level measurements at the EDL site (SWMU 085) **(2306-D17).**

FDEP inquired during DPT investigation why did you not go to the north side as well? NASA responded that the north side of the plume had been investigated by DPT as part of the historical delineation at the site. During a data gap evaluation, NASA identified that the southern boundary was not investigated in the way the rest of the site was. That is why we did the southern side only. NASA can provide the package pulled together for FDEP's former Project Manager for KSC and provide to FDEP for review.

The 1.5 µg/L result at monitoring well EDL-MW006R was noted to be really low. The Team will continue to monitor until we are two rounds clean.

MOBIL

(Note: The sample prefix for this site is CGO since the service station was formerly a Citgo station.) The COCs at Mobil are benzene, 1,2,4-trimethylbenzene (1,2,4-TMB), xylenes, methyl tert butyl ether (MTBE), naphthalene, 1- and 2-methylnaphthalene. LTM samples were collected from 3 monitoring wells in May 2022. 1,2,4-TMB and MTBE were greater than GCTLs at CGO-MW0018 in May 2022. CGO-MW0019 was added to the sampling schedule following the 2020 sampling event; analytes were below GCTLs in May 2022. The MOBIL is scheduled for a sampling event in November 2024. Recommend continuing MNA in the LTM program and abandoning 9 historically clean perimeter monitoring wells (CGO-MW0002, CGO-MW0003, CGO-MW0004, CGO-MW0008, CGO-MW0009, CGO-MW0010, CGO-MW0012, CGO-MW0013, and CGO-MW0016).

The Team reached consensus to continue biennial LTM sampling of CGO-MW0018 and CGO-MW0019 for select volatile organic compounds (VOCs) (benzene; 1,2,4-TMB; xylenes; and MTBE) and CGO-MW0006 for the same VOCs plus naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene, and collection of nine water level measurements in November 2024 at the MOBIL site (SWMU 093) **(2306-D18).**

The Team reached tentative consensus to abandon nine historically clean perimeter monitoring wells (CGO-MW0002, CGO-MW0003, CGO-MW0004, CGO-MW0008, CGO-MW0009, CGO-MW0010, CGO-MW0012, CGO-MW0013, and CGO-MW0016) at the MOBIL site (SWMU 093) **(2306-D19).**

FDEP reserves the right to review the upcoming report before concurring with the well abandonment.

GSSP

The COCs at GSSP are tetrachloroethene (PCE), TCE, cis-1,2-DCE, trans-1,2-DCE, VC and naphthalene. Groundwater samples were collected from 14 MWs in November 2022. VC results were greater than GCTLs at 5 MWs (GSSP-MW0019, GSSP-MW0020, GSSP-MW0035, GSSPMW0053, and GSSP-MW0062) and also above the natural attenuation default concentration (NADC) at GSSP-MW0020. Naphthalene is greater than GCTL at GSSP-MW0024R. Other analytes were below their GCTLs for at least the fourth consecutive sampling event. Recommend reducing site COCs to VC and naphthalene

Recommend continuing MNA in the LTM program. GSSP is scheduled for a regular sampling event in November 2023. A 5-year expanded sampling event is scheduled for November 2024, when 23 MWs will be sampled.

FDEP inquired if there was a closed loop injection at this location. AECOM stated there was a recirculation system with both injection and extraction wells so believe it was a closed loop. FDEP inquired if there was petroleum at this location. AECOM responded there was the only known release was PCE. NASA stated that the naphthalene is downgradient in two wells and may have been the result of mowing operations.

FDEP inquired when was the last time GSSP-MW0027 and GSSP-MW0028 were sampled? Monitoring well GSSP-MW0054 is also high too. If it has been more than a decade you may want to sample those wells again. Action item for AECOM to get back with FDEP with this information **(2306-A02).**

The Team reached consensus to continue annual LTM sampling of 14 monitoring wells for VC with three select monitoring wells also sampled for naphthalene and collect 33 water level measurements in November 2023 at the GSSP site (SWMU 095) **(2306-D20).**

FDEP inquired if we want more VOCs thrown in we can add in November. Are there additional costs to only run VC or is it the suite? AECOM stated it is all the same cost. FDEP agrees with this for November and, if needed, to add more later on.

SSPF

Ammonia is the COC at SSPF. Groundwater samples were collected from 5 MWs in May 2022. Ammonia was greater than GCTLs at four MWs and greater than twice the KSC background in three MWs (SSPF-MW0006, SSPF-MW0014, and SSPF-MW0016) in May 2022, yet continue overall stable and decreasing trends. Recommend continuing MNA in the LTM program. Next sampling event is scheduled for November 2024.

FDEP inquired if the alternative cleanup target level (CTL) calculations are being used for ammonia at this site. That number may be higher than the background levels. NASA is happy to look at the alternative CTL based on the potential to eliminate this site.

The Team reached consensus to continue biennial sampling of five monitoring wells for ammonia and collect 15 water level measurements in November 2024 at the SSPF site (SWMU 095) **(2306-D21).**

FDEP inquired if conditional closure has been considered for this location? NASA stated for the program they typically look for unconditional closure. The Department prefers that as well and understands if that is the chosen path forward.

FSA1

The COCs at FSA 1 are benzene, ethylbenzene, isopropylbenzene, 1- and 2-methylnaphthalene, naphthalene, and total petroleum hydrocarbons (TPH). Groundwater samples were collected from 10 MWs in May 2022. Isopropylbeneze was greater than GCTLs at four MWs (FSA1-MW0001, FSA1-MW0002, FSA1-MW0017A, and FSA1-MW0021) and greater than NADC at FSA1-MW0001. 1- and 2-Methylnaphthalene were greater than GCTLs at FSA1-MW0001 in May 2022. Recommend discontinuing naphthalene (which has been below its GCTL since 2019) and TPH (which has been below its GCTL since 2021) analyses. Recommend continuing annual LTM sampling in alternating seasons. The next scheduled sampling event at FSA1 is November 2023.

FDEP inquired if fluctuations correlate with depth to water at this site. AECOM confirmed they do.

The Team reached consensus to continue annual LTM sampling of 10 monitoring wells for select VOCs (isopropylbenzene) and select polynuclear aromatic hydrocarbons (1-methylnaphthalene and 2-methylnaphalene) and collect 18 water level measurements in November 2023 at the FSA1 site (PRL 157) **(2306-D22).**

FDEP inquired if there were naphthalene spikes on the last samples. AECOM confirmed there was a little bump up in the numbers.

FDEP inquired if the Team has naphthalene trends on the ADP to which the response was there are not.

Results: Decision Items 2306-D7 through D22
Action Item 2306-A02

2306-M08 Mark Jonnet/Tetra Tech

<u>Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update, June 2023</u>

Objective: This advance data package (ADP) provides a summary of the air sparge treatment system operations and maintenance, performance groundwater sampling, and test consensus statements for a path forward.

Discussion:

A summary of air sparge system operations was presented for the period from January 1 through December 31, 2022. Air sparging is being performed to protect the Outstanding Florida Waters (OFW) in the Barge Canal at the toe of the Eastern and Western Plumes. Air sparging also operates in the former Hot Spot of the Eastern Plume as a barrier to treat volatile organic compounds (VOCs) migrating toward the Barge Canal.

Eastern Plume

In and up- and down-gradient of the former Hot Spot, 32 wells were sampled in December 2022. At the OFW sparge area, 8 monitoring wells and 3 surface water samples were collected in June and December 2022.

Upgradient of the Hot Spot Treatment Area

Upgradient of the Hot Spot Treatment Area, vinyl chloride (VC) exceeds its natural attenuation default concentration (NADC) in four of six wells ranging from 110 to 310 µg/L, the remaining two wells have VC concentrations of 6.5 and 91 µg/L. Trans-1,2-dichloroethene (tDCE) exceeds its groundwater cleanup target level (GCTL) in three of six wells ranging from 180 to 260 µg/L. VC and tDCE were not detected in the vertical extent well, MW81. Due to the presences of the Crawlerway, Saturn Causeway, and mission-critical utilities, treatment is not proposed for the upgradient area.

The Team reached consensus to continue annual monitoring of MWs 01, 02, 07ID, 44, 45, 46, and 81 in the upgradient Eastern plume area with samples analyzed for VOCs by 8260B **(2306-D23).**

Hot Spot Treatment Area

The interim measure (IM) objective is to remediate contaminated groundwater within treatment zone (former Hot Spot and surrounding high concentration plume [HCP]) to support transition to long-term monitoring (LTM). The site transitioned to current operations in 2017 once GCTLs were achieved in treatment area. The 2022 groundwater results continue to support maintaining current operations. VC is the only contaminant exceeding GCTL and remains stable in MWs 11, 12, 20, 47, 72 at 2.4, 11, 4.9, 5.5, and 5.0

µg/L. MWs 04, 05, 10, 48, 49, 71, 73, and 74 remain less than GCTLs.

The Team reached consensus that the IM is operating as designed and to continue operation of the same sparging wells operated in 2022 to prevent upgradient contamination from impacting the treated zone **(2306-D24).**

The Team reached consensus to conduct semi-annual sampling of MW21R to determine if VC decreases to less than GCTLs **(2306-D25).**

The Team reached consensus to continue annual sampling of wells 09, 10, 11, 12, 20, 49, 71, and 72 with all groundwater samples to be analyzed for VOCs by 8260B **(2306-D26).**

The Team reached consensus to continue biennial sampling of wells 04, 05, 06, 47, 48, 73, and 74 with all groundwater samples to be analyzed for VOCs by 8260B. December 2023 will be the annual sampling event and December 2024 will be the biennial sampling event **(2306-D27).**

Downgradient of Hot Spot Treatment Area

VC was the only contaminant exceeding GCTL in MWs 09, 11, 50, 51, and 76, ranging from 6.0 to 28 µg/L. MW51 decreased from 140 µg/L (exceeding NADC) in December 2021 to less than NADC at 28 µg/L in November 2022.

The Team reached consensus to continue annual monitoring of MWs 13, 14, 15, 19, 50, 51, 70, 75, and 76 downgradient of the Hot Spot Treatment Area with samples analyzed for VOCs by 8260B **(2306-D28).**

Eastern Plume OFW Area

The IM objective to prevent VOC migration into the Barge Canal is being met, based on results for two of the four monitoring wells adjacent to Barge Canal being below detection limits during both events while remaining two wells had low-level DCE detections. Surface water results were all below detection limits.

The Team reached consensus to continue annual monitoring of MWs 13, 14, 15, 19, 50, 51, 70, 75, and 76 downgradient of the Hot Spot

Treatment Area with samples analyzed for VOCs by 8260B **(2306-D29).**

The Team reached consensus that the IM is operating as designed and to continue operation of the air sparging barrier as operated in 2023 to prevent upgradient contamination from impacting Barge Canal **(2306-D30).**

The Team reached consensus to continue semi-annual sampling of MWs 16, 18, 54, 59, 60, 61, 77, and 78 to monitor the effectiveness of the sparging barrier preventing groundwater contamination discharge to Barge Canal. All groundwater and surface water samples to be analyzed for VOCs by 8260B, SWs 06, 07, and 08 will no longer be sampled based on all results BDLs. **(2306-D31).**

Western Plume

Interim Groundwater Monitoring of area upgradient of the OFW IM shows that VC is the only contaminant exceeding GCTLs, with a maximum concentration in MW42 at 58 µg/L. All results were non-detect in adjacent vertical delineation well MW82. Plume centerline wells have shown a decreasing trend over time and continue not to warrant active remediation.

The Team reached consensus to continue annual monitoring of MWs 23, 24, 25R, 27, 29, 30R, 37, 38, 39, 40, 41, 42, and 82, with samples to be analyzed for VOCs by 8260B **(2306-D32).**

Western OFW Area

The IM objective to prevent VOC migration into the Barge Canal is being met, based on four of the five monitoring wells adjacent to Barge Canal had low-level cis- and trans-DCE detections with VC not detected; the fifth canal-side monitoring well (MW84) exceeded VC GCTL at 2.9 µg/L. VC concentrations in MW84 are expected to decrease once new air sparging wells are activated. New air sparging wells approved in prior KSCRT meeting (2302-D02). Surface water results were all below detection limits.

The Team reached consensus to continue annual monitoring of western upgradient MWs 23, 24, 25R, 27, 29, 30R, 37, 38, 39, 40, 41, 42, and 82, samples analyzed for VOCs by 8260B **(2306-D33).**

The Team reached consensus that the IM is operating as designed and to continue operation of the air sparging barrier as operated in 2023 and the new eastern expansion to the barrier to prevent upgradient contamination from impacting Barge Canal **(2306-D34).**

FDEP, referencing slide 29 of the presentation, noted that the VC result for MW84 exceeds 2.4 ug/L, which is the surface water cleanup target level (SWCTL) for VC. FDEP would like to continue sampling surface water in that location. Tetra Tech stated they will continue with sampling surface water at locations SW9 and SW10 at least until MW84 detections are less than 2.4 ug/L.

The Team reached consensus to continue semi-annual sampling of MWs 31, 32, 33, 35, 36, 63, 68, 79, 80, 83, and 84 and SWs 09, and 10 to support the effectiveness of the sparging barrier preventing groundwater contamination discharge to Barge Canal. All groundwater and surface water samples to be analyzed for VOCs by 8260B, SWs 03, 04, and 05 will no longer be sampled based on all results BDLs **(2306-D35).**

FDEP appreciates keeping VOCs from discharging to the OFW and inquired if the east/west end wells are within the ROIs of the air sparge barriers. Tetra Tech stated that monitoring wells 77 and 61 are beyond the radius of influence of the air sparge wells. MW69 was to the side of the sparge wall and its results led to extending the sparge barrier.

Results: Decision Items 2306-D23 through D35

DAY 2

2306-M09 Chad Lee/AECOM

GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan, June 2023

Objective: This advance data package (ADP) provides a brief background for the referenced areas, summarizes soil site assessment related work performed from 2020 through 2022, and presents consensus statements.

Discussion:

As part of the background information, FDEP (referencing Slide 10) inquired if there was dewatering at the site during the 2018 Northeast Area IM. NASA replied that the soil removal was accomplished using caissons driven to 25 ft and no dewatering occurred. While there was some conventional excavation, most of the soil removal was accomplished with a large diameter auger. The excavated material was allowed to decant before being disposed. Flowable fill was placed back in.

AECOM mentioned (since it was not in the presentation for background purposes) that the ditches in the northeast area have been excavated as well.

To delineate PCBs in the shallow soils outside of paved areas, a total of 330 soil samples from 118 boring locations were collected for analysis of PCBs using Environmental Protection Agency Method 8082A. Analytical results indicate that PCBs were above the State of Florida Direct Exposure Residential Soil Cleanup Target Levels (SCTLs) in three areas at GSRY: Northeast PCB Soil Plume Area, Southeast PCB Plume Area, and the Western PCB Plume area.

In conclusion, the Northeast Shallow Soil PCB Plume is delineated to the east, north, and west, and is bordered by a paved asphalt surface to the south. The Southeast Shallow Soil PCB Plume is delineated to the north and south, is bordered by a paved asphalt surface or a building to the west, and is bordered by the Ransom Road Sandblast Yard (SWMU 021) to the east. The West Shallow Soil PCB Plume is delineated in the northern portion to the north and west, is bordered by buildings or a paved asphalt surface to the east, and is bordered by the General Services Administration Reclamation Yard West (SWMU 036) to the west. Additional sampling is needed to completely delineate PCBs in shallow soil beyond the fence line on the south side of the West Area. The shallow soil plumes are delineated vertically in the areas proposed for Soil IM.

Chapter 62-780 of the Florida Administrative Code requires delineation to below CTLs in every direction. Buildings and paved surfaces are being used in some areas as boundaries of the proposed excavation areas, and delineation is not complete beyond the southwest fence line. AECOM will need to take a look at that (southwest corner) **(2306-A03).**

FDEP stated that NASA can proceed with the excavation and inquired if that asphalt was going to be used as an engineering control. AECOM confirmed that it would be used as an engineering control. FDEP agreed that was fine and stated we need to assume that there is contamination to some extent based on this data. If we want to assume asphalt is the control for the underlying PCB-contaminated soil, then you wouldn't have to take confirmatory sampling to the south. FDEP want to see a professional engineering seal on any land use control submitted. FDEP also wants to see a couple of green dots for delineation.

NASA stated they might need to take a look and discuss; there might already be PCB land use controls in place at SWMU 021 (Ransom Road Sandblast Yard). Any additional concerns may be covered under that site's Land Use Control Implementation Plan (LUCIP).

FDEP stated if we have data to show this we just need to see it. We need the assurance that it does not go beyond the control data.

NASA will look at historical information and if required we can sample and delineate.

The Team reached consensus to conduct additional shallow soil sampling beyond the south and southwest fence line **(2306-D36).**

The Team reached consensus to present data to the Team once PCBs are delineated **(2306-D37).**

The Team reached consensus to conduct soil IM removal and disposal for the PCB-contaminated soils at the Northeast, Southeast, and Western Shallow Soil PCB Plume areas. See the ADP presentation for the proposed soil removal areas and the proposed IM Work Plan for each area **(2306-D38).**

The proposed IM Work Plan for the Northeast Plume Area includes removal of soils above the residential SCTL, removal of approximately 30 cubic yards of PCB-contaminated soil, and 1.0-foot total depth. If encountered, soil removal will be terminated at the water table. No additional sampling is required, the fence will not be removed, monitoring wells will not be removed, and due to the small area and underground utilities, the use of heavy machinery may not be feasible; soft digging by hand or vacuum may be required. The area will be restored to existing conditions.

The proposed IM Work Plan for the Southeast Plume Area includes removal of soils above the residential SCTL at GSRY and above the industrial SCTL at RRSY, removal of approximately 360 cubic yards of PCB-contaminated soil, and 2.0-foot total depth. If encountered, soil removal will be terminated at the water table. No additional sampling is required under this IM, if encountered, soil removal will be terminated at the water table, the excavation will occur during the dry season, the fence will be removed and reinstalled and a daily temporary fence will be required to maintain site security, due to extensive underground utilities, the use of heavy machinery may be limited in certain areas; soft digging by hand or vacuum may be required. The area will be restored to existing conditions.

The proposed IM Work Plan for the Western Plume Area includes removal of soils above the residential SCTL, removal of approximately 3,500 cubic yards of PCB-contaminated soil, and 3.0-foot total depth. If encountered, soil removal will be terminated at the water table. The fence will be temporarily removed and reinstalled and a daily temporary fence will be required to maintain site security, monitoring wells will not be removed, verification sampling will be conducted at the shoulders of the ditch along the southern and southwestern borders of the excavation extents; proposed locations are presented on the figure, underground utilities are known to reside in the northern and eastern areas; soft digging by hand or vacuum may be required to verify utility locations before heavy machinery can be used. The area will be restored to existing conditions.

Team consensus was reached to install one new monitoring well GSRY-MW0079, screened from 2 to 12 feet bls, at the GSRY-SB4164 location, which had the highest PCB concentration of 28 mg/kg at 0.5-1.0 feet bls, which is above Leachability for Groundwater, and collect a groundwater sample from GSRY-MW0079 for analysis of PCBs **(2306-D39).**

FDEP stated if you are going to use the entire asphalt area as a control may not need any more samples in the Northeast area. If NASA wants to sample under the asphalt, the land use control area might be reduced, but NASA might simply manage the whole. No sampling on the east side is going to be required.

NASA responded they would just keep the asphalt and maintain inspecting that control since the Ransom Road Sandblast Yard next door also has a LUCIP in place.

Results: Decision Items 2306-D36 through D39
Action Item 2306-A03

2306-M10 Scott Anderson/Tetra Tech

Hydrocarbon Burn Facility (HBF) Groundwater Modeling Update, June 2023

Objective: This advance data package (ADP) provides an update on per- and polyfluorinated alkyl substances (PFAS) assessment activities and the data generated to support development of a Conceptual Site Model and a groundwater model. It is for informational purposes.

Discussion:
There is perfluorooctanesulfonic acid (PFOS) throughout the site, some of which will be addressed under other investigations. The main focus of this presentation is the shallow and intermediate zones within the centralized portion of the HBF.

Plumes appear to generally trend north/south and in line with depressions that fill up with water. That is also observed at Schwartz Road Landfill (which falls under another study) to the northwest of HBF.

Recent assessment activities focused on the shallow and intermediate zones. An updated site conceptual model was developed.

During precipitation events in the dry season and during wet season, there appears to be migration from the intermediate (I) to the shallow (S) zone into the surface water features southeast of the source area/burn pan area. During the wet season, contaminant loading to surface water features is maximized. There appears to be lateral spread within the surface water features and strong downward migrations in source area/burn pan area above the clay unit.

A total of 96 groundwater monitoring wells area are present at the HBF. The wells occur in clusters in three distinct zones; less than 10ft (shallow [S]), 10-30ft 9intermediate [I]), and greater than 30 ft

(lower intermediate [LI]). For the transducer study synoptic event, seventeen pressure transducers were installed in well clusters across the site to provide spatial and vertical resolution of groundwater elevations through time. Three pressure transducers were installed in surface water (stilling wells). One barometric pressure transducer was installed at the site to record atmospheric pressure. Transducers collected data a 5-minute intervals from November 2022 to January 2023 (approximately 6 weeks). Precipitation data was collected over the same time period.

Comparison of long-term water level analysis determined that the direction of gradient flips with downward trend from March to May and upward trend November to January in the north-central area of the site.

In summary, transducers collected data during the dry season and wet season. Each study was approximately 6 weeks long and approximately six months apart. The tidal influence is more apparent in dry season, though doesn't impact gradients/flow. Vertical gradients at well clusters typically downward during the dry season with direction flipping upward during precipitation events, returning downward after a few days (return to static conditions). Vertical upgradients at well clusters within the site (not along Static Test Road) are typically upward during wet season. Larger (increased) vertical gradients between S and I/LI zones for well clusters along Static Test Road during wet season. However, many of these well clusters exhibit upward gradients between I and LI zones. Precipitation events and wet season drive vertical gradients, which contribute to groundwater flow and contaminant migration, including discharge to the Banana River. Horizontal gradients and groundwater flow directions are generally consistent from on-site to Banana River though both wet and dry seasons.

Next steps include staff gauges being installed to evaluate linear surface water features in the area of the PFAS plume. Synoptic water levels will be recorded from staff gauges and HBF wells and analyzed to better simulate groundwater flow from the HBF area. This staff gauge data, Conceptual Site Model and groundwater modeling will be presented in the next PFAS Assessment Report Addendum.

2306-M11 Robert Lynch/HGL

GSA Reclamation Yard West (SWMU 036) Confirmatory Sampling (CS) Results and Interim Measures (IM) Work Plan, June 2023

Objective: This advance data package (ADP) is to present the CS activities conducted between 2021 and 2022 and the proposed soil IM. Based upon evaluation of the data, recommendations are presented to obtain consensus on the proposed IM to remove soils that exceed the industrial soil cleanup target levels (iSCTLs) for lead (Pb) and benzo(a)pyrene equivalent (BAPE).

Discussion:

Confirmatory Sampling

The CS activities conducted between April 19, 2021, and October 10, 2022, at the GSA Reclamation Yard West (GSRW) site included the collection of 40 groundwater samples from 10 direct push technology (DPT) boring locations; 217 soil samples screened with a photoionization detector (PID) from 82 borings for organic vapor analysis (OVA); and the collection of 120 soil samples from 91 boring locations. CS activities were conducted to determine presence or absence of contaminants of potential concern (COPCs) identified by the SWMU Assessment (SA)/CS Work Plan (CSWP); delineate contaminants of concern (COCs); and close data gaps.

Groundwater Sampling

LOC 8 (Diesel Above Ground Storage Tank [AST]Area) and LOC 10 (Vinyl Chloride Groundwater Exceedance Area)

CS groundwater activities were completed in April 2021. DPT groundwater samples were collected from 1 boring at Location of Concern (LOC) 8 and 9 borings at LOC 10. Samples were collected from screen centerpoints at 10, 20, 30, and 40 feet (ft.) below ground surface (bgs). The samples from LOC 8 were analyzed for volatile organic compounds (VOCs), and the sample from the shallowest interval was additionally analyzed for total recoverable petroleum hydrocarbons (TRPH). The groundwater samples from LOC 10 were analyzed for vinyl chloride (VC) only. All groundwater analytical results were either non-detect or below Florida Department of Environmental Protection (FDEP) groundwater cleanup target levels

(GCTLs). No further assessment of groundwater for VOCs and TRPH at LOC 8 or VC at LOC 10 is recommended.

OVA Screening

HGL conducted OVA screening using a PID at 42 borings at LOC 7 (Northern Staging Area); 4 borings at LOC 8 (Diesel AST); 5 borings at LOC 11 (Hydrocarbon Odor); and 31 borings at LOC 12 (Stormwater Runoff Areas). Each boring was screened at 0 to 0.5 ft bgs; 0.5 to 2 ft bgs; and then every 1-ft interval down to the water table. On average, the water table was encountered between 2 and 3 ft bgs. PID readings ranged between 0 and 19.2 parts per million. Results of the OVA screenings were used to assess/identify CS soil sampling locations.

Soil Sampling

Initial CS activities in 2021 involved the collection of soil samples from all 5 LOCs where soil contamination was thought or known to be possible. Soils were analyzed for various COPCs identified by the SA/CSWP (HGL, 2021): metals, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), TRPH, and VOCs. Various SCTL exceedances were detected (metals; BAPE; and total PCBs). By October 2022, delineation to residential SCTLs (rSCTLs) was achieved. The analytical results for each LOC are summarized below.

LOC 7-1 – East End of Northern Staging Area

Detections of BAPE and PCBs at SB0001 and SB0002 exceeded their respective rSCTLs. Lateral and vertical delineation to the rSCTLs was achieved for the 2 COCs. All BAPE and PCB concentrations were less than their respective leachability SCTL (lSCTL) and iSCTL. Analytical results for all vertical step-down soil samples were below SCTLs. No further assessment for BAPE and PCBs is recommended for LOC 7-1.

LOC 7-2 – Central Part of Northern Staging Area

Detections of arsenic (As) above the rSCTL were noted in 2 borings (maximum detection was 5.7 mg/kg at SB0006 in the 0 to 0.5 ft bgs interval). Detections of PCBs above the rSCTL were noted in 5 borings (maximum detection was 1.6 mg/kg at SB0004 in the 0 to

0.5 ft bgs interval). Delineation to the rSCTLs for As and PCBs was achieved laterally, and vertically in the 0.5 to 2 ft bgs sample interval.

Concentrations of TRPH exceeded the rSCTL in 1 boring (SB0004). The soil sample was re-collected and analyzed for petroleum hydrocarbon fractionation using the Massachusetts DEP [MADEP] volatile petroleum hydrocarbon [VPH] and extractable petroleum hydrocarbon [EPH] methods. The soil sample was re-collected for TRPH and fractionation analysis in unison. Analytical results for both were below the SCTLs. No further assessment for As, PCBs, and TRPH is recommended for LOC 7-2.

LOC 7-3 – West End of Northern Staging Area

Concentrations of PCBs at SB0007 and SB0045 exceeded the rSCTL. Delineation to the rSCTLs for PCBs was achieved laterally, and vertically in the 0.5 to 2 ft bgs sample interval. No further assessment for PCBs is recommended for LOC 7-3.

LOC 8 – Diesel AST Area

A soil sample was collected from 0 to 0.5 ft. bgs and analyzed for TRPH and VOCs. VOCs were non-detect and TRPH was detected below Florida DEP SCTLs. No further assessment is recommended for LOC 8.

LOC 9 – TRPH Exceedance Area

Two soil samples were collected for TRPH at SB0014 from 0 to 0.5 and 0.5 to 2 ft. bgs. The maximum detection (742 mg/kg at 0-0.5 ft bgs) exceeded the lSCTL and rSCTL. The soil sample was re-collected from 0 to 0.5 ft bgs for TRPH and fractionation in unison. The concentration of TRPH confirmed the initial rSCTL exceedance, but the fractionation results were below SCTLs. No further assessment is recommended for LOC 9.

LOC 11 – Hydrocarbon Odor Area

TRPH exceeded the lSCTL and rSCTL at SB0009 but subsequent fractionation results were below SCTLs. To confirm the fractionation data, a soil sample was re-collected for TRPH and fractionation. The concentration of TRPH confirmed the initial

rSCTL exceedance, but the fractionation results were below SCTLs. No further assessment is recommended for LOC 11.

LOC 12-1 – Stormwater Runoff Area

Soil concentrations were detected above SCTLs for various metals (antimony [Sb], As, chromium [Cr], copper [Cu], and nickel [Ni]), PCBs, and TRPH. All COCs were vertically delineated in the 0.5 to 2 ft bgs sample interval.

Concentrations of TRPH exceeded the lSCTL and rSCTL at 2 borings but subsequent fractionation results were below the SCTLs. In speciation analysis for hexavalent Cr (Cr[VI]), Cr(VI) was not detected, eliminating Cr as a COC.

All soil leachate analytical results for various metal extracts (Sb, As, Cr, Cu, and Ni by Synthetic Precipitation Leaching Procedure [SPLP]) were either non-detect or below GCTLs. The remaining SCTL exceedances of As, Cu, Ni, and PCBs were delineated vertically by 2 step-down samples (0.5 to 2 ft bgs) and 10 lateral step-out samples. No further assessment is recommended for LOC 12-1.

FDEP inquired whether the SPLP extract was analyzed for total or hexavalent chromium. HGL replied that the SPLP for SB12 and SB13 was for total chromium since there is no leachability SCTL for hexavalent chromium.

LOC 12-2 – Stormwater Runoff Area

Originally, soil samples were collected at 3 borings from 0 to 0.5 ft bgs. The only exceedances included Cr and Ni above their respective rSCTLs at 1 boring. Speciation results for Cr(VI) were below SCTLs, eliminating Cr as a COC. Delineation to below the rSCTL for Ni was achieved both laterally and in the 0.5 to 2 ft bgs sample interval vertically. No further assessment is recommended for LOC 12-2.

LOC 12-3 – Stormwater Runoff Area

Originally, soil samples were collected at 3 borings from 0 to 0.5 ft bgs. The only rSCTL exceedances included As and Cu at 1 boring. A lSCTL exceedance of Cr was additionally detected at the same boring. Speciation results for Cr(VI) were below SCTLs, eliminating

Cr as a COC. Vertical delineation to below rSCTLs for both As and Cu was achieved in the 0.5 to 2 ft bgs sample interval. An aluminum pad impeded the collection of a lateral step-out to the east, however, lateral delineation to below the rSCTL was achieved. All soil leachate analytical results reported for metals by SPLP extraction were either non-detect or below GCTLs. No further assessment is recommended for LOC 12-3.

LOC 12-4 – Stormwater Runoff Area

Originally, soil samples were collected at 3 borings from 0 to 0.5 ft bgs. The only rSCTL exceedance included As. Delineation to the rSCTL for As was achieved laterally and in the 0.5 to 2 ft bgs sample interval vertically. No further assessment is recommended for LOC 12-4.

LOC 12-5 – Stormwater Runoff Area

Originally, soil samples were collected at 3 borings from 0 to 0.5 ft bgs. Two samples had BAPE and various metals (Cu, Pb, Ni, Sb, and Cr) SCTL exceedances. Speciation results for Cr(VI) were below SCTLs, eliminating Cr as a COC. The concentration of Pb at SB0022 (2,060 mg/kg) and the concentration of BAPE at SB0023 (1.035 mg/kg) exceeded their respective iSCTLs. Vertical delineation to the rSCTLs at SB022 was achieved for Pb (at 0.5 to 2 ft bgs) and Cu (at 2 to 3 ft bgs). Vertical delineation to the rSCTLs for BAPE, Cu and Ni was achieved at SB0023 at 0.5 to 2 ft bgs. Lateral delineation for Cu, Pb, Ni, and BAPE around SB0022 and SB0023 was achieved using 11 step-out samples. All soil SPLP analytical results reported for metals (Sb, Cu, Pb, and Ni) were either non-detect or below GCTLs. A soil interim measure is recommended for LOC 12-5.

Recommendations

Prepare an IMWP to remove soils that exceed the iSCTL for Pb (SB022) and BAPE (SB0023) at LOC 12-5.

Upon completion of the IM, a Statement of Basis (SB) and Land Use Control Implementation Plan (LUCIP) is recommended to address the remaining rSCTL exceedances of As, Cu, Ni, BAPE, and PCBs onsite.

The soil removal action will enable conditional site closure under Florida Administrative Code Chapter 62-780.680 Risk Management Option Level II.

FDEP noted that there has been awhile since the monitoring wells have been sampled. HGL added that there was a more comprehensive 2021 April event where all were below GCTLs. The full VOCs TRPH, VC was all below limits. FDEP commented that would be good to see.

FDEP total metals analysis was run concurrently with SPLP analysis? HGL believes they did. FDEP noted the statement on Slide 49 that the method detection limits for metals in the SPLP extract was above the associated GCTLs, so that the non-detected values are above GCTLs. FDEP stated this was pretty unusual for metals and will review this carefully when a report is submitted.

Soil IMWP Proposed Footprint

Soil shall be excavated from 0 to 0.5 ft bgs for the Pb footprint (194.5 sq ft; 3.6 cubic yards) and BAPE footprint (313.7 sq ft; 5.8 cubic yards). The aluminum pad to the south provides engineering controls preventing potential human exposure to potential COCs. If the engineering controls are removed, additional assessment is warranted prior to site closure. FDEP inquired how we ensure the aluminum plate does not move? NASA responded that is addressed with quarterly LUCIP inspections. The inspector can check for potential movement by checking coordinates using a global positioning unit the unit each time if needed. The Remediation Program can also reach out to the Facility Manager to request that if a move is planned, they will reach out to the NASA Remediation Program first. It was also noted that these plates are not easily moved. There are jersey barriers and roll offs staged there so it isn't easy to relocate that plate.

The Team reached consensus that confirmatory sampling activities demonstrated that site groundwater does not exceed GCTLs **(2306-D40).**

The Team reached consensus that confirmatory sampling activities demonstrated that site soils exceeding SCTLs have been fully delineated **(2306-D41).**

The Team reached consensus for the proposed Interim Measure excavation boundaries at LOC 12-5 to remove soils that exceed the iSCTL for:

a. Pb (SB022); bound by sample locations below iSCTL (SB0062, SB0063, and SB0074); and

b. BAPE (SB0023); bound by sample locations below iSCTL (SB0064, SB0065, and SB0066) **(2306-D42).**

The Team reached consensus to prepare a Statement of Basis (SB) and Land Use Control Implementation Plan (LUCIP) to document and maintain land use controls for soils with As, Cu, Ni, BAPE, and PCBs above the rSCTLs **(2306- D43).**

Results: Decision Items 2306-D40 through D43

2306-M11 Chris Adkison/NASA

CAMP Update, June 2023

Objective: NASA to provide a look-ahead of the upcoming schedule.

Discussion:
NASA provided an update of the CAMP and scheduled reports.

If you have updates/changes/mods, please let Chris Adkison know so he can make the changes.

NASA had to cancel one meeting late last year which caused our February meeting to be quite robust. We had to shift to accommodate things and believe we are back to where we need to be moving forward. Deliverables slid to the right.

June turned out to be fairly robust, but with STRIVES (export control) reviews, a lot had to be pushed out to July, August, or September. We have some documents being routed through STRIVES now and FDEP should be receiving those in the next week or so. July becomes light but then August and September will be more robust as a domino effect result from a few months ago.

2306-M12 KSCRT

Miscellaneous Discussion

The CCB project team heard back on Provect IR60; it is covered under the previous Provect IR. Tetra Tech will forward FDEP the approval email (to Jason French). It looks like we are good to use that product for the Convertor/Compressor Building MW21 area **(2306-A04).**

Results: Action Item 2306-A04

AECOM

1. MLVP IM Progress Report (Linnea King Clark)(60 min)
2. VAB LTM (Chad Lee) (45 min)
3. Q6 Radar Station Soil IM (Chad Lee) (30 min)
4. MLPV HS RAE (Linnea King Clark/Randy Sillan)(45 min)

HGL

1. CM&S Site Characterization (Jason Bublitz) (45-60 min)
2. Air Sparge Abandonment for the VPF (Jason Bublitz) (30 min)
3. SLF Area PFAS new MW locations (Howard Fowler)

Tetra Tech

1. LC 34 Annual PMR (Mark Jonnet) 60 min
2. East CCF Annual PMR (Mark Jonnet 45 min
3. HBF IGWM ADP (Jen Buel) 40 min

2023 Meeting Dates (continues to be hybrid option in 2023)
August 3rd and 4th
October 5th and 6th
November 30th and December 1st

FDEP
15-20-minute FDEP update by Program Manager
Natasha Darre is the team leader next meeting so email topics to this individual after the meeting is over.

June 2023 Decision Items Rev 2		Decision
Decision No.	Minutes Reference	
2306-D01	2306-M01	**Meeting Minutes and Miscellaneous Items:** Reviewed the outstanding consensus items. Obtained consensus that Revision 1 of the April 2023 KSCRT meeting minutes and action items are final. Team members are aware and do not object that meeting minutes and decision/action items may become public as part of a report at a later date.
2306-D02	2306-M04	**False Cape Data Collection Annex (SWMU 113) Monitoring Well Network:** Team consensus was reached to install monitoring wells at the recommended locations on Slide 21, with the addition of a well installed for vertical delineation at location MW-F.
2306-D03	2306-M05	**Soil Interim Measures at Various Sites (South Water Pump Station [PRL 213]):** The Team reached consensus for No Further Action (NFA) for soil and groundwater at the site.
2306-D04	2306-M05	**Soil Interim Measures at Various Sites (South Water Pump Station [PRL 213]):** The Team reached consensus that a Site Rehabilitation Completion Order Request Letter will be prepared.
2306-D05	2306-M06	**Convertor/Compressor Building (SWMU 089) Annual Performance Monitoring Update:** The Team reached consensus to transition from PM to LTM with next reporting period (January 2023 – December 2023) as Year 1 of LTM.
2306-D06	2306-M06	**Convertor/Compressor Building (SWMU 089) Annual Performance Monitoring Update:** The Team reached consensus to continue sampling 25 wells plus MW62 and MW64 annually in December 2023 and 23 wells biennially in December 2024 to monitor VOC contaminant trends; well IDs and sampling frequency are shown on Slide 18 of the presentation. Sampling results will be presented to the KSCRT prior to submittal of 2023 Annual LTM Report.
2306-D07	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to install a new monitoring well with a screen interval of 15 to 25 feet bls at the RRLF-DPT0024 location for RRLF.
2306-D08	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial LTM sampling frequency at the RRLF with now five monitoring wells for vinyl chloride (VC) and collection of 16 water level measurements in November 2024.
2306-D09	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial LTM sampling of now nine monitoring wells (which includes addition of M505-MW0029) for trichloroethylene (TCE), cis-1,2-dichloroethene (DCE, and VC and collection of 35 water level measurements in November 2024 at Building M505 (SWMU 039).
2306-D10	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial LTM sampling with now three monitoring wells (which includes addition of O_C-MW0006I) for vinyl chloride and collection of five water level measurements in November 2024 for the O&C site (SWMU 076).
2306-D11	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to install a new monitoring well with a screen interval of 3 to 13 feet bls adjacent to VPF-MW0023 at the VPF site (SWMU 077).
2306-D12	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** Test consensus to continue biennial LTM sampling with now nine monitoring wells for TCE, cis-1,2-DCE, and VC and collection of 35 water level measurements in November 2024 at the VPF site (SWMU 077).
2306-D13	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** Team reached consensus to install a new monitoring well with a screen interval of 15 to 25 feet bls at EHF-DPT0005 location (SWMU 079).
2306-D14	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial LTM sampling frequency with now four monitoring wells for VC and collection of seven water level measurements in November 2024 at the EHF site (SWMU 079).
2306-D15	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to discontinue MNA of groundwater at KARS Park I (SWMU 084).
2306-D16	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to abandon monitoring well KP1-MW0017 at KARS Park I (SWMU 084).
2306-D17	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue current sampling schedule, which includes November 2024 LTM sampling of two monitoring wells (EDL-MW0004 and EDL-MW0006R) for VC and collection of four water level measurements at the EDL site (SWMU 085).
2306-D18	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial LTM sampling of CGO-MW0018 and CGO-MW0019 for select volatile organic compounds (VOCs) (benzene; 1,2,4-TMB; xylenes; and MTBE) and CGO-MW0006 for the same VOCs plus naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene, and collection of nine water level measurements in November 2024 at the MOBIL site (SWMU 093).
2306-D19	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached tentative consensus to abandon nine historically clean perimeter monitoring wells (CGO-MW0002, CGO-MW0003, CGO-MW0004, CGO-MW0008, CGO-MW0009, CGO-MW0010, CGO-MW0012, CGO-MW0013, and CGO-MW0016) at the MOBIL site (SWMU 093).
2306-D20	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue annual LTM sampling of 14 monitoring wells for VC with three select monitoring wells also sampled for naphthalene and collect 33 water level measurements in November 2023 at the GSSP site (SWMU 095).
2306-D21	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue biennial sampling of five monitoring wells for ammonia and collect 15 water level measurements in November 2024 at the SSPF site (SWMU 095).
2306-D22	2306-M07	**Industrial Area (IA) Long-Term Monitoring (LTM) Update:** The Team reached consensus to continue annual LTM sampling of 10 monitoring wells for select VOCs (isopropylbenzene) and select polynuclear aromatic hydrocarbons (1-methylnaphthalene and 2-methylnaphalene) and collect 18 water level measurements in November 2023 at the FSA1 site (PRL 157).
2306-D23	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual monitoring of MWs 01, 02, 07ID, 44, 45, 46, and 81 in the upgradient Eastern plume area with samples analyzed for VOCs by 8260B.
2306-D24	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus that the IM is operating as designed and to continue operation of the same sparging wells operated in 2022 to prevent upgradient contamination from impacting the treated zone.
2306-D25	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to conduct semi-annual sampling of MW21R to determine if VC decreases to less than GCTLs.
2306-D26	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual sampling of wells 09, 10, 11, 12, 20, 49, 71, and 72 with all groundwater samples to be analyzed for VOCs by 8260B.

June 2023 Decision Items Rev 2		Decision
Decision No.	Minutes Reference	
2306-D27	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue biennial sampling of wells 04, 05, 06, 47, 48, 73, and 74 with all groundwater samples to be analyzed for VOCs by 8260B. December 2023 will be the annual sampling event and December 2024 will be the biennial sampling event.
2306-D28	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual monitoring of MWs 13, 14, 15, 19, 50, 51, 70, 75, and 76 downgradient of the Hot Spot Treatment Area with samples analyzed for VOCs by 8260B.
2306-D29	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual monitoring of MWs 13, 14, 15, 19, 50, 51, 70, 75, and 76 downgradient of the Hot Spot Treatment Area with samples analyzed for VOCs by 8260B.
2306-D30	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus that the IM is operating as designed and to continue operation of the air sparging barrier as operated in 2023 to prevent upgradient contamination from impacting Barge Canal.
2306-D31	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue semi-annual sampling of MWs 16, 18, 54, 59, 60, 61, 77, and 78 to monitor the effectiveness of the sparging barrier preventing groundwater contamination discharge to Barge Canal. All groundwater and surface water samples to be analyzed for VOCs by 8260B. SWs 06, 07, and 08 will no longer be sampled based on all results BDLs .
2306-D32	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual monitoring of MWs 23, 24, 25R, 27, 29, 30R, 37, 38, 39, 40, 41, 42, and 82, with samples to be analyzed for VOCs by 8260B.
2306-D33	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue annual monitoring of western upgradient MWs 23, 24, 25R, 27, 29, 30R, 37, 38, 39, 40, 41, 42, and 82, samples analyzed for VOCs by 8260B.
2306-D34	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus that the IM is operating as designed and to continued operation of the air sparging barrier as operated in 2022 and the new eastern expansion to the barrier to prevent upgradient contamination from impacting Barge Canal.
2306-D35	2306-M08	**Area South of K7-0516 (SWMU 100) Interim Measure Operation, Maintenance and Groundwater Monitoring Update:** The Team reached consensus to continue semi-annual sampling of MWs 31, 32, 33, 35, 36, 63, 68, 79, 80, 83, and 84 and SWs 09 and 10 to support the effectiveness of the sparging barrier preventing groundwater contamination discharge to Barge Canal. All groundwater and surface water samples to be analyzed for VOCs by 8260B; SWs 03, 04, and 05 will no longer be sampled based on all results BDLs.
2306-D36	2306-M09	**GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan:** The Team reached consensus to conduct additional shallow soil sampling beyond the south and southwest fence line.
2306-D37	2306-M09	**GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan:** The Team reached consensus to present data to the Team once PCBs are delineated.
2306-D38	2306-M09	**GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan:** The Team reached consensus to conduct soil IM removal and disposal for the PCB-contaminated soils at the Northeast, Southeast, and Western Shallow Soil PCB Plume areas. See the ADP presentation for the proposed soil removal areas and the proposed IM Work Plan for each area.
2306-D39	2306-M09	**GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan:** Team consensus was reached to iInstall one new monitoring well GSRY-MW0079, screened from 2 to 12 feet bls, at the GSRY-SB4164 location, which had the highest PCB concentration of 28 mg/kg at 0.5-1.0 feet bls, which is above Leachability for Groundwater, and collect a groundwater sample from GSRY-MW0079 for analysis of PCBs.
2306-D40	2306-M11	**GSA Reclamation Yard West (SWMU 036) Confirmatory Sampling (CS) Results and Interim Measures (IM) Work Plan:** The Team reached consensus that confirmatory sampling activities demonstrated that site groundwater does not exceed GCTLs.
2306-D41	2306-M11	**GSA Reclamation Yard West (SWMU 036) Confirmatory Sampling (CS) Results and Interim Measures (IM) Work Plan:** The Team reached consensus that confirmatory sampling activities demonstrated that site soils exceeding SCTLs have been fully delineated.
2306-D42	2306-M11	**GSA Reclamation Yard West (SWMU 036) Confirmatory Sampling (CS) Results and Interim Measures (IM) Work Plan:** The Team reached consensus for the proposed Interim Measure excavation boundaries at LOC 12-5 to remove soils that exceed the iSCTL for: a. Pb (SB022); bound by sample locations below iSCTL (SB0062, SB0063, and SB0074); and b. BAPE (SB0023); bound by sample locations below iSCTL (SB0064, SB0065, and SB0066).
2306-D43	2306-M11	**GSA Reclamation Yard West (SWMU 036) Confirmatory Sampling (CS) Results and Interim Measures (IM) Work Plan:** The Team reached consensus to prepare a Statement of Basis (SB) and Land Use Control Implementation Plan (LUCIP) to document and maintain land use controls for soils with As, Cu, Ni, BAPE, and PCBs above the rSCTLs.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Comments
1712-A01	1712-M07	Team	If a document contains materials controlled under EAR99 (as determined by Export Control), the following clause shall be included on the first page (Action item): "EAR99 – NO LICENSE REQUIRED This information or item is controlled under the Export Administration Regulations (EAR) as EAR99. It may be exported without a license, expect to embargoed/designated countries (General Provision Six) or entities of concern. The designation of EAR99 does not constitute public release. Per Lori Ray, Reference STI TN#### NASA KSC Export Control Office, 321-867-9209."	Open	Standing Open Item
1810-A01	1810-M01	Team	NASA legal is concerned about copyright infringement regarding the inclusion of lab reports in documents. Reach out to labs to get release statements from them for the lab reports.	Open	Standing Open Item
2002-A03	2002-M10	A&Es	NASA requests that all A&E firms please large file transfer the .pdf and PowerPoint versions of the ADPs being presented so they can be uploaded to the folder and utilized for the team meeting. Cover letters should summarize the goal of the ADPs and the consensus statements should be provided for the minutes.	Open	Standing Open Item
2102-A09	2102-M13	Team	General Comment: FDEP observed that, based on the current monitoring network and plume depiction, one could think the plume is not delineated. Trepidations exist about making decisions without understanding how MNA has progressed. For clarity moving forward, the NASA lead requested that future documents include the end point assessment map that shows that we have plume delineation at a site, as well as a cross-section reference (e.g., what was the last map that brought us to the point of LTM, and where are we now [all the circa data circa]).	Open	Standing Open Item
2102-A07	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (ORSY Site):** FDEP inquired about past results for monitoring well ORSY-DRM-MW0001I. NASA stated they will look into the historical sampling results and get back with the Team.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A08	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (EHF Site):** FDEP and NASA discussed the site. NASA stated that the MNA program is routinely optimized, but this site was never included in an engineering evaluation process. Mounding takes place at this location, and a building was removed in the past few years. NASA took an action item to review the sampling data in the RFI for this location.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A10	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (M7-505 Site):** NASA took an action item to investigate if there are deeper data points around the location of MW0033.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A11	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (GSSP Site)**: FDEP inquired if this site was delineated to the northwest of the lake, and if we have vertical delineation at this location. NASA stated a site characterization was performed in 2012. In 2009, DPT55 was placed on the west side of the pond (west of MW0035) and DPT56 was located on the east side of the pond (20ft NW of the location of monitoring wells MW0033, MW0034, and MW0035). On the west side there were no detections, and on the east side there were low detections. Surface water was also sampled here. NASA took an action item to provide this data to FDEP for reference following the meeting.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.
2102-A12	2102-M13	NASA (RPO)	**Industrial Area LTM, February 2021 (KARS Park 1 Site):** FDEP inquired if this was a skeet range previously? NASA stated there was a rifle/pistol range with a skeet range to the west (reference slide 154). FDEP inquired on the groundwater in the rifle/pistol range area? NASA stated that the groundwater was not monitored in that area. Tetra Tech pulled up the old wells in a previous presentation figure during the meeting. The only well shown in the area of discussion was in the lead shot area (KP1-MW0007). FDEP stated they would like to know what happened west of LOC 9 if NASA can provide that data. NASA took an action item to look into this.	Open	Findings and recommendations were submitted to FDEP. NASA is implementing the recommendations and will be revisited at a later date.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Comments
2106-A01	2106-M03	NASA/FDEP	**NASA Remediation Program Updates, June 2021:** FDEP stated that, regarding the existing Statement of Basis template being acceptable, it would be best for FDEP and NASA to have a follow up meeting to review the current template. FDEP and NASA can decide from there.	Open	
2106-A02	2106-M03	NASA/FDEP	**NASA Remediation Program Updates, June 2021:** Regarding updating the Statement of Basis (SB) for a site after an IM has taken place (post initial SB publication), FDEP agrees that this is an administrative item and it does have significance. For the Federal Facilities Branch, it may not be critical to see the change in SB post IM, but the RCRA Program may have a different perspective. We need an understanding of what are considered significant changes on the permit, what triggers public notification, etc. That is a conversation NASA and FDEP should have to provide firmer ground on what is required going forward.	Open	Most of this has been addressed in the current permit modification, but still need a follow up meeting with FDEP to discuss the SB requirements.
2203-A05	2203-M09	NASA	**Industrial Area (IA) Long-Term Monitoring (LTM) Update, March 2022:** FDEP requested a brief letter report with the findings to support discontinuing the MNA at this OSRY (SWMU 004) site for groundwater. NASA confirmed it would provide this.	Open	This is being worked currently.
2210-A01	2210-M02	NASA	**C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan:** NASA stated that the well with the detection is the downgradient well. There was not a detection in the upgradient well; it was a "J" exceedance. There may be surface water and groundwater interaction at that location. Perhaps under the Center-wide investigation, we can do a co-located sample at this location. This will be an action item for NASA and AECOM to discuss	Open	NASA discussed with AECOM (under Center-wide Investigation) who will collect a surface water sample at this location and collect a sample from the existing monitoring well.
2210-A03	2210-M03	NASA	**LC39A Operations Support Building Area (AOSB) (SWMU #111) Year One Performance Monitoring, October 2022:** The Team reached consensus to include PFAS analyses for MWs 10 and 11 during the semi-annual sampling events. FDEP inquired if this was going to be an effort included under a larger investigation eventually? NASA responded that the center is co-located with water bodies, and the river could be a source. There is a PFAS source associated with a former STP, but that is not located here. It may be worth adding a surface water sample to this area. Let's talk about our Center-wide investigation first and how this might tie in.	Open	This will be addressed under the Center-wide PFAS investigation.
2210-A05	2210-M05	NASA	**LC39B (SWMU 009) LOX Area DPT Investigations and Air Sparging:** FDEP referring to Slide 27 inquired why staining samples aren't sent to the lab? How do you ascertain whether there is petroleum in that interval? Tetra Tech stated if they didn't see the visual stain, they sent it to the lab for the other contaminants of concern (COCs). However, that is an easy addition to sample for. FDEP instructed the Team to collect from that interval and send the samples to the lab, versus performing a visual inspection.	Open	Soil samples will be collected in the future
2210-A10	2210-M10	NASA	**Base Support Building (SWMU 014) and KARS Park II (SWMU #118) PFAS Site Assessment Report:** NASA took an action item to sample the borrow pit to the west of KARS Park II.	Open	This will be addressed under the Center-wide PFAS investigation.
2304-A02	2304-M04	NASA	**CCB SWMU #089 - MW21 Area Groundwater IMWP:** Action item was added to look for this information (sodium and TDS) and submit to FDEP for their information.	Open	TDS sampling was available. Chris Adkison going to check further. If no sodium available then NASA will recommend sampling of three background wells moving forward for sodium and TDS. TDS and sodium were both available but old data. Will include the sampling of background wells for sodium and TDS moving forward.
2304-A03	2304-M04	NASA	**CCB SWMU #089 - MW21 Area Groundwater IMWP:** Tetra Tech will provide FDEP the trade names of the proposed chemicals to be used at the site via email as soon as possible.	Open	Follow up emails determined the trade name proposed has not been approved yet. Tetra Tech is following the process to get this chemical approved for use at this location and for future use.
2306-A01	2306 -M04	NASA	**False Cape Data Collection Annex (SWMU 113) Monitoring Well Network:** FDEP recommended a well installation at the MW-F location. NASA will confirm the depth of this new well in an email to FDEP.	Open	
2306-A02	2306-M07	NASA	**Industrial Area (IA) Long-Term Monitoring (LTM) Update :** FDEP inquired when was the last time GSSP-MW0027 and GSSP-MW0028 were sampled? Monitoring well GSSP-MW0054 is also high too. If it has been more than a decade you may want to sample those wells again. Action item to get back with FDEP with this information.	Open	
2306-A03	2306-M09	NASA	**GSA Reclamation Yard (SWMU 10) Shallow Soil Polychlorinated Biphenyl (PCB) Site Assessment and Proposed Interim Measures (IM) Work Plan:** Chapter 62-780 of the Florida Administrative Code requires delineation to below CTLs in every direction. Buildings and paved surfaces are being used in some areas as boundaries of the proposed excavation areas, and delineation is not complete beyond the southwest fence line. AECOM will need to take a look at that (southwest corner).	Open	
2306-A04	2306-M12	NASA	**Miscellaneous Discussion:** The CCB project team heard back on Provect IR60; it is covered under the previous Provect IR. Tetra Tech will forward FDEP the approval email (to Jason French). It looks like we are good to use that product for the Converter Compressor Building MW21 area.	Open	

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
1906-A01	1906-M01	NASA (Ryan O'Meara)	Per FDEP correspondence letter dated (March 22, 2019) RPM Ryan O'Meara will provide a site history of the Visitor Center Maintenance Area (SWMU 099) at a future team meeting.	Closed	10/2/2019	Discussion earlier this month with FDEP
1906-A02	1906-M11	FDEP	Discuss with FDEP Management to ensure Alternative Soil Cleanup Target Levels approved for use by Cape Canaveral Air Force Station for barium and copper may be applies to Kennedy Space Center sites.	Closed	8/8/2019	FDEP indicated that the ASCTLs that have been approved for use at CCAFS by the University of Florida can be referenced and applied to KSC sites. FDEP sent the Team an email on this subject on 6/27/19.
1908-A01	1908-M03	NASA Remediation Program wide	An action item was added for the NASA Remediation Program to begin adding a references section in all new and revised LUCIP documents moving forward.	Closed	2/6/2020	FDEP approved the use of a site-specific document reference within the NASA LUCIPs that states, "Site-specific documentation is available for review by contacting the Environmental Assurance Branch at telephone number (321)867-6971", moving forward.
1908-A02	1908-M04	FDEP	FDEP will check with their records department to add language that requires the preferred submission method of a report cover page with the CD only for report submittals moving forward.	Closed	10/23/2019	No FDEP mentioned record - this submittal method is acceptable.
1910-A01	1910-M02	NASA & TetraTech	Launch Complex (LC) 34 (SWMU CC054): DNAPL Source Zone Site Characterization Engineering Evaluation and Remedial Alternatives Evaluation (RAE) for the DSZ discussed the MWs in Layer 8 vertically delineating the TCE (four existing and four newly installed wells were sampled). The Team discussed the Layer 8 wells and recommended they be sampled as part of the next annual plume-wide sampling event scheduled in Dec 2020. An action item for NASA was added to work with Tetra Tech to make sure the deep wells get incorporated into the sampling program accordingly.	Closed	4/16/2020	These wells have been incorporated
2002-A01	2002-M07	A&Es	NASA requests that any updates to the PFAS six questionnaires be provided to Mark Speranza with Tetra Tech so he can utilize those same questions at other sites where Tetra Tech is investigating PFAS.	Closed	4/16/2020	No updates to questionnaires
2002-A02	2002-M07	FDEP	FDEP to look into the review and responses of the following document "White Paper: Development of Surface Water Criteria for PFOA and PFOS based on the protection of aquatic receptors" published by the Center for Environmental & Human Toxicology at the University of Florida , and provide input back to the Team.	Closed	6/18/2020	John Winters looked into and provided response on 05/22/2020 to the Team.
2008-A01	2008-M02	AECOM	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: There seems to be a gap of treatment with regards to wells IS1, 1D and 6IR and if the HS2 area is turned off, is there a concern of contaminants slipping through? AECOM clarified that these sparge wells are spaced closely but not operating at the same time. The ROI distance and spacing in the expansion was based on what was learned from the original system design. Looking at DO and ORP, and performance monitoring, AECOM is not seeing data that this area is not being treated. NASA inquired if the wells 1S, 1D, and 6IR are being sampled? AECOM stated these are not being sampled, but they will take an action to research why and come back with an explanation to FDEP.	Closed	10/8/2020	Teams meeting with AECOM on 8/27/20 - The recently observed ROI of the BS system overlaps at the space between treatment barrier walls, therefore there is not gap in treatment. IW0006IR was not sampled because collective data from previous DPT investigations indicated VOCs > 100 ug/L was not present at the 6IR location and that the ROI of treatment wells was treating the targeted >100 VC plume as designed. IW0001S was not sampled because it is not within the treatment interval. Conclusion: IW0001D and IW0006IR will be included in the upcoming September 2020 sampling event. IW0006IR will continue to be monitored for VOC and dissolved oxygen (DO) during OM&M events.
2008-A03	2008-M02	AE Firms	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: NASA asked the AE firms to query their teams to find out what sites are sampling using PDBs.	Closed	10/8/2020	HGL and Tetra Tech are not using PDBs at any of their sites. AECOM to look into the sites where this may be used and will report back to NASA. AECOM followed up with NASA that two sites were planned for use of PDBs to include Wilson Corners and the VAB LTM. Per NASA's request, PDBs will no longer be used in sampling moving forward, but the preferred "low-flow" sampling will be used from this point on.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2008-A04	2008-M03	AECOM	GSRY Reclamation Yard (SWMU #0010) - An April 2020 approval letter from FDEP regarding UIC at the site stated that since Provect-OX was applied to the saturated subsurface in multiple LDA/caisson excavation cells, monitoring for appropriate Underground Injection Control (UIC) parameters was recommended for a subset of wells, and should be analyzed for the iron, manganese, and sodium. After one year, sampling frequency and locations should be assessed. This means that the Team would need one additional sampling round to meet that year timeframe. AECOM will take an action to update the presentation prior to uploading to RIS for the records	Closed	10/8/2020	AECOM's Jennifer Joyal confirmed this presentation was updated prior to uploading to RIS.
2008-A05	2008-M07	FDEP	FDEP stated that the department has been doing a pilot project beginning with listing out dry cleaner and other cleanup sites. This PFAS tracking spreadsheet has minimal data and link to the reports associated with them, and the state is really trying to identify the max concentrations by media type. It is interesting to see what is coming up. AECOM inquired if the state has a list issued for the hazardous waste sites? AECOM did locate the dry-cleaning list. FDEP stated there are links in the spreadsheet to all different facilities to include landfills and electroplaters. There is an updated version of the tracking sheet, and FDEP will send out a copy to the Team.	Closed	10/8/2020	Laura Barrett (FDEP) provided the latest version of the tracking sheet to the Team.
1906-A03	1906-M09	NASA (Deda Johansen)	Component Refurbishment and Chemical Analysis (CRCA) facility (SWMU 041) Follow-up with NASA Compliance to determine if piping/sumps within the main CRCA building (K6-1696) and adjacent hazardous storage building are double-lined and compliant with Spill Prevention, Control, and Countermeasure (SPCC) requirements.	Closed	12/10/2020	NASA reached out to Jeff Bobersky (NASA Compliance SPCC) on this topic, and was referred to Albert Gibson (NASA Compliance Haz Materials/ Haz Waste) for answers. This piping is not subject to SPCC double-lined requirements, and should be discussed from a hazardous materials/haz waste compliance standpoint. Project has been reassigned from Ryan O'Meara to Deda Johansen
2010-A01	2010-M02	NASA	Components Refurbishment and Chemical Analysis (CRCA) Solid Waste Management Unit (SWMU) #041, Year 1 Operations Maintenance and Monitoring: NASA took an action item to transition MW0032 to quarterly monitoring.	Closed	12/10/2020	MW0032 has been transitioned to quarterly monitoring
2010-A02	2010-M02	NASA (Deda Johansen)	Components Refurbishment and Chemical Analysis (CRCA) Solid Waste Management Unit (SWMU) #041, Year 1 Operations Maintenance and Monitoring: NASA took the action to present a basket item after the next two rounds of quarterly groundwater data, which will take place in October 2020 and January 2021	Closed	12/10/2020	Tetra Tech presented groundwater data in a basket item at the 12/10/2020 KSCRT meeting to update FDEP on the October sample results for monitoring well CRCA-MW0032, and propose installation of MW0033 to monitor the downgradient plume edge west of MW0032
2010-A03	2010-M3	NASA (Anne Chrest)	KSC Headquarters Building Area (KHQA) (SWMU #104) Perimeter Soil IM Completion: NASA will provide a copy of the Interim Measure Work Plan for LOC 2D and 2E to FDEP	Closed	12/10/2020	Anne provided after meeting - FYI only and previously submitted and approved by FDEP earlier regime.
2010-A04	2010-M04	Tetra Tech	LC34 DNAPL Source Zone Remediation Alternative Evaluation (RAE) Discussion and Proposed Pilot Study, October 2020: Aquifer testing was conducted in 2019 for Layer 7. During the test, an upward gradient was observed in well pairs screened in Layers 6 and 8, suggesting an upward gradient. FDEP inquired if the Team recalls how much of a gradient was observe? TetraTech will take an action to provide that information following the meeting to FDEP.	Closed	12/10/2020	Mark Jonnet (Tetra Tech) provided the requested information to Kirk Johnson (FDEP) by email on 10/9/2020. Water level elevations at the paired wells differed by 0.7 to 0.8 ft and the average vertical gradient was 0.02 ft/ft.
2008-A02	2008-M02	AECOM & NASA	Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU #056) Corrective Measures Implementation (CMI) and Interim Measures (IM) Update, August 2020: An action item was assigned to NASA and AECOM to convene and review past data and devise a plan to present to the state regarding the data gap in the northwest portion of the site, and the downgradient wells that serve as the points of compliance, where the vinyl chloride results have recently exceeded its groundwater cleanup target level (1 µg/L) and show signs of increasing.	Closed	2/17/2021	AECOM is under contract to conduct additional groundwater assessment and installation of wells to the east of the biosparge barrier and railroad tracks. Up to 10 monitoring wells will be installed based on the results of the groundwater assessment.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2012-A01	2012-M02	NASA (Deda Johansen)	Maintenance and Operations (M&O) Building (SWMU #014) Confirmation Sampling Work Plan for Soil Land Use Control Implementation Plan (LUCIP) Removal, December 2020: NASA (Deda Johansen) took an action item to look more into the site history for data from the prior investigation	Closed	2/17/2021	A bibliography with brief descriptions of document content was prepared. It will be included in HGL's upcoming Confirmatory Sampling Work Plan for Soil LUCIP Close-out
2012-A02	2012-M03	NASA (Mike Deliz)	Review of Site Status and Deliverables, December 2020: FDEP inquired if NASA will be going over the outstanding CAMP documents later on, or if a list could be provided. NASA (Mike Deliz) took an action item to consolidate and send the outstanding document summary to FDEP	Closed	2/17/2021	A consolidation of the outstanding CAMP documents was provided to FDEP following the meeting
2102-A01	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP asked about the TDS and sodium results in the bioremediation area that are above Class GII groundwater standards. NASA responded that the sodium and TDS are compared to the KSC background levels, and took an action to provide the approved plan and data to FDEP for future reference.	Closed	4/28/2021	Completed - NASA sent both the background study and the approval letter to FDEP on 2/19/2021. A follow-up meeting was held between NASA, FDEP and HGL on 3/1/2021. FDEP requested a copy of the Decision Process Document, and as a follow-on later requested a copy of the actual background study. On 4/18/2021, FDEP recommended that NASA identify a suite of wells at the site that can be used to generate site-specific background information. NASA will follow that recommendation.
2102-A02	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP inquired if NASA has an UIC approval order to identify what NASA is using? NASA stated UIC monitoring was approved as part of the IM work plans that will be provided to FDEP .	Closed	4/28/2021	NASA provided FDEP with the 2016 and 2018 Bioremediation Work Plans that included the UIC Notifications as an appendix in each.
2102-A03	2102-M05	NASA (DJ)	Contractors Road Heavy Equipment Area (SWMU #055) 2020 Annual Groundwater Monitoring, February 2021: FDEP inquired if the Team resampled for benzene and chloroform at the site, and found these not to be a risk? NASA performed a real-time investigation during the KSCRT meeting of past data and did not find resampling of benzene. Since no soil benzene source was identified in soil or groundwater, and the detections did not exceed the commercial level, NASA submitted these sampling results to the NASA Industrial Hygiene Office for review. FDEP would like to see the email to help understand the resampling and rationale of the dropping of these chemicals off the sampling list. NASA will provide this benzene data to FDEP and have a discussion to review the data and also the UIC information from May/June 2014.	Closed	4/28/2021	NASA sent the Vapor Intrusion Memorandum to FDEP on 2/19/2021. A follow-up meeting was held between NASA, FDEP and HGL on 3/1/2021. FDEP's primary concern was that the sub-slab vapor results would be acted on if needed. NASA explained that KSC's Industrial Hygienist was consulted about the findings which FDEP had concerns about and found no need for action, and that vapor sampling results will continue to be provided to KSC's Environmental and Occupational Health organization.
2102-A04	2102-M10	NASA (DJ)	GSA Reclamation Yard (SWMU#010), DPT Results, February 2021: FDEP pointed out that the iron in monitoring well MW0071 exceeded the secondary standard. What is the basis for not including monitoring well MW0071? NASA responded that the results for iron were within the range of background values for KSC, and will provide documentation. FDEP stated that site-specific background data may be needed at some point. NASA took an action item to look at the RFI for that data, and provide to FDEP.	Closed	4/28/2021	The RFI and CMS groundwater metals data for GSRY were reviewed. The majority of the data are from the upper horizon of the aquifer (30 ft. or shallower), while the zone treated with Provect-OX™ was 40-50 ft below ground surface. In the 2021 wet season groundwater sampling event, samples for iron will be collected from a site well outside the treated area.
2102-A05	2102-M13	NASA (RO)	needs to be a downgradient well establishing the extent of the plume at FSA1 (PRL #157). Do we have one? AECOM took an action item to look into that request	Closed	4/28/2021	NASA will be installing a downgradient well.
2102-A06	2102-M13	NASA (RO)	Industrial Area LTM, February 2021 (FSA1 Site): NASA stated they will take a look into the prior DPT data to see if we need to install that well and provide the Team with an update and make a recommendation	Closed	4/28/2021	NASA will be installing a downgradient well.
2104-A01	2104-M04	NASA (AMC)	Area South of K7-0516 and Eastern Component Cleaning Facility (SWMU #030) Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: An action item to incorporate surface water sampling into the CCF monitoring program was assigned to NASA and Tetra Tech	Closed	6/22/2021	This surface water sampling was incorporated in the barge canal sampling program moving forward.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2012-A03	2012-M03	NASA (MD)	Review of Site Status and Deliverables, December 2020: Mike will summarize the look ahead and send a detailed version to FDEP that will provide site histories, what NASA has completed, and where they are going (plume maps, the works). FDEP inquired if they could also obtain a copy of the slides being presented today. NASA confirmed they would provide the slides via large file transfer	Closed	9/15/2021	Look ahead and maps have been provided to FDEP by NASA
2104-A02	2104-M04	NASA (AMC)	Area South of K7-0516 and Eastern Component Cleaning Facility (SWMU #030) Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: FDEP requested that the sampling plans for 2021 be documented in a letter since there will not be a report submitted this year for this site. NASA stated they would put a memo together and provide the work plan for the next year of monitoring	Closed	9/15/2021	FDEP referenced the April 2021 advance data package (ADP) in their review letters dated May 11, 2021 (for CCF, SWMU #030) and May 12, 2021 (for 516S, SWMU #100). Both letters state additional groundwater assessment activities will be conducted in 2021. This work has been delayed and will now occur in early 2022. The proposed sampling plans were presented in the April 2021 ADP. Revisions to the CCF East sampling plan will be presented at the September Team meeting. This meets the intent of this action item.
2106-A03	2106-M03	NASA	NASA Remediation Program Updates, June 2021: FDEP received a request from Florida Today requesting documents associated with PFAS on KSC. NASA stated they will provide the Oculus document/report names to FDEP to assist with the inquiry.	Closed	9/15/2021	NASA assisted FDEP with this inquiry
2012-A04	2012-M04	NASA (MD)	Firex Water Tank (SWMU #069) Confirmation Sampling Work Plan for Soil LUCIP Removal, December 2020: NASA (Mike Deliz) took an action item to see what NASA can find out on these discharge reports	Closed	11/9/2021	Internal discharge records were located and saved to the NASA shared drive. No additional spill records have been located for the release(s). The site entered the RCRA process through a SWMU Assessment and was added to KSC's RCRA Permit Appendix A. A Discharge Report Form does not appear to have been filed.
2109-A02	2109-M09	NASA (MJD)	KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021: NASA has conducted sampling in the Indian River for PFAS. NASA to provide FDEP with the surface water sample results from the Indian River	Closed	11/9/2021	Sample results provided to FDEP
2109-A01	2109-M09	NASA (AC)	Wilson Corners (SWMU 001) High Concentration Plume Site Characterization and Revised AS System Layout, September 2021: NASA will send historic groundwater sampling data to FDEP.	Closed	1/11/2022	This data was provided to FDEP on November 9, 2021, during the KSCRT meeting.
2109-A03	2109-M14	NASA (DJ)	General Services Administration Reclamation Yard (GSRY) SWMU 010, May/June Groundwater Monitoring Results September 2021: NASA asked that the pre-Interim Measure UIC sample results be added to the applicable figure and requested that AECOM update the table with pre-treatment results in the ADP and get that back to the Team for the records.	Closed	1/11/2022	The pre-Interim Measure UIC results were included in the UIC discussion in the annual groundwater monitoring report that was submitted in November 2021.
2201-A02	2201-M04	NASA	Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022: NASA will update the summary table for KARS Park I and email back out to the Team.	Closed	5/3/2022	addressed in the meeting minutes
2203-A01	2203-M03	NASA	Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022: FDEP requested that HGL provide information regarding the number of sample points necessary for Mann-Kendall statistical analysis	Closed	5/3/2022	HGL provided the requested information to FDEP in a follow up email on March 8, 2022 to FDEP.
2203-A04	2203-M06	NASA	GSA Reclamation Yard (SWMU 010) Groundwater Monitoring Update, March 2022: FDEP requested a synoptic figure of the last two clean sampling events of the two wells.	Closed	5/3/2022	AECOM provided figure to FDEP on March 9, 2022
2203-A06	2203-M09	NASA	CAMP Deliverables Look-Ahead and Document Requirements, March 2022: FDEP inquired if the CAMP document being presented is the document sent around March 1? NASA confirmed that it was, but that it was revised since then. For PRL 237, there were two errors on dates (inadvertently switched), but will send this after the meeting.	Closed	5/3/2022	NASA provided the updated CAMP to team members
2201-A03	2201-M04	NASA	Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022: NASA owes FDEP an update on Q6 Radar Station (SWMU #112), so they will put together an ADP to review the RFI they completed.	Closed	6/28/2022	contract was modified and NASA will present results for this in a future presentation

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2205-A02	2205-M08	NASA	**Wilson Corners (SWMU #001) 2021 Annual Long-Term Monitoring Update, May 2022:** FDEP stated that VOC concentrations are increasing to the west but the natural attenuation default concentrations (NADC) footprint hasn't changed much. AECOM confirmed that was correct. Based predominantly on DPT data, the existing wells are appropriate for the extent of the low-concentration plume (LCP). The performance monitoring wells are more on the interior of the plume and will give us a better idea of what is going on with the high concentration plume (HCP). FDEP inquired what the vertical head difference of the zones are that are being referred to. AECOM will look into this question and provide the information.	Closed	6/28/2022	AECOM provided vertical head data for 2019, 2020 and 2021 to FDEP on May 5, 2022.
1810-A02	1810-M04	NASA	**Launch Complex 39B (LC39B) (SWMU 009)** - revisit team consensus 1810-D13 on weir installation based on permits date expiration and Year 2 PM results. (Team consensus reached to suspend the weir installation since CVOC concentrations adjacent to the pond are below their respective GCTLs and to re-evaluate the need for the weir prior to the SJRWMD and USACE permit expiration (11 July 2023).	Closed	10/6/2022	The Team reached consensus to evaluate Action Item 1810-M04, 1810-A02 in 2022 to re-evaluate the need for a weir near OFW. Tetra Tech resampled for line of evidence and upon reviewing the results presented in an ADP on October 6, 2022, this action was closed out.
2201-A01	2201-M04	NASA	**Center-Wide Per- and Polyfluoroalkyl Substances (PRL #237) Phase III Solid Waste Management Unit Site Assessment and Confirmatory Sampling Report Summary, January 2022:** NASA stated that the red boundary (PFAS LOC) in the figure on slide 90 is for the fire station, and not for Central Supply. NASA will gather together the figures they are investigating, and provide to FDEP.	Closed	10/6/2022	This was addressed in the submittal of the Center-wide report.
2203-A02	2203-M03	NASA	**Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022:** FDEP inquired if there is still extensive VC present in the 46-60ft bls interval, which is depicted on a single figure What is below 60 ft bls? NASA responded that below 60 ft bls is clean and there were no exceedances at that interval. HGL added that DPT results achieved GCTLs at the 56-60 ft depth level. FDEP requested that this information be provided on separate figures (46-56 ft bls and a 56-60 ft bls), to show there is vertical delineation.	Closed	10/6/2022	This information was provided in the report submitted to FDEP on August 23, 2022.
2203-A03	2203-M03	NASA	**Contractors Rd Heavy Equipment Area (SWMU 055) 2021 Annual Groundwater Monitoring Report Advanced Data Package, March 2022:** FDEP requested a copy of the proposed DPT sample points. FDEP referenced the 2020 DPT in the HS1 area, noting some additional points on the southern side of the plume might be needed in the deeper interval. NASA responded they agree there exists a data gap on the southeast edge. In 2021, HGL collected more data to close those gaps. HGL and NASA will look to see if more data is needed in that locale. FDEP would also like to see the additional proposed points in the northwest area for defining the HC plumes NASA will get FDEP their initial plan when it is prepared.	Closed	10/6/2022	The proposed sampling locations were provided to FDEP on July 1, 2022.
2205-A01	2205-M03	NASA	**Annual Update on the Interim Measure Operation, Maintenance, and Monitoring at Area South of K7-516 and Interim Groundwater Monitoring of 516S and Eastern Components Cleaning Facility, May 2022:** FDEP recommended e a monitoring well with results showing that the groundwater plume is not having an impact on the OFW. Along with the two surface water samples, the monitoring well sample would provide a reasonable assessment. A screen interval similar to the other side of the air sparge curtain (27-37 bls) seems appropriate. HGL suggested consideration with placing the new monitoring well closer to the barge canal, similar to MW36. Tetra Tech will come up with a recommendation and provide a map to FDEP.	Closed	10/6/2022	NASA provided a map with the suggested well locations to FDEP on 06/19/2022. Close out.
2206-A02	2206-M04	NASA	**Annual Update on Launch Complex 34 :** A brief site history and background were provided on LC34. FDEP inquired if the part of the plume that is above GCTLs discharges to the Atlantic Ocean. Tetra Tech stated they had temporary wells along the ocean. They can go back and pull together the data if this would be helpful. FDEP agreed this would be helpful to understand the history of the site.	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.
2206-A03	2206-M04	NASA	**Annual Update on Launch Complex 34 :** FDEP referenced Slide 15, which gives an overview of the HCS. Are there groundwater flow maps available that present the depth to groundwater and groundwater flow within the capture zone? NASA requested this be captured as an action item to follow up on .	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2206-A04	2206-M04	NASA	**Annual Update on Launch Complex 34 :** FDEP inquired if it was possible the northeasterly DSZ finger had been present prior to the 2019 recharacterization, but had been missed by earlier DPT points? Tetra Tech stated that it is possible and they will take an action item to look at the 2019 recharacterization for DPT coverage in that area. Whether it was missed or moved, sampling indicates the plume has not come out from under the blockhouse.	Closed	10/6/2022	NASA provided this information by email to FDEP on August 2, 2022.
2206-A05	2206-M05	NASA	**Fluid Servicing Road Area Interim Groundwater Monitoring Summary, June 2022:** HGL will provide the 2020 DPT results for this site to the Team at the next meeting.	Closed	10/6/2022	This information was included in the ADP dated September 13, 2022.
2206-A01	2206-M03	NASA	**Update on NASA KSC Program:** For PFAS, NASA made a commitment to provide an update to this GIS layer semiannually. NASA will consider providing the GIS layer and will follow up with FDEP on this request.	Closed	2/7/2023	The GIS layer was provided to FDEP in November 2022. This will be closed out.
2206-A06	2206-M07	NASA	**SLERA Conclusions and Recommendations for the Un-numbered Operational Area (UNOA), PRL #229, June 2022:** FDEP stated that they will farm this information out to University of Florida (UF) for review. NASA responded that this SLERA report is already drafted and they will submit the report for review with the details.	Closed	2/7/2023	This has been submitted and will be closed out.
2206-A07	2206-M09	NASA	**Stand-alone Electrical Equipment Confirmation Sampling Report Addendum and Interim Measure Work Plan, June 2022:** NASA stated they will be removing everything 0.5 mg/kg to the building, and inquired with FDEP how the PCB coordinated removal would work. FDEP has not participated in one of those yet, so this will be a mutual learning experience. NASA will forward the Notification Letter sent previously to Bruce.	Closed	2/7/2023	Deda will look for this letter and send out to FDEP. Deda provided to FDEP on 09/27/2022; this will be closed out.
2210-A04	2210-M04	NASA	**Fire Station #3 PFAS Site Assessment Update, October 2022:** First flush rain evaluations and Nalgene samplers are planned to be used. Once the monitoring well installation locations are determined, does FDEP want to know where those are? FDEP responded that they would like to know for information purposes. NASA will provide these locations to FDEP prior to installation.	Closed	2/7/2023	Sent to FDEP on 01/24/2023; this will be closed out
2210-A07	2210-M09	NASA	**Meeting Minutes and Miscellaneous Updates:** Annual Update on Launch Complex 34 at a prior meeting provided an overview of the hydraulic containment system (HCS). FDEP requested groundwater flow maps at the time that present the depth to groundwater and groundwater flow within the capture zone. NASA provided this information by email to FDEP on August 2, 2022. As a result, FDEP noted that the information provided was capture modeling and FDEP would like to see water level measurements to support the capture zone. NASA and Tetra Tech will provide that data to FDEP.	Closed	2/7/2023	The additional information was provided to FDEP and will be closed out.
2210-A08	2210-M10	NASA	**Base Support Building (SWMU 014) and KARS Park II (SWMU #118) PFAS Site Assessment Report:** The half white half back circle represents surface water. NASA requested to add a note to the Slide 35 to clarify what the symbol means for the ADP and the report.	Closed	2/7/2023	Standardization for symbols was provided by NASA to the A&E firms (January 11, 2023); this will be closed out.
2210-A09	2210-M10	NASA	**Base Support Building (SWMU 014) and KARS Park II (SWMU #118) PFAS Site Assessment Report:** NASA would like to maintain consistency throughout all the PFAS presentations (e.g., triangle symbol for surface water, etc.). The NASA RPMs will get together and issue guidance to the A&E firms on the use of identifiers in presentations for consistency.	Closed	2/7/2023	Standardization for symbols was provided by NASA to the A&E firms (January 11, 2023); this will be closed out.
2210-A12	2210-M12	NASA	**SWMU 067 POL and SWMU #088 SW3 ADP:** Tetra Tech will create a figure of the proposed monitoring well locations and give to Deda with NASA.	Closed	2/7/2023	Figure created and provided to FDEP. This will be closed.
2210-A02	2210-M02	NASA	**C-5 Electrical Substation (SWMU #066) Groundwater Monitoring Report and Long-Term Monitoring Work Plan:** FDEP requested the team construct an east/west cross-section of the plume to show vertical delineation of the site and put data points on the figure. A figure like this already exists and was developed during the site characterization. NASA will send this figure to FDEP.	Closed	4/5/2023	The figure was included in the C-5 Electrical Substation Groundwater Monitoring Report that was sent to FDEP on January 23, 2023.

Action Item No.	Minutes Reference	Responsible Team Member	Action item	Status	Date Closed	Closure Comments
2210-A06	2210-M08	NASA	**Fire Station #1 (SWMU #116), Sewage Treatment Plant #1 and Sludge Disposal Area (SWMU #117) PFAS Sites Assessment Update:** The image on Slide 35 displays surface water PFOS results. Future sampling will be focused on influent into the Gator Pond, effluent from the gator pond, associated borrow pits that are part of the stormwater management system, tributaries into Buck Creek, locations within Buck Creek, junction of Buck Creek and Banana River with offsets north and south, isolated borrow pits northeast of gator pond to determine impacts, and four locations along Banana River that will correspond to DPT locations. Tetra Tech will email FDEP the locations of the proposed monitoring well locations.	Closed	4/5/2023	Locations provided to FDEP on February 22, 2023.
2210-A11	2210-M11	NASA	**Fire Station #2, Former Sewage Treatment Plant #17, and Towway Area (SWMU 114):** Space Florida sampled their effluent as they dewatered (referencing slide 25). Didn't see PFOS until last week or two and discharged to the east along Astronaut Rd and will keep in mind in future sampling efforts (in the hundreds). (Jan/Feb) DPTs along astronaut road predate the discharge. Will have to investigate south of the new road. We didn't have connectivity to the SLF with that dewatering effluent. We will go back to those areas to see what might have been spread within the SWMU boundary. Make a figure to show where all the effluent sample locations are.	Closed	4/5/2023	Maps have been drafted and will be submitted with the Land Use Control Annual Report; estimated February 2023.
2302-A01	2302-M12	NASA	**Launch Complex 39A (SWMU #008) and Launch Complex 39B (SWMU #009) Performance Monitoring, February 2023:** Action item for NASA to provide a list of wells that will be sampled for PFAS at LC39A to FDEP prior to conducting the sampling	Closed	6/28/2023	The list of wells were provided to FDEP.
2302-A02	2302-M12	NASA	**Launch Complex 39A (SWMU #008) and Launch Complex 39B (SWMU #009) Performance Monitoring, February 2023:** Action item for NASA to provide a list of wells that will be sampled for PFAS at LC39B to FDEP prior to conducting the sampling	Closed	6/28/2023	The list of wells were provided to FDEP.
2304-A01	2304-M03	NASA	**GSA Reclamation Yard (GSRY) 2022 Groundwater Monitoring Results:** NASA to provide FDEP approval emails or correspondence regarding lack of pre-injection data at the site and the selection of MW0002IS as a site-specific background well.	Closed	6/28/2023	Emails sent by NASA to FDEP on June 7, 2023.

APPENDIX F
PFAS Site Assessment and Mitigation Sampling Work Plan

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AECOM Imagine it. Delivered.

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RE: PFAS Site Assessment and Mitigation Sampling Work Plan
South Repeater Building
Kennedy Space Center, FL
AECOM Project Number: 60667657

This Per- and polyfluoroalkyl Substances (PFAS) Site Assessment and Mitigation Sampling Work Plan provides a summary of the activities to perform site assessments to further delineate the extent of PFAS affected media the South Repeater Building.

The primary objective of this work plan is to identify locations for groundwater and soil sampling at the South Repeater Building. Additionally, this work plan will identify locations for Hydraulic Profiling Tool (HPT) and observation and extraction well installations. Rationale for each sample location and sample depth is detailed below with supporting information in tables and figures provided.

South Repeater Building

Groundwater: Groundwater Direct Push Technology (DPT) samples are proposed at 20 locations for South Repeater Building as shown on **Figure 1**. Sampling intervals and rationale for each location can be found on **Table 1**. Sample depths shown on Table 1 represent the center of a four-foot-long sampling screen.

Soil: Soil samples are proposed at 41 locations as shown on **Figure 1**. Sampling depths and rationale for each location can be found on **Table 2**.

HPT: HPT locations are proposed at 20 locations for South Repeater Building as shown on **Figure 1**. Rationale for each location can be found on **Table 2**. All locations will be advanced until the deep confining unit is encountered. This confining unit is estimated to be 50 feet below land surface.

Observation and Extraction wells: Observation and/or extraction well locations are proposed at 12 locations for South Repeater Building as shown on **Figure 1**. Rationale for each location can be found on **Table 3**.

Quality Control

The following quality control samples will be collected in accordance with the KSC Center-Wide PFAS Assessment Standard Operating Procedures:

(1) field duplicate per 10 samples
(1) matrix spike/matrix spike duplicate per 20 samples
(1) equipment blank per 10 samples
(1) field blank per cooler/container

Analytical Method

All samples will be submitted to SGS North America for PFAS analysis by Environmental Protection Agency method 537 modified Department of Defense Quality Systems Manual (DoD QSM) 5.3 compliant. Requested analytes include table B-15 analytes of the DoD QSM 5.3 with the addition of 4 analytes previously requested during the Kennedy Space Center Center-Wide PFAS Assessment project. The list of analytes for this sampling plan can be found in **Table 4.**

TABLES

Table 1
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0042	2 to 6	Delineate northeast of Tel-4 Road
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		56 to 59	
	A3RB-DPT0043	2 to 6	Delineate north of Tel-4 Road
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		56 to 59	
	A3RB-DPT0044	2 to 6	Delineate southern boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		56 to 59	
	A3RB-DPT0045	2 to 6	Delineate southern boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0046	2 to 6	Delineate western boundary
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0047	2 to 6	Delineate treeline west of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0048	2 to 6	Delineate treeline west of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0049	2 to 6	Delineate treeline west of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0050	2 to 6	Delineate east side of Courtenay Parkway South
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
	A3RB-DPT0051	2 to 6	Delineate east side of Courtenay Parkway South
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0052	2 to 6	To investigate a potential source of PFAS within historic orange groves
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	

Table 1
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-DPT0053	2 to 6	To investigate a potential source of PFAS within historic orange groves
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0054	2 to 6	Step out west of A3RB-DPT0019 (west of Tel-4 Road)
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0055	2 to 6	Delineate northwest of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0056	2 to 6	Delineate northwest of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0057	2 to 6	To investigate a potential source of PFAS within historic orange groves
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0058	2 to 6	Delineate east of South Repeater Building
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0059	2 to 6	Delineate east of South Repeater Building
		8 to 12	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0060	2 to 6	Delineate north of A3RB-DPT0026
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	
	A3RB-DPT0061	2 to 6	Delineate north of A3RB-DPT0026
		8 to 12	
		16 to 20	
		23 to 27	
		40 to 44	
		55 to 59	

Notes:
A3RB - Area 3 Repeater Building
DPT = Direct Push Technology
ft = Feet
ft bls = Feet below land surface
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 2
Soil Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-SB0062	0 to 5	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
		5 to 10	
		40 to 45	
		50 to 55	
	A3RB-SB0063	10 to 15	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0064	25 to 30	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0065	5 to 10	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0066	20 to 25	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0067	45 to 50	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0068	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0069	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0070	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0071	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0072	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0073	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0074	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0075	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0076	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0077	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0078	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0079	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0080	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0081	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0082	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0083	0 to 0.5	Determine background concentrations prior to excavation activities
		0.5 to 2	
	A3RB-SB0084	15 to 20	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0085	20 to 25	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0086	10 to 15	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
		15 to 20	

Table 2
Soil Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth (ft bls)	Rationale
South Repeater Building	A3RB-SB0087	20 to 25	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
		25 to 30	
	A3RB-SB0088	15 to 20	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0089	15 to 20	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
		25 to 30	
	A3RB-SB0090	10 to 15	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0091	10 to 15	Evaluate mass flux and mass storage zones for PFAS in groundwater; sample collected based on HPT log
	A3RB-SB0092	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0093	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0094	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0095	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0096	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0097	0 to 0.5	Determine background concentrations prior to excavation activities
	A3RB-SB0098	0 to 0.5	Determine background concentrations prior to pump test discharge into the drainage ditch
		0.5 to 1	
	A3RB-SB0099	0 to 0.5	Determine background concentrations prior to pump test discharge into the drainage ditch
		0.5 to 1	
	A3RB-SB00100	0 to 0.5	Determine background concentrations prior to pump test discharge into the drainage ditch
		0.5 to 1	
	A3RB-SB00101	0 to 0.5	Determine background concentrations prior to pump test discharge into the drainage ditch
		0.5 to 1	
	A3RB-SB00102	0 to 0.5	Determine background concentrations prior to excavation activities

Notes:
A3RB = Area 3 Repeater Building
ft bls = Feet below land surface
HPT = Hydraulic Profiling Tool
PFAS = Per-and polyfluoroalkyl substances
SB = Soil Boring
SWMU = Solid Waste Management Unit

Table 3
Monitoring Well Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Location	Location ID	Depth Interval (ft bls)	Rationale
South Repeater Building	A3RB-MW0028	35.0 - 55.0	Deep observation well for Pilot Test
	A3RB-MW0029	15.0 - 25.0	Intermediate well for Pilot Test
	A3RB-MW0030	5.0 - 10.0	Shallow observation well for Pilot Test
	A3RB-MW0031	35.0 - 55.0	Deep observation well for Pilot Test
	A3RB-MW0032	5.0 - 10.0	Shallow observation well for Pilot Test
	A3RB-MW0033	15.0 - 25.0	Intermediate observation well for Pilot Test
	A3RB-MW0034	35.0 - 55.0	Deep observation well for Pilot Test
	A3RB-MW0035	5.0 - 10.0	Shallow observation well for Pilot Test
	A3RB-MW0036	15.0 - 25.0	Intermediate observation well for Pilot Test
	A3RB-EW0001	35.0 - 55.0	Deep Extraction Well for Pilot Test
	A3RB-EW0002	5.0 - 10.0	Shallow Extraction Well for Pilot Test
	A3RB-EW0003	15.0 - 25.0	Intermediate Extraction Well for Pilot Test

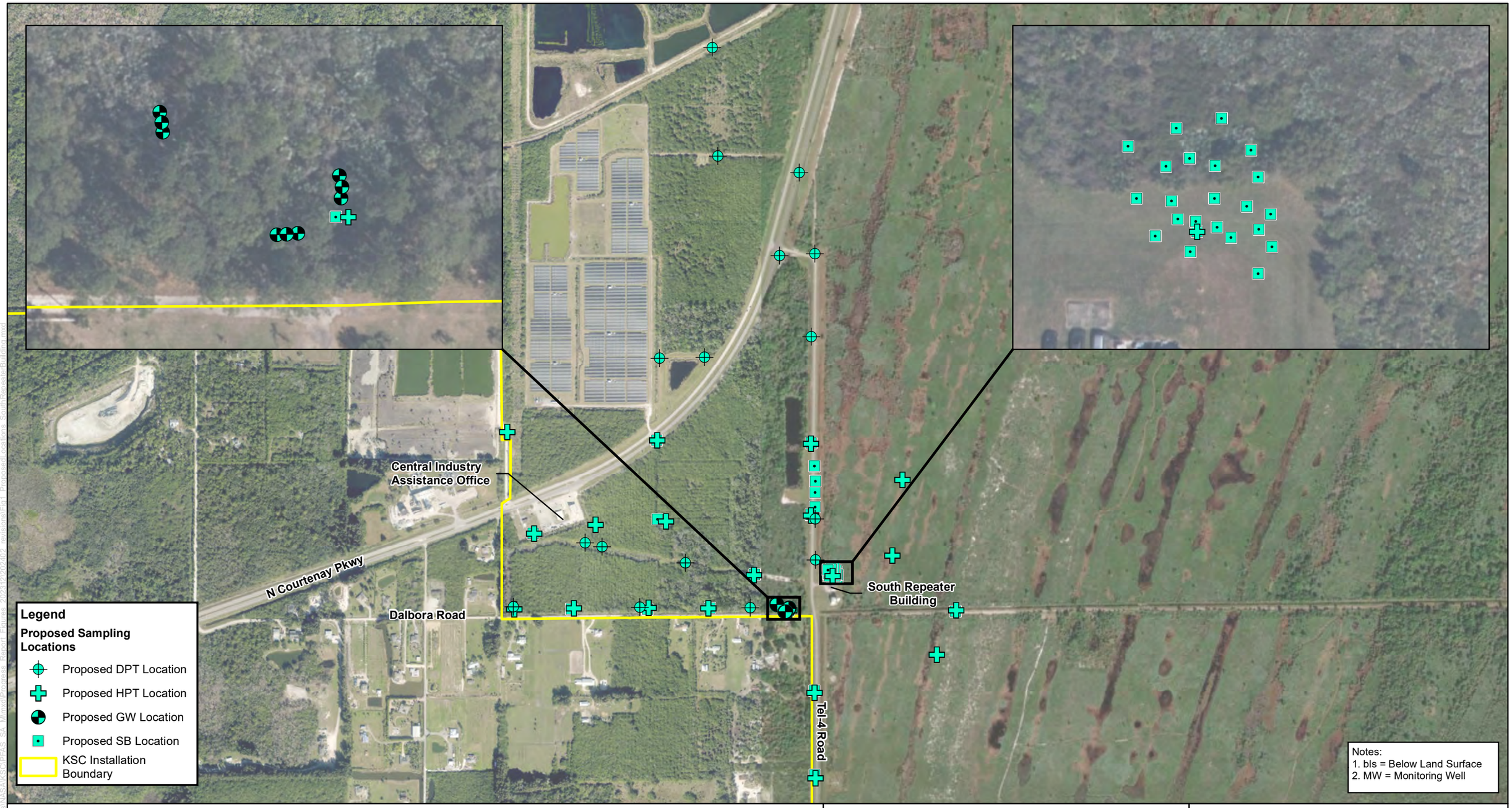
Notes:
A3RB = Area 3 Repeater Building
DPT = Direct Push Technology
ft bls = Feet below land surface
MW = Monitoring Well
PFAS = Per-and polyfluoroalkyl substances
SWMU = Solid Waste Management Unit

Table 4
DPT Groundwater Sample Rationale
PFAS Site Assessment and Mitigation
South Repeater Building (SWMU 121)

Compound Name	Compound	CAS	
2-(N-Ethylperfluorooctanesulfonamido) acetic acid	N-EtFOSAA	2991-50-6	DOD QSM 5.3 Table B-15 List
2-(NMethylperfluorooctanesulfonamido) acetic acid	N-MeFOSAA	2355-31-9	
Fluorotelomer sulphonic acid 4:2	4:2 FTS	757124-72-4	
Fluorotelomer sulphonic acid 6:2	6:2 FTSA	27619-97-2	
Fluorotelomer sulphonic acid 8:2	8:2 FTS	39108-34-4	
N-methylperfluorooctanesulfonamide	MeFOSA	31506-32-8	
Perfluorobutanesulfonic acid	PFBS	375-73-5	
Perfluorobutanoic acid	PFBA	375-22-4	
Perfluorodecanesulfonic acid	PFDS	335-77-3	
Perfluorodecanoic acid	PFDA	335-76-2	
Perfluorododecanoic acid	PFDoA	307-55-1	
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	
Perfluoroheptanoic acid	PFHpA	375-85-9	
Perfluorohexanesulfonic acid	PFHxS	355-46-4	
Perfluorohexanoic acid	PFHxA	307-24-4	
Perfluorononanesulfonic acid	PFNS	68259-12-1	
Perfluorononanoic acid	PFNA	375-95-1	
Perfluorooctanesulfonamide	PFOSA	754-91-6	
Perfluorooctanesulfonic acid	PFOS	1763-23-1	
Perfluorooctanoic acid	PFOA	335-67-1	
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	
Perfluoropentanoic acid	PFPeA	2706-90-3	
Perfluorotetradecanoic acid	PFTeA	376-06-7	
Perfluorotridecanoic acid	PFTriA	72629-94-8	
Perfluoroundecanoic acid	PFUnA	2058-94-8	
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	4 Additional analytes included in Center-Wide sampling
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1	
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4	
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	

Notes
DOD: Department of Defence
QSM: Quality Systems Manual

FIGURES



MAPPING NOTES:
-Basemap Source
Orthoimagery from Brevard County, 2018.
-Projection
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901
-Scale
1 Inch = 800 Feet

0 400 800 1,600
Feet

N

AECOM

JOHN F. KENNEDY
SPACE CENTER
MERRITT ISLAND, FLORIDA

Drawn By: AD | Date Saved: 2/8/2024

FIGURE 1
PROPOSED SAMPLING LOCATIONS
SOUTH REPEATER BUILDING

Document Path: M:\Gisprojects\Projects\NASA\KSC\PRAS_SA_Mxd\Progress_Report_Figures_20231202_revisions\Fig1_ProposedLocations_SouthRepeaterBuilding.mxd