MORPHEUS TEST AREA
SWMU #119

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) SITE ASSESSMENT WORK PLAN

KENNEDY SPACE CENTER, FLORIDA

Prepared for:

National Aeronautics and Space Administration
Kennedy Space Center, Florida

January 2023
Revision 0

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LIST OF ACRONYMS AND ABBREVIATIONS

mg/kg	milligrams per kilogram
ng/L	nanograms per liter
bls	below land surface
DPT	Direct Push Technology
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
HGL	HydroGeoLogic, Inc.
KSC	John F. Kennedy Space Center
MTA	Morpheus Test Area
NASA	National Aeronautics and Space Administration
No.	number
PFAS	Per- and Polyfluoroalkyl Substances
PFBS	Perfluorobutanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PRL	Potential Release Location
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SLF	Shuttle Landing Facility
SW SL	Surface Water Screening Level
SWMU	Solid Waste Management Unit

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1.0 INTRODUCTION

The Morpheus Test Area (MTA) is located at John F. Kennedy Space Center (KSC), Florida ("the Site;" **Figure 1**) and is designated Solid Waste Management Unit (SWMU) Number (No.) 119 under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program. The site was formerly known as Potential Release Location (PRL) No. 237, Location of Concern No. 14. In accordance with the RCRA Corrective Action Program, HydroGeoLogic, Inc. (HGL) prepared this Per-and Polyfluoroalkyl Substances (PFAS) Site Assessment Work Plan for the National Aeronautics and Space Administration (NASA) under Contract No. 80KSC019D0012, Delivery Order 80KSC021F0168, Technical Directive No. 1. This document presents and summarizes the approach to investigating soil, groundwater, and surface water with PFAS impacts that were previously identified at the Site.

1.1 SITE DESCRIPTION

The MTA is located to the northwest of the Shuttle Landing Facility (SLF) runway, between the runway and the SLF boundary canal. The area is primarily covered with grass with several concrete pads and small landing facility support structures in the vicinity. SWMU No. 114 is located southeast of the MTA, PRL 237 Area of Potential Concern (AOPC) No 1 is located near the southeastern corner of the MTA, and PRL 237 AOPC No 2 is located to the east of SWMU 114.

1.2 SITE HISTORY

Information regarding historical and current property use is summarized below from the *Center-Wide Phase II and III Solid Waste Management Unit Assessment and Confirmatory Sampling Report for Per- and Polyfluorinated Alkyl Substances, Potential Release Location (PRL) No. 237*, Kennedy Space Center, Florida (AECOM, 2022).

In 2012, during testing activities, the Morpheus 1.5A Lander malfunctioned and caught fire on the northern grassy area of the runway. An unknown quantity of Aqueous Film Forming Foam was used to extinguish the resulting fire.

1.3 PREVIOUS INVESTIGATIONS

PFAS Phase I investigation activities were completed by Geosyntec in 2018 and 2019. During Phase I, 31 groundwater samples were collected from seven locations (PFAS-DPT0081 through PFAS-DPT0085, PFAS-DPT0093 and PFAS-DPT0095) and three surface water samples (PFAS-SW0029 through PFAS-SW0031) were collected on the SLF boundary canal surrounding the Site. Concentrations in these samples were found to be above Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) and Florida Department of Environmental Protection (FDEP)

Surface Water Screening Levels (SW SLs) (NASA, 2019). Based on this information, additional sampling was recommended.

In January 2021, as part of PFAS Phase II activities, 17 groundwater samples from four direct push technology (DPT) locations (PFAS-DPT0150 through PFAS-DPT0153) and 10 soil samples were collected from five soil boring locations (PFAS-SB0008 through PFAS-SB0012) (AECOM, 2022). It should be noted that Phase I through Phase II groundwater analytical results were initially screened against the FDEP Provisional Groundwater Cleanup Target Levels. Site investigation activities completed prior to 2022 are summarized in the Center-Wide Phase II and III Solid Waste Management Unit Assessment and Confirmatory Sampling Report for Per- and Polyfluorinated Alkyl Substances, Potential Release Location (PRL) No. 237 (Center-Wide Phase II and III Report, AECOM, 2022)

Center-Wide Phase II and III Report recommended the collection of DPT groundwater samples from seven locations, soil samples from seven locations, a surface water sample from one location, and a concrete sample from one location at the Morpheus Test Area. Additionally, a soil core was proposed to be advanced to a depth of 80 feet.

In February 2022, as part of site assessment activities conducted by AECOM, 14 soil samples were collected from seven soil boring locations (MTA-SB0001 through MTA-SB0007) and one concrete sample was collected from the concrete pad in the center of the MTA Site. The concrete sample was analyzed by Synthetic Precipitation Leaching Procedure (SPLP) analysis. A summary of the 2022 field work performed by AECOM is provided as Attachment A.

Analytical results from Phase II and site assessment soil samples indicate that perfluorooctanesulfonic acid (PFOS) concentrations were above the EPA RSL in the 0 to 0.5 feet below land surface (bls) and/or the 0.5 to 2 feet bls depth intervals at four locations. The greatest PFOS concentration was detected in the MTA-SB0005 0.5 to 2 feet bls sample at a concentration of 1.61 milligrams per kilogram (mg/kg). The extent of PFOS above the EPA RSL has not been fully delineated. Soil analytical results are shown on **Figure 2**.

Analytical results for the Phase I surface water samples indicate that the concentrations of PFOS were above the SW SL at all three sample locations with a maximum concentration of 100 nanograms per liter (ng/L) at PFAS-SW0031. Concentrations of perfluorooctanoic acid (PFOA) are less than the SW SL at all locations. The surface water sample proposed in the Center-Wide Phase II and III Report was not collected but will be collected in a future SLF area surface water assessment. Surface water analytical results are shown on **Figure 3**.

Phase I and Phase II groundwater analytical results indicate concentrations of one or more PFAS compounds above the EPA RSL in at least one interval at seven of the 10 sample locations. The maximum PFOA, perfluorononanoic acid (PFNA), perfluorobutanesulfonic acid (PFBS), perfluorohexanesulfonic acid (PFHxS), and PFOS concentrations were detected at PFAS-DPT0083 at 10 feet bls at concentrations of 1,200 ng/L, 4.5 ng/L, 600 ng/L, 17,000 ng/L and 2,000 ng/L, respectively. The groundwater samples proposed in the Center-Wide Phase II and III Report was not collected. Five of the proposed groundwater sample locations have been incorporated into this Work Plan. Two of the locations were determined to be unnecessary based on subsequent

groundwater assessment data and changes to the PFOS screening level from 70 ng/L to 4 ng/L. Groundwater analytical results are shown on **Figure 3**.

No monitoring wells have been installed at the Site. Based on groundwater elevation data from SWMU 114 located to the southeast, groundwater flow is assumed to be towards the west or southwest (**Figures 4 and 5**).

One lithologic boring (MTA-SB0008) was advanced at the Site by AECOM. The lithology consists of sands, silt, and gravel to a depth of 47.5 feet bls. A lean clay was present from 47.5 to 50.5 feet bls. The lean clay was underlain by silty sand to a depth of at least 60 feet.

2.0 SITE ASSESSMENT ACTIVITIES

The proposed site assessment approach and activities are described in the following sections.

2.1 SITE ASSESSMENT APPROACH

Site assessment activities will be performed using a phased approach. Initial site assessment activities will consist of the following activities:

- Collection of soil samples at depths of 0 to 0.5 feet bls and 0.5 feet to 2 feet bls from seven soil sample locations;
- Collection of soil samples at a depth of 2 to 4 feet bls from MTA-SB0003 and MTA-SB0005;
- Installation of one staff gauge to monitor surface water levels at the Site;
- Installation of four shallow monitoring wells screened across the water table (5’ to 15’ unless water table is less than 5’) to determine the groundwater flow direction;
- Collection of groundwater samples from the four new monitoring wells;
- Collection of DPT groundwater samples at five depths (3’-7’, 13’-17’, 23’-27’, 33’-37’, and 43’-47’) from ten DPT groundwater sample locations to continue the delineation of PFAS compounds; and
- Collection of one surface water sample.

Based on the results of the activities listed above, additional soil, groundwater, and/or surface water sample locations may be proposed. Additional proposed groundwater and surface water samples may be specific to the MTA or as part of the greater SLF study area investigation.

Additionally, water level measurements will be collected from the four newly installed monitoring wells and one staff gauge, and water samples will be collected from one monitoring well and one surface water location. Water level measurements and water samples will be taken on a quarterly basis for 1 year.

All collected samples will be analyzed by EPA Method 537.1.1 Mod for the 25 PFAS compounds listed below. Select samples may be analyzed for branched and linear PFOS, PFOA, PFNA, and/or PFHxS analysis based on overall PFAS concentrations.

Analyte	Acronym	CAS No.
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanesulfonic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA	2058-94-8
Perfluorodecanoic acid	PFDoA	307-55-1

Analyte	Acronym	CAS No.
Perfluorotridecanoic acid	PFTriA	72629-94-8
Perfluorotetradecanoic acid	PFTeA	376-06-7
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorododecanoic acid	PFDS	335-77-3
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
4:2 Fluorotelomer sulfonate	4:2 FTS	757124-72-4
6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Hexafluoropropylene oxide dimer acid	GenX	13252-13-6

Laboratory analytical results for soil and groundwater samples will be screened against the EPA RSLs. Laboratory analytical results for surface water samples will be screened against the FDEP SW SLs. The screening levels for specific PFAS compounds are summarized below.

Compound	EPA Soil RSL(1) (mg/kg)	EPA Groundwater RSL(2) (ng/L)	FDEP SW SL (ng/L)
PFOA	0.19	6	500
PFNA	0.19	6	-
PFBS	19	601	-
PFHxS	1.3	39	-
PFOS	0.13	4	10
GenX	0.23	6	-

(1): EPA, 2022. Regional Screening Level Resident Soil Table (TR=1E-06, HQ=1.0)
(2): EPA, 2022. Regional Screening Level Resident Tapwater Table (TR=1E-06, HQ=0.1)

2.2 INITIAL SITE ASSESSMENT ACTIVITIES

The proposed initial site assessment activities are summarized in the following sections. The rationale for the proposed sample locations is given in **Table 1**.

2.2.1 Soil Sampling

During initial site assessment activities, 14 soil samples from seven locations are proposed to delineate the horizontal extent of PFOS in soil above the RSL. Soil samples will be collected at each of the seven locations at depths of 0 to 0.5 feet bls and 0.5 feet to 2 feet bls using a hand auger. At MTA-SB0003 and MTA-SB0005, soil samples will be collected at a depth of 2 to 4 feet bls. **Figure 2** depicts the proposed soil sample locations.

2.2.2 Staff Gauge Installations

One staff gauge will be installed in the canal located to the northwest of the MTA and SLF runway. The proposed location of the staff gauge (PSG-1) is shown on **Figure 3**. The water level elevation

at the staff gauge will be measured on a quarterly basis for 1 year to assess temporal variations in water level elevations.

2.2.3 Monitoring Well Installations

Four shallow monitoring wells are proposed to be installed using a DPT drilling rig to determine the groundwater flow direction at the Site. The wells will be 1-inch in diameter and set so that the screened interval intersects the water table (screened 5' to 15' unless water table is less than 5'). No intermediate monitoring wells are proposed at this time. The locations of the four proposed wells (PMW-1 through PMW-4) are shown on **Figure 3**. The locations and elevations of the wells will be surveyed by a Florida-licensed surveyor. Water levels will be measured from the four new monitoring wells on a quarterly basis for 1 year to assess temporal variations in water table elevations and the groundwater flow direction.

2.2.4 Monitoring Well Sampling

Groundwater samples will be collected from the four newly installed monitoring wells. Additionally, proposed monitoring well PMW-4 will be sampled on a quarterly basis for 1 year to assess temporal variations in PFAS concentrations.

2.2.5 DPT Groundwater Sampling

The objective of the initial groundwater investigation is to gain an understanding of the magnitude of PFAS impacts in the vicinity of the Site. Concurrent with the monitoring well installations, groundwater sampling at ten DPT groundwater sample locations are proposed. At each sample location, groundwater samples will be collected at intervals of 3 to 7 feet (or water table), 13 to 17 feet, 23 to 27 feet, 33 to 37 feet, and 43 to 47 feet bls. The boreholes will be pressure grouted from total depth to land surface immediately following sample collection. No samples from these proposed locations will be collected below the 43 to 47 feet bls interval. The proposed DPT groundwater sample locations are shown on **Figure 3**.

2.2.6 Surface Water Sampling

Surface water sample location PSW-1 will be sampled at the immediate surface on a quarterly basis for 1 year to assess temporal variations in PFAS concentrations. The proposed surface water sample location is shown on **Figure 3**.

2.3 SUBSEQUENT SITE ASSESSMENT ACTIVITIES

After data from the initial round of site assessment activities has been reviewed by HGL and NASA KSC, additional soil and DPT groundwater sample locations may be proposed to complete horizontal delineation, complete vertical delineation, reduce the footprint of the interpreted area of PFAS above RSLs, and/or investigate groundwater/surface water interactions. Additional surface water sampling locations will be proposed as part of a SLF area-wide surface water investigation to be performed after the initial site assessment activities have been completed at the MTA and other sites in the SLF study area. All currently proposed DPT sample and monitoring well locations for the SLF study area are shown on **Figure 6**.

3.0 REFERENCES

AECOM, 2022. *Center-Wide Phase II and III Solid Waste Management Unit Assessment and Confirmatory Sampling Report for Per- and Polyfluorinated Alkyl Substances, Potential Release Location (PRL) No. 237*, Kennedy Space Center, Florida. 2022.

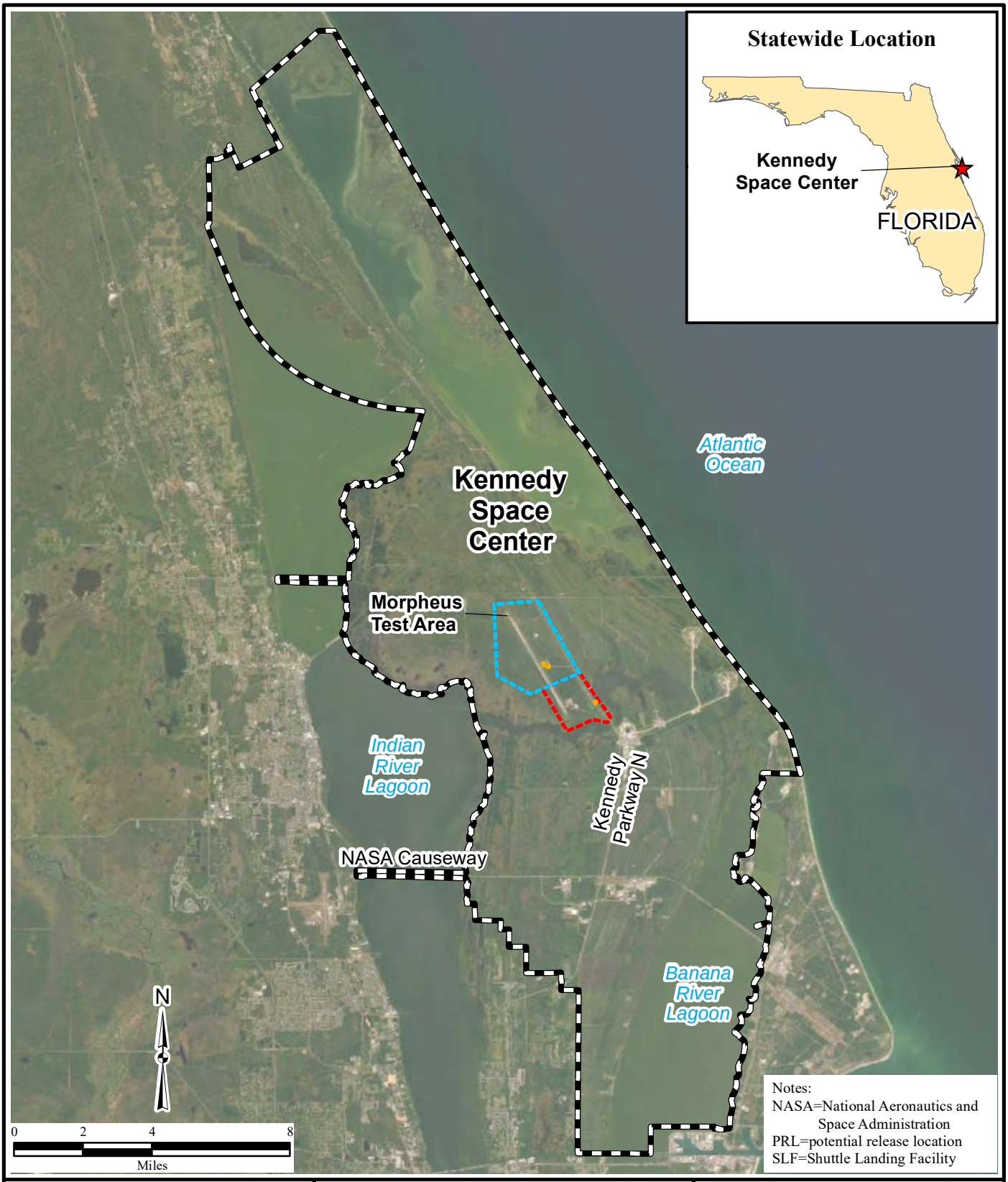
National Aeronautics and Space Administration (NASA). 2019. *Phase I Solid Waste Management Unit Assessment and Confirmatory Sampling Report Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Potential Release Location 237*, John F. Kennedy Space Center, Florida (Revision 0). Prepared by Geosyntec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

TABLE

Table 1
Morpheus Test Area Work Plan
Sample Location Rationale

Proposed Sample Location	Rationale
PSB-1	Assess soil quality west of MTA-SB0003
PSB-2	Assess soil quality south of MTA-SB0003
PSB-3	Assess soil quality southeast of MTA-SB0003 and southwest of MTA-SB0004
PSB-4	Assess soil quality southeast of MTA-SB0004
PSB-5	Assess soil quality east of MTA-SB0004 and southeast of MTA-SB0005
PSB-6	Assess soil quality east of MTA-SB0006
PSB-7	Assess soil quality north of concete pad
MTA-SB0003	Delineate soils above RSL vertically
MTA-SB0005	Delineate soils above RSL vertically
PDPT-1	Assess groundwater quality southwest of PFAS-DPT0083
PDPT-2	Assess groundwater quality northwest of PFAS-DPT0083
PDPT-3	Assess groundwater quality northeast of PFAS-DPT0083
PDPT-4	Assess groundwater quality southeast of PFAS-DPT0083
PDPT-5	Assess groundwater quality southeast of PFAS-DPT0083
PDPT-6	Assess groundwater quality east of PFAS-DPT0083
PDPT-7	Assess groundwater quality northeast of PFAS-DPT0083
PDPT-8	Assess groundwater quality north of PFAS-DPT0083
PDPT-9	Assess groundwater quality northwest of PFAS-DPT0083
PMW-1	Shallow monitoring well at PFAS-DPTDPT0083 Hotspot for groundwater flow
PMW-2	Shallow monitoring well northwest of PFAS-DPTDPT0083 Hotspot for groundwater flow
PMW-3	Shallow monitoring well northeast of PFAS-DPTDPT0083 Hotspot for groundwater flow
PMW-4	Shallow monitoring well south of PFAS-DPTDPT0083 Hotspot for groundwater flow

FIGURES



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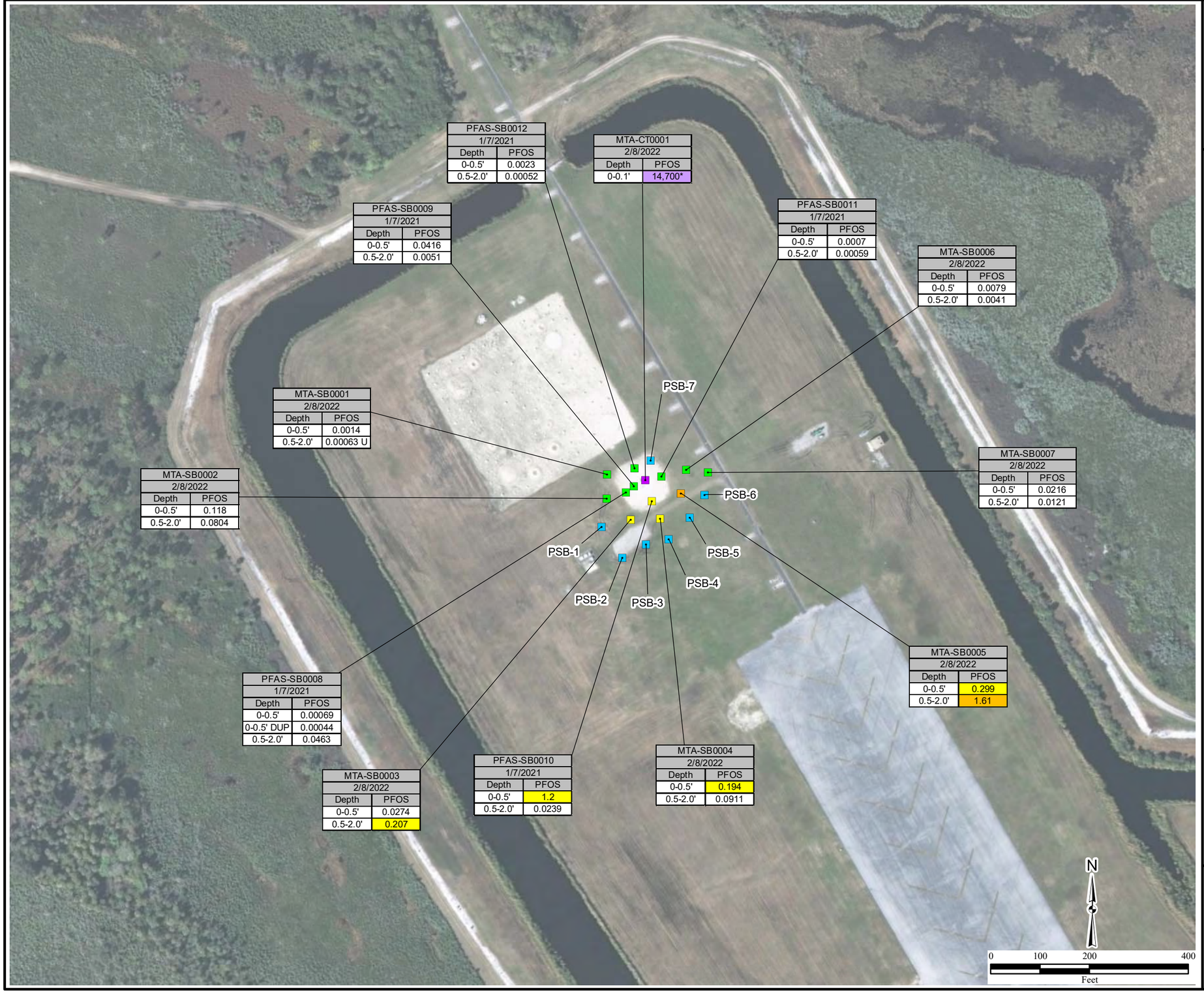
Source: HGL, 3E Consultants
ArcGIS Online Imagery

Legend

- Site Location
- SWMU 114 Boundary
- SWMU 119 Boundary
- PRL 237 Boundary
- Kennedy Space Center

Figure 1
Morpheus Test Area
Site Location Map

Figure 2
Morpheus Test Area
Soil Sample Analytical Results



Legend

- Soil Sample Concentration Less than RSLs
- Soil Sample Concentration Greater than RSLs
- Soil Sample Concentration Greater than 10 x RSLs
- Soil Sample Concentration Greater than 1000 x RSLs
- Proposed Soil Sample (0-0.5', 0.5'-2')
  (2' to 4' Samples will be collected at MTA-SB03 and MTA-SB05)

Notes:
Yellow=concentration greater than RSLs
Orange=concentration greater than 10 x RSLs
Purple=concentration greater than 1000 x RSLs
Results in milligrams per kilogram (mg/kg)

*=SPLP Sample
PFOS=perfluorooctanesulfonic acid
PRL=potential release location
RSL=regional screening level
SLF=Shuttle Landing Facility
SPLP=synthetic precipitation leaching procedure
U=not detected

Sample Location	
Sample Date	
Depth	PFOS Concentration

Soil RSLs	
PFOS	0.13 mg/kg

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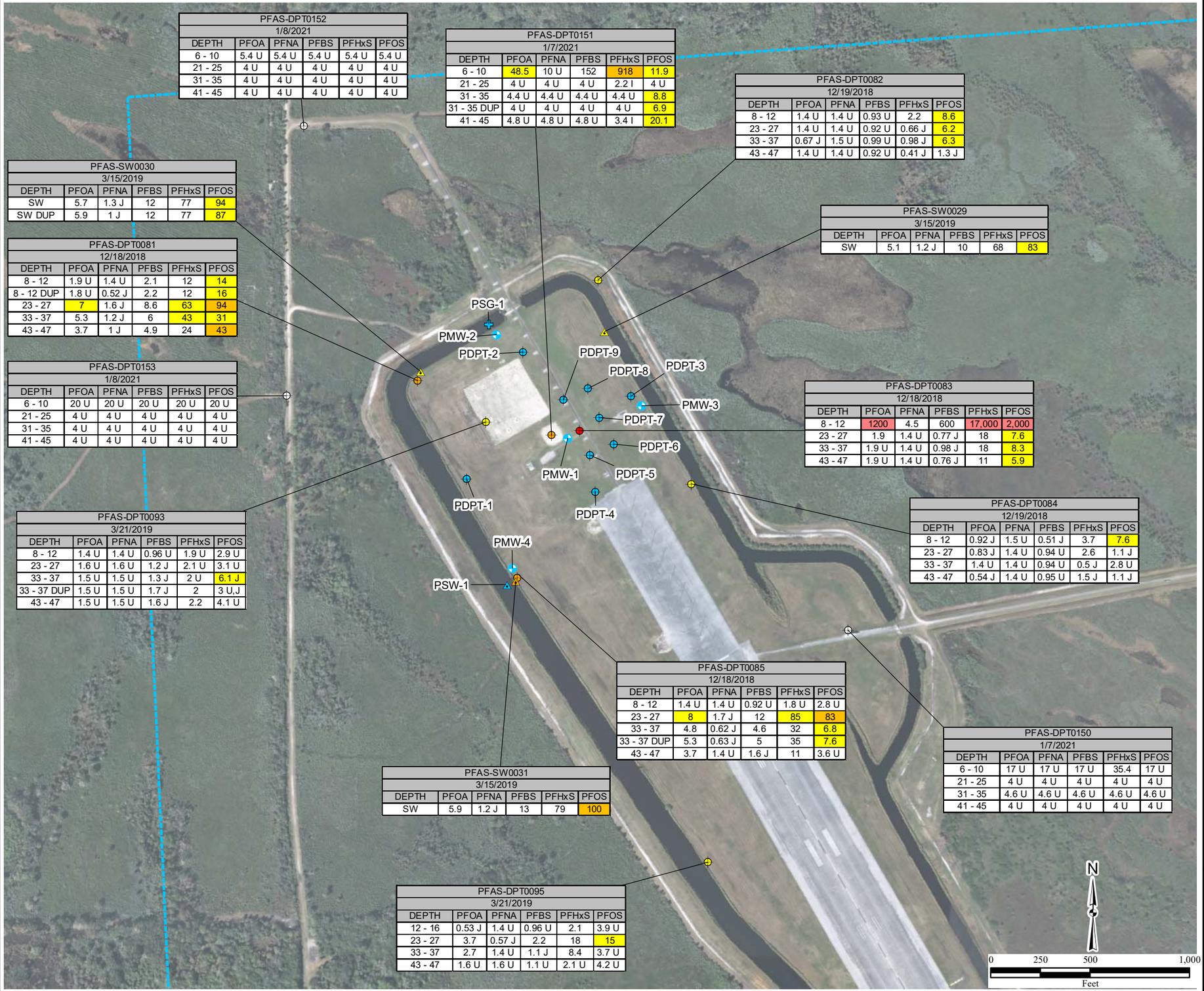
Source: HGL, ArcGIS Online Imagery

Figure 3
Morpheus Test Area
Surface Water and Groundwater Analytical Results



PFAS-DPT0152
1/8/2021

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
6 - 10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
21 - 25	4 U	4 U	4 U	4 U	4 U
31 - 35	4 U	4 U	4 U	4 U	4 U
41 - 45	4 U	4 U	4 U	4 U	4 U

PFAS-DPT0151
1/7/2021

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
6 - 10	48.5	10 U	152	918	11.9
21 - 25	4 U	4 U	4 U	2.2 I	4 U
31 - 35	4.4 U	4.4 U	4.4 U	4.4 U	8.8
31 - 35 DUP	4 U	4 U	4 U	4 U	6.9
41 - 45	4.8 U	4.8 U	4.8 U	3.4 I	20.1

PFAS-DPT0082
12/19/2018

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	1.4 U	1.4 U	0.93 U	2.2	8.6
23 - 27	1.4 U	1.4 U	0.92 U	0.66 J	6.2
33 - 37	0.67 J	1.5 U	0.99 U	0.98 J	6.3
43 - 47	1.4 U	1.4 U	0.92 U	0.41 J	1.3 J

PFAS-SW0030
3/15/2019

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
SW	5.7	1.3 J	12	77	94
SW DUP	5.9	1 J	12	77	87

PFAS-SW0029
3/15/2019

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
SW	5.1	1.2 J	10	68	83

PFAS-DPT0081
12/18/2018

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	1.9 U	1.4 U	2.1	12	14
8 - 12 DUP	1.8 U	0.52 J	2.2	12	16
23 - 27	7	1.6 J	8.6	63	94
33 - 37	5.3	1.2 J	6	43	31
43 - 47	3.7	1 J	4.9	24	43

PFAS-DPT0153
1/8/2021

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
6 - 10	20 U	20 U	20 U	20 U	20 U
21 - 25	4 U	4 U	4 U	4 U	4 U
31 - 35	4 U	4 U	4 U	4 U	4 U
41 - 45	4 U	4 U	4 U	4 U	4 U

PFAS-DPT0083
12/18/2018

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	1200	4.5	600	17,000	2,000
23 - 27	1.9	1.4 U	0.77 J	18	7.6
33 - 37	1.9 U	1.4 U	0.98 J	18	8.3
43 - 47	1.9 U	1.4 U	0.76 J	11	5.9

PFAS-DPT0093
3/21/2019

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	1.4 U	1.4 U	0.96 U	1.9 U	2.9 U
23 - 27	1.6 U	1.6 U	1.2 J	2.1 U	3.1 U
33 - 37	1.5 U	1.5 U	1.3 J	2 U	6.1 J
33 - 37 DUP	1.5 U	1.5 U	1.7 J	2	3 U,J
43 - 47	1.5 U	1.5 U	1.6 J	2.2	4.1 U

PFAS-DPT0084
12/19/2018

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	0.92 J	1.5 U	0.51 J	3.7	7.6
23 - 27	0.83 J	1.4 U	0.94 U	2.6	1.1 J
33 - 37	1.4 U	1.4 U	0.94 U	0.5 J	2.8 U
43 - 47	0.54 J	1.4 U	0.95 U	1.5 J	1.1 J

PFAS-DPT0085
12/18/2018

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
8 - 12	1.4 U	1.4 U	0.92 U	1.8 U	2.8 U
23 - 27	8	1.7 J	12	85	83
33 - 37	4.8	0.62 J	4.6	32	6.8
33 - 37 DUP	5.3	0.63 J	5	35	7.6
43 - 47	3.7	1.4 U	1.6 J	11	3.6 U

PFAS-DPT0150
1/7/2021

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
6 - 10	17 U	17 U	17 U	35.4	17 U
21 - 25	4 U	4 U	4 U	4 U	4 U
31 - 35	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U
41 - 45	4 U	4 U	4 U	4 U	4 U

PFAS-SW0031
3/15/2019

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
SW	5.9	1.2 J	13	79	100

PFAS-DPT0095
3/21/2019

DEPTH	PFOA	PFNA	PFBS	PFHxS	PFOS
12 - 16	0.53 J	1.4 U	0.96 U	2.1	3.9 U
23 - 27	3.7	0.57 J	2.2	18	15
33 - 37	2.7	1.4 U	1.1 J	8.4	3.7 U
43 - 47	1.6 U	1.6 U	1.1 U	2.1 U	4.2 U

Legend

- DPT Sample Concentration Detection Limit greater than RSLs
- DPT Sample Concentration Greater than RSLs
- DPT Sample Concentration Greater than 10 x RSLs
- DPT Sample Concentration Greater than 100 x RSLs
- Surface Water Sample Concentration Greater than SW SLs
- Surface Water Sample Concentration Greater than 10 x SW SLs
- Proposed DPT Sample
- Proposed Staff Gauge
- Proposed Monitoring Well
- Proposed Surface Water Sample Location
- SWMU 119 Boundary

Notes:
Yellow=concentration greater than SLs
Orange=concentration greater than 10 x SLs
Red=concentration greater than 100 x SLs
Results in nanograms per liter (ng/L)

I=estimated value
J=estimated value
PFOA=perfluorooctanoic acid
PFNA=perfluorononanoic acid
PFHxS=perfluorohexanesulfonic acid
PFOS=perfluorooctanesulfonic acid
PFBS=perfluorobutanesulfonic acid
PRL=potential release location
RSL=regional screening level
SL=screening level
SLF=Shuttle Landing Facility
SW SL=surface water screening level
U=not detected

Sample Location					
Sample Date					
Depth	PFOA	PFNA	PFHxS	PFOS	PFBS

Groundwater RSLs				
PFOA	PFNA	PFHxS	PFOS	PFBS
6	6	40	4	600

Surface Water SLs	
PFOS	10 ng/L
PFOA	500 ng/L

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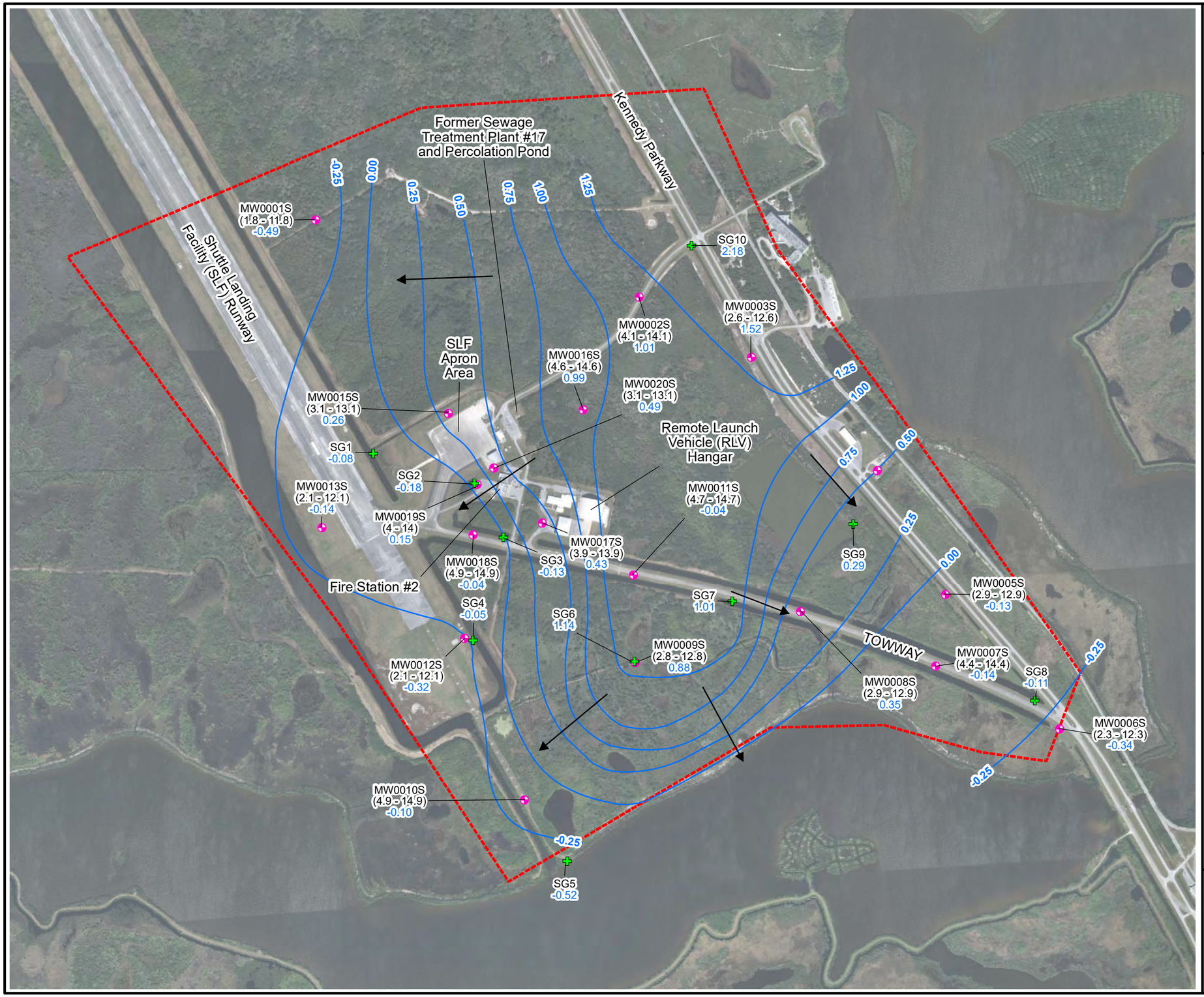
Source: HGL, ArcGIS Online Imagery

Figure 4
SWMU #114
Groundwater Elevation Map
Shallow Zone



Legend

- Staff Gauge Location
- Shallow Zone Monitoring Well
- MW0001S (1.8 - 11.8) -0.49 — Monitoring Well Identification, Screened Interval (ft), Groundwater Elevation (ft amsl, NAVD88)
- Generalized Groundwater Flow Direction
- −1.50− Groundwater Elevation Contour (ft amsl, NAVD88)
- SWMU 114 Boundary

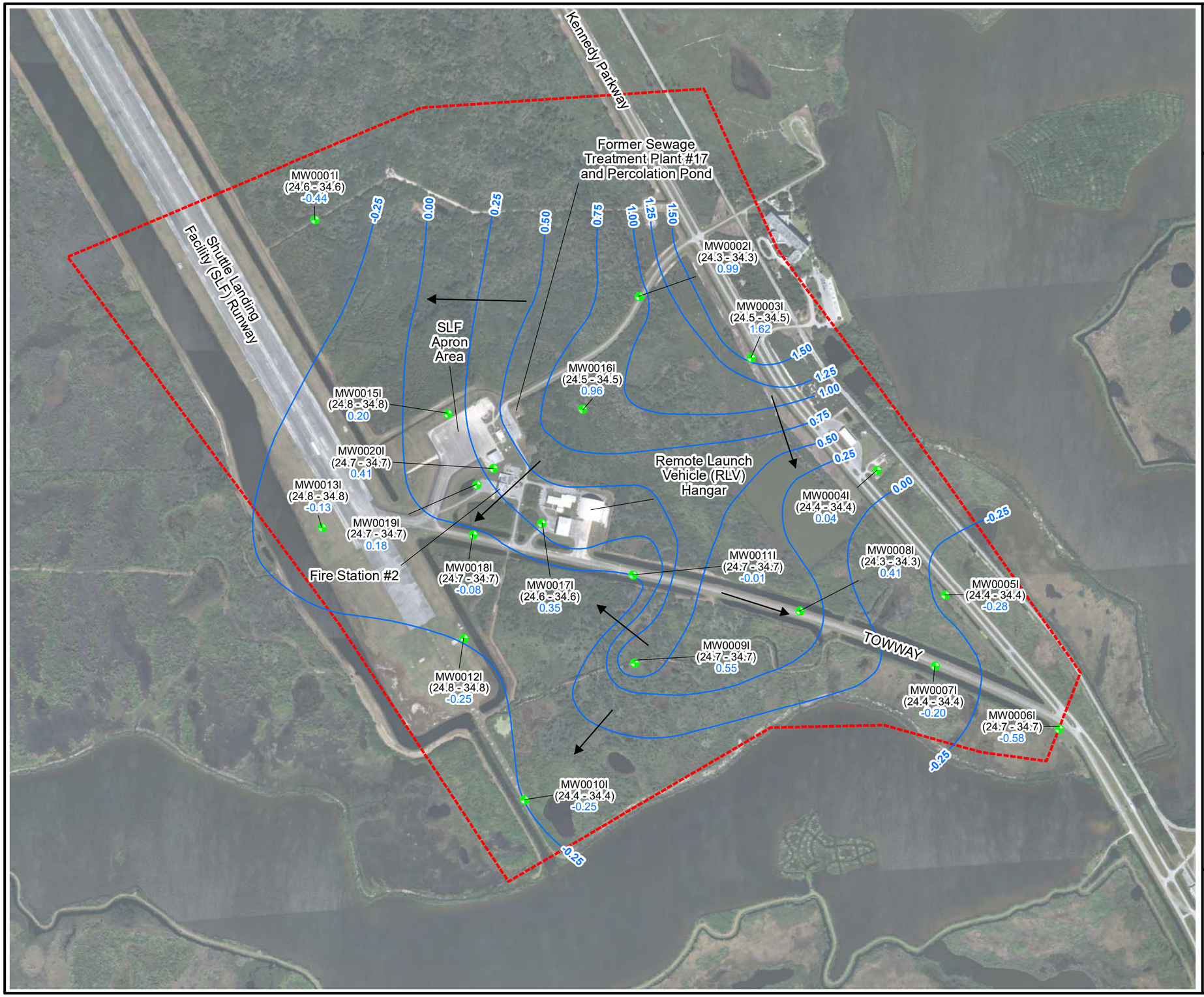
Notes:
ft amsl=feet above mean sea level
NAVD88=North American Vertical Datum of 1988
SWMU=solid waste management unit

N

0 500 1,000 2,000
Feet

\\srv-gst-01\hglgis\KSC_NS1002_Misc_Figures\PFOS_Sites\Work_Plan\SLF_Former_F-R_Bldg\(04)SWMU114_GWE_Shallow.mxd
1/25/2023 TB
Source: HGL, ArcGIS Online Imagery

Figure 5
SWMU #114
Groundwater Elevation Map
Intermediate Zone



Legend

- Intermediate Zone Monitoring Well
- MW0001I (24.6 - 34.6) -0.44 — Monitoring Well Identification, Screened Interval (ft), Groundwater Elevation (ft amsl, NAVD88)
- Generalized Groundwater Flow Direction
- −1.50− Groundwater Elevation Contour (ft amsl, NAVD88)
- SWMU 114 Boundary

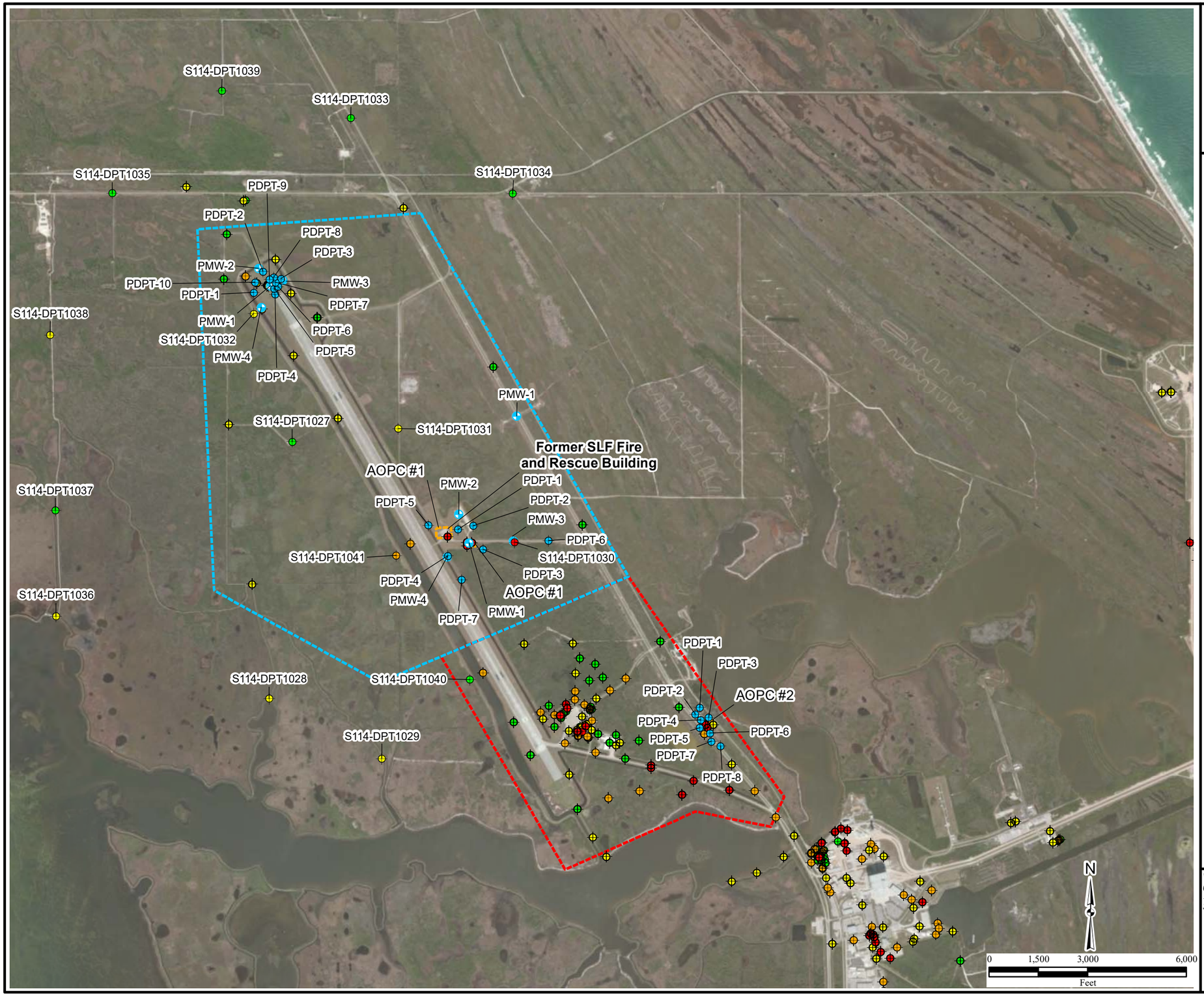
Notes:
ft amsl=feet above mean sea level
NAVD88=North American Vertical Datum of 1988
SWMU=solid waste management unit

N

0 500 1,000 2,000
Feet

\\srv-gst-01\hglgis\KSC_NS1002_Misc_Figures\PFOS_Sites\Work_Plan\SLF_Former_F-R_Bldg\(05)SWMU114_GWE_Int.mxd
1/25/2023 TB
Source: HGL, ArcGIS Online Imagery

Figure 6
SLF Area
Regional Proposed DPT Locations and Monitoring Wells



Legend

- DPT Sample Concentration Less than RSLs
- DPT Sample Concentration Greater than RSLs
- DPT Sample Concentration Greater than 10 x RSLs
- DPT Sample Concentration Greater than 100 x RSLs
- DPT Sample Concentration Greater than 1000 x RSLs
- Proposed DPT Sample
- Proposed Monitoring Well
- SWMU 114 Boundary
- SWMU 119 Boundary
- PRL 237 Boundary

Notes:
PRL=potential release location
RSL=regional screening level
SLF=Shuttle Landing Facility
SWMU=solid waste management unit

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1/25/2023 TB
Source: HGL,
ArcGIS Online Imagery

ATTACHMENT 1

AECOM Morpheus Test Area Summary of Field Activities Memo

January 16, 2023

Mr. Ryan O'Meara, PE
Remediation Project Manager
National Aeronautics and Space Administration
Mail Code SI-E2
Building K6-1547 (Logistics Facility)
John F. Kennedy Space Center
Kennedy Space Center, FL 32899-0001

Subject: Per- and polyfluoroalkyl Substances (PFAS) Site Assessment and Mitigation
Morpheus Test Area
Summary of Field Activities

Dear Mr. O'Meara:

This letter provides a summary of the following Per- and polyfluoroalkyl Substances (PFAS) site assessment field activities completed at Morpheus Test Area (MTA) on February 8, 2022 and March 22, 2022 located at the John F. Kennedy Space Center, Florida.

These field activities were completed in accordance with the PFAS Site Assessment and Mitigation Sampling Work Plan for Morpheus Test Area, Fire Station #2, Vehicle Assembly Building North, and Area 3 Repeater Building dated April 27, 2022. All samples collected were submitted to SGS North America, Inc for analysis by Environmental Protection Agency method 537 modified Department of Defense Quality Systems Manual (DoD QSM) 5.3. Requested analytes included 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.

Sampling

On February 8, 2022, 14 soil samples were collected from seven boring locations. Soil samples from each boring were collected from two depth intervals: 0-0.5 feet below land surface (bls) and 0.5-2 feet bls. Additionally, one surface water sample and one concrete sample were collected for analysis. Analytical results for the soil, surface water, and concrete samples are summarized in **Table 1**, **Table 2**, and **Table 3**, respectively. Laboratory analytical reports are provided in **Attachment A**.

On March 22, 2022, one soil core was advanced to a terminal depth of 55 feet bls. A sample was collected for PFAS and Fractional Organic Carbon (FOC) and submitted for analysis at 47.5 feet bls. A soil boring log is included as **Attachment B**.

The daily field notes are included as **Attachment C**. A photo log from each sampling location is provided as **Attachment D**.

Investigation Derived Waste

One soil drum was generated during the sampling activities and containerized in 55-gallon drum (ID No. 220928) containerized in a clamshell (ID 225175). The drum was approximately 30% full. The contents within the drum were sampled on April 24, 2022. Drum information has been logged in the IDW Inventory table and is included as **Attachment E**. The IDW log has been updated with analytical data received. Laboratory analytical reports for the IDW samples are provided in **Attachment A**.

AECOM is releasing this data to NASA for their use or the use of other A&Es, as needed. Should you require additional information, please contact Jennifer Gootee at Jennifer.Gootee@aecom.com or via phone at (407) 276-4550.

Sincerely,

AECOM Technical Services, Inc.

Digitally Signed and Sealed by:
Jennifer Gootee, PE
Florida License No. 57964

Florida Certificate of Authorization No. 8115
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Attachments as noted

TABLES

Table 1
Soil Analytical Results
Morpheus Test Area

Analyte			Perfluoro-octane sulfonic Acid (PFOS)	Perfluoro-octanoic Acid (PFOA)	Perfluoro-butane-sulfonic Acid (PFBS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-hexane-sulfonic Acid (PFHXS)	Hexa-fluoro-propylene Oxide Dimer Acid (HFPO-DA)	11CL-PF3OUDS	4,8-dioxa-3H-Perfluoro-nonanoic Acid (ADONA)	4:2 Fluorotelomer sulphonic acid (4:2F2S)	6:2 Fluorotelomer sulphonic acid (6:2FTS)	8:2 Fluorotelomer sulphonic acid (8:2FTS)	9CL-PF3ONS	N-Ethylperfluorooactane Sulfonamidoacetate (EtFOSAA)	N-Methylperfluorooactane Sulfonamidoacetate (N-MeFOSAA)	N-Methylperfluorooactanesulfonamide (MeFOSA)	Perfluorobutanoic Acid (PFBA)	Perfluorodecanesulfonic Acid (PFDS)	Perfluoro-decanoic Acid (PFDA)	Perfluoro-dodecanoic Acid (PFDOA)	Perfluoroheptanesulfonic Acid (PFHPS)	Perfluoro-heptanoic Acid (PFHPA)	Perfluoro-hexanoic Acid (PFHXA)	Perfluorononanesulfonic Acid (PFNS)	Perfluorooctane Sulfonamide (PFOSA)	Perfluoropentanefulfonic Acid (PFPES)	Perfluoropentatonoic Acid (PFPEA)	Perfluoro-tetra-decanoic Acid (PFTEA)	Perfluoro-tridecanoic Acid (PFTRIA)	Perfluoro-undecanoic Acid (PFUNA)	FOC
EPA Residential Risk Screening Levels (mg/kg)			**0.013**	**0.019**	**1.9**	**0.019**	**0.13**	**0.023**																								
EPA Industrial Risk Screening Levels (mg/kg)			**0.16**	**0.25**	**25**	**0.25**	**1.6**	**0.35**																								
Location ID	**Sample Date**	**Depth Interval (ft)**																														
MTA-SB0001	2/8/2022	0 - 0.5	**0.0014**	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	0.00055 U	0.00055 U	0.00055 U	0.00055 U	0.00055 U	**0.00035 J**	0.00055 U	0.00055 U	0.00055 U	**0.00085 J**	0.00055 U	0.00055 U	0.00055 U	
MTA-SB0001	2/8/2022	0.5 - 2	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	0.00063 U	**0.00046 J**	0.00063 U	0.00063 U	0.00063 U	
MTA-SB0002	2/8/2022	0 - 0.5	**0.118**	**0.0023**	0.00059 U	**0.0021**	**0.0039**	0.00059 U	0.00059 U	0.00059 U	0.00059 U	**0.00042 J**	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	**0.0015**	**0.00085 J**	**0.0064**	**0.00043 J**	**0.0012**	**0.0028**	**0.0027**	**0.0024**	0.00059 U	0.00059 U	**0.0062**	0.00059 U	0.00059 U	**0.0019**	
MTA-SB0002	2/8/2022	0.5 - 2	**0.0804**	**0.00048 J**	0.00059 U	**0.00076 J**	**0.0013**	0.00059 U	0.00059 U	0.00059 U	0.00059 U	**0.00097 J**	**0.0028**	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	**0.00080 J**	0.00059 U	0.00059 U	0.00059 U	**0.00055 J**	**0.00081 J**	0.00059 U	0.00059 U	0.00059 U	**0.0012**	0.00059 U	0.00059 U	0.00059 U	
MTA-SB0003	2/8/2022	0 - 0.5	**0.0274**	**0.00093 J**	0.00058 U	**0.00084 J**	**0.00090 J**	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	**0.00064 J**	**0.00064 J**	**0.0017**	0.00058 U	0.00058 U	**0.0012**	**0.00097 J**	**0.0016**	0.00058 U	0.00058 U	**0.0016**	0.00058 U	0.00058 U	**0.00055 J**	
MTA-SB0003	2/8/2022	0.5 - 2	0.207	**0.00081 J**	0.00058 U	**0.0023**	**0.0019**	0.00058 U	0.00058 U	0.00058 U	0.00058 U	**0.00048 J**	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	0.00058 U	**0.0010 J**	**0.00065 J**	0.00058 U	0.00058 U	0.00058 U	**0.00089 J**	0.00058 U	0.00058 U	0.00058 U	
MTA-SB0004	2/8/2022	0 - 0.5	0.194	**0.0014**	0.00060 U	**0.0025**	**0.0012**	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	**0.00082 J**	0.00060 U	**0.0019**	0.00060 U	0.00060 U	**0.0012**	**0.0012**	**0.0020**	0.00060 U	0.00060 U	**0.0025**	0.00060 U	0.00060 U	**0.00069 J**	
MTA-SB0004	2/8/2022	0.5 - 2	**0.0911**	**0.0053**	0.00059 U	**0.0012**	**0.0147**	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	0.00059 U	**0.00057 J**	0.00059 U	0.00059 U	0.00059 U	**0.0049**	**0.0023**	**0.0018**	0.00059 U	0.00059 U	**0.00050 J**	**0.0024**	0.00059 U	0.00059 U	0.00059 U	
MTA-SB0005	2/8/2022	0 - 0.5	0.299	**0.0034**	0.00058 U	**0.0085**	**0.0049**	0.00058 U	0.00058 U	0.00058 U	0.00058 U	**0.0032**	**0.0157**	0.00058 U	0.00058 U	0.00058 U	0.00058 U	**0.00045 J**	**0.0017**	**0.0072**	**0.0246**	**0.0012**	**0.00047 J**	**0.0042**	**0.0037**	**0.0537**	**0.0062**	**0.00030 J**	**0.0078**	0.00058 U	0.00058 U	**0.0040**	
MTA-SB0005	2/8/2022	0.5 - 2	1.61	**0.0071**	0.00056 U	**0.0117**	**0.0225**	0.00056 U	0.00056 U	0.00056 U	0.00056 U	**0.0260**	**0.0055**	0.00056 U	0.00056 U	0.00056 U	0.056 U	**0.0011**	0.00056 U	**0.0019**	0.00056 U	**0.0053**	**0.0046**	**0.0038**	0.056 U	**0.0012**	**0.00065 J**	**0.0059**	0.00056 U	0.00056 U	0.00056 U	
MTA-SB0006	2/8/2022	0 - 0.5	**0.0079**	**0.00035 J**	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	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	**0.00030 J**	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	
MTA-SB0006	2/8/2022	0.5 - 2	**0.0041**	0.00056 U	0.00056 U	0.00056 U	**0.00050 J**	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.00056 U	0.0028 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	**0.00028 J**	0.00056 U	0.00056 U	0.00056 U	
MTA-SB0007	2/8/2022	0 - 0.5	**0.0216**	**0.00038 J**	0.00055 U	**0.00062 J**	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	0.00055 U	0.00055 U	**0.00037 J**	**0.00027 J**	0.00055 U	0.00055 U	0.00055 U	**0.00041 J**	0.00055 U	0.00055 U	0.00055 U	
MTA-SB0007	2/8/2022	0.5 - 2	**0.0121**	**0.00061 J**	0.00057 U	0.00057 U	**0.00034 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	0.00057 U	**0.00049 J**	0.00057 U	0.00057 U	0.00057 U	0.00057 U	0.00057 U	**0.00031 J**	0.00057 U	0.00057 U	0.00057 U	
MTA-SB0008	4/22/2022	47 - 48	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	0.00064 U	1.0

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
Yellow Highlighted cell indicates an exceedance of Residential EPA RSLs
Red font inidcates exceedance of Industrial EPA RSLs
Results are presented in milligrams per kilogram (mg/kg)
EPA = Environmental Protection Agency
FOC = Fractional Organic Carbon
ft = Feet
J = analytical result was greater than or equal to the reporting limit, but less than the practical quantitation limit
RSL = Risk Screening Level
U = Result was below the laboratory RL
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Table 2
Surface Water Analytical Results
Morpheus Test Area

Analyte		Perfluoro-octane sulfonic Acid (PFOS)	Perfluoro-octanoic Acid (PFOA)	Perfluoro-butane-sulfonic Acid (PFBS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-hexane-sulfonic Acid (PFHXS)	Hexa-fluoro-propylene Oxide Dimer Acid (HFPO-DA)	11CL-PF3OUDS	4,8-dioxa-3H-Perfluoro-nonanoic Acid (ADONA)	4:2 Fluorotelomer sulphonic acid (4:2F2S)	6:2 Fluorotelomer sulphonic acid (6:2FTS)	8:2 Fluorotelomer sulphonic acid (8:2FTS)	9CL-PF3ONS	N-Ethylperfluorooactane Sulfonamidoacetate (EtFOSAA)	N-Methylperfluorooactane Sulfonamidoacetate (N-MeFOSAA)	N-Methylperfluorooactanesulfonamide (MeFOSA)	Perfluorobutanoic Acid (PFBA)	Perfluorodecanesulfonic Acid (PFDS)	Perfluoro-decanoic Acid (PFDA)	Perfluoro-dodecanoic Acid (PFDOA)	Perfluoroheptanesulfonic Acid (PFHPS)	Perfluoro-heptanoic Acid (PFHPA)	Perfluoro-hexanoic Acid (PFHXA)	Perfluorononanesulfonic Acid (PFNS)	Perfluorooctane Sulfonamide (PFOSA)	Perfluoropentanefulfonic Acid (PFPES)	Perfluoropentatonoic Acid (PFPEA)	Perfluoro-tetra-decanoic Acid (PFTEA)	Perfluoro-tridecanoic Acid (PFTRIA)	Perfluoro-undecanoic Acid (PFUNA)
Provisional Surface Water Cleanup Target Level (ng/L)		**10**	**500**																										
Location ID	Sample Date																												
MTA-SW0001	2/8/2022	**56.7**	**3.5 J**	**12.3**	4.0 U	**69.7**	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	8.0 U	40 U	**14.3 J**	4.0 U	4.0 U	4.0 U	**2.3 J**	**5.0 J**	**12.0**	4.0 U	4.0 U	**12.4**	**13.8**	4.0 U	4.0 U	4.0 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
Yellow Highlighted cell indicates an exceedance of provisional
Results are presented in nanograms per liter (ng/L)
Florida Department of Environmental Protection Surface Water Target Levels
J = analytical result was greater than or equal to the reporting limit, but less than the practical quantitation limit
Nanograms per liter (ng/L)
U = Result was below the laboratory RL
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Table 3
Concrete Analytical Results
Morpheus Test Area

Analyte		Perfluoro-octane sulfonic Acid (PFOS)	Perfluoro-octanoic Acid (PFOA)	Perfluoro-butane-sulfonic Acid (PFBS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-hexane-sulfonic Acid (PFHXS)	Hexa-fluoro-propylene Oxide Dimer Acid (HFPO-DA)	11CL-PF3OUDS	4,8-dioxa-3H-Perfluoro-nonanoic Acid (ADONA)	4:2 Fluorotelomer sulphonic acid (4:2F2S)	6:2 Fluorotelomer sulphonic acid (6:2FTS)	8:2 Fluorotelomer sulphonic acid (8:2FTS)	9CL-PF3ONS	N-Ethylperfluorooactane Sulfonamidoacetate (EtFOSAA)	N-Methylperfluorooactane Sulfonamidoacetate (N-MeFOSAA)	N-Methylperfluorooactanesulfonamide (MeFOSA)	Perfluorobutanoic Acid (PFBA)	Perfluorodecanesulfonic Acid (PFDS)	Perfluoro-decanoic Acid (PFDA)	Perfluoro-dodecanoic Acid (PFDOA)	Perfluoroheptanesulfonic Acid (PFHPS)	Perfluoro-heptanoic Acid (PFHPA)	Perfluoro-hexanoic Acid (PFHXA)	Perfluorononanesulfonic Acid (PFNS)	Perfluorooctane Sulfonamide (PFOSA)	Perfluoropentanefulfonic Acid (PFPES)	Perfluoropentatonoic Acid (PFPEA)	Perfluoro-tetra-decanoic Acid (PFTEA)	Perfluoro-tridecanoic Acid (PFTRIA)	Perfluoro-undecanoic Acid (PFUNA)
Location ID	**Sample Date**																													
MTA-CT0001	2/8/2022	**14700**	**582**	**3240**	30 U	**10200**	40 U	40 U	40 U	**64.4 J**	**636**	**176 J**	40 U	40 U	160 U	40 U	**786**	30 U	30 U	30 U	**479**	**448**	**3900**	**30.3 J**	**277**	**2520**	**1340**	30 U	30 U	30 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
Results are presented in nanograms per liter (ng/L)
J = analytical result was greater than or equal to the reporting limit, but less than the practical quantitation limit
Nanograms per liter (ng/L)
U = Result was below the laboratory RL
11CL-PF3OUDS = 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
9CL-PF3ONS = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

ATTACHMENT A

LABORATORY ANALYTICAL REPORTS

National Aeronautics and
Space Administration

PERMISSION TO PUBLISH

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Caitlin Brice, M.S. — Signature

12/27/18 — Date

SGS Legal Reviewed CM

Company Name: SGS North America Inc.
Company Representative Name: Caitlin Brice
Company Representative Title: General Manager
Company Address: 4405 Vineland Rd., Ste C15, Orlando, FL 32811
Company Representative Phone: 407-425-6700
Company Representative E-Mail: caitlin.brice@sgs.com

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
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: 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

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 **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 [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%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found 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	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found 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 **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 **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	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
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

	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 **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

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 **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 [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	

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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-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
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	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
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 **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
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-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		1/24/22	16:00
2		1/24/22	17:00		1/25/22	0900
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

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FA92586: Chain of Custody
Page 1 of 3

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
	~~A3RB-DPT0012-004.0-20220124~~	~~A3RB-DPT0012~~	~~20220124~~	~~gm~~	WG	N	G	2	2	
	~~A3RB-DPT0012-010.0-20220124~~				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 [signature]	01/24/2022	16:00	1 [signature]	1/24/22	16:00
2 [signature]	1/24/22	17:10	2 [signature]	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**

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: _____

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

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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.

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Automated Report

Technical Report for

AECOM, Inc

NASA KSC, PFAS SA & Mitigation

60667657

SGS Job Number: FA95078

Sampling Date: 04/22/22

Report to:

AECOM, INC.

teresa.amentt.jennings@aecom.com

ATTN: Teresa Amentt Jennings

Total number of pages in report: **40**

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: FA95078

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA95078-1	04/22/22	11:35	CM	04/22/22	SO	Soil	MTA-SB0008-047.5-20220422
FA95078-2	04/22/22	13:40	CM	04/22/22	AQ	Field Blank Soil	MTA-FB-20220422-01

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA95078

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 5/9/2022 3:08:57 PM

On 04/22/2022, 1 Sample, and 1 Field Blank were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 6.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA95078 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:** OP91059

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Samples FA95101-22MS, FA95101-23DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix: SO **Batch ID:** OP90927

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Samples FA94976-1MS, FA94976-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

General Chemistry By Method ASTM D2974-87

Matrix: SO **Batch ID:** GN91206

Sample FA95078-1DUP was used as the QC sample for Fractional Organic Carbon.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN91219

Sample FA95250-11DUP was used as the QC sample 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:

_____

Gabriela Benitez, QA Coordinator *(Signature on File)*

Summary of Hits

Job Number: FA95078
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/22/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA95078-1	**MTA-SB0008-047.5-20220422**					
Fractional Organic Carbon		1.0	0.01	0.01	%	ASTM D2974-87
FA95078-2	**MTA-FB-20220422-01**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	MTA-SB0008-047.5-20220422		
Lab Sample ID:	FA95078-1	**Date Sampled:**	04/22/22
Matrix:	SO - Soil	**Date Received:**	04/22/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	75.6
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q28312.D	1	05/03/22 17:11	MV	04/26/22 06:30	OP90927	S4Q402
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	0.00064 U	0.0013	0.00064	0.00049	mg/kg	
2706-90-3	Perfluoropentanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
307-24-4	Perfluorohexanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
375-85-9	Perfluoroheptanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
335-67-1	Perfluorooctanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
375-95-1	Perfluorononanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
335-76-2	Perfluorodecanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
2058-94-8	Perfluoroundecanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
307-55-1	Perfluorododecanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
72629-94-8	Perfluorotridecanoic acid	0.00064 U	0.0013	0.00064	0.00034	mg/kg	
376-06-7	Perfluorotetradecanoic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
2706-91-4	Perfluoropentanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
355-46-4	Perfluorohexanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
375-92-8	Perfluoroheptanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
1763-23-1	Perfluorooctanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
68259-12-1	Perfluorononanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
335-77-3	Perfluorodecanesulfonic acid	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
31506-32-8	MeFOSA	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
2991-50-6	EtFOSAA	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.00064 U	0.0013	0.00064	0.00032	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: MTA-SB0008-047.5-20220422
Lab Sample ID: FA95078-1 **Date Sampled:** 04/22/22
Matrix: SO - Soil **Date Received:** 04/22/22
Method: EPA 537M QSM5.3 B-15 IN HOUSE **Percent Solids:** 75.6
Project: NASA KSC, PFAS SA & Mitigation

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
39108-34-4	8:2 Fluorotelomer sulfonate	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
919005-14-4	ADONA	0.00064 U	0.0013	0.00064	0.00032	mg/kg	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.00064 U	0.0013	0.00064	0.00037	mg/kg	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.00064 U	0.0013	0.00064	0.00033	mg/kg	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	79%		50-150%
	13C5-PFHxA	81%		50-150%
	13C4-PFHpA	85%		50-150%
	13C8-PFOA	96%		50-150%
	13C9-PFNA	94%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	90%		50-150%
	13C2-PFDoDA	89%		50-150%
	13C2-PFTeDA	98%		50-150%
	13C3-PFBS	92%		50-150%
	13C3-PFHxS	97%		50-150%
	13C8-PFOS	94%		50-150%
	13C8-FOSA	69%		50-150%
	d3-MeFOSA	64%		50-150%
	d3-MeFOSAA	107%		50-150%
	d5-EtFOSAA	109%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	98%		50-150%
	13C2-8:2FTS	96%		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:	MTA-SB0008-047.5-20220422		
Lab Sample ID:	FA95078-1	**Date Sampled:**	04/22/22
Matrix:	SO - Soil	**Date Received:**	04/22/22
		Percent Solids:	75.6
Project:	NASA KSC, PFAS SA & Mitigation		

General Chemistry

Analyte	Result	LOQ	LOD	DL	Units	DF	Analyzed	By	Method
Fractional Organic Carbon	1.0	0.01	0.01	0.01	%	1	04/29/22 11:41	JB	ASTM D2974-87
Solids, Percent	75.6				%	1	04/30/22 15:57	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:	MTA-FB-20220422-01		
Lab Sample ID:	FA95078-2	**Date Sampled:**	04/22/22
Matrix:	AQ - Field Blank Soil	**Date Received:**	04/22/22
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	5Q961.D	1	05/06/22 16:59	NG	05/04/22 08:30	OP91059	S5Q18
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: MTA-FB-20220422-01
Lab Sample ID: FA95078-2 **Date Sampled:** 04/22/22
Matrix: AQ - Field Blank Soil **Date Received:** 04/22/22
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	0.0083 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	98%		50-150%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	103%		50-150%
	13C8-PFOA	122%		50-150%
	13C9-PFNA	106%		50-150%
	13C6-PFDA	101%		50-150%
	13C7-PFUnDA	104%		50-150%
	13C2-PFDoDA	98%		50-150%
	13C2-PFTeDA	88%		50-150%
	13C3-PFBS	103%		50-150%
	13C3-PFHxS	102%		50-150%
	13C8-PFOS	104%		50-150%
	13C8-FOSA	103%		50-150%
	d3-MeFOSA	90%		50-150%
	d3-MeFOSAA	94%		50-150%
	d5-EtFOSAA	103%		50-150%
	13C2-4:2FTS	96%		50-150%
	13C2-6:2FTS	111%		50-150%
	13C2-8:2FTS	93%		50-150%
	13C3-HFPO-DA	96%		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: FA95078
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.

FA95078

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 Pollet/ 419-302-0236~~ CHRIS MANSHOLT /407 456 6082		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	MTA-[illegible]-0475-20220422	MTA-SC0015	20220422	11:35	SO	N	G	2	1	1	
	~~DUP-SC0015-IW~~										
2	MTA - FB - 20220422-01	MTA - FB	20220422	13:40	WQ	FB	C	2	2		

INITIAL ASSESSMENT TW

LABEL VERIFICATION SM

6.2° IR#1 DIRECT FROM FIELD

***Field* Comments:**
Report only per QAPP WS #15-2 & Fractional Organic Carbon (FOC)

***Lab* Comments:**

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1			1	4/22/22	05:45
2	4/22/22	16:32	2	4/22/22	1632
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

FA95078: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA95078 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 4/22/2022 4:32:00 PM **Delivery Method:** DROPOFF **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (6.2);

Cooler Temps (Corrected) °C: Cooler 1: (6.6);

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 COOLER RECEIVED DIRECT FROM FIELD @ 6.2C. COOLER CONTAINED ICE.

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 4/22/2022 4:32:00 PM Reviewer: _____ Date: _____

FA95078: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95078
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90927	EPA 537M QSM5.3 B-15						
OP90927-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	100	%	71-135
OP90927-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	97	%	69-132
OP90927-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	97	%	70-132
OP90927-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	100	%	71-131
OP90927-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	94	%	69-133
OP90927-BS	375-95-1	Perfluorononanoic acid	BSP	REC	92	%	72-129
OP90927-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	98	%	69-133
OP90927-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	98	%	64-136
OP90927-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	94	%	69-135
OP90927-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	102	%	66-139
OP90927-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	95	%	69-133
OP90927-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	99	%	72-128
OP90927-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	98	%	73-123
OP90927-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	67-130
OP90927-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	97	%	70-132
OP90927-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	97	%	68-136
OP90927-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	93	%	69-125
OP90927-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	98	%	59-134
OP90927-BS	754-91-6	PFOSA	BSP	REC	101	%	67-137
OP90927-BS	2355-31-9	MeFOSAA	BSP	REC	98	%	63-144
OP90927-BS	2991-50-6	EtFOSAA	BSP	REC	98	%	61-139
OP90927-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	101	%	62-145
OP90927-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	100	%	64-140
OP90927-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	103	%	65-137
OP90927-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	97	%	71-135
OP90927-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	96	%	69-132
OP90927-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	95	%	70-132
OP90927-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	98	%	71-131
OP90927-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	92	%	69-133
OP90927-MS*	375-95-1	Perfluorononanoic acid	MS	REC	91	%	72-129
OP90927-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	69-133
OP90927-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	96	%	64-136
OP90927-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	92	%	69-135
OP90927-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	101	%	66-139
OP90927-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	93	%	69-133
OP90927-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	97	%	72-128
OP90927-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	100	%	73-123
OP90927-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	96	%	67-130
OP90927-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	99	%	70-132
OP90927-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	94	%	68-136
OP90927-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	96	%	69-125
OP90927-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	99	%	59-134

* Sample used for QC is not from job FA95078

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95078
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90927-MS*	754-91-6	PFOSA	MS	REC	100	%	67-137
OP90927-MS*	2355-31-9	MeFOSAA	MS	REC	97	%	63-144
OP90927-MS*	2991-50-6	EtFOSAA	MS	REC	92	%	61-139
OP90927-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	101	%	62-145
OP90927-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	99	%	64-140
OP90927-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	101	%	65-137
OP90927-MSD*	375-22-4	Perfluorobutanoic acid	MSD	REC	97	%	71-135
OP90927-MSD*	375-22-4	Perfluorobutanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	REC	95	%	69-132
OP90927-MSD*	2706-90-3	Perfluoropentanoic acid	MSD	RPD	1	%	30
OP90927-MSD*	307-24-4	Perfluorohexanoic acid	MSD	REC	95	%	70-132
OP90927-MSD*	307-24-4	Perfluorohexanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	REC	97	%	71-131
OP90927-MSD*	375-85-9	Perfluoroheptanoic acid	MSD	RPD	1	%	30
OP90927-MSD*	335-67-1	Perfluorooctanoic acid	MSD	REC	92	%	69-133
OP90927-MSD*	335-67-1	Perfluorooctanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	375-95-1	Perfluorononanoic acid	MSD	REC	89	%	72-129
OP90927-MSD*	375-95-1	Perfluorononanoic acid	MSD	RPD	1	%	30
OP90927-MSD*	335-76-2	Perfluorodecanoic acid	MSD	REC	93	%	69-133
OP90927-MSD*	335-76-2	Perfluorodecanoic acid	MSD	RPD	0	%	30
OP90927-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	REC	96	%	64-136
OP90927-MSD*	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	307-55-1	Perfluorododecanoic acid	MSD	REC	92	%	69-135
OP90927-MSD*	307-55-1	Perfluorododecanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	REC	100	%	66-139
OP90927-MSD*	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	REC	93	%	69-133
OP90927-MSD*	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	2	%	30
OP90927-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	96	%	72-128
OP90927-MSD*	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	1	%	30
OP90927-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	97	%	73-123
OP90927-MSD*	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	1	%	30
OP90927-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	94	%	67-130
OP90927-MSD*	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	0	%	30
OP90927-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	100	%	70-132
OP90927-MSD*	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	4	%	30
OP90927-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	96	%	68-136
OP90927-MSD*	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	4	%	30
OP90927-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	97	%	69-125
OP90927-MSD*	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	4	%	30
OP90927-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	97	%	59-134
OP90927-MSD*	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	0	%	30
OP90927-MSD*	754-91-6	PFOSA	MSD	REC	99	%	67-137
OP90927-MSD*	754-91-6	PFOSA	MSD	RPD	2	%	30
OP90927-MSD*	31506-32-8	MeFOSA	MSD	RPD	2	%	30

* Sample used for QC is not from job FA95078

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95078
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP90927-MSD*	2355-31-9	MeFOSAA	MSD	REC	95	%	63-144
OP90927-MSD*	2355-31-9	MeFOSAA	MSD	RPD	0	%	30
OP90927-MSD*	2991-50-6	EtFOSAA	MSD	REC	93	%	61-139
OP90927-MSD*	2991-50-6	EtFOSAA	MSD	RPD	3	%	30
OP90927-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	98	%	62-145
OP90927-MSD*	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	0	%	30
OP90927-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	98	%	64-140
OP90927-MSD*	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP90927-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	100	%	65-137
OP90927-MSD*	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	2	%	30
OP91059	EPA 537M QSM5.3 B-15						
OP91059-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	95	%	73-129
OP91059-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	94	%	72-129
OP91059-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP91059-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	93	%	72-130
OP91059-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	71-133
OP91059-BS	375-95-1	Perfluorononanoic acid	BSP	REC	96	%	69-130
OP91059-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP91059-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	98	%	69-133
OP91059-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	95	%	72-134
OP91059-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	83	%	65-144
OP91059-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	94	%	71-132
OP91059-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	96	%	72-130
OP91059-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	95	%	71-127
OP91059-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP91059-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP91059-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	93	%	65-140
OP91059-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP91059-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	95	%	53-142
OP91059-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP91059-BS	31506-32-8	MeFOSA	BSP	REC	90	%	68-141
OP91059-BS	2355-31-9	MeFOSAA	BSP	REC	83	%	65-136
OP91059-BS	2991-50-6	EtFOSAA	BSP	REC	83	%	61-135
OP91059-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	113	%	63-143
OP91059-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	111	%	64-140
OP91059-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP91059-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	96	%	73-129
OP91059-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	95	%	72-129
OP91059-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	72-129
OP91059-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	93	%	72-130
OP91059-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	83	%	71-133
OP91059-MS*	375-95-1	Perfluorononanoic acid	MS	REC	95	%	69-130
OP91059-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	71-129

* Sample used for QC is not from job FA95078

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95078
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/22/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91059-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	98	%	69-133
OP91059-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	97	%	72-134
OP91059-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	87	%	65-144
OP91059-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	95	%	71-132
OP91059-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	94	%	72-130
OP91059-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	90	%	71-127
OP91059-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	88	%	68-131
OP91059-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	96	%	69-134
OP91059-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	86	%	65-140
OP91059-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	100	%	69-127
OP91059-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	93	%	53-142
OP91059-MS*	754-91-6	PFOSA	MS	REC	96	%	67-137
OP91059-MS*	31506-32-8	MeFOSA	MS	REC	89	%	68-141
OP91059-MS*	2355-31-9	MeFOSAA	MS	REC	83	%	65-136
OP91059-MS*	2991-50-6	EtFOSAA	MS	REC	74	%	61-135
OP91059-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	112	%	63-143
OP91059-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140
OP91059-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	96	%	67-138
OP91059-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91059-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP91059-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91059-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91059-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91059-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91059-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30

* Sample used for QC is not from job FA95078

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: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q402-IBLK	4Q28268.D	1	05/03/22	MV	n/a	n/a	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

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	94%	50-150%
	13C5-PFPeA	94%	50-150%
	13C5-PFHxA	93%	50-150%

Instrument Blank

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q402-IBLK	4Q28268.D	1	05/03/22	MV	n/a	n/a	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	94%	50-150%
	13C8-PFOA	102%	50-150%
	13C9-PFNA	98%	50-150%
	13C6-PFDA	102%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	95%	50-150%
	13C3-PFHxS	98%	50-150%
	13C8-PFOS	94%	50-150%
	13C8-FOSA	109%	50-150%
	d3-MeFOSA	116%	50-150%
	d3-MeFOSAA	102%	50-150%
	d5-EtFOSAA	110%	50-150%
	13C2-4:2FTS	93%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	101%	50-150%
	13C3-HFPO-DA	84%	50-150%

Instrument Blank

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q18-IBLK	5Q953.D	1	05/06/22	NG	n/a	n/a	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

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	107%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	110%	50-150%

Instrument Blank

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q18-IBLK	5Q953.D	1	05/06/22	NG	n/a	n/a	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	111%	50-150%
	13C8-PFOA	115%	50-150%
	13C9-PFNA	115%	50-150%
	13C6-PFDA	113%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	118%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	108%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	107%	50-150%

Method Blank Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-MB	4Q28302.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

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	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	91%	50-150%

Method Blank Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-MB	4Q28302.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	100%	50-150%
	13C9-PFNA	96%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	93%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	99%	50-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	95%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	63%	50-150%
	d3-MeFOSA	54%	50-150%
	d3-MeFOSAA	110%	50-150%
	d5-EtFOSAA	116%	50-150%
	13C2-4:2FTS	91%	50-150%
	13C2-6:2FTS	101%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	85%	50-150%

Method Blank Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	5Q960.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

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	101%	50-150%
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	105%	50-150%

Method Blank Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	5Q960.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	110%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	83%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	100%	50-150%

Blank Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-BS	4Q28301.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
375-22-4	Perfluorobutanoic acid	10	10.0	100	71-135
2706-90-3	Perfluoropentanoic acid	10	9.7	97	69-132
307-24-4	Perfluorohexanoic acid	10	9.7	97	70-132
375-85-9	Perfluoroheptanoic acid	10	10	100	71-131
335-67-1	Perfluorooctanoic acid	10	9.4	94	69-133
375-95-1	Perfluorononanoic acid	10	9.2	92	72-129
335-76-2	Perfluorodecanoic acid	10	9.8	98	69-133
2058-94-8	Perfluoroundecanoic acid	10	9.8	98	64-136
307-55-1	Perfluorododecanoic acid	10	9.4	94	69-135
72629-94-8	Perfluorotridecanoic acid	10	10.2	102	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.5	95	69-133
375-73-5	Perfluorobutanesulfonic acid	10	9.9	99	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	9.8	98	73-123
355-46-4	Perfluorohexanesulfonic acid	10	9.3	93	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	9.7	97	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	9.7	97	68-136
68259-12-1	Perfluorononanesulfonic acid	10	9.3	93	69-125
335-77-3	Perfluorodecanesulfonic acid	10	9.8	98	59-134
754-91-6	PFOSA	10	10.1	101	67-137
31506-32-8	MeFOSA	10	9.5	95	60-140
2355-31-9	MeFOSAA	10	9.8	98	63-144
2991-50-6	EtFOSAA	10	9.8	98	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.1	101	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	10.0	100	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	10.3	103	65-137
13252-13-6	HFPO-DA (GenX)	10	9.8	98	60-140
919005-14-4	ADONA	10	9.1	91	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	9.2	92	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	50-150%
	13C5-PFPeA	91%	50-150%
	13C5-PFHxA	90%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-BS	4Q28301.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	91%	50-150%
	13C8-PFOA	97%	50-150%
	13C9-PFNA	94%	50-150%
	13C6-PFDA	97%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	92%	50-150%
	13C2-PFTeDA	98%	50-150%
	13C3-PFBS	93%	50-150%
	13C3-PFHxS	97%	50-150%
	13C8-PFOS	97%	50-150%
	13C8-FOSA	68%	50-150%
	d3-MeFOSA	58%	50-150%
	d3-MeFOSAA	111%	50-150%
	d5-EtFOSAA	114%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	102%	50-150%
	13C3-HFPO-DA	86%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-BS	5Q959.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0760	95	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0750	94	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0747	93	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0746	93	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0741	93	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0766	96	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0754	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0785	98	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0762	95	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0666	83	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0751	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0765	96	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0762	95	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0744	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0780	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0745	93	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0767	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0759	95	53-142
754-91-6	PFOSA	0.08	0.0742	93	67-137
31506-32-8	MeFOSA	0.08	0.0718	90	68-141
2355-31-9	MeFOSAA	0.08	0.0666	83	65-136
2991-50-6	EtFOSAA	0.08	0.0663	83	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0902	113	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0890	111	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0757	95	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0739	92	60-140
919005-14-4	ADONA	0.08	0.0741	93	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0820	103	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0781	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	108%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-BS	5Q959.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	71%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	112%	50-150%
	13C2-8:2FTS	108%	50-150%
	13C3-HFPO-DA	107%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MS	5Q964.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-22	5Q963.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	Compound	FA95101-22 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0392		0.167	0.200	96	73-129
2706-90-3	Perfluoropentanoic acid	0.0912		0.167	0.249	95	72-129
307-24-4	Perfluorohexanoic acid	0.161		0.167	0.321	96	72-129
375-85-9	Perfluoroheptanoic acid	0.0430		0.167	0.198	93	72-130
335-67-1	Perfluorooctanoic acid	0.0829		0.167	0.222	83	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.159	95	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.158	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.163	98	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.161	97	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.145	87	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.159	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0461		0.167	0.203	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0565		0.167	0.206	90	71-127
355-46-4	Perfluorohexanesulfonic acid	0.494		0.167	0.640	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0254		0.167	0.185	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.334		0.167	0.478	86	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	0.155	93	53-142
754-91-6	PFOSA	0.0083	U	0.167	0.160	96	67-137
31506-32-8	MeFOSA	0.017	U	0.167	0.149	89	68-141
2355-31-9	MeFOSAA	0.017	U	0.167	0.139	83	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.123	74	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.187	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.0065	J	0.167	0.195	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.160	96	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.154	92	60-140
919005-14-4	ADONA	0.017	U	0.167	0.160	96	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.167	0.162	97	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.167	0.171	103	60-140

CAS No.	ID Standard Recoveries	MS	FA95101-22	Limits
	13C4-PFBA	96%	100%	50-150%
	13C5-PFPeA	96%	100%	50-150%
	13C5-PFHxA	96%	102%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MS	5Q964.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-22	5Q963.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	ID Standard Recoveries	MS	FA95101-22	Limits
	13C4-PFHpA	96%	102%	50-150%
	13C8-PFOA	106%	123%	50-150%
	13C9-PFNA	96%	105%	50-150%
	13C6-PFDA	102%	110%	50-150%
	13C7-PFUnDA	99%	102%	50-150%
	13C2-PFDoDA	94%	100%	50-150%
	13C2-PFTeDA	78%	92%	50-150%
	13C3-PFBS	105%	108%	50-150%
	13C3-PFHxS	99%	102%	50-150%
	13C8-PFOS	97%	102%	50-150%
	13C8-FOSA	97%	105%	50-150%
	d3-MeFOSAA	97%	109%	50-150%
	d5-EtFOSAA	100%	112%	50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	94%		50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-MS	4Q28304.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402
OP90927-MSD	4Q28305.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402
FA94976-1	4Q28303.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	Compound	FA94976-1 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	1.1	U	10.8	10.5	97	11.1	10.7	97	2	71-135/30
2706-90-3	Perfluoropentanoic acid	1.1	U	10.8	10.4	96	11.1	10.5	95	1	69-132/30
307-24-4	Perfluorohexanoic acid	1.1	U	10.8	10.3	95	11.1	10.5	95	2	70-132/30
375-85-9	Perfluoroheptanoic acid	1.1	U	10.8	10.6	98	11.1	10.7	97	1	71-131/30
335-67-1	Perfluorooctanoic acid	1.1	U	10.8	10.0	92	11.1	10.2	92	2	69-133/30
375-95-1	Perfluorononanoic acid	1.1	U	10.8	9.8	91	11.1	9.9	89	1	72-129/30
335-76-2	Perfluorodecanoic acid	1.1	U	10.8	10.3	95	11.1	10.3	93	0	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.1	U	10.8	10.4	96	11.1	10.6	96	2	64-136/30
307-55-1	Perfluorododecanoic acid	1.1	U	10.8	10.0	92	11.1	10.2	92	2	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.1	U	10.8	10.9	101	11.1	11.1	100	2	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.1	U	10.8	10.1	93	11.1	10.3	93	2	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.1	U	10.8	10.5	97	11.1	10.6	96	1	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.1	U	10.8	10.8	100	11.1	10.7	97	1	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.1	U	10.8	10.4	96	11.1	10.4	94	0	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.1	U	10.8	10.7	99	11.1	11.1	100	4	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.1	U	10.8	10.2	94	11.1	10.6	96	4	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.1	U	10.8	10.4	96	11.1	10.8	97	4	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.1	U	10.8	10.7	99	11.1	10.7	97	0	59-134/30
754-91-6	PFOSA	1.1	U	10.8	10.8	100	11.1	11.0	99	2	67-137/30
31506-32-8	MeFOSA	1.1	U	10.8	9.9	92	11.1	10.1	91	2	60-140/30
2355-31-9	MeFOSAA	1.1	U	10.8	10.5	97	11.1	10.5	95	0	63-144/30
2991-50-6	EtFOSAA	1.1	U	10.8	10	92	11.1	10.3	93	3	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.1	U	10.8	10.9	101	11.1	10.9	98	0	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.1	U	10.8	10.7	99	11.1	10.9	98	2	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.1	U	10.8	10.9	101	11.1	11.1	100	2	65-137/30
13252-13-6	HFPO-DA (GenX)	1.1	U	10.8	10.6	98	11.1	10.8	97	2	60-140/30
919005-14-4	ADONA	1.1	U	10.8	10.1	93	11.1	10.1	91	0	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.1	U	10.8	9.4	87	11.1	9.3	84	1	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.1	U	10.8	9.8	91	11.1	10	90	2	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA94976-1	Limits
	13C4-PFBA	95%	97%	87%	50-150%
	13C5-PFPeA	93%	96%	86%	50-150%
	13C5-PFHxA	92%	94%	87%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90927-MS	4Q28304.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402
OP90927-MSD	4Q28305.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402
FA94976-1	4Q28303.D	1	05/03/22	MV	04/26/22	OP90927	S4Q402

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-1

CAS No.	ID Standard Recoveries	MS	MSD	FA94976-1	Limits
	13C4-PFHpA	93%	96%	88%	50-150%
	13C8-PFOA	99%	100%	96%	50-150%
	13C9-PFNA	97%	99%	93%	50-150%
	13C6-PFDA	99%	103%	97%	50-150%
	13C7-PFUnDA	92%	95%	90%	50-150%
	13C2-PFDoDA	94%	96%	90%	50-150%
	13C2-PFTeDA	99%	102%	96%	50-150%
	13C3-PFBS	96%	98%	93%	50-150%
	13C3-PFHxS	96%	100%	95%	50-150%
	13C8-PFOS	98%	97%	94%	50-150%
	13C8-FOSA	104%	108%	81%	50-150%
	d3-MeFOSA	105%	106%		50-150%
	d3-MeFOSAA	108%	113%	105%	50-150%
	d5-EtFOSAA	114%	116%	109%	50-150%
	13C2-4:2FTS	98%	101%	89%	50-150%
	13C2-6:2FTS	104%	107%	98%	50-150%
	13C2-8:2FTS	104%	105%	95%	50-150%
	13C3-HFPO-DA	87%	90%		50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-DUP	5Q966.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-23	5Q965.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	Compound	FA95101-23 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.017 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0083 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0083 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0083 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0083 U		ND		nc	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	0.0083 U		ND		nc	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	FA95101-23	Limits
	13C4-PFBA	89%	101%	50-150%
	13C5-PFPeA	88%	101%	50-150%
	13C5-PFHxA	91%	103%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95078
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-DUP	5Q966.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-23	5Q965.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95078-2

CAS No.	ID Standard Recoveries	DUP	FA95101-23	Limits
	13C4-PFHpA	93%	105%	50-150%
	13C8-PFOA	104%	122%	50-150%
	13C9-PFNA	94%	108%	50-150%
	13C6-PFDA	91%	106%	50-150%
	13C7-PFUnDA	93%	102%	50-150%
	13C2-PFDoDA	89%	102%	50-150%
	13C2-PFTeDA	80%	94%	50-150%
	13C3-PFBS	96%	109%	50-150%
	13C3-PFHxS	95%	108%	50-150%
	13C8-PFOS	93%	106%	50-150%
	13C8-FOSA	93%	108%	50-150%
	d3-MeFOSAA	93%	106%	50-150%
	d5-EtFOSAA	92%	112%	50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	85%		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: FA95078
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	GN91206	FA95078-1	%	1.0	1.0	0.5	0-40%
Solids, Percent	GN91219	FA95250-11	%	84.2	83.7	0.6	0-5%

Associated Samples:
Batch GN91206: FA95078-1
Batch GN91219: FA95078-1
(*) 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: FA95131

Sampling Date: 04/25/22

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: **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

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SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FA95131

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA95131-1	04/25/22	13:00	BFDS	04/26/22	AQ	Water	PFAS-IDW-20220425-01
FA95131-2	04/25/22	13:50	BFDS	04/26/22	AQ	Water	PFAS-IDW-20220425-02
FA95131-3	04/25/22	14:15	BFDS	04/26/22	SO	Soil	PFAS-IDW-20220425-03
FA95131-4	04/25/22	12:30	BFDS	04/26/22	AQ	Trip Blank Water	PFAS-TB01-20220425

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA95131

Site: NASA KSC, PFAS SA & Mitigation **Report Date:** 5/24/2022 2:12:17 PM

On 04/26/2022, 3 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA95131 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 Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** VI2536

Sample(s) FA94984-9MS, FA94984-9MSD were used as the QC samples indicated.

VI2536-MB: Sample was treated with an anti-foaming agent.

FA95131-1: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FA95131-1 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

FA95131-1 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.

FA95131-2: Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.

FA95131-2 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

FA95131-2 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.

Matrix: AQ **Batch ID:** VI2547

Sample(s) FA95129-7MS, FA95129-7MSD were used as the QC samples indicated.

For Sample(s) FA95131-4 are associated with an CCV that has a recovery for Acetone outside high control limit.

FA95131-4 for 2-Chloroethyl Vinyl Ether: Result reported from HCl preserved sample and should be used for screening purposes only.

FA95131-4 for Dichlorodifluoromethane: Associated CCV outside control limits low.

FA95131-4 for Acetone: Associated CCV outside of control limits high. Confirmed by re-analysis beyond hold time.

Matrix: AQ **Batch ID:** VI2555

FA95131-4: Confirmation run beyond holdtime.

Matrix: SO **Batch ID:** V3C777

Sample(s) FA95130-2MS, FA95130-2MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene, 4-Methyl-2-pentanone (MIBK), Chlorobenzene, Dibromochloromethane, Ethylbenzene, Methyl Chloride, Styrene, Tetrachloroethylene, Toluene, trans-1,3-Dichloropropene, Xylene (total) are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 4-Methyl-2-pentanone (MIBK), Chlorobenzene, Dibromochloromethane, Ethylbenzene, Methyl Chloride, Styrene, Tetrachloroethylene, Toluene, trans-1,3-Dichloropropene, Xylene (total) are outside control limits. Probable cause is due to matrix interference.

FA95131-3 for Chloroethane: Associated CCV outside of control limits high, sample is ND.

Matrix: SO **Batch ID:** V3C779

Sample(s) FA95303-1MS, FA95303-1MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, Bromoform, p-Chlorotoluene, tert-Butylbenzene are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, Bromoform, p-Chlorotoluene, tert-Butylbenzene are outside control limits. Probable cause is due to matrix interference.

MS Semi-volatiles By Method SW846 8270E

Matrix: AQ **Batch ID:** OP90994

Sample(s) FA95129-3MS, FA95129-3MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for Pentachlorophenol are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for Aniline, Pentachlorophenol are outside control limits. Probable cause is due to matrix interference.

OP90994-BS for Dibenzofuran: Spike recoveries calculated from actual spike mix concentration.

MS Semi-volatiles By Method SW846 8270E

Matrix: AQ **Batch ID:** OP90994

OP90994-BS for 2-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 3-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 4-Chloroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 4-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for Dibenzofuran: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for Carbazole: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for Aniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 4-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 4-Chloroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 3-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 3,3'-Dichlorobenzidine: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 3,3'-Dichlorobenzidine: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for Carbazole: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for Aniline: Spike recoveries calculated from actual spike mix concentration.

OP90994-BS for 2-Nitroaniline: Spike recoveries calculated from actual spike mix concentration.

FA95131-1 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high, sample was ND.

FA95131-1 for 2-Nitrophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-1 for 2,4,5-Trichlorophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-1 for 2,4,6-Trichlorophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-2 for 2,4,6-Trichlorophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-2 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high, sample was ND.

Matrix: SO **Batch ID:** OP91074

Sample(s) FA95131-3MS, FA95131-3MSD were used as the QC samples indicated.

FA95131-3 for 2,4-Dichlorophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-3 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high, sample was ND.

FA95131-3 for 2-Nitrophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-3 for 2,4,5-Trichlorophenol: Associated CCV outside of control limits high, sample was ND.

FA95131-3 for 2,4,6-Trichlorophenol: Associated CCV outside of control limits high, sample was ND.

Metals Analysis By Method SW846 6010C

Matrix: AQ **Batch ID:** MP40649

Sample(s) FA95129-3DUP, FA95129-3MS, FA95129-3MSD, FA95129-3PS, FA95129-3SDL were used as the QC samples.

RPD(s) for Duplicate for Chromium, Selenium, Silver are outside control limits for sample MP40649-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Beryllium, Silver are outside control limits for sample MP40649-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Sample(s) FA95131-1 for Lead have elevated reporting limit(s) due to matrix interference.

Matrix: SO **Batch ID:** MP40651

Sample(s) FA95269-1ADUP, FA95269-1AMS, FA95269-1AMSD, FA95269-1APS, FA95269-1ASDL were used as the QC samples.

Matrix Spike/Matrix Spike Duplicate Recovery(s) for Cadmium, Chromium, Lead are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix Spike/Matrix Spike Duplicate Recovery(s) for Antimony, Silver are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Cadmium, Chromium, Lead, Antimony, Arsenic, Beryllium, Nickel, Selenium, Silver, Thallium are outside control limits for sample MP40651-D1. High RPD due to possible sample non-homogeneity.

RPD(s) for MSD for Cadmium, Chromium, Lead, Silver are outside control limits for sample MP40651-S2. High RPD due to possible sample non-homogeneity.

RPD(s) for Serial Dilution for Antimony, Arsenic, Selenium, Thallium are outside control limits for sample MP40651-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

MP40651-D1 for Selenium: RPD acceptable due to low duplicate and sample concentrations.

MP40651-D1 for Antimony: RPD acceptable due to low duplicate and sample concentrations.

MP40651-D1 for Silver: RPD acceptable due to low duplicate and sample concentrations.

MP40651-D1 for Thallium: RPD acceptable due to low duplicate and sample concentrations.

Metals Analysis By Method SW846 6010C

Matrix: SO **Batch ID:** MP40651

MP40651-D1 for Arsenic: RPD acceptable due to low duplicate and sample concentrations.

MP40651-D1 for Nickel: RPD acceptable due to low duplicate and sample concentrations.

MP40651-D1 for Beryllium: RPD acceptable due to low duplicate and sample concentrations.

MP40651-S1 for Antimony: Spike recovery indicates possible matrix interference and/or sample non-homogeneity.

MP40651-S1 for Silver: Spike recovery indicates possible matrix interference and/or sample non-homogeneity.

MP40651-PS1 for Lead: Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

MP40651-PS1 for Cadmium: Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

MP40651-PS1 for Chromium: Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

FA95131-3 for Thallium: Sample dilution required due to difficult matrix.

FA95131-3 for Silver: Sample dilution required due to difficult matrix.

FA95131-3 for Selenium: Sample dilution required due to difficult matrix.

FA95131-3 for Barium: Sample dilution required due to difficult matrix.

FA95131-3 for Antimony: Sample dilution required due to difficult matrix.

FA95131-3 for Nickel: Sample dilution required due to difficult matrix.

FA95131-3 for Arsenic: Sample dilution required due to difficult matrix.

FA95131-3 for Beryllium: Sample dilution required due to difficult matrix.

FA95131-3 for Cadmium: Sample dilution required due to difficult matrix.

FA95131-3 for Chromium: Sample dilution required due to difficult matrix.

Metals Analysis By Method SW846 6010C

Matrix: SO **Batch ID:** MP40651

FA95131-3 for Lead: Sample dilution required due to difficult matrix.

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP40630

Sample(s) FA95138-1DUP, FA95138-1MS, FA95138-1MSD, FA95138-1SDL were used as the QC samples for metals.

Metals Analysis By Method SW846 7471B

Matrix: SO **Batch ID:** MP40629

Sample(s) FA94943-1DUP, FA94943-1MS, FA94943-1MSD, FA94943-1SDL were used as the QC samples for metals.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN91231

Sample(s) FA95304-12DUP 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: FA95131
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA95131-1	**PFAS-IDW-20220425-01**					
Barium		5.4 I	200	1.0	ug/l	SW846 6010C
Chromium		11.6	10	1.0	ug/l	SW846 6010C
Nickel		7.7 I	40	0.40	ug/l	SW846 6010C
Selenium		3.0 I	10	2.9	ug/l	SW846 6010C
Silver		0.90 I	10	0.70	ug/l	SW846 6010C
FA95131-2	**PFAS-IDW-20220425-02**					
Acetone [a]		125	25	10	ug/l	SW846 8260D
Arsenic		2.5 I	10	1.3	ug/l	SW846 6010C
Barium		30.1 I	200	1.0	ug/l	SW846 6010C
Beryllium		0.20 I	4.0	0.20	ug/l	SW846 6010C
Chromium		72.6	10	1.0	ug/l	SW846 6010C
Lead		3.2 I	5.0	1.1	ug/l	SW846 6010C
Nickel		21.6 I	40	0.40	ug/l	SW846 6010C
FA95131-3	**PFAS-IDW-20220425-03**					
Arsenic [b]		2.2 I	4.4	0.88	mg/kg	SW846 6010C
Barium [b]		5.5 I	88	0.44	mg/kg	SW846 6010C
Chromium [b]		4.4	4.4	0.44	mg/kg	SW846 6010C
Mercury		0.010 I	0.049	0.0049	mg/kg	SW846 7471B
Nickel [b]		0.93 I	18	0.22	mg/kg	SW846 6010C
Silver [b]		0.39 I	4.4	0.36	mg/kg	SW846 6010C
FA95131-4	**PFAS-TB01-20220425**					
Acetone [c]		19.2 I	25	10	ug/l	SW846 8260D
Methylene Chloride		94.4	5.0	2.0	ug/l	SW846 8260D

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Sample dilution required due to difficult matrix.
(c) Associated CCV outside of control limits high. Confirmed by re-analysis beyond hold time.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-01
Lab Sample ID: FA95131-1
Matrix: AQ - Water
Method: SW846 8260D
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I747432.D	1	04/29/22 20:07	AK	n/a	n/a	VI2536
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	10 U	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
108-86-1	Bromobenzene	0.37 U	1.0	0.37	ug/l	
74-97-5	Bromochloromethane	0.45 U	1.0	0.45	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
104-51-8	n-Butylbenzene	0.23 U	1.0	0.23	ug/l	
135-98-8	sec-Butylbenzene	0.24 U	1.0	0.24	ug/l	
98-06-6	tert-Butylbenzene	0.31 U	1.0	0.31	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [b]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	0.22 U	1.0	0.22	ug/l	
106-43-4	p-Chlorotoluene	0.31 U	1.0	0.31	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-01
Lab Sample ID: FA95131-1
Matrix: AQ - Water
Method: SW846 8260D
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	0.31 U	1.0	0.31	ug/l	
594-20-7	2,2-Dichloropropane	0.24 U	1.0	0.24	ug/l	
563-58-6	1,1-Dichloropropene	0.34 U	1.0	0.34	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
87-68-3	Hexachlorobutadiene	0.30 U	2.0	0.30	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
99-87-6	p-Isopropyltoluene	0.21 U	1.0	0.21	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
74-95-3	Methylene Bromide	0.37 U	2.0	0.37	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
103-65-1	n-Propylbenzene	0.29 U	1.0	0.29	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.28 U	1.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	0.61 U	2.0	0.61	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [c]	0.50 U	2.0	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	0.63 U	2.0	0.63	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.32 U	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.27 U	1.0	0.27	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
	m,p-Xylene	0.47 U	2.0	0.47	ug/l	
95-47-6	o-Xylene	0.26 U	1.0	0.26	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-IDW-20220425-01		
Lab Sample ID:	FA95131-1	**Date Sampled:**	04/25/22
Matrix:	AQ - Water	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	97%		85-112%
460-00-4	4-Bromofluorobenzene	96%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Result reported from HCl preserved sample and should be used for screening purposes only.
(c) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-01
Lab Sample ID: FA95131-1
Matrix: AQ - Water
Method: SW846 8270E SW846 3510C
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X081191.D	1	05/02/22 16:35	WH	04/29/22 08:36	OP90994	SX3250
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.57 U	4.8	0.57	ug/l	
95-57-8	2-Chlorophenol	0.61 U	4.8	0.61	ug/l	
120-83-2	2,4-Dichlorophenol	0.80 U	4.8	0.80	ug/l	
105-67-9	2,4-Dimethylphenol	0.71 U	4.8	0.71	ug/l	
51-28-5	2,4-Dinitrophenol	4.8 U	24	4.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	1.9 U	9.6	1.9	ug/l	
95-48-7	2-Methylphenol	0.54 U	4.8	0.54	ug/l	
	3&4-Methylphenol	0.94 U	4.8	0.94	ug/l	
88-75-5	2-Nitrophenol [a]	0.82 U	4.8	0.82	ug/l	
100-02-7	4-Nitrophenol	4.8 U	24	4.8	ug/l	
87-86-5	Pentachlorophenol	4.8 U	24	4.8	ug/l	
108-95-2	Phenol	0.48 U	4.8	0.48	ug/l	
95-95-4	2,4,5-Trichlorophenol [a]	0.71 U	4.8	0.71	ug/l	
88-06-2	2,4,6-Trichlorophenol [a]	0.72 U	4.8	0.72	ug/l	
62-53-3	Aniline	0.96 U	4.8	0.96	ug/l	
1912-24-9	Atrazine	0.98 U	4.8	0.98	ug/l	
100-52-7	Benzaldehyde	4.8 U	24	4.8	ug/l	
92-52-4	1,1'-Biphenyl	0.60 U	4.8	0.60	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	0.81 U	4.8	0.81	ug/l	
85-68-7	Butyl Benzyl Phthalate	0.96 U	4.8	0.96	ug/l	
86-74-8	Carbazole	0.58 U	4.8	0.58	ug/l	
106-47-8	4-Chloroaniline	0.61 U	4.8	0.61	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	0.78 U	4.8	0.78	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.70 U	4.8	0.70	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.73 U	4.8	0.73	ug/l	
91-58-7	2-Chloronaphthalene	0.48 U	4.8	0.48	ug/l	
132-64-9	Dibenzofuran	0.58 U	4.8	0.58	ug/l	
91-94-1	3,3'-Dichlorobenzidine	0.62 U	4.8	0.62	ug/l	
84-66-2	Diethyl Phthalate	0.96 U	4.8	0.96	ug/l	
131-11-3	Dimethyl Phthalate	0.96 U	4.8	0.96	ug/l	
84-74-2	Di-n-butyl Phthalate	0.96 U	4.8	0.96	ug/l	
117-84-0	Di-n-octyl Phthalate	0.96 U	4.8	0.96	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-01
Lab Sample ID: FA95131-1
Matrix: AQ - Water
Method: SW846 8270E SW846 3510C
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	0.78 U	4.8	0.78	ug/l	
606-20-2	2,6-Dinitrotoluene	0.69 U	4.8	0.69	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.96 U	4.8	0.96	ug/l	
118-74-1	Hexachlorobenzene	0.67 U	4.8	0.67	ug/l	
87-68-3	Hexachlorobutadiene	0.48 U	4.8	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	1.7 U	4.8	1.7	ug/l	
67-72-1	Hexachloroethane	1.6 U	4.8	1.6	ug/l	
78-59-1	Isophorone	0.75 U	4.8	0.75	ug/l	
88-74-4	2-Nitroaniline	1.7 U	4.8	1.7	ug/l	
99-09-2	3-Nitroaniline	0.85 U	4.8	0.85	ug/l	
100-01-6	4-Nitroaniline	1.1 U	4.8	1.1	ug/l	
98-95-3	Nitrobenzene	0.90 U	4.8	0.90	ug/l	
62-75-9	N-Nitrosodimethylamine	0.48 U	4.8	0.48	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	0.64 U	4.8	0.64	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	0.48 U	4.8	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	22%		14-67%
4165-62-2	Phenol-d5	15%		10-50%
118-79-6	2,4,6-Tribromophenol	64%		33-118%
4165-60-0	Nitrobenzene-d5	54%		42-108%
321-60-8	2-Fluorobiphenyl	63%		40-106%
1718-51-0	Terphenyl-d14	76%		39-121%

(a) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-01
Lab Sample ID: FA95131-1
Matrix: AQ - Water
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	1.0 U	6.0	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Arsenic	1.3 U	10	1.3	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	5.4 I	200	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Beryllium	0.20 U	4.0	0.20	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	11.6	10	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Lead [a]	10 U	15	10	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	04/29/22	04/29/22	LM	SW846 7470A [1]	SW846 7470A [3]
Nickel	7.7 I	40	0.40	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Selenium	3.0 I	10	2.9	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.90 I	10	0.70	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18642
(2) Instrument QC Batch: MA18653
(3) Prep QC Batch: MP40630
(4) Prep QC Batch: MP40649

(a) Elevated reporting limit(s) due to matrix interference. Manually elevated.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-02
Lab Sample ID: FA95131-2
Matrix: AQ - Water
Method: SW846 8260D
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I747433.D	1	04/29/22 20:30	AK	n/a	n/a	VI2536
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	125	25	10	ug/l	
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
108-86-1	Bromobenzene	0.37 U	1.0	0.37	ug/l	
74-97-5	Bromochloromethane	0.45 U	1.0	0.45	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
104-51-8	n-Butylbenzene	0.23 U	1.0	0.23	ug/l	
135-98-8	sec-Butylbenzene	0.24 U	1.0	0.24	ug/l	
98-06-6	tert-Butylbenzene	0.31 U	1.0	0.31	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [b]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	0.22 U	1.0	0.22	ug/l	
106-43-4	p-Chlorotoluene	0.31 U	1.0	0.31	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-02
Lab Sample ID: FA95131-2
Matrix: AQ - Water
Method: SW846 8260D
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	0.31 U	1.0	0.31	ug/l	
594-20-7	2,2-Dichloropropane	0.24 U	1.0	0.24	ug/l	
563-58-6	1,1-Dichloropropene	0.34 U	1.0	0.34	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
87-68-3	Hexachlorobutadiene	0.30 U	2.0	0.30	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
99-87-6	p-Isopropyltoluene	0.21 U	1.0	0.21	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
74-95-3	Methylene Bromide	0.37 U	2.0	0.37	ug/l	
75-09-2	Methylene Chloride	2.0 U	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
103-65-1	n-Propylbenzene	0.29 U	1.0	0.29	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.28 U	1.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	0.61 U	2.0	0.61	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane [c]	0.50 U	2.0	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	0.63 U	2.0	0.63	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.32 U	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.27 U	1.0	0.27	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
	m,p-Xylene	0.47 U	2.0	0.47	ug/l	
95-47-6	o-Xylene	0.26 U	1.0	0.26	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-IDW-20220425-02		
Lab Sample ID:	FA95131-2	**Date Sampled:**	04/25/22
Matrix:	AQ - Water	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		83-118%
17060-07-0	1,2-Dichloroethane-D4	99%		79-125%
2037-26-5	Toluene-D8	99%		85-112%
460-00-4	4-Bromofluorobenzene	98%		83-118%

(a) Sample was treated with an anti-foaming agent. Sample was not preserved to a pH < 2.
(b) Result reported from HCl preserved sample and should be used for screening purposes only.
(c) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-02
Lab Sample ID: FA95131-2
Matrix: AQ - Water
Method: SW846 8270E SW846 3510C
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X081192.D	1	05/02/22 17:00	WH	04/29/22 08:36	OP90994	SX3250
Run #2							

	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.58 U	4.9	0.58	ug/l	
95-57-8	2-Chlorophenol	0.61 U	4.9	0.61	ug/l	
120-83-2	2,4-Dichlorophenol	0.81 U	4.9	0.81	ug/l	
105-67-9	2,4-Dimethylphenol	0.72 U	4.9	0.72	ug/l	
51-28-5	2,4-Dinitrophenol	4.9 U	24	4.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol [a]	1.9 U	9.7	1.9	ug/l	
95-48-7	2-Methylphenol	0.54 U	4.9	0.54	ug/l	
	3&4-Methylphenol	0.95 U	4.9	0.95	ug/l	
88-75-5	2-Nitrophenol [a]	0.83 U	4.9	0.83	ug/l	
100-02-7	4-Nitrophenol	4.9 U	24	4.9	ug/l	
87-86-5	Pentachlorophenol	4.9 U	24	4.9	ug/l	
108-95-2	Phenol	0.49 U	4.9	0.49	ug/l	
95-95-4	2,4,5-Trichlorophenol [a]	0.72 U	4.9	0.72	ug/l	
88-06-2	2,4,6-Trichlorophenol [a]	0.73 U	4.9	0.73	ug/l	
62-53-3	Aniline	0.97 U	4.9	0.97	ug/l	
1912-24-9	Atrazine	0.99 U	4.9	0.99	ug/l	
100-52-7	Benzaldehyde	4.9 U	24	4.9	ug/l	
92-52-4	1,1'-Biphenyl	0.60 U	4.9	0.60	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	0.82 U	4.9	0.82	ug/l	
85-68-7	Butyl Benzyl Phthalate	0.97 U	4.9	0.97	ug/l	
86-74-8	Carbazole	0.58 U	4.9	0.58	ug/l	
106-47-8	4-Chloroaniline	0.61 U	4.9	0.61	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	0.79 U	4.9	0.79	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.71 U	4.9	0.71	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.73 U	4.9	0.73	ug/l	
91-58-7	2-Chloronaphthalene	0.49 U	4.9	0.49	ug/l	
132-64-9	Dibenzofuran	0.58 U	4.9	0.58	ug/l	
91-94-1	3,3'-Dichlorobenzidine	0.62 U	4.9	0.62	ug/l	
84-66-2	Diethyl Phthalate	0.97 U	4.9	0.97	ug/l	
131-11-3	Dimethyl Phthalate	0.97 U	4.9	0.97	ug/l	
84-74-2	Di-n-butyl Phthalate	0.97 U	4.9	0.97	ug/l	
117-84-0	Di-n-octyl Phthalate	0.97 U	4.9	0.97	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-02
Lab Sample ID: FA95131-2
Matrix: AQ - Water
Method: SW846 8270E SW846 3510C
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
121-14-2	2,4-Dinitrotoluene	0.79 U	4.9	0.79	ug/l	
606-20-2	2,6-Dinitrotoluene	0.69 U	4.9	0.69	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	0.97 U	4.9	0.97	ug/l	
118-74-1	Hexachlorobenzene	0.67 U	4.9	0.67	ug/l	
87-68-3	Hexachlorobutadiene	0.49 U	4.9	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	1.8 U	4.9	1.8	ug/l	
67-72-1	Hexachloroethane	1.6 U	4.9	1.6	ug/l	
78-59-1	Isophorone	0.75 U	4.9	0.75	ug/l	
88-74-4	2-Nitroaniline	1.8 U	4.9	1.8	ug/l	
99-09-2	3-Nitroaniline	0.85 U	4.9	0.85	ug/l	
100-01-6	4-Nitroaniline	1.1 U	4.9	1.1	ug/l	
98-95-3	Nitrobenzene	0.91 U	4.9	0.91	ug/l	
62-75-9	N-Nitrosodimethylamine	0.49 U	4.9	0.49	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	0.65 U	4.9	0.65	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	0.49 U	4.9	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	27%		14-67%
4165-62-2	Phenol-d5	22%		10-50%
118-79-6	2,4,6-Tribromophenol	72%		33-118%
4165-60-0	Nitrobenzene-d5	68%		42-108%
321-60-8	2-Fluorobiphenyl	76%		40-106%
1718-51-0	Terphenyl-d14	89%		39-121%

(a) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-02
Lab Sample ID: FA95131-2
Matrix: AQ - Water
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	1.0 U	6.0	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Arsenic	2.5 I	10	1.3	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	30.1 I	200	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Beryllium	0.20 I	4.0	0.20	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	72.6	10	1.0	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	3.2 I	5.0	1.1	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	04/29/22	04/29/22	LM	SW846 7470A [1]	SW846 7470A [3]
Nickel	21.6 I	40	0.40	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Selenium	2.9 U	10	2.9	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]
Thallium	1.4 U	10	1.4	ug/l	1	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA18642
(2) Instrument QC Batch: MA18653
(3) Prep QC Batch: MP40630
(4) Prep QC Batch: MP40649

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID:	PFAS-IDW-20220425-03		
Lab Sample ID:	FA95131-3	**Date Sampled:**	04/25/22
Matrix:	SO - Soil	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	76.7
Project:	NASA KSC, PFAS SA & Mitigation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C17707.D	1	04/29/22 11:25	CV	n/a	n/a	V3C777
Run #2	3C17757.D	1	05/03/22 09:52	CV	n/a	n/a	V3C779

	Initial Weight	Final Volume
Run #1	7.48 g	5.0 ml
Run #2	6.97 g	5.0 ml

VOA TCL List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone	0.087 U	0.17	0.087	mg/kg	
71-43-2	Benzene	0.0011 U	0.0044	0.0011	mg/kg	
75-27-4	Bromodichloromethane	0.00087 U	0.0044	0.00087	mg/kg	
75-25-2	Bromoform	0.00094 U [a]	0.0047	0.00094	mg/kg	
78-93-3	2-Butanone (MEK)	0.0063 U	0.022	0.0063	mg/kg	
98-06-6	tert-Butylbenzene	0.00094 U [a]	0.0047	0.00094	mg/kg	
75-15-0	Carbon Disulfide	0.00087 U	0.0044	0.00087	mg/kg	
56-23-5	Carbon Tetrachloride	0.00089 U	0.0044	0.00089	mg/kg	
108-90-7	Chlorobenzene	0.00087 U	0.0044	0.00087	mg/kg	
75-00-3	Chloroethane [b]	0.0017 U	0.0044	0.0017	mg/kg	
67-66-3	Chloroform	0.0012 U	0.0044	0.0012	mg/kg	
106-43-4	p-Chlorotoluene	0.00094 U [a]	0.0047	0.00094	mg/kg	
124-48-1	Dibromochloromethane	0.00087 U	0.0044	0.00087	mg/kg	
96-12-8	1,2-Dibromo-3-chloropropane	0.0018 U [a]	0.0047	0.0018	mg/kg	
95-50-1	1,2-Dichlorobenzene	0.00094 U [a]	0.0047	0.00094	mg/kg	
75-34-3	1,1-Dichloroethane	0.0015 U	0.0044	0.0015	mg/kg	
107-06-2	1,2-Dichloroethane	0.00087 U	0.0044	0.00087	mg/kg	
75-35-4	1,1-Dichloroethylene	0.00087 U	0.0044	0.00087	mg/kg	
156-59-2	cis-1,2-Dichloroethylene	0.0012 U	0.0044	0.0012	mg/kg	
156-60-5	trans-1,2-Dichloroethylene	0.00087 U	0.0044	0.00087	mg/kg	
78-87-5	1,2-Dichloropropane	0.00087 U	0.0044	0.00087	mg/kg	
10061-01-5	cis-1,3-Dichloropropene	0.00087 U	0.0044	0.00087	mg/kg	
10061-02-6	trans-1,3-Dichloropropene	0.00087 U	0.0044	0.00087	mg/kg	
100-41-4	Ethylbenzene	0.00087 U	0.0044	0.00087	mg/kg	
591-78-6	2-Hexanone	0.0065 U	0.022	0.0065	mg/kg	
74-83-9	Methyl Bromide	0.0017 U	0.0044	0.0017	mg/kg	
74-87-3	Methyl Chloride	0.0017 U	0.0044	0.0017	mg/kg	
75-09-2	Methylene Chloride	0.0096 U	0.017	0.0096	mg/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	0.0065 U	0.022	0.0065	mg/kg	
100-42-5	Styrene	0.00087 U	0.0044	0.00087	mg/kg	
79-34-5	1,1,2,2-Tetrachloroethane	0.00087 U	0.0044	0.00087	mg/kg	
127-18-4	Tetrachloroethylene	0.0011 U	0.0044	0.0011	mg/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-IDW-20220425-03		
Lab Sample ID:	FA95131-3	**Date Sampled:**	04/25/22
Matrix:	SO - Soil	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	76.7
Project:	NASA KSC, PFAS SA & Mitigation		

VOA TCL List

CAS No.	Compound	Result	PQL	MDL	Units	Q
108-88-3	Toluene	0.0087 U	0.017	0.0087	mg/kg	
71-55-6	1,1,1-Trichloroethane	0.00087 U	0.0044	0.00087	mg/kg	
79-00-5	1,1,2-Trichloroethane	0.00087 U	0.0044	0.00087	mg/kg	
79-01-6	Trichloroethylene	0.00087 U	0.0044	0.00087	mg/kg	
75-01-4	Vinyl Chloride	0.00087 U	0.0044	0.00087	mg/kg	
1330-20-7	Xylene (total)	0.0018 U	0.013	0.0018	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	99%	75-124%
17060-07-0	1,2-Dichloroethane-D4	116%	105%	72-135%
2037-26-5	Toluene-D8	93%	103%	75-126%
460-00-4	4-Bromofluorobenzene	102%	113%	71-133%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits high, sample is ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-03
Lab Sample ID: FA95131-3
Matrix: SO - Soil
Method: SW846 8270E SW846 3550C
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: 76.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X081419.D	1	05/06/22 22:21	WH	05/05/22 08:45	OP91074	SX3254
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	0.025 U	0.22	0.025	mg/kg	
95-57-8	2-Chlorophenol	0.027 U	0.22	0.027	mg/kg	
120-83-2	2,4-Dichlorophenol [a]	0.025 U	0.22	0.025	mg/kg	
105-67-9	2,4-Dimethylphenol	0.058 U	0.22	0.058	mg/kg	
51-28-5	2,4-Dinitrophenol	0.22 U	1.1	0.22	mg/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	0.087 U	0.43	0.087	mg/kg	
95-48-7	2-Methylphenol	0.026 U	0.22	0.026	mg/kg	
	3&4-Methylphenol	0.036 U	0.22	0.036	mg/kg	
88-75-5	2-Nitrophenol [a]	0.024 U	0.22	0.024	mg/kg	
100-02-7	4-Nitrophenol	0.22 U	1.1	0.22	mg/kg	
108-95-2	Phenol	0.022 U	0.22	0.022	mg/kg	
95-95-4	2,4,5-Trichlorophenol [a]	0.035 U	0.22	0.035	mg/kg	
88-06-2	2,4,6-Trichlorophenol [a]	0.025 U	0.22	0.025	mg/kg	
101-55-3	4-Bromophenyl phenyl ether	0.023 U	0.22	0.023	mg/kg	
85-68-7	Butyl benzyl phthalate	0.043 U	0.22	0.043	mg/kg	
86-74-8	Carbazole	0.030 U	0.22	0.030	mg/kg	
106-47-8	4-Chloroaniline	0.055 U	0.22	0.055	mg/kg	
111-91-1	bis(2-Chloroethoxy)methane	0.022 U	0.22	0.022	mg/kg	
111-44-4	bis(2-Chloroethyl)ether	0.025 U	0.22	0.025	mg/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	0.027 U	0.22	0.027	mg/kg	
91-58-7	2-Chloronaphthalene	0.022 U	0.22	0.022	mg/kg	
132-64-9	Dibenzofuran	0.022 U	0.22	0.022	mg/kg	
95-50-1	1,2-Dichlorobenzene	0.022 U	0.22	0.022	mg/kg	
541-73-1	1,3-Dichlorobenzene	0.023 U	0.22	0.023	mg/kg	
106-46-7	1,4-Dichlorobenzene	0.029 U	0.22	0.029	mg/kg	
91-94-1	3,3'-Dichlorobenzidine	0.052 U	0.22	0.052	mg/kg	
84-66-2	Diethyl Phthalate	0.043 U	0.43	0.043	mg/kg	
131-11-3	Dimethyl Phthalate	0.043 U	0.22	0.043	mg/kg	
117-84-0	Di-n-octyl Phthalate	0.043 U	0.22	0.043	mg/kg	
84-74-2	Di-n-butyl Phthalate	0.087 U	0.43	0.087	mg/kg	
121-14-2	2,4-Dinitrotoluene	0.022 U	0.22	0.022	mg/kg	
606-20-2	2,6-Dinitrotoluene	0.028 U	0.22	0.028	mg/kg	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-IDW-20220425-03		
Lab Sample ID:	FA95131-3	**Date Sampled:**	04/25/22
Matrix:	SO - Soil	**Date Received:**	04/26/22
Method:	SW846 8270E SW846 3550C	**Percent Solids:**	76.7
Project:	NASA KSC, PFAS SA & Mitigation		

ABN Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
117-81-7	bis(2-Ethylhexyl)phthalate	0.043 U	0.43	0.043	mg/kg	
118-74-1	Hexachlorobenzene	0.022 U	0.22	0.022	mg/kg	
87-68-3	Hexachlorobutadiene	0.022 U	0.22	0.022	mg/kg	
77-47-4	Hexachlorocyclopentadiene	0.043 U	0.22	0.043	mg/kg	
67-72-1	Hexachloroethane	0.026 U	0.22	0.026	mg/kg	
78-59-1	Isophorone	0.022 U	0.22	0.022	mg/kg	
88-74-4	2-Nitroaniline	0.050 U	0.22	0.050	mg/kg	
99-09-2	3-Nitroaniline	0.025 U	0.22	0.025	mg/kg	
100-01-6	4-Nitroaniline	0.063 U	0.22	0.063	mg/kg	
98-95-3	Nitrobenzene	0.022 U	0.22	0.022	mg/kg	
621-64-7	N-Nitrosodi-n-propylamine	0.022 U	0.22	0.022	mg/kg	
120-82-1	1,2,4-Trichlorobenzene	0.026 U	0.22	0.026	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	74%		41-100%
118-79-6	2,4,6-Tribromophenol	70%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	75%		43-107%
1718-51-0	Terphenyl-d14	90%		45-119%

(a) Associated CCV outside of control limits high, sample was ND.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PFAS-IDW-20220425-03
Lab Sample ID: FA95131-3
Matrix: SO - Soil
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: 76.7

Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony [a]	0.57 U	8.8	0.57	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Arsenic [a]	2.2 I	4.4	0.88	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Barium [a]	5.5 I	88	0.44	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Beryllium [a]	0.22 U	2.2	0.22	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Cadmium [a]	0.22 U	1.8	0.22	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Chromium [a]	4.4	4.4	0.44	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Lead [a]	0.44 U	8.8	0.44	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Mercury	0.010 I	0.049	0.0049	mg/kg	1	04/29/22	04/29/22	LM	SW846 7471B [1]	SW846 7471B [3]
Nickel [a]	0.93 I	18	0.22	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Selenium [a]	1.1 U	8.8	1.1	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Silver [a]	0.39 I	4.4	0.36	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]
Thallium [a]	0.48 U	4.4	0.48	mg/kg	10	05/04/22	05/05/22	LM	SW846 6010C [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA18641
(2) Instrument QC Batch: MA18653
(3) Prep QC Batch: MP40629
(4) Prep QC Batch: MP40651

(a) Sample dilution required due to difficult matrix.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < PQL

Report of Analysis

Client Sample ID: PFAS-TB01-20220425
Lab Sample ID: FA95131-4
Matrix: AQ - Trip Blank Water
Method: SW846 8260D
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I747677.D	1	05/06/22 14:29	LR	n/a	n/a	VI2547
Run #2 [a]	I747874.D	1	05/12/22 01:10	AK	n/a	n/a	VI2555

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
67-64-1	Acetone [b]	19.2	25	10	ug/l	I
71-43-2	Benzene	0.31 U	1.0	0.31	ug/l	
108-86-1	Bromobenzene	0.37 U	1.0	0.37	ug/l	
74-97-5	Bromochloromethane	0.45 U	1.0	0.45	ug/l	
75-27-4	Bromodichloromethane	0.24 U	1.0	0.24	ug/l	
75-25-2	Bromoform	0.41 U	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	2.0 U	5.0	2.0	ug/l	
104-51-8	n-Butylbenzene	0.23 U	1.0	0.23	ug/l	
135-98-8	sec-Butylbenzene	0.24 U	1.0	0.24	ug/l	
98-06-6	tert-Butylbenzene	0.31 U	1.0	0.31	ug/l	
75-15-0	Carbon Disulfide	0.53 U	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	0.36 U	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	0.20 U	1.0	0.20	ug/l	
75-00-3	Chloroethane	0.67 U	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether [c]	2.1 U	5.0	2.1	ug/l	
67-66-3	Chloroform	0.30 U	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	0.22 U	1.0	0.22	ug/l	
106-43-4	p-Chlorotoluene	0.31 U	1.0	0.31	ug/l	
110-82-7	Cyclohexane	0.39 U	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	0.28 U	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	1.0 U	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	0.28 U	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane [d]	0.50 U	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	0.32 U	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	0.22 U	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	0.26 U	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	0.34 U	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	0.31 U	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	0.32 U	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.28 U	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	0.22 U	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	0.43 U	1.0	0.43	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-TB01-20220425		
Lab Sample ID:	FA95131-4	**Date Sampled:**	04/25/22
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

VOA Special List

CAS No.	Compound	Result	PQL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	0.31 U	1.0	0.31	ug/l	
594-20-7	2,2-Dichloropropane	0.24 U	1.0	0.24	ug/l	
563-58-6	1,1-Dichloropropene	0.34 U	1.0	0.34	ug/l	
10061-01-5	cis-1,3-Dichloropropene	0.29 U	1.0	0.29	ug/l	
10061-02-6	trans-1,3-Dichloropropene	0.21 U	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	0.36 U	1.0	0.36	ug/l	
76-13-1	Freon 113	0.48 U	1.0	0.48	ug/l	
87-68-3	Hexachlorobutadiene	0.30 U	2.0	0.30	ug/l	
591-78-6	2-Hexanone	2.0 U	10	2.0	ug/l	
98-82-8	Isopropylbenzene	0.22 U	1.0	0.22	ug/l	
99-87-6	p-Isopropyltoluene	0.21 U	1.0	0.21	ug/l	
79-20-9	Methyl Acetate	5.0 U	20	5.0	ug/l	
74-83-9	Methyl Bromide	2.0 U	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	0.50 U	2.0	0.50	ug/l	
74-95-3	Methylene Bromide	0.37 U	2.0	0.37	ug/l	
75-09-2	Methylene Chloride	94.4	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	1.0 U	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.23 U	1.0	0.23	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
103-65-1	n-Propylbenzene	0.29 U	1.0	0.29	ug/l	
100-42-5	Styrene	0.22 U	1.0	0.22	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	0.28 U	1.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	0.30 U	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.22 U	1.0	0.22	ug/l	
108-88-3	Toluene	0.30 U	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	0.61 U	2.0	0.61	ug/l	
120-82-1	1,2,4-Trichlorobenzene	0.50 U	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	0.25 U	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	0.47 U	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	0.35 U	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	0.50 U	2.0	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	0.63 U	2.0	0.63	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.32 U	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.27 U	1.0	0.27	ug/l	
75-01-4	Vinyl Chloride	0.41 U	1.0	0.41	ug/l	
	m,p-Xylene	0.47 U	2.0	0.47	ug/l	
95-47-6	o-Xylene	0.26 U	1.0	0.26	ug/l	

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PFAS-TB01-20220425		
Lab Sample ID:	FA95131-4	**Date Sampled:**	04/25/22
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/26/22
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	NASA KSC, PFAS SA & Mitigation		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	108%	105%	79-125%
2037-26-5	Toluene-D8	98%	102%	85-112%
460-00-4	4-Bromofluorobenzene	97%	99%	83-118%

(a) Confirmation run beyond holdtime.
(b) Associated CCV outside of control limits high. Confirmed by re-analysis beyond hold time.
(c) Result reported from HCl preserved sample and should be used for screening purposes only.
(d) Associated CCV outside control limits low.

U = Not detected MDL = Method Detection Limit I = Result > = MDL but < PQL J = Estimated value
PQL = Practical Quantitation Limit V = Indicates analyte found in associated method blank
L = 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

FA95131

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.	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: Jennifer Joyal	Send Inv 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 AECOM Depot, 523 18th Street, Orlando	Report to Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS	Turnaround Time(specify): Standard 14 day	Deliver Samples To SGS Orlando	Site-Spicific WS#15 from QAPP: 15-2, 15-27, & 15-28

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 VOC by SW8260B	HCl 1,4-Dioxane by SW8260B SIM	4 DEG SVOC by SW8270D	4 DEG PAH by SW8270D SIM	4 DEG RCRA Metals by SW6010	4 DEG Sb, Be, Ni & Tl by SW6010	DI/MeOH VOC by SW8260B	4DEG Select PFAS by 537	4DEG VOC by SW8260B		Comments
1	PFAS-IDW-20220425-01	PFAS-IDW	20220425	1300	IDW	IDW	C	13	3	3	4	2	1		-	2	3		
2	PFAS-IDW-20220425-02	PFAS-IDW	20220425	1350	IDW	IDW	C	13	3	3	4	2	1		-	2	3		
	~~PFAS-IDW-20220425-03~~	~~PFAS-IDW~~	~~20220425~~		~~IDW~~	~~IDW~~	~~G~~	~~11~~	~~3~~	~~3~~	~~2~~	~~2~~	~~1~~		-				
	~~PFAS-IDW-202202-04~~	~~PFAS-IDW~~	~~202202~~		~~IDS~~	~~IDW~~	~~G~~	~~5~~	~~-~~	~~1~~	~~1~~	~~1~~	~~1~~		~~3~~				
3	PFAS-IDW-20220425-05	PFAS-IDW	20220425	1415	IDS	IDW	G	8	-	1	2	1	1		3	2			
	~~PFAS-IDW-202202-06~~	~~PFAS-IDW~~	~~202202~~		~~IDS~~	~~IDW~~	~~G~~	~~5~~	~~-~~	~~1~~	~~1~~	~~1~~	~~1~~		~~3~~				
4	PFAS-TB01-20220425	PFAS-TB01	20220425	1230	WQ	TB	G	2	2										

INITIAL ASSESSMENT SM

LABEL VERIFICATION 26 APR

***Field* Comments:**
Report only per QAPP WS #15-2, 15-27, & 15-28

***Lab* Comments:**

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		4/25/22	1615		4/26/22	8:21
2		4/26/22	8:54		4/26/22	9:35
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 4/13**

FA95131: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA95131 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 4/26/2022 9:38:00 AM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

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 FROZEN @ 4/26/2022 // 1230
PM INFORMED US TO SEPARATE THIS JOB AND FA95133 DUE TO PFAS BEING RAN AS DOD AND OTHER SAMPLES BEING NORMAL.

SM001
Rev. Date 05/24/17

Technician: NATHANS Date: 4/26/2022 9:38:00 AM Reviewer: _____ Date: _____

FA95131: Chain of Custody
Page 2 of 2

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C777-MB	3C17702.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	200	100	ug/kg	
71-43-2	Benzene	ND	5.0	1.2	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	25	7.3	ug/kg	
75-15-0	Carbon Disulfide	ND	5.0	1.0	ug/kg	
56-23-5	Carbon Tetrachloride	ND	5.0	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	2.0	ug/kg	
67-66-3	Chloroform	ND	5.0	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	1.8	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	25	7.5	ug/kg	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/kg	
74-87-3	Methyl Chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene Chloride	ND	20	11	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	25	7.5	ug/kg	
100-42-5	Styrene	ND	5.0	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	1.3	ug/kg	
108-88-3	Toluene	ND	20	10	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg	
75-01-4	Vinyl Chloride	ND	5.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	15	2.1	ug/kg	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C777-MB	3C17702.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	75-124%
17060-07-0	1,2-Dichloroethane-D4	106%	72-135%
2037-26-5	Toluene-D8	92%	75-126%
460-00-4	4-Bromofluorobenzene	96%	71-133%

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-MB [a]	I747419.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.37	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.45	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.23	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.24	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.31	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether	ND	5.0	2.1	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.22	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.31	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.31	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.24	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.34	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-MB [a]	I747419.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.21	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
74-95-3	Methylene Bromide	ND	2.0	0.37	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.29	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	2.0	0.61	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.63	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.27	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
	m,p-Xylene	ND	2.0	0.47	ug/l	
95-47-6	o-Xylene	ND	1.0	0.26	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-MB [a]	I747419.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	83-118%
17060-07-0	1,2-Dichloroethane-D4	101%	79-125%
2037-26-5	Toluene-D8	99%	85-112%
460-00-4	4-Bromofluorobenzene	98%	83-118%

(a) Sample was treated with an anti-foaming agent.

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C779-MB	3C17755.D	1	05/03/22	CV	n/a	n/a	V3C779

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	Result	RL	MDL	Units	Q
75-25-2	Bromoform	ND	5.0	1.0	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	1.0	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	1.0	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.9	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	75-124%
17060-07-0	1,2-Dichloroethane-D4	102%	72-135%
2037-26-5	Toluene-D8	100%	75-126%
460-00-4	4-Bromofluorobenzene	97%	71-133%

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-MB	I747674.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.31	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.37	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.45	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.24	ug/l	
75-25-2	Bromoform	ND	1.0	0.41	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.0	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.23	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.24	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.31	ug/l	
75-15-0	Carbon Disulfide	ND	2.0	0.53	ug/l	
56-23-5	Carbon Tetrachloride	ND	1.0	0.36	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.67	ug/l	
110-75-8	2-Chloroethyl Vinyl Ether	ND	5.0	2.1	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.22	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.31	ug/l	
110-82-7	Cyclohexane	ND	1.0	0.39	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.28	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.28	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.22	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.26	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.34	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.31	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.32	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.22	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.43	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.31	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.24	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.34	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.29	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-MB	I747674.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.36	ug/l	
76-13-1	Freon 113	ND	1.0	0.48	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.22	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.21	ug/l	
79-20-9	Methyl Acetate	ND	20	5.0	ug/l	
74-83-9	Methyl Bromide	ND	5.0	2.0	ug/l	
74-87-3	Methyl Chloride	ND	2.0	0.50	ug/l	
74-95-3	Methylene Bromide	ND	2.0	0.37	ug/l	
75-09-2	Methylene Chloride	ND	5.0	2.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
91-20-3	Naphthalene	ND	5.0	1.0	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.29	ug/l	
100-42-5	Styrene	ND	1.0	0.22	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.28	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.22	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	2.0	0.61	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.47	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.35	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.50	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.63	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.32	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.27	ug/l	
75-01-4	Vinyl Chloride	ND	1.0	0.41	ug/l	
	m,p-Xylene	ND	2.0	0.47	ug/l	
95-47-6	o-Xylene	ND	1.0	0.26	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-MB	I747674.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	108%	79-125%
2037-26-5	Toluene-D8	98%	85-112%
460-00-4	4-Bromofluorobenzene	97%	83-118%

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-BS	I747416.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	132	106	50-147
71-43-2	Benzene	25	27.1	108	81-122
108-86-1	Bromobenzene	25	23.7	95	80-121
74-97-5	Bromochloromethane	25	26.0	104	76-123
75-27-4	Bromodichloromethane	25	24.0	96	79-123
75-25-2	Bromoform	25	20.4	82	66-123
78-93-3	2-Butanone (MEK)	125	118	94	56-143
104-51-8	n-Butylbenzene	25	25.3	101	79-126
135-98-8	sec-Butylbenzene	25	26.7	107	83-133
98-06-6	tert-Butylbenzene	25	26.1	104	80-133
75-15-0	Carbon Disulfide	25	26.5	106	66-148
56-23-5	Carbon Tetrachloride	25	25.3	101	76-136
108-90-7	Chlorobenzene	25	24.8	99	82-124
75-00-3	Chloroethane	25	21.2	85	62-144
110-75-8	2-Chloroethyl Vinyl Ether	125	136	109	56-122
67-66-3	Chloroform	25	24.6	98	80-124
95-49-8	o-Chlorotoluene	25	25.8	103	81-127
106-43-4	p-Chlorotoluene	25	24.1	96	83-130
110-82-7	Cyclohexane	25	28.3	113	73-138
124-48-1	Dibromochloromethane	25	23.1	92	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	24.2	97	64-123
106-93-4	1,2-Dibromoethane	25	25.5	102	75-120
75-71-8	Dichlorodifluoromethane	25	19.7	79	42-167
95-50-1	1,2-Dichlorobenzene	25	23.9	96	82-124
541-73-1	1,3-Dichlorobenzene	25	24.3	97	84-125
106-46-7	1,4-Dichlorobenzene	25	24.0	96	78-120
75-34-3	1,1-Dichloroethane	25	27.1	108	81-122
107-06-2	1,2-Dichloroethane	25	25.8	103	75-125
75-35-4	1,1-Dichloroethylene	25	28.0	112	78-137
156-59-2	cis-1,2-Dichloroethylene	25	27.3	109	78-120
156-60-5	trans-1,2-Dichloroethylene	25	28.1	112	76-127
78-87-5	1,2-Dichloropropane	25	25.6	102	76-124
142-28-9	1,3-Dichloropropane	25	24.3	97	80-118
594-20-7	2,2-Dichloropropane	25	25.5	102	74-139
563-58-6	1,1-Dichloropropene	25	28.2	113	79-131
10061-01-5	cis-1,3-Dichloropropene	25	25.2	101	75-118

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-BS	I747416.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-02-6	trans-1,3-Dichloropropene	25	24.8	99	80-120
100-41-4	Ethylbenzene	25	25.8	103	81-121
76-13-1	Freon 113	25	29.6	118	72-134
87-68-3	Hexachlorobutadiene	25	26.3	105	75-142
591-78-6	2-Hexanone	125	112	90	61-129
98-82-8	Isopropylbenzene	25	26.1	104	83-132
99-87-6	p-Isopropyltoluene	25	25.9	104	79-130
79-20-9	Methyl Acetate	125	141	113	65-126
74-83-9	Methyl Bromide	25	25.5	102	59-143
74-87-3	Methyl Chloride	25	21.7	87	50-159
74-95-3	Methylene Bromide	25	24.9	100	78-119
75-09-2	Methylene Chloride	25	23.9	96	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	111	89	66-122
1634-04-4	Methyl Tert Butyl Ether	25	25.1	100	72-117
91-20-3	Naphthalene	25	23.1	92	63-132
103-65-1	n-Propylbenzene	25	25.8	103	82-133
100-42-5	Styrene	25	25.1	100	78-119
630-20-6	1,1,1,2-Tetrachloroethane	25	23.7	95	77-122
79-34-5	1,1,2,2-Tetrachloroethane	25	24.6	98	72-120
127-18-4	Tetrachloroethylene	25	25.9	104	76-135
108-88-3	Toluene	25	25.9	104	80-120
87-61-6	1,2,3-Trichlorobenzene	25	24.0	96	68-131
120-82-1	1,2,4-Trichlorobenzene	25	24.4	98	73-129
71-55-6	1,1,1-Trichloroethane	25	25.7	103	75-130
79-00-5	1,1,2-Trichloroethane	25	25.4	102	76-119
79-01-6	Trichloroethylene	25	26.4	106	81-126
75-69-4	Trichlorofluoromethane	25	25.6	102	71-156
96-18-4	1,2,3-Trichloropropane	25	23.7	95	77-120
95-63-6	1,2,4-Trimethylbenzene	25	24.2	97	79-120
108-67-8	1,3,5-Trimethylbenzene	25	25.8	103	79-120
75-01-4	Vinyl Chloride	25	24.2	97	69-159
	m,p-Xylene	50	51.0	102	79-126
95-47-6	o-Xylene	25	24.4	98	80-127

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2536-BS	I747416.D	1	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	103%	79-125%
2037-26-5	Toluene-D8	102%	85-112%
460-00-4	4-Bromofluorobenzene	97%	83-118%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C777-BS	3C17721.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	250	228	91	61-152
71-43-2	Benzene	50	46.1	92	76-126
75-27-4	Bromodichloromethane	50	46.7	93	74-130
78-93-3	2-Butanone (MEK)	250	233	93	75-137
75-15-0	Carbon Disulfide	50	40.8	82	72-122
56-23-5	Carbon Tetrachloride	50	42.2	84	78-133
108-90-7	Chlorobenzene	50	40.7	81	81-129
75-00-3	Chloroethane	50	41.1	82	68-133
67-66-3	Chloroform	50	42.4	85	72-123
124-48-1	Dibromochloromethane	50	40.0	80	76-127
75-34-3	1,1-Dichloroethane	50	44.9	90	73-125
107-06-2	1,2-Dichloroethane	50	45.1	90	74-128
75-35-4	1,1-Dichloroethylene	50	42.7	85	81-136
156-59-2	cis-1,2-Dichloroethylene	50	45.0	90	74-126
156-60-5	trans-1,2-Dichloroethylene	50	43.8	88	70-127
78-87-5	1,2-Dichloropropane	50	45.7	91	74-125
10061-01-5	cis-1,3-Dichloropropene	50	47.7	95	80-123
10061-02-6	trans-1,3-Dichloropropene	50	42.6	85	75-131
100-41-4	Ethylbenzene	50	41.9	84	77-123
591-78-6	2-Hexanone	250	215	86	72-133
74-83-9	Methyl Bromide	50	42.1	84	65-139
74-87-3	Methyl Chloride	50	35.8	72	71-144
75-09-2	Methylene Chloride	50	44.1	88	74-137
108-10-1	4-Methyl-2-pentanone (MIBK)	250	210	84	76-132
100-42-5	Styrene	50	42.9	86	78-125
79-34-5	1,1,2,2-Tetrachloroethane	50	39.5	79	71-126
127-18-4	Tetrachloroethylene	50	47.9	96	79-130
108-88-3	Toluene	50	40.7	81	76-124
71-55-6	1,1,1-Trichloroethane	50	41.4	83	70-129
79-00-5	1,1,2-Trichloroethane	50	42.5	85	74-124
79-01-6	Trichloroethylene	50	46.5	93	75-128
75-01-4	Vinyl Chloride	50	40.2	80	76-141
1330-20-7	Xylene (total)	150	125	83	80-129

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C777-BS	3C17721.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	75-124%
17060-07-0	1,2-Dichloroethane-D4	98%	72-135%
2037-26-5	Toluene-D8	92%	75-126%
460-00-4	4-Bromofluorobenzene	97%	71-133%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C779-BS	3C17753.D	1	05/03/22	CV	n/a	n/a	V3C779

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
75-25-2	Bromoform	50	41.6	83	76-127
98-06-6	tert-Butylbenzene	50	44.9	90	77-133
106-43-4	p-Chlorotoluene	50	44.9	90	80-134
96-12-8	1,2-Dibromo-3-chloropropane	50	39.5	79	70-137
95-50-1	1,2-Dichlorobenzene	50	45.0	90	80-129

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	75-124%
17060-07-0	1,2-Dichloroethane-D4	98%	72-135%
2037-26-5	Toluene-D8	99%	75-126%
460-00-4	4-Bromofluorobenzene	98%	71-133%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-BS	I747672.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	148	118	50-147
71-43-2	Benzene	25	26.3	105	81-122
108-86-1	Bromobenzene	25	22.0	88	80-121
74-97-5	Bromochloromethane	25	24.8	99	76-123
75-27-4	Bromodichloromethane	25	23.5	94	79-123
75-25-2	Bromoform	25	18.5	74	66-123
78-93-3	2-Butanone (MEK)	125	138	110	56-143
104-51-8	n-Butylbenzene	25	22.5	90	79-126
135-98-8	sec-Butylbenzene	25	24.0	96	83-133
98-06-6	tert-Butylbenzene	25	23.3	93	80-133
75-15-0	Carbon Disulfide	25	23.8	95	66-148
56-23-5	Carbon Tetrachloride	25	23.8	95	76-136
108-90-7	Chlorobenzene	25	23.3	93	82-124
75-00-3	Chloroethane	25	23.2	93	62-144
110-75-8	2-Chloroethyl Vinyl Ether	125	149	119	56-122
67-66-3	Chloroform	25	23.5	94	80-124
95-49-8	o-Chlorotoluene	25	23.3	93	81-127
106-43-4	p-Chlorotoluene	25	22.2	89	83-130
110-82-7	Cyclohexane	25	26.3	105	73-138
124-48-1	Dibromochloromethane	25	21.4	86	78-122
96-12-8	1,2-Dibromo-3-chloropropane	25	22.6	90	64-123
106-93-4	1,2-Dibromoethane	25	23.4	94	75-120
75-71-8	Dichlorodifluoromethane	25	16.4	66	42-167
95-50-1	1,2-Dichlorobenzene	25	21.6	86	82-124
541-73-1	1,3-Dichlorobenzene	25	22.3	89	84-125
106-46-7	1,4-Dichlorobenzene	25	21.4	86	78-120
75-34-3	1,1-Dichloroethane	25	26.3	105	81-122
107-06-2	1,2-Dichloroethane	25	26.6	106	75-125
75-35-4	1,1-Dichloroethylene	25	26.6	106	78-137
156-59-2	cis-1,2-Dichloroethylene	25	25.2	101	78-120
156-60-5	trans-1,2-Dichloroethylene	25	26.9	108	76-127
78-87-5	1,2-Dichloropropane	25	25.4	102	76-124
142-28-9	1,3-Dichloropropane	25	23.7	95	80-118
594-20-7	2,2-Dichloropropane	25	24.2	97	74-139
563-58-6	1,1-Dichloropropene	25	27.2	109	79-131
10061-01-5	cis-1,3-Dichloropropene	25	24.2	97	75-118

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-BS	I747672.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-02-6	trans-1,3-Dichloropropene	25	23.7	95	80-120
100-41-4	Ethylbenzene	25	24.0	96	81-121
76-13-1	Freon 113	25	26.8	107	72-134
87-68-3	Hexachlorobutadiene	25	22.8	91	75-142
591-78-6	2-Hexanone	125	122	98	61-129
98-82-8	Isopropylbenzene	25	23.2	93	83-132
99-87-6	p-Isopropyltoluene	25	22.9	92	79-130
79-20-9	Methyl Acetate	125	128	102	65-126
74-83-9	Methyl Bromide	25	25.4	102	59-143
74-87-3	Methyl Chloride	25	20.9	84	50-159
74-95-3	Methylene Bromide	25	24.3	97	78-119
75-09-2	Methylene Chloride	25	23.7	95	69-135
108-10-1	4-Methyl-2-pentanone (MIBK)	125	122	98	66-122
1634-04-4	Methyl Tert Butyl Ether	25	24.3	97	72-117
91-20-3	Naphthalene	25	20.8	83	63-132
103-65-1	n-Propylbenzene	25	23.3	93	82-133
100-42-5	Styrene	25	23.1	92	78-119
630-20-6	1,1,1,2-Tetrachloroethane	25	22.2	89	77-122
79-34-5	1,1,2,2-Tetrachloroethane	25	23.7	95	72-120
127-18-4	Tetrachloroethylene	25	23.5	94	76-135
108-88-3	Toluene	25	23.7	95	80-120
87-61-6	1,2,3-Trichlorobenzene	25	20.8	83	68-131
120-82-1	1,2,4-Trichlorobenzene	25	21.2	85	73-129
71-55-6	1,1,1-Trichloroethane	25	24.2	97	75-130
79-00-5	1,1,2-Trichloroethane	25	24.9	100	76-119
79-01-6	Trichloroethylene	25	25.1	100	81-126
75-69-4	Trichlorofluoromethane	25	25.5	102	71-156
96-18-4	1,2,3-Trichloropropane	25	22.2	89	77-120
95-63-6	1,2,4-Trimethylbenzene	25	21.9	88	79-120
108-67-8	1,3,5-Trimethylbenzene	25	23.2	93	79-120
75-01-4	Vinyl Chloride	25	23.8	95	69-159
	m,p-Xylene	50	47.7	95	79-126
95-47-6	o-Xylene	25	22.6	90	80-127

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI2547-BS	I747672.D	1	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	83-118%
17060-07-0	1,2-Dichloroethane-D4	109%	79-125%
2037-26-5	Toluene-D8	101%	85-112%
460-00-4	4-Bromofluorobenzene	93%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95130-2MS	3C17722.D	1	04/29/22	CV	n/a	n/a	V3C777
FA95130-2MSD	3C17723.D	1	04/29/22	CV	n/a	n/a	V3C777
FA95130-2	3C17703.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	FA95130-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	140	U	248	190	76	239	197	82	4	61-152/27
71-43-2	Benzene	3.4	U	49.7	41.0	82	47.9	40.0	84	2	76-126/26
75-27-4	Bromodichloromethane	3.4	U	49.7	39.7	80	47.9	38.5	80	3	74-130/25
78-93-3	2-Butanone (MEK)	17	U	248	195	78	239	199	83	2	75-137/25
75-15-0	Carbon Disulfide	3.4	U	49.7	38.7	78	47.9	37.7	79	3	72-122/29
56-23-5	Carbon Tetrachloride	3.4	U	49.7	40.4	81	47.9	38.8	81	4	78-133/29
108-90-7	Chlorobenzene	3.4	U	49.7	35.6	72*	47.9	34.2	71*	4	81-129/29
75-00-3	Chloroethane	3.4	U	49.7	38.2	77	47.9	36.6	76	4	68-133/29
67-66-3	Chloroform	3.4	U	49.7	37.9	76	47.9	37.4	78	1	72-123/26
124-48-1	Dibromochloromethane	3.4	U	49.7	33.8	68*	47.9	31.9	67*	6	76-127/27
75-34-3	1,1-Dichloroethane	3.4	U	49.7	40.8	82	47.9	39.4	82	3	73-125/27
107-06-2	1,2-Dichloroethane	3.4	U	49.7	38.6	78	47.9	38.1	80	1	74-128/23
75-35-4	1,1-Dichloroethylene	3.4	U	49.7	39.9	80*	47.9	38.9	81	3	81-136/28
156-59-2	cis-1,2-Dichloroethylene	3.4	U	49.7	39.3	79	47.9	37.8	79	4	74-126/26
156-60-5	trans-1,2-Dichloroethylene	3.4	U	49.7	40.7	82	47.9	39.1	82	4	70-127/27
78-87-5	1,2-Dichloropropane	3.4	U	49.7	40.2	81	47.9	39.3	82	2	74-125/25
10061-01-5	cis-1,3-Dichloropropene	3.4	U	49.7	41.0	82	47.9	40.1	84	2	80-123/26
10061-02-6	trans-1,3-Dichloropropene	3.4	U	49.7	35.6	72*	47.9	34.4	72*	3	75-131/28
100-41-4	Ethylbenzene	3.4	U	49.7	37.8	76*	47.9	35.9	75*	5	77-123/31
591-78-6	2-Hexanone	17	U	248	179	72	239	176	74	2	72-133/26
74-83-9	Methyl Bromide	3.4	U	49.7	40.1	81	47.9	38.7	81	4	65-139/31
74-87-3	Methyl Chloride	3.4	U	49.7	33.4	67*	47.9	32.1	67*	4	71-144/27
75-09-2	Methylene Chloride	14	U	49.7	38.4	77	47.9	37.7	79	2	74-137/28
108-10-1	4-Methyl-2-pentanone (MIBK)	17	U	248	176	71*	239	170	71*	3	76-132/26
100-42-5	Styrene	3.4	U	49.7	36.3	73*	47.9	34.9	73*	4	78-125/30
79-34-5	1,1,2,2-Tetrachloroethane	3.4	U	49.7	34.0	68*	47.9	33.4	70*	2	71-126/30
127-18-4	Tetrachloroethylene	3.4	U	49.7	38.0	76*	47.9	36.1	75*	5	79-130/31
108-88-3	Toluene	14	U	49.7	37.1	75*	47.9	35.1	73*	6	76-124/30
71-55-6	1,1,1-Trichloroethane	3.4	U	49.7	38.1	77	47.9	37.2	78	2	70-129/27
79-00-5	1,1,2-Trichloroethane	3.4	U	49.7	35.7	72*	47.9	34.5	72*	3	74-124/28
79-01-6	Trichloroethylene	3.4	U	49.7	42.7	86	47.9	40.7	85	5	75-128/27
75-01-4	Vinyl Chloride	3.4	U	49.7	39.1	79	47.9	36.9	77	6	76-141/27
1330-20-7	Xylene (total)	10	U	149	113	76*	144	107	75*	5	80-129/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95130-2MS	3C17722.D	1	04/29/22	CV	n/a	n/a	V3C777
FA95130-2MSD	3C17723.D	1	04/29/22	CV	n/a	n/a	V3C777
FA95130-2	3C17703.D	1	04/29/22	CV	n/a	n/a	V3C777

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Surrogate Recoveries	MS	MSD	FA95130-2	Limits
1868-53-7	Dibromofluoromethane	100%	101%	103%	75-124%
17060-07-0	1,2-Dichloroethane-D4	97%	100%	110%	72-135%
2037-26-5	Toluene-D8	93%	92%	92%	75-126%
460-00-4	4-Bromofluorobenzene	99%	99%	96%	71-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA94984-9MS	I747440.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9MSD	I747441.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9	I747439.D	100	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	FA94984-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		12500	12700	102	12500	12600	101	1	50-147/21
71-43-2	Benzene	ND		2500	2560	102	2500	2530	101	1	81-122/14
108-86-1	Bromobenzene	ND		2500	2140	86	2500	2130	85	0	80-121/14
74-97-5	Bromochloromethane	ND		2500	2490	100	2500	2400	96	4	76-123/14
75-27-4	Bromodichloromethane	ND		2500	2240	90	2500	2200	88	2	79-123/19
75-25-2	Bromoform	ND		2500	1870	75	2500	1780	71	5	66-123/21
78-93-3	2-Butanone (MEK)	ND		12500	11900	95	12500	12000	96	1	56-143/18
104-51-8	n-Butylbenzene	ND		2500	2170	87	2500	2200	88	1	79-126/16
135-98-8	sec-Butylbenzene	ND		2500	2460	98	2500	2440	98	1	83-133/16
98-06-6	tert-Butylbenzene	ND		2500	2340	94	2500	2400	96	3	80-133/16
75-15-0	Carbon Disulfide	ND		2500	2360	94	2500	2370	95	0	66-148/23
56-23-5	Carbon Tetrachloride	ND		2500	2350	94	2500	2340	94	0	76-136/23
108-90-7	Chlorobenzene	ND		2500	2280	91	2500	2240	90	2	82-124/14
75-00-3	Chloroethane	ND		2500	2070	83	2500	2220	89	7	62-144/20
110-75-8	2-Chloroethyl Vinyl Ether	ND		12500	12800	102	12500	12400	99	3	56-122/23
67-66-3	Chloroform	ND		2500	2290	92	2500	2260	90	1	80-124/15
95-49-8	o-Chlorotoluene	ND		2500	2310	92	2500	2320	93	0	81-127/15
106-43-4	p-Chlorotoluene	ND		2500	2170	87	2500	2200	88	1	83-130/15
110-82-7	Cyclohexane	ND		2500	2600	104	2500	2600	104	0	73-138/18
124-48-1	Dibromochloromethane	ND		2500	2100	84	2500	2080	83	1	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	ND		2500	2240	90	2500	2320	93	4	64-123/18
106-93-4	1,2-Dibromoethane	ND		2500	2280	91	2500	2280	91	0	75-120/13
75-71-8	Dichlorodifluoromethane	ND		2500	1860	74	2500	1920	77	3	42-167/19
95-50-1	1,2-Dichlorobenzene	ND		2500	2150	86	2500	2150	86	0	82-124/14
541-73-1	1,3-Dichlorobenzene	ND		2500	2220	89	2500	2220	89	0	84-125/14
106-46-7	1,4-Dichlorobenzene	ND		2500	2190	88	2500	2160	86	1	78-120/15
75-34-3	1,1-Dichloroethane	ND		2500	2490	100	2500	2490	100	0	81-122/15
107-06-2	1,2-Dichloroethane	ND		2500	2420	97	2500	2400	96	1	75-125/14
75-35-4	1,1-Dichloroethylene	ND		2500	2580	103	2500	2620	105	2	78-137/18
156-59-2	cis-1,2-Dichloroethylene	ND		2500	2470	99	2500	2480	99	0	78-120/15
156-60-5	trans-1,2-Dichloroethylene	ND		2500	2550	102	2500	2560	102	0	76-127/17
78-87-5	1,2-Dichloropropane	ND		2500	2400	96	2500	2320	93	3	76-124/14
142-28-9	1,3-Dichloropropane	ND		2500	2310	92	2500	2300	92	0	80-118/13
594-20-7	2,2-Dichloropropane	ND		2500	2020	81	2500	1990	80	1	74-139/17
563-58-6	1,1-Dichloropropene	ND		2500	2630	105	2500	2630	105	0	79-131/16
10061-01-5	cis-1,3-Dichloropropene	ND		2500	2260	90	2500	2220	89	2	75-118/23

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA94984-9MS	I747440.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9MSD	I747441.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9	I747439.D	100	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Compound	FA94984-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	ND		2500	2240	90	2500	2160	86	4	80-120/22
100-41-4	Ethylbenzene	5400		2500	7420	81	2500	7650	90	3	81-121/14
76-13-1	Freon 113	ND		2500	2800	112	2500	2690	108	4	72-134/20
87-68-3	Hexachlorobutadiene	ND		2500	2310	92	2500	2400	96	4	75-142/19
591-78-6	2-Hexanone	ND		12500	11200	90	12500	11100	89	1	61-129/18
98-82-8	Isopropylbenzene	118		2500	2490	95	2500	2490	95	0	83-132/15
99-87-6	p-Isopropyltoluene	ND		2500	2340	94	2500	2370	95	1	79-130/16
79-20-9	Methyl Acetate	ND		12500	13400	107	12500	13200	106	2	65-126/18
74-83-9	Methyl Bromide	ND		2500	2260	90	2500	2490	100	10	59-143/19
74-87-3	Methyl Chloride	ND		2500	2160	86	2500	2200	88	2	50-159/19
74-95-3	Methylene Bromide	ND		2500	2230	89	2500	2180	87	2	78-119/14
75-09-2	Methylene Chloride	ND		2500	2270	91	2500	2230	89	2	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		12500	10900	87	12500	11000	88	1	66-122/16
1634-04-4	Methyl Tert Butyl Ether	ND		2500	2370	95	2500	2330	93	2	72-117/14
91-20-3	Naphthalene	ND		2500	2070	83	2500	2070	83	0	63-132/25
103-65-1	n-Propylbenzene	ND		2500	2390	96	2500	2400	96	0	82-133/15
100-42-5	Styrene	ND		2500	2290	92	2500	2270	91	1	78-119/23
630-20-6	1,1,1,2-Tetrachloroethane	ND		2500	2240	90	2500	2200	88	2	77-122/19
79-34-5	1,1,2,2-Tetrachloroethane	ND		2500	2320	93	2500	2280	91	2	72-120/14
127-18-4	Tetrachloroethylene	ND		2500	2370	95	2500	2340	94	1	76-135/16
108-88-3	Toluene	ND		2500	2410	96	2500	2360	94	2	80-120/14
87-61-6	1,2,3-Trichlorobenzene	ND		2500	2160	86	2500	2170	87	0	68-131/25
120-82-1	1,2,4-Trichlorobenzene	ND		2500	2170	87	2500	2190	88	1	73-129/20
71-55-6	1,1,1-Trichloroethane	ND		2500	2350	94	2500	2390	96	2	75-130/16
79-00-5	1,1,2-Trichloroethane	ND		2500	2380	95	2500	2310	92	3	76-119/14
79-01-6	Trichloroethylene	ND		2500	2450	98	2500	2450	98	0	81-126/15
75-69-4	Trichlorofluoromethane	ND		2500	2420	97	2500	2780	111	14	71-156/21
96-18-4	1,2,3-Trichloropropane	ND		2500	2280	91	2500	2210	88	3	77-120/16
95-63-6	1,2,4-Trimethylbenzene	ND		2500	2210	88	2500	2250	90	2	79-120/18
108-67-8	1,3,5-Trimethylbenzene	ND		2500	2390	96	2500	2380	95	0	79-120/19
75-01-4	Vinyl Chloride	ND		2500	2300	92	2500	2400	96	4	69-159/18
	m,p-Xylene	9060		5000	13200	83	5000	13300	85	1	79-126/15
95-47-6	o-Xylene	416		2500	2700	91	2500	2670	90	1	80-127/14

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA94984-9MS	I747440.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9MSD	I747441.D	100	04/29/22	AK	n/a	n/a	VI2536
FA94984-9	I747439.D	100	04/29/22	AK	n/a	n/a	VI2536

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-1, FA95131-2

CAS No.	Surrogate Recoveries	MS	MSD	FA94984-9	Limits
1868-53-7	Dibromofluoromethane	100%	101%	96%	83-118%
17060-07-0	1,2-Dichloroethane-D4	100%	105%	100%	79-125%
2037-26-5	Toluene-D8	101%	101%	99%	85-112%
460-00-4	4-Bromofluorobenzene	96%	97%	96%	83-118%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95303-1MS	3C17803.D	1	05/04/22	CV	n/a	n/a	V3C779
FA95303-1MSD	3C17804.D	1	05/04/22	CV	n/a	n/a	V3C779
FA95303-1	3C17765.D	1	05/03/22	CV	n/a	n/a	V3C779

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-3

CAS No.	Compound	FA95303-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
75-25-2	Bromoform	4.6	U	54.4	36.7	67*	55.6	38.1	69*	4	76-127/26
98-06-6	tert-Butylbenzene	4.6	U	54.4	34.2	63*	55.6	37.6	68*	9	77-133/34
106-43-4	p-Chlorotoluene	4.6	U	54.4	39.4	72*	55.6	42.8	77*	8	80-134/33
96-12-8	1,2-Dibromo-3-chloropropane	4.6	U	54.4	36.5	67*	55.6	36.7	66*	1	70-137/29
95-50-1	1,2-Dichlorobenzene	4.6	U	54.4	36.7	67*	55.6	40.1	72*	9	80-129/32

CAS No.	Surrogate Recoveries	MS	MSD	FA95303-1	Limits
1868-53-7	Dibromofluoromethane	97%	97%	99%	75-124%
17060-07-0	1,2-Dichloroethane-D4	98%	97%	108%	72-135%
2037-26-5	Toluene-D8	98%	99%	97%	75-126%
460-00-4	4-Bromofluorobenzene	97%	98%	80%	71-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95129-7MS	I747696.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7MSD	I747697.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7	I747684.D	25	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	FA95129-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	630	U	3130	3610	116	3130	3820	122	6	50-147/21
71-43-2	Benzene	25	U	625	685	110	625	701	112	2	81-122/14
108-86-1	Bromobenzene	25	U	625	624	100	625	652	104	4	80-121/14
74-97-5	Bromochloromethane	25	U	625	636	102	625	702	112	10	76-123/14
75-27-4	Bromodichloromethane	25	U	625	608	97	625	631	101	4	79-123/19
75-25-2	Bromoform	25	U	625	493	79	625	544	87	10	66-123/21
78-93-3	2-Butanone (MEK)	130	U	3130	3520	113	3130	3740	120	6	56-143/18
104-51-8	n-Butylbenzene	25	U	625	572	92	625	609	97	6	79-126/16
135-98-8	sec-Butylbenzene	25	U	625	638	102	625	662	106	4	83-133/16
98-06-6	tert-Butylbenzene	25	U	625	643	103	625	669	107	4	80-133/16
75-15-0	Carbon Disulfide	50	U	625	607	97	625	622	100	2	66-148/23
56-23-5	Carbon Tetrachloride	25	U	625	617	99	625	625	100	1	76-136/23
108-90-7	Chlorobenzene	25	U	625	631	101	625	654	105	4	82-124/14
75-00-3	Chloroethane	50	U	625	584	93	625	569	91	3	62-144/20
110-75-8	2-Chloroethyl Vinyl Ether	130	U	3130	3620	116	3130	3530	113	3	56-122/23
67-66-3	Chloroform	25	U	625	619	99	625	664	106	7	80-124/15
95-49-8	o-Chlorotoluene	25	U	625	706	113	625	709	113	0	81-127/15
106-43-4	p-Chlorotoluene	25	U	625	606	97	625	635	102	5	83-130/15
110-82-7	Cyclohexane	25	U	625	696	111	625	711	114	2	73-138/18
124-48-1	Dibromochloromethane	25	U	625	587	94	625	632	101	7	78-122/19
96-12-8	1,2-Dibromo-3-chloropropane	130	U	625	653	104	625	706	113	8	64-123/18
106-93-4	1,2-Dibromoethane	50	U	625	657	105	625	697	112	6	75-120/13
75-71-8	Dichlorodifluoromethane	50	U	625	417	67	625	445	71	6	42-167/19
95-50-1	1,2-Dichlorobenzene	25	U	625	596	95	625	644	103	8	82-124/14
541-73-1	1,3-Dichlorobenzene	25	U	625	616	99	625	630	101	2	84-125/14
106-46-7	1,4-Dichlorobenzene	25	U	625	610	98	625	632	101	4	78-120/15
75-34-3	1,1-Dichloroethane	25	U	625	703	112	625	713	114	1	81-122/15
107-06-2	1,2-Dichloroethane	25	U	625	689	110	625	717	115	4	75-125/14
75-35-4	1,1-Dichloroethylene	25	U	625	699	112	625	724	116	4	78-137/18
156-59-2	cis-1,2-Dichloroethylene	25	U	625	660	106	625	691	111	5	78-120/15
156-60-5	trans-1,2-Dichloroethylene	25	U	625	680	109	625	707	113	4	76-127/17
78-87-5	1,2-Dichloropropane	25	U	625	653	104	625	693	111	6	76-124/14
142-28-9	1,3-Dichloropropane	25	U	625	665	106	625	703	112	6	80-118/13
594-20-7	2,2-Dichloropropane	25	U	625	539	86	625	555	89	3	74-139/17
563-58-6	1,1-Dichloropropene	25	U	625	702	112	625	731	117	4	79-131/16
10061-01-5	cis-1,3-Dichloropropene	25	U	625	612	98	625	637	102	4	75-118/23

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95129-7MS	I747696.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7MSD	I747697.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7	I747684.D	25	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Compound	FA95129-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-02-6	trans-1,3-Dichloropropene	25	U	625	650	104	625	699	112	7	80-120/22
100-41-4	Ethylbenzene	156		625	808	104	625	838	109	4	81-121/14
76-13-1	Freon 113	25	U	625	694	111	625	705	113	2	72-134/20
87-68-3	Hexachlorobutadiene	50	U	625	587	94	625	601	96	2	75-142/19
591-78-6	2-Hexanone	250	U	3130	3460	111	3130	3660	117	6	61-129/18
98-82-8	Isopropylbenzene	25	U	625	628	100	625	670	107	6	83-132/15
99-87-6	p-Isopropyltoluene	25	U	625	607	97	625	619	99	2	79-130/16
79-20-9	Methyl Acetate	500	U	3130	3210	103	3130	3380	108	5	65-126/18
74-83-9	Methyl Bromide	130	U	625	651	104	625	720	115	10	59-143/19
74-87-3	Methyl Chloride	50	U	625	535	86	625	546	87	2	50-159/19
74-95-3	Methylene Bromide	50	U	625	614	98	625	653	104	6	78-119/14
75-09-2	Methylene Chloride	130	U	625	620	99	625	639	102	3	69-135/16
108-10-1	4-Methyl-2-pentanone (MIBK)	130	U	3130	3360	108	3130	3600	115	7	66-122/16
1634-04-4	Methyl Tert Butyl Ether	25	U	625	641	103	625	675	108	5	72-117/14
91-20-3	Naphthalene	306		625	913	97	625	973	107	6	63-132/25
103-65-1	n-Propylbenzene	25	U	625	657	105	625	669	107	2	82-133/15
100-42-5	Styrene	25	U	625	630	101	625	659	105	4	78-119/23
630-20-6	1,1,1,2-Tetrachloroethane	25	U	625	622	100	625	635	102	2	77-122/19
79-34-5	1,1,2,2-Tetrachloroethane	25	U	625	690	110	625	729	117	5	72-120/14
127-18-4	Tetrachloroethylene	25	U	625	632	101	625	609	97	4	76-135/16
108-88-3	Toluene	64.7		625	730	106	625	747	109	2	80-120/14
87-61-6	1,2,3-Trichlorobenzene	50	U	625	582	93	625	624	100	7	68-131/25
120-82-1	1,2,4-Trichlorobenzene	50	U	625	568	91	625	625	100	10	73-129/20
71-55-6	1,1,1-Trichloroethane	25	U	625	623	100	625	650	104	4	75-130/16
79-00-5	1,1,2-Trichloroethane	25	U	625	687	110	625	736	118	7	76-119/14
79-01-6	Trichloroethylene	25	U	625	626	100	625	663	106	6	81-126/15
75-69-4	Trichlorofluoromethane	50	U	625	644	103	625	677	108	5	71-156/21
96-18-4	1,2,3-Trichloropropane	50	U	625	629	101	625	684	109	8	77-120/16
95-63-6	1,2,4-Trimethylbenzene	1380		625	1930	88	625	2020	102	5	79-120/18
108-67-8	1,3,5-Trimethylbenzene	535		625	1170	102	625	1210	108	3	79-120/19
75-01-4	Vinyl Chloride	25	U	625	622	100	625	619	99	0	69-159/18
	m,p-Xylene	2200		1250	3410	97	1250	3560	109	4	79-126/15
95-47-6	o-Xylene	1940		625	2500	90	625	2630	110	5	80-127/14

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA95129-7MS	I747696.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7MSD	I747697.D	25	05/06/22	LR	n/a	n/a	VI2547
FA95129-7	I747684.D	25	05/06/22	LR	n/a	n/a	VI2547

The QC reported here applies to the following samples: **Method:** SW846 8260D

FA95131-4

CAS No.	Surrogate Recoveries	MS	MSD	FA95129-7	Limits
1868-53-7	Dibromofluoromethane	101%	102%	100%	83-118%
17060-07-0	1,2-Dichloroethane-D4	111%	113%	111%	79-125%
2037-26-5	Toluene-D8	103%	105%	100%	85-112%
460-00-4	4-Bromofluorobenzene	97%	98%	98%	83-118%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MB	X081181.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.56	ug/l	
	3&4-Methylphenol	ND	5.0	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	0.74	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
62-53-3	Aniline	ND	5.0	1.0	ug/l	
1912-24-9	Atrazine	ND	5.0	1.0	ug/l	
100-52-7	Benzaldehyde	ND	25	5.0	ug/l	
92-52-4	1,1'-Biphenyl	ND	5.0	0.62	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
86-74-8	Carbazole	ND	5.0	0.60	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.60	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MB	X081181.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.8	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.88	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.2	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	0.50	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	5.0	0.50	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	47%	14-67%
4165-62-2	Phenol-d5	34%	10-50%
118-79-6	2,4,6-Tribromophenol	72%	33-118%
4165-60-0	Nitrobenzene-d5	70%	42-108%
321-60-8	2-Fluorobiphenyl	78%	40-106%
1718-51-0	Terphenyl-d14	94%	39-121%

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MB	9I014994.D	1	05/04/22	WH	04/29/22	OP90994	S9I537

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	ND	5.0	0.59	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	0.63	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	0.84	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	0.74	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	5.0	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	0.56	ug/l	
	3&4-Methylphenol	ND	5.0	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.85	ug/l	
100-02-7	4-Nitrophenol	ND	25	5.0	ug/l	
87-86-5	Pentachlorophenol	ND	25	5.0	ug/l	
108-95-2	Phenol	ND	5.0	0.50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	0.74	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.75	ug/l	
62-53-3	Aniline	ND	5.0	1.0	ug/l	
1912-24-9	Atrazine	ND	5.0	1.0	ug/l	
100-52-7	Benzaldehyde	ND	25	5.0	ug/l	
92-52-4	1,1'-Biphenyl	ND	5.0	0.62	ug/l	
101-55-3	4-Bromophenyl Phenyl Ether	ND	5.0	0.85	ug/l	
85-68-7	Butyl Benzyl Phthalate	ND	5.0	1.0	ug/l	
86-74-8	Carbazole	ND	5.0	0.60	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.63	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	0.81	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	0.73	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	5.0	0.76	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.60	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.64	ug/l	
84-66-2	Diethyl Phthalate	ND	5.0	1.0	ug/l	
131-11-3	Dimethyl Phthalate	ND	5.0	1.0	ug/l	
84-74-2	Di-n-butyl Phthalate	ND	5.0	1.0	ug/l	
117-84-0	Di-n-octyl Phthalate	ND	5.0	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	0.81	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	0.71	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	0.69	ug/l	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MB	9I014994.D	1	05/04/22	WH	04/29/22	OP90994	S9I537

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Result	RL	MDL	Units	Q
87-68-3	Hexachlorobutadiene	ND	5.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.6	ug/l	
78-59-1	Isophorone	ND	5.0	0.78	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	1.8	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.88	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	1.2	ug/l	
98-95-3	Nitrobenzene	ND	5.0	0.93	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	0.50	ug/l	
621-64-7	N-Nitrosodi-n-propylamine	ND	5.0	0.67	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	5.0	0.50	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	46%	14-67%
4165-62-2	Phenol-d5	35%	10-50%
118-79-6	2,4,6-Tribromophenol	90%	33-118%
4165-60-0	Nitrobenzene-d5	78%	42-108%
321-60-8	2-Fluorobiphenyl	76%	40-106%
1718-51-0	Terphenyl-d14	86%	39-121%

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-MB	X081414.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	Result	RL	MDL	Units	Q
59-50-7	4-Chloro-3-methyl Phenol	ND	170	19	ug/kg	
95-57-8	2-Chlorophenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	19	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	44	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	830	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	330	67	ug/kg	
95-48-7	2-Methylphenol	ND	170	20	ug/kg	
	3&4-Methylphenol	ND	170	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	18	ug/kg	
100-02-7	4-Nitrophenol	ND	830	170	ug/kg	
108-95-2	Phenol	ND	170	17	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	33	ug/kg	
86-74-8	Carbazole	ND	170	23	ug/kg	
106-47-8	4-Chloroaniline	ND	170	42	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	17	ug/kg	
132-64-9	Dibenzofuran	ND	170	17	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	17	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	18	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	40	ug/kg	
84-66-2	Diethyl Phthalate	ND	330	33	ug/kg	
131-11-3	Dimethyl Phthalate	ND	170	33	ug/kg	
117-84-0	Di-n-octyl Phthalate	ND	170	33	ug/kg	
84-74-2	Di-n-butyl Phthalate	ND	330	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	170	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	21	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	330	33	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	17	ug/kg	
87-68-3	Hexachlorobutadiene	ND	170	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	33	ug/kg	

Method Blank Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-MB	X081414.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-72-1	Hexachloroethane	ND	170	20	ug/kg	
78-59-1	Isophorone	ND	170	17	ug/kg	
88-74-4	2-Nitroaniline	ND	170	39	ug/kg	
99-09-2	3-Nitroaniline	ND	170	19	ug/kg	
100-01-6	4-Nitroaniline	ND	170	48	ug/kg	
98-95-3	Nitrobenzene	ND	170	17	ug/kg	
621-64-7	N-Nitrosodi-n-propylamine	ND	170	17	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	170	20	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	73%	40-102%
4165-62-2	Phenol-d5	73%	41-100%
118-79-6	2,4,6-Tribromophenol	72%	42-108%
4165-60-0	Nitrobenzene-d5	66%	40-105%
321-60-8	2-Fluorobiphenyl	76%	43-107%
1718-51-0	Terphenyl-d14	92%	45-119%

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-BS	X081180.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
59-50-7	4-Chloro-3-methyl Phenol	50	37.4	75	54-103
95-57-8	2-Chlorophenol	50	35.6	71	52-98
120-83-2	2,4-Dichlorophenol	50	42.5	85	53-103
105-67-9	2,4-Dimethylphenol	50	32.9	66	43-90
51-28-5	2,4-Dinitrophenol	100	76.1	76	44-112
534-52-1	4,6-Dinitro-o-cresol	100	92.1	92	66-121
95-48-7	2-Methylphenol	50	30.1	60	43-90
	3&4-Methylphenol	100	58.7	59	36-88
88-75-5	2-Nitrophenol	50	43.9	88	53-102
100-02-7	4-Nitrophenol	100	44.6	45	18-62
87-86-5	Pentachlorophenol	100	64.6	65	61-115
108-95-2	Phenol	50	17.2	34	19-56
95-95-4	2,4,5-Trichlorophenol	50	46.9	94	62-109
88-06-2	2,4,6-Trichlorophenol	50	43.9	88	59-107
62-53-3	Aniline	25	12.1	48 [a]	47-100
1912-24-9	Atrazine	50	41.4	83	62-114
100-52-7	Benzaldehyde	50	33.7	67	36-129
92-52-4	1,1'-Biphenyl	50	37.3	75	57-104
101-55-3	4-Bromophenyl Phenyl Ether	50	42.3	85	65-109
85-68-7	Butyl Benzyl Phthalate	50	44.0	88	65-112
86-74-8	Carbazole	25	22.1	88 [a]	59-113
106-47-8	4-Chloroaniline	25	17.2	68 [a]	49-105
111-91-1	bis(2-Chloroethoxy)methane	50	36.7	73	51-102
111-44-4	bis(2-Chloroethyl)ether	50	36.3	73	53-100
108-60-1	2,2'-Oxybis(1-chloropropane)	50	37.6	75	45-106
91-58-7	2-Chloronaphthalene	50	39.1	78	57-103
132-64-9	Dibenzofuran	25	20.5	82 [a]	61-106
91-94-1	3,3'-Dichlorobenzidine	25	19.6	78 [a]	46-117
84-66-2	Diethyl Phthalate	50	41.3	83	64-108
131-11-3	Dimethyl Phthalate	50	41.7	83	63-106
84-74-2	Di-n-butyl Phthalate	50	42.7	85	65-107
117-84-0	Di-n-octyl Phthalate	50	39.6	79	62-118
121-14-2	2,4-Dinitrotoluene	50	44.8	90	61-110
606-20-2	2,6-Dinitrotoluene	50	43.3	87	63-108
117-81-7	bis(2-Ethylhexyl)phthalate	50	39.3	79	61-117
118-74-1	Hexachlorobenzene	50	41.0	82	63-108

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-BS	X081180.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
87-68-3	Hexachlorobutadiene	50	37.7	75	42-102
77-47-4	Hexachlorocyclopentadiene	50	39.9	80	39-102
67-72-1	Hexachloroethane	50	33.6	67	42-100
78-59-1	Isophorone	50	37.3	75	43-87
88-74-4	2-Nitroaniline	25	19.9	80 [a]	54-128
99-09-2	3-Nitroaniline	25	19.8	80 [a]	56-106
100-01-6	4-Nitroaniline	25	22.2	88 [a]	55-120
98-95-3	Nitrobenzene	50	35.4	71	50-104
62-75-9	N-Nitrosodimethylamine	50	27.5	55	28-78
621-64-7	N-Nitrosodi-n-propylamine	50	36.6	73	52-104
95-94-3	1,2,4,5-Tetrachlorobenzene	50	38.8	78	47-111

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	48%	14-67%
4165-62-2	Phenol-d5	33%	10-50%
118-79-6	2,4,6-Tribromophenol	73%	33-118%
4165-60-0	Nitrobenzene-d5	69%	42-108%
321-60-8	2-Fluorobiphenyl	76%	40-106%
1718-51-0	Terphenyl-d14	85%	39-121%

(a) Spike recoveries calculated from actual spike mix concentration.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-BS	9I014992.D	1	05/04/22	WH	04/29/22	OP90994	S9I537

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
59-50-7	4-Chloro-3-methyl Phenol	50	38.0	76	54-103
95-57-8	2-Chlorophenol	50	34.9	70	52-98
120-83-2	2,4-Dichlorophenol	50	40.2	80	53-103
105-67-9	2,4-Dimethylphenol	50	34.6	69	43-90
51-28-5	2,4-Dinitrophenol	100	85.9	86	44-112
534-52-1	4,6-Dinitro-o-cresol	100	96.3	96	66-121
95-48-7	2-Methylphenol	50	31.1	62	43-90
	3&4-Methylphenol	100	57.9	58	36-88
88-75-5	2-Nitrophenol	50	42.7	85	53-102
100-02-7	4-Nitrophenol	100	46.8	47	18-62
87-86-5	Pentachlorophenol	100	91.6	92	61-115
108-95-2	Phenol	50	19.4	39	19-56
95-95-4	2,4,5-Trichlorophenol	50	43.5	87	62-109
88-06-2	2,4,6-Trichlorophenol	50	43.5	87	59-107
62-53-3	Aniline	25	13.5	54 [a]	47-100
1912-24-9	Atrazine	50	46.0	92	62-114
100-52-7	Benzaldehyde	50	34.8	70	36-129
92-52-4	1,1'-Biphenyl	50	39.2	78	57-104
101-55-3	4-Bromophenyl Phenyl Ether	50	42.9	86	65-109
85-68-7	Butyl Benzyl Phthalate	50	45.2	90	65-112
86-74-8	Carbazole	25	22.5	90 [a]	59-113
106-47-8	4-Chloroaniline	25	18.6	74 [a]	49-105
111-91-1	bis(2-Chloroethoxy)methane	50	38.9	78	51-102
111-44-4	bis(2-Chloroethyl)ether	50	37.1	74	53-100
108-60-1	2,2'-Oxybis(1-chloropropane)	50	35.1	70	45-106
91-58-7	2-Chloronaphthalene	50	38.3	77	57-103
132-64-9	Dibenzofuran	25	21.1	84 [a]	61-106
91-94-1	3,3'-Dichlorobenzidine	25	20.0	80 [a]	46-117
84-66-2	Diethyl Phthalate	50	39.6	79	64-108
131-11-3	Dimethyl Phthalate	50	39.6	79	63-106
84-74-2	Di-n-butyl Phthalate	50	41.3	83	65-107
117-84-0	Di-n-octyl Phthalate	50	41.9	84	62-118
121-14-2	2,4-Dinitrotoluene	50	47.4	95	61-110
606-20-2	2,6-Dinitrotoluene	50	45.8	92	63-108
117-81-7	bis(2-Ethylhexyl)phthalate	50	42.4	85	61-117
118-74-1	Hexachlorobenzene	50	41.9	84	63-108

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-BS	9I014992.D	1	05/04/22	WH	04/29/22	OP90994	S9I537

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
87-68-3	Hexachlorobutadiene	50	40.7	81	42-102
77-47-4	Hexachlorocyclopentadiene	50	43.0	86	39-102
67-72-1	Hexachloroethane	50	36.7	73	42-100
78-59-1	Isophorone	50	38.5	77	43-87
88-74-4	2-Nitroaniline	25	25.5	102 [a]	54-128
99-09-2	3-Nitroaniline	25	20.3	82 [a]	56-106
100-01-6	4-Nitroaniline	25	23.6	94 [a]	55-120
98-95-3	Nitrobenzene	50	39.4	79	50-104
62-75-9	N-Nitrosodimethylamine	50	23.9	48	28-78
621-64-7	N-Nitrosodi-n-propylamine	50	36.4	73	52-104
95-94-3	1,2,4,5-Tetrachlorobenzene	50	39.2	78	47-111

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	50%	14-67%
4165-62-2	Phenol-d5	37%	10-50%
118-79-6	2,4,6-Tribromophenol	89%	33-118%
4165-60-0	Nitrobenzene-d5	78%	42-108%
321-60-8	2-Fluorobiphenyl	75%	40-106%
1718-51-0	Terphenyl-d14	81%	39-121%

(a) Spike recoveries calculated from actual spike mix concentration.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-BS2	9I014993.D	1	05/04/22	WH	04/29/22	OP90994	S9I537

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	35%	14-67%
4165-62-2	Phenol-d5	24%	10-50%
118-79-6	2,4,6-Tribromophenol	85%	33-118%
4165-60-0	Nitrobenzene-d5	77%	42-108%
321-60-8	2-Fluorobiphenyl	70%	40-106%
1718-51-0	Terphenyl-d14	78%	39-121%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-BS	X081413.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
59-50-7	4-Chloro-3-methyl Phenol	1670	1360	82	52-108
95-57-8	2-Chlorophenol	1670	1260	76	48-104
120-83-2	2,4-Dichlorophenol	1670	1460	88	51-105
105-67-9	2,4-Dimethylphenol	1670	1060	64	43-96
51-28-5	2,4-Dinitrophenol	3330	2740	82	40-119
534-52-1	4,6-Dinitro-o-cresol	3330	3230	97	64-121
95-48-7	2-Methylphenol	1670	1160	70	46-107
	3&4-Methylphenol	3330	2450	74	44-111
88-75-5	2-Nitrophenol	1670	1430	86	49-104
100-02-7	4-Nitrophenol	3330	2830	85	56-116
108-95-2	Phenol	1670	1140	68	45-110
95-95-4	2,4,5-Trichlorophenol	1670	1660	100	58-112
88-06-2	2,4,6-Trichlorophenol	1670	1570	94	56-109
101-55-3	4-Bromophenyl phenyl ether	1670	1490	89	62-110
85-68-7	Butyl benzyl phthalate	1670	1510	91	65-113
86-74-8	Carbazole	1670	1490	89	60-111
106-47-8	4-Chloroaniline	1670	907	54	30-115
111-91-1	bis(2-Chloroethoxy)methane	1670	1160	70	48-105
111-44-4	bis(2-Chloroethyl)ether	1670	1110	67	46-103
108-60-1	2,2'-Oxybis(1-chloropropane)	1670	1150	69	40-110
91-58-7	2-Chloronaphthalene	1670	1290	77	53-106
132-64-9	Dibenzofuran	1670	1350	81	57-108
95-50-1	1,2-Dichlorobenzene	1670	1130	68	44-102
541-73-1	1,3-Dichlorobenzene	1670	1120	67	42-100
106-46-7	1,4-Dichlorobenzene	1670	1090	65	40-106
91-94-1	3,3'-Dichlorobenzidine	1670	1180	71	36-114
84-66-2	Diethyl Phthalate	1670	1400	84	61-109
131-11-3	Dimethyl Phthalate	1670	1410	85	59-108
117-84-0	Di-n-octyl Phthalate	1670	1610	97	64-119
84-74-2	Di-n-butyl Phthalate	1670	1480	89	63-108
121-14-2	2,4-Dinitrotoluene	1670	1580	95	59-109
606-20-2	2,6-Dinitrotoluene	1670	1500	90	61-107
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1420	85	64-115
118-74-1	Hexachlorobenzene	1670	1420	85	59-111
87-68-3	Hexachlorobutadiene	1670	1230	74	41-108
77-47-4	Hexachlorocyclopentadiene	1670	1300	78	49-110

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-BS	X081413.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-72-1	Hexachloroethane	1670	1050	63	40-105
78-59-1	Isophorone	1670	1180	71	42-89
88-74-4	2-Nitroaniline	1670	1340	80	56-123
99-09-2	3-Nitroaniline	1670	1250	75	41-111
100-01-6	4-Nitroaniline	1670	1240	74	54-113
98-95-3	Nitrobenzene	1670	1080	65	43-108
621-64-7	N-Nitrosodi-n-propylamine	1670	1120	67	48-108
120-82-1	1,2,4-Trichlorobenzene	1670	1180	71	45-100

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	71%	40-102%
4165-62-2	Phenol-d5	71%	41-100%
118-79-6	2,4,6-Tribromophenol	80%	42-108%
4165-60-0	Nitrobenzene-d5	65%	40-105%
321-60-8	2-Fluorobiphenyl	77%	43-107%
1718-51-0	Terphenyl-d14	89%	45-119%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MS1	X081195.D	1	05/02/22	WH	04/29/22	OP90994	SX3250
OP90994-MSD1	X081196.D	1	05/02/22	WH	04/29/22	OP90994	SX3250
FA95129-3	X081186.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	FA95129-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
59-50-7	4-Chloro-3-methyl Phenol	4.7	U	94.3	79.0	84	94.3	67.8	72	15	54-103/23
95-57-8	2-Chlorophenol	4.7	U	94.3	72.7	77	94.3	65.6	70	10	52-98/25
120-83-2	2,4-Dichlorophenol	4.7	U	94.3	87.9	93	94.3	78.0	83	12	53-103/26
105-67-9	2,4-Dimethylphenol	4.7	U	94.3	68.2	72	94.3	59.1	63	14	43-90/27
51-28-5	2,4-Dinitrophenol	24	U	189	151	80	189	124	66	20	44-112/25
534-52-1	4,6-Dinitro-o-cresol	9.4	U	189	180	95	189	166	88	8	66-121/23
95-48-7	2-Methylphenol	4.7	U	94.3	61.9	66	94.3	56.0	59	10	43-90/28
	3&4-Methylphenol	4.7	U	189	117	62	189	107	57	9	36-88/28
88-75-5	2-Nitrophenol	4.7	U	94.3	94.3	100	94.3	83.3	88	12	53-102/29
100-02-7	4-Nitrophenol	24	U	189	89.9	48	189	85.1	45	5	18-62/33
87-86-5	Pentachlorophenol	24	U	189	113	60*	189	97.0	51*	15	61-115/26
108-95-2	Phenol	4.7	U	94.3	32.4	34	94.3	31.1	33	4	19-56/35
95-95-4	2,4,5-Trichlorophenol	4.7	U	94.3	97.4	103	94.3	86.3	91	12	62-109/22
88-06-2	2,4,6-Trichlorophenol	4.7	U	94.3	95.3	101	94.3	83.5	89	13	59-107/23
62-53-3	Aniline	4.7	U	47.2	22.7	48 [a]	47.2	21.4	46 [a]	6	47-100/30
1912-24-9	Atrazine	4.7	U	94.3	89.6	95	94.3	81.3	86	10	62-114/24
100-52-7	Benzaldehyde	24	U	94.3	69.8	74	94.3	64.8	69	7	36-129/29
92-52-4	1,1'-Biphenyl	4.7	U	94.3	79.0	84	94.3	71.1	75	11	57-104/23
101-55-3	4-Bromophenyl Phenyl Ether	4.7	U	94.3	89.5	95	94.3	80.3	85	11	65-109/23
85-68-7	Butyl Benzyl Phthalate	4.7	U	94.3	92.4	98	94.3	84.4	89	9	65-112/24
86-74-8	Carbazole	4.7	U	47.2	47.6	100 [a]	47.2	43.0	92 [a]	10	59-113/21
106-47-8	4-Chloroaniline	4.7	U	47.2	33.2	70 [a]	47.2	30.1	64 [a]	10	49-105/27
111-91-1	bis(2-Chloroethoxy)methane	4.7	U	94.3	78.3	83	94.3	69.9	74	11	51-102/28
111-44-4	bis(2-Chloroethyl)ether	4.7	U	94.3	76.7	81	94.3	68.9	73	11	53-100/27
108-60-1	2,2'-Oxybis(1-chloropropane)	4.7	U	94.3	80.3	85	94.3	72.1	76	11	45-106/26
91-58-7	2-Chloronaphthalene	4.7	U	94.3	83.6	89	94.3	74.1	79	12	57-103/23
132-64-9	Dibenzofuran	4.7	U	47.2	43.5	92 [a]	47.2	38.9	82 [a]	11	61-106/21
91-94-1	3,3'-Dichlorobenzidine	4.7	U	47.2	39.6	84 [a]	47.2	36.1	76 [a]	9	46-117/29
84-66-2	Diethyl Phthalate	4.7	U	94.3	86.4	92	94.3	77.2	82	11	64-108/21
131-11-3	Dimethyl Phthalate	4.7	U	94.3	87.6	93	94.3	78.7	83	11	63-106/22
84-74-2	Di-n-butyl Phthalate	4.7	U	94.3	91.8	97	94.3	82.0	87	11	65-107/21
117-84-0	Di-n-octyl Phthalate	4.7	U	94.3	87.0	92	94.3	78.8	84	10	62-118/24
121-14-2	2,4-Dinitrotoluene	4.7	U	94.3	94.5	100	94.3	85.4	91	10	61-110/21
606-20-2	2,6-Dinitrotoluene	4.7	U	94.3	91.7	97	94.3	82.9	88	10	63-108/21
117-81-7	bis(2-Ethylhexyl)phthalate	4.7	U	94.3	84.9	90	94.3	74.8	79	13	61-117/23
118-74-1	Hexachlorobenzene	4.7	U	94.3	85.5	91	94.3	76.7	81	11	63-108/22

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP90994-MS1	X081195.D	1	05/02/22	WH	04/29/22	OP90994	SX3250
OP90994-MSD1	X081196.D	1	05/02/22	WH	04/29/22	OP90994	SX3250
FA95129-3	X081186.D	1	05/02/22	WH	04/29/22	OP90994	SX3250

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-1, FA95131-2

CAS No.	Compound	FA95129-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
87-68-3	Hexachlorobutadiene	4.7	U	94.3	77.9	83	94.3	70.6	75	10	42-102/28
77-47-4	Hexachlorocyclopentadiene	4.7	U	94.3	83.5	89	94.3	76.9	82	8	39-102/29
67-72-1	Hexachloroethane	4.7	U	94.3	70.6	75	94.3	66.1	70	7	42-100/29
78-59-1	Isophorone	4.7	U	94.3	80.0	85	94.3	70.7	75	12	43-87/25
88-74-4	2-Nitroaniline	4.7	U	47.2	43.5	92 [a]	47.2	39.3	84 [a]	10	54-128/24
99-09-2	3-Nitroaniline	4.7	U	47.2	41.4	88 [a]	47.2	37.7	80 [a]	9	56-106/27
100-01-6	4-Nitroaniline	4.7	U	47.2	47.0	100 [a]	47.2	41.3	88 [a]	13	55-120/24
98-95-3	Nitrobenzene	4.7	U	94.3	75.1	80	94.3	66.7	71	12	50-104/28
62-75-9	N-Nitrosodimethylamine	4.7	U	94.3	52.8	56	94.3	49.6	53	6	28-78/30
621-64-7	N-Nitrosodi-n-propylamine	4.7	U	94.3	77.7	82	94.3	69.3	73	11	52-104/25
95-94-3	1,2,4,5-Tetrachlorobenzene	4.7	U	94.3	80.6	85	94.3	71.6	76	12	47-111/27

CAS No.	Surrogate Recoveries	MS	MSD	FA95129-3	Limits
367-12-4	2-Fluorophenol	49%	46%	23%	14-67%
4165-62-2	Phenol-d5	34%	33%	15%	10-50%
118-79-6	2,4,6-Tribromophenol	80%	71%	69%	33-118%
4165-60-0	Nitrobenzene-d5	78%	70%	61%	42-108%
321-60-8	2-Fluorobiphenyl	85%	76%	70%	40-106%
1718-51-0	Terphenyl-d14	92%	84%	94%	39-121%

(a) Spike recoveries calculated from actual spike mix concentration.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-MS	X081420.D	1	05/06/22	WH	05/05/22	OP91074	SX3254
OP91074-MSD	X081421.D	1	05/06/22	WH	05/05/22	OP91074	SX3254
FA95131-3	X081419.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	FA95131-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
59-50-7	4-Chloro-3-methyl Phenol	220 U		2170	1580	73	2170	1630	75	3	52-108/21
95-57-8	2-Chlorophenol	220 U		2170	1500	69	2170	1550	72	3	48-104/26
120-83-2	2,4-Dichlorophenol	220 U		2170	1690	78	2170	1740	80	3	51-105/27
105-67-9	2,4-Dimethylphenol	220 U		2170	1340	62	2170	1380	64	3	43-96/23
51-28-5	2,4-Dinitrophenol	1100 U		4350	2300	53	4330	2220	51	4	40-119/32
534-52-1	4,6-Dinitro-o-cresol	430 U		4350	3420	79	4330	3660	84	7	64-121/29
95-48-7	2-Methylphenol	220 U		2170	1410	65	2170	1440	66	2	46-107/24
	3&4-Methylphenol	220 U		4350	2900	67	4330	2980	69	3	44-111/24
88-75-5	2-Nitrophenol	220 U		2170	1640	75	2170	1730	80	5	49-104/27
100-02-7	4-Nitrophenol	1100 U		4350	3170	73	4330	3290	76	4	56-116/23
108-95-2	Phenol	220 U		2170	1360	63	2170	1320	61	3	45-110/24
95-95-4	2,4,5-Trichlorophenol	220 U		2170	1830	84	2170	1930	89	5	58-112/22
88-06-2	2,4,6-Trichlorophenol	220 U		2170	1780	82	2170	1850	85	4	56-109/25
101-55-3	4-Bromophenyl phenyl ether	220 U		2170	1680	77	2170	1770	82	5	62-110/21
85-68-7	Butyl benzyl phthalate	220 U		2170	1720	79	2170	1820	84	6	65-113/20
86-74-8	Carbazole	220 U		2170	1680	77	2170	1780	82	6	60-111/19
106-47-8	4-Chloroaniline	220 U		2170	796	37	2170	818	38	3	30-115/30
111-91-1	bis(2-Chloroethoxy)methane	220 U		2170	1380	64	2170	1420	66	3	48-105/24
111-44-4	bis(2-Chloroethyl)ether	220 U		2170	1330	61	2170	1370	63	3	46-103/27
108-60-1	2,2'-Oxybis(1-chloropropane)	220 U		2170	1400	64	2170	1420	66	1	40-110/25
91-58-7	2-Chloronaphthalene	220 U		2170	1490	69	2170	1550	72	4	53-106/23
132-64-9	Dibenzofuran	220 U		2170	1550	71	2170	1620	75	4	57-108/22
95-50-1	1,2-Dichlorobenzene	220 U		2170	1360	63	2170	1400	65	3	44-102/28
541-73-1	1,3-Dichlorobenzene	220 U		2170	1340	62	2170	1350	62	1	42-100/30
106-46-7	1,4-Dichlorobenzene	220 U		2170	1310	60	2170	1330	61	2	40-106/29
91-94-1	3,3'-Dichlorobenzidine	220 U		2170	1510	69	2170	1700	78	12	36-114/28
84-66-2	Diethyl Phthalate	430 U		2170	1590	73	2170	1640	76	3	61-109/20
131-11-3	Dimethyl Phthalate	220 U		2170	1620	75	2170	1660	77	2	59-108/20
117-84-0	Di-n-octyl Phthalate	220 U		2170	1840	85	2170	1930	89	5	64-119/21
84-74-2	Di-n-butyl Phthalate	430 U		2170	1660	76	2170	1750	81	5	63-108/19
121-14-2	2,4-Dinitrotoluene	220 U		2170	1730	80	2170	1850	85	7	59-109/20
606-20-2	2,6-Dinitrotoluene	220 U		2170	1680	77	2170	1750	81	4	61-107/22
117-81-7	bis(2-Ethylhexyl)phthalate	430 U		2170	1600	74	2170	1710	79	7	64-115/23
118-74-1	Hexachlorobenzene	220 U		2170	1570	72	2170	1690	78	7	59-111/21
87-68-3	Hexachlorobutadiene	220 U		2170	1410	65	2170	1450	67	3	41-108/27
77-47-4	Hexachlorocyclopentadiene	220 U		2170	1450	67	2170	1660	77	14	49-110/31

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95131
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91074-MS	X081420.D	1	05/06/22	WH	05/05/22	OP91074	SX3254
OP91074-MSD	X081421.D	1	05/06/22	WH	05/05/22	OP91074	SX3254
FA95131-3	X081419.D	1	05/06/22	WH	05/05/22	OP91074	SX3254

The QC reported here applies to the following samples: **Method:** SW846 8270E

FA95131-3

CAS No.	Compound	FA95131-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-72-1	Hexachloroethane	220	U	2170	1270	58	2170	1280	59	1	40-105/32
78-59-1	Isophorone	220	U	2170	1390	64	2170	1420	66	2	42-89/22
88-74-4	2-Nitroaniline	220	U	2170	1490	69	2170	1620	75	8	56-123/24
99-09-2	3-Nitroaniline	220	U	2170	1470	68	2170	1580	73	7	41-111/25
100-01-6	4-Nitroaniline	220	U	2170	1500	69	2170	1590	73	6	54-113/22
98-95-3	Nitrobenzene	220	U	2170	1290	59	2170	1340	62	4	43-108/25
621-64-7	N-Nitrosodi-n-propylamine	220	U	2170	1330	61	2170	1380	64	4	48-108/27
120-82-1	1,2,4-Trichlorobenzene	220	U	2170	1420	65	2170	1440	66	1	45-100/26

CAS No.	Surrogate Recoveries	MS	MSD	FA95131-3	Limits
367-12-4	2-Fluorophenol	64%	67%	74%	40-102%
4165-62-2	Phenol-d5	64%	67%	74%	41-100%
118-79-6	2,4,6-Tribromophenol	67%	73%	70%	42-108%
4165-60-0	Nitrobenzene-d5	58%	62%	66%	40-105%
321-60-8	2-Fluorobiphenyl	67%	70%	75%	43-107%
1718-51-0	Terphenyl-d14	76%	82%	90%	45-119%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 04/29/22

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.042	.0025	.0042	0.00060	<0.042

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date:			04/29/22				04/29/22	
Metal	FA94943-1 Original	DUP	RPD	QC Limits	FA94943-1 Original	DUP	RPD	QC Limits
Mercury	0.17	0.17	0.0	0-20	0.17	0.17	0.0	0-20

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 04/29/22

Metal	FA94943-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.17	0.40	0.242	95.1	80-120

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 04/29/22

Metal	FA94943-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.17	0.38	0.221	95.2	5.1	20

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 04/29/22

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.25	0.25	100.0	80-120

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40629 Methods: SW846 7471B
Matrix Type: SOLID Units: ug/l

Prep Date: 04/29/22

Metal	FA94943-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	2.09	2.04	2.4	0-10

Associated samples MP40629: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40630 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/29/22

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.50	.03	.03	-0.021	<0.50

Associated samples MP40630: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40630
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date:			04/29/22					04/29/22	
Metal	FA95138-1 Original	DUP	RPD	QC Limits	FA95138-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	3.0	3	100.0	80-120

Associated samples MP40630: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40630 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/29/22

Metal	FA95138-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.0	2.9	3	96.7	3.4	20

Associated samples MP40630: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40630 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/29/22

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	3.1	3	103.3	80-120

Associated samples MP40630: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40630
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/29/22

Metal	FA95138-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP40630: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	14		
Antimony	6.0	1	1	1.2	<6.0
Arsenic	10	1.3	1.3	-1.8	<10
Barium	200	.5	1	0.10	<200
Beryllium	4.0	.1	.2	-0.10	<4.0
Cadmium	5.0	.1	.2	-0.10	<5.0
Calcium	1000	50	50		
Chromium	10	.5	1	0.40	<10
Cobalt	50	.2	.2		
Copper	25	1	1		
Iron	300	15	17		
Lead	5.0	1	1.1	-0.50	<5.0
Magnesium	5000	35	35		
Manganese	15	.25	1		
Molybdenum	50	.3	.3		
Nickel	40	.4	.4	0.10	<40
Potassium	10000	100	200		
Selenium	10	2	2.9	2.3	<10
Silver	10	.5	.7	0.20	<10
Sodium	10000	250	500		
Strontium	10	.25	.5		
Thallium	10	1	1.4	-1.2	<10
Tin	50	.5	1		
Titanium	10	.5	1		
Vanadium	50	.5	.6		
Zinc	20	3	4.4		

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:			05/04/22					05/04/22	
Metal	FA95129-3 Original	DUP	RPD	QC Limits	FA95129-3 Original	MS	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum									
Antimony	0.0	0.0	NC	0-20	0.0	473	500	94.6	80-120
Arsenic	0.0	0.0	NC	0-20	0.0	1890	2000	94.5	80-120
Barium	26.5	26.4	0.4	0-20	26.5	2010	2000	99.2	80-120
Beryllium	0.50	0.50	0.0	0-20	0.50	49.7	50	98.4	80-120
Cadmium	0.0	0.0	NC	0-20	0.0	49.3	50	98.6	80-120
Calcium	anr								
Chromium	0.0	0.50	200.0(a)	0-20	0.0	204	200	102.0	80-120
Cobalt									
Copper									
Iron	anr								
Lead	0.0	0.0	NC	0-20	0.0	476	500	95.2	80-120
Magnesium	anr								
Manganese									
Molybdenum									
Nickel	5.2	5.4	3.8	0-20	5.2	491	500	97.2	80-120
Potassium									
Selenium	0.0	2.0	200.0(a)	0-20	0.0	1920	2000	96.0	80-120
Silver	0.50	0.70	33.3 (a)	0-20	0.50	48.8	50	96.6	80-120
Sodium									
Strontium									
Thallium	0.0	0.0	NC	0-20	0.0	1930	2000	96.5	80-120
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	FA95129-3 Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	0.0	470	500	94.0	0.6	20
Arsenic	0.0	1890	2000	94.5	0.0	20
Barium	26.5	2010	2000	99.2	0.0	20
Beryllium	0.50	49.4	50	97.8	0.6	20
Cadmium	0.0	49.3	50	98.6	0.0	20
Calcium	anr					
Chromium	0.0	202	200	101.0	1.0	20
Cobalt						
Copper						
Iron	anr					
Lead	0.0	474	500	94.8	0.4	20
Magnesium	anr					
Manganese						
Molybdenum						
Nickel	5.2	490	500	97.0	0.2	20
Potassium						
Selenium	0.0	1920	2000	96.0	0.0	20
Silver	0.50	48.4	50	95.8	0.8	20
Sodium						
Strontium						
Thallium	0.0	1930	2000	96.5	0.0	20
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony	484	500	96.8	80-120
Arsenic	1930	2000	96.5	80-120
Barium	2020	2000	101.0	80-120
Beryllium	50.3	50	100.6	80-120
Cadmium	50.2	50	100.4	80-120
Calcium	anr			
Chromium	206	200	103.0	80-120
Cobalt				
Copper				
Iron	anr			
Lead	486	500	97.2	80-120
Magnesium	anr			
Manganese				
Molybdenum				
Nickel	497	500	99.4	80-120
Potassium				
Selenium	1960	2000	98.0	80-120
Silver	49.4	50	98.8	80-120
Sodium				
Strontium				
Thallium	1970	2000	98.5	80-120
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	FA95129-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	0.00	6.50	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	26.5	25.4	4.2	0-10
Beryllium	0.500	0.00	100.0(a)	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	anr			
Chromium	0.00	0.00	NC	0-10
Cobalt				
Copper				
Iron	anr			
Lead	0.00	0.00	NC	0-10
Magnesium	anr			
Manganese				
Molybdenum				
Nickel	5.20	5.10	1.9	0-10
Potassium				
Selenium	0.00	16.2	NC	0-10
Silver	0.500	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40649
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	Sample ml	Final ml	FA95129-3 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	9.8	10			101	0.2	5	100	101.0	80-120
Arsenic	9.8	10			99.6	0.2	5	100	99.6	80-120
Barium	9.8	10	26.5	25.97	277.3	0.2	12.5	250	100.5	80-120
Beryllium	9.8	10	.5	.49	52.2	0.2	2.5	50	103.4	80-120
Cadmium	9.8	10			52.1	0.2	2.5	50	104.2	80-120
Calcium										
Chromium	9.8	10			53.4	0.2	2.5	50	106.8	80-120
Cobalt										
Copper										
Iron										
Lead	9.8	10			48.9	0.2	2.5	50	97.8	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel	9.8	10	5.2	5.096	108.6	0.2	5	100	103.5	80-120
Potassium										
Selenium	9.8	10			98.6	0.2	5	100	98.6	80-120
Silver	9.8	10	.5	.49	50	0.2	2.5	50	99.0	80-120
Sodium										
Strontium										
Thallium	9.8	10			98.1	0.2	5	100	98.1	80-120
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP40649: FA95131-1, FA95131-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date: 05/04/22

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.7	1.8		
Antimony	1.0	.05	.065	-0.025	<1.0
Arsenic	0.50	.065	.1	-0.040	<0.50
Barium	10	.025	.05	0.015	<10
Beryllium	0.25	.005	.025	-0.0050	<0.25
Cadmium	0.20	.005	.025	-0.0050	<0.20
Calcium	250	2.5	2.5		
Chromium	0.50	.025	.05	0.015	<0.50
Cobalt	2.5	.01	.025		
Copper	1.3	.05	.05		
Iron	15	.75	.85		
Lead	1.0	.05	.05	-0.060	<1.0
Magnesium	250	1.8	1.8		
Manganese	0.75	.013	.025		
Molybdenum	2.5	.015	.025		
Nickel	2.0	.02	.025	0.015	<2.0
Potassium	500	5	10		
Selenium	1.0	.1	.12	0.090	<1.0
Silver	0.50	.025	.041	0.025	<0.50
Sodium	500	13	25		
Strontium	0.50	.013	.025		
Thallium	0.50	.05	.055	-0.040	<0.50
Tin	2.5	.025	.045		
Titanium	0.50	.025	.025		
Vanadium	2.5	.025	.025		
Zinc	1.0	.15	.15		

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:			05/04/22					05/04/22	
Metal	FA95269-1A Original	DUP	RPD	QC Limits	FA95269-1A Original	MS	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum									
Antimony	1.5	0.65 (a)	79.1 (b)	0-20	1.5	11.9 (a)	24.1	43.2N(d)	80-120
Arsenic	2.3	1.1 (a)	70.6 (b)	0-20	2.3	91.4 (a)	96.3	92.5	80-120
Barium	54.1	49.3 (a)	9.3	0-20	54.1	146 (a)	96.3	95.4	80-120
Beryllium	0.0	0.026(a)	200.0(b)	0-20	0.0	2.5 (a)	2.41	103.8	80-120
Cadmium	73.3	41.0 (a)	56.5*(c)	0-20	73.3	47.3 (a)	2.41	-1079.7e	80-120
Calcium									
Chromium	61.5	35.3 (a)	54.1*(c)	0-20	61.5	66.3 (a)	9.63	49.8 (e)	80-120
Cobalt									
Copper									
Iron									
Lead	1720	922 (a)	60.4*(c)	0-20	1720	898 (a)	24.1	-3413.6e	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	17.5	10.5 (a)	50.0 (b)	0-20	17.5	40.0 (a)	24.1	93.4	80-120
Potassium									
Selenium	2.0	1.3 (a)	42.4 (b)	0-20	2.0	94.7 (a)	96.3	96.2	80-120
Silver	4.9	3.1 (a)	45.0 (b)	0-20	4.9	5.6 (a)	2.41	29.1N(d)	80-120
Sodium									
Strontium									
Thallium	2.1	0.65 (a)	105.5(b)	0-20	2.1	97.4 (a)	96.3	98.9	80-120
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Sample dilution required due to difficult matrix.
(b) RPD acceptable due to low duplicate and sample concentrations.
(c) High RPD due to possible sample non-homogeneity.
(d) Spike recovery indicates possible matrix interference and/or sample non-homogeneity.
(e) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date: 05/04/22

Metal	FA95269-1A Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	1.5	10.5 (a)	23.5	38.3N(b)	12.5	20
Arsenic	2.3	90.2 (a)	93.9	93.6	1.3	20
Barium	54.1	144 (a)	93.9	95.7	1.4	20
Beryllium	0.0	2.5 (a)	2.35	106.5	0.0	20
Cadmium	73.3	61.5 (a)	2.35	-502.7(c	26.1 (d)	20
Calcium						
Chromium	61.5	50.9 (a)	9.39	-112.9(c	26.3 (d)	20
Cobalt						
Copper						
Iron						
Lead	1720	1290 (a)	23.5	-1831.9c	35.8 (d)	20
Magnesium						
Manganese						
Molybdenum						
Nickel	17.5	36.6 (a)	23.5	81.4	8.9	20
Potassium						
Selenium	2.0	93.8 (a)	93.9	97.8	1.0	20
Silver	4.9	7.2 (a)	2.35	98.0	25.0 (d)	20
Sodium						
Strontium						
Thallium	2.1	96.8 (a)	93.9	100.9	0.6	20
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Sample dilution required due to difficult matrix.
(b) Spike recovery indicates possible matrix interference and/or sample non-homogeneity.
(c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
(d) High RPD due to possible sample non-homogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/04/22

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony	23.7	25	94.8	80-120
Arsenic	95.0	100	95.0	80-120
Barium	99.8	100	99.8	80-120
Beryllium	2.5	2.5	100.0	80-120
Cadmium	2.5	2.5	100.0	80-120
Calcium				
Chromium	10.2	10	102.0	80-120
Cobalt				
Copper				
Iron				
Lead	24.0	25	96.0	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel	24.6	25	98.4	80-120
Potassium				
Selenium	96.0	100	96.0	80-120
Silver	2.4	2.5	96.0	80-120
Sodium				
Strontium				
Thallium	97.8	100	97.8	80-120
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	FA95269-1A Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony	30.4	39.1	28.6 (a)	0-10
Arsenic	48.7	0.00	100.0(a)	0-10
Barium	1120	1090	2.8	0-10
Beryllium	0.00	0.00	NC	0-10
Cadmium	1520	1490	1.9	0-10
Calcium				
Chromium	1280	1250	2.3	0-10
Cobalt				
Copper				
Iron				
Lead	35800	35200	1.5	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	363	355	2.2	0-10
Potassium				
Selenium	41.0	51.6	25.9 (a)	0-10
Silver	101	107	5.9	0-10
Sodium				
Strontium				
Thallium	43.7	55.8	27.7 (a)	0-10
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: FA95131
Account: MEFLOR - AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

QC Batch ID: MP40651
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/04/22

Metal	Sample ml	Final ml	FA95269-1A Raw	FA95269-1A Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	9.8	10	30.4	29.792	131.5	0.2	5	100	101.7	80-120
Arsenic	9.8	10	48.7	47.726	141.5	0.2	5	100	93.8	80-120
Barium	9.8	10	1123	1100.54	1370	0.2	12.5	250	107.8	80-120
Beryllium	9.8	10			50.9	0.2	2.5	50	101.8	80-120
Cadmium	9.8	10	1522	1491.56	1565	0.2	2.5	50	146.9*(a	80-120
Calcium										
Chromium	9.8	10	1278	1252.44	1329	0.2	2.5	50	153.1*(a	80-120
Cobalt										
Copper										
Iron										
Lead	9.8	10	35760	35044.8	35840	0.2	2.5	50	1590.4*a	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel	9.8	10	362.5	355.25	462.2	0.2	5	100	107.0	80-120
Potassium										
Selenium	9.8	10	41	40.18	129.7	0.2	5	100	89.5	80-120
Silver	9.8	10	101.3	99.274	149.8	0.2	2.5	50	101.1	80-120
Sodium										
Strontium										
Thallium	9.8	10	43.7	42.826	129.3	0.2	5	100	86.5	80-120
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP40651: FA95131-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested
(a) Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

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: FA95133

Sampling Date: 04/25/22

Report to:

AECOM
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Total number of pages in report: 45

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

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SGS North America Inc.

Sample Summary

AECOM, Inc

Job No: FA95133

NASA KSC, PFAS SA & Mitigation
Project No: 60667657

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA95133-1	04/25/22	13:00	BFDS	04/26/22	AQ	Water	PFAS-IDW-20220425-01
FA95133-2	04/25/22	13:50	BFDS	04/26/22	AQ	Water	PFAS-IDW-20220425-02
FA95133-3	04/25/22	14:15	BFDS	04/26/22	SO	Soil	PFAS-IDW-20220425-03

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, Inc **Job No:** FA95133

Site: NASA KSC, PFAS SA & Mitigation **Report Date** 5/17/2022 11:16:16

On 04/26/2022, 3 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 3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA95133 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:** OP91059

Sample(s) FA95101-22MS, FA95101-23DUP were used as the QC samples indicated.

Sample(s) FA95133-1, FA95133-2 have surrogates outside control limits.

FA95133-1: Dilution required due to matrix interference (ID recovery standard failure).

FA95133-2: Dilution required due to matrix interference (ID recovery standard failure).

Matrix: SO **Batch ID:** OP91179

Sample(s) FA95133-3MS, FA95133-3MSD were used as the QC samples indicated.

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN91231

Sample(s) FA95304-12DUP 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:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA95133
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA95133-1	**PFAS-IDW-20220425-01**					
Perfluorohexanoic acid [a]		0.0240 J	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanesulfonic acid [a]		0.0193 J	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.232	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.101	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
FA95133-2	**PFAS-IDW-20220425-02**					
Perfluorooctanoic acid [a]		0.0612	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid [a]		0.115	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid [a]		0.306	0.042	0.021	ug/l	EPA 537M QSM5.3 B-15
FA95133-3	**PFAS-IDW-20220425-03**					

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: PFAS-IDW-20220425-01
Lab Sample ID: FA95133-1
Matrix: AQ - Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q59296.D	5	05/09/22 20:35	MV	05/04/22 08:30	OP91059	S3Q810
Run #2 [a]	3Q59297.D	20	05/09/22 20:53	MV	05/04/22 08:30	OP91059	S3Q810

	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	0.042 U	0.083	0.042	0.021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.0240	0.042	0.021	0.010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
375-95-1	Perfluorononanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-76-2	Perfluorodecanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
307-55-1	Perfluorododecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0193	0.042	0.021	0.010	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.232	0.042	0.021	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.101	0.042	0.021	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.021 U	0.042	0.021	0.010	ug/l	
31506-32-8	MeFOSA	0.042 U	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.042 U	0.083	0.042	0.021	ug/l	
2991-50-6	EtFOSAA	0.042 U	0.083	0.042	0.021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U	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: PFAS-IDW-20220425-01
Lab Sample ID: FA95133-1 **Date Sampled:** 04/25/22
Matrix: AQ - Water **Date Received:** 04/26/22
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	0.083	0.042	0.021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.042 U	0.083	0.042	0.021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.042 U	0.083	0.042	0.021	ug/l	
919005-14-4	ADONA	0.042 U	0.083	0.042	0.021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.042 U	0.083	0.042	0.021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.17 U [b]	0.33	0.17	0.083	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%	115%	50-150%
	13C5-PFPeA	113%	116%	50-150%
	13C5-PFHxA	83%	106%	50-150%
	13C4-PFHpA	109%	115%	50-150%
	13C8-PFOA	110%	115%	50-150%
	13C9-PFNA	117%	118%	50-150%
	13C6-PFDA	110%	114%	50-150%
	13C7-PFUnDA	0% [c]	113%	50-150%
	13C2-PFDoDA	0% [c]	113%	50-150%
	13C2-PFTeDA	106%	109%	50-150%
	13C3-PFBS	114%	120%	50-150%
	13C3-PFHxS	112%	121%	50-150%
	13C8-PFOS	119%	114%	50-150%
	13C8-FOSA	87%	126%	50-150%
	d3-MeFOSA	57%	89%	50-150%
	d3-MeFOSAA	135%	130%	50-150%
	d5-EtFOSAA	142%	128%	50-150%
	13C2-4:2FTS	148%	138%	50-150%
	13C2-6:2FTS	137%	133%	50-150%
	13C2-8:2FTS	126%	132%	50-150%
	13C3-HFPO-DA	99%	111%	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: PFAS-IDW-20220425-02
Lab Sample ID: FA95133-2
Matrix: AQ - Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3Q59298.D	5	05/09/22 21:12	MV	05/04/22 08:30	OP91059	S3Q810
Run #2 [a]	3Q59299.D	20	05/09/22 21:30	MV	05/04/22 08:30	OP91059	S3Q810

	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	0.042 U	0.083	0.042	0.021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
307-24-4	Perfluorohexanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0612	0.042	0.021	0.010	ug/l	
375-95-1	Perfluorononanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-76-2	Perfluorodecanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
307-55-1	Perfluorododecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.021 U	0.042	0.021	0.010	ug/l	
PERFLUOROALKYLSULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.115	0.042	0.021	0.010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.306	0.042	0.021	0.010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.021 U	0.042	0.021	0.010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.083 U [b]	0.17	0.083	0.042	ug/l	
PERFLUOROOCTANESULFONAMIDES							
754-91-6	PFOSA	0.021 U	0.042	0.021	0.010	ug/l	
31506-32-8	MeFOSA	0.042 U	0.083	0.042	0.021	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS							
2355-31-9	MeFOSAA	0.042 U	0.083	0.042	0.021	ug/l	
2991-50-6	EtFOSAA	0.042 U	0.083	0.042	0.021	ug/l	
FLUOROTELOMER SULFONATES							
757124-72-4	4:2 Fluorotelomer sulfonate	0.042 U	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: PFAS-IDW-20220425-02
Lab Sample ID: FA95133-2
Matrix: AQ - Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: n/a

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
27619-97-2	6:2 Fluorotelomer sulfonate	0.042 U	0.083	0.042	0.021	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	0.042 U	0.083	0.042	0.021	ug/l	
NEXT GENERATION PFAS ANALYTES							
13252-13-6	HFPO-DA (GenX)	0.042 U	0.083	0.042	0.021	ug/l	
919005-14-4	ADONA	0.042 U	0.083	0.042	0.021	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.042 U	0.083	0.042	0.021	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.17 U [b]	0.33	0.17	0.083	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	105%	113%	50-150%
	13C5-PFPeA	104%	111%	50-150%
	13C5-PFHxA	93%	107%	50-150%
	13C4-PFHpA	99%	109%	50-150%
	13C8-PFOA	96%	112%	50-150%
	13C9-PFNA	95%	106%	50-150%
	13C6-PFDA	90%	104%	50-150%
	13C7-PFUnDA	0% [c]	99%	50-150%
	13C2-PFDoDA	0% [c]	96%	50-150%
	13C2-PFTeDA	90%	102%	50-150%
	13C3-PFBS	105%	118%	50-150%
	13C3-PFHxS	106%	119%	50-150%
	13C8-PFOS	96%	113%	50-150%
	13C8-FOSA	87%	116%	50-150%
	d3-MeFOSA	56%	101%	50-150%
	d3-MeFOSAA	121%	126%	50-150%
	d5-EtFOSAA	127%	131%	50-150%
	13C2-4:2FTS	118%	119%	50-150%
	13C2-6:2FTS	121%	140%	50-150%
	13C2-8:2FTS	111%	130%	50-150%
	13C3-HFPO-DA	92%	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: PFAS-IDW-20220425-03
Lab Sample ID: FA95133-3
Matrix: SO - Soil
Method: EPA 537M QSM5.3 B-15 IN HOUSE
Project: NASA KSC, PFAS SA & Mitigation

Date Sampled: 04/25/22
Date Received: 04/26/22
Percent Solids: 91.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q91319.D	1	05/15/22 14:25	JB	05/12/22 07:00	OP91179	S2Q1278
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	0.00041	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	0.00055 U	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:	PFAS-IDW-20220425-03		
Lab Sample ID:	FA95133-3	**Date Sampled:**	04/25/22
Matrix:	SO - Soil	**Date Received:**	04/26/22
Method:	EPA 537M QSM5.3 B-15 IN HOUSE	**Percent Solids:**	91.7
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	83%		50-150%
	13C5-PFPeA	89%		50-150%
	13C5-PFHxA	91%		50-150%
	13C4-PFHpA	94%		50-150%
	13C8-PFOA	94%		50-150%
	13C9-PFNA	96%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	95%		50-150%
	13C2-PFDoDA	97%		50-150%
	13C2-PFTeDA	105%		50-150%
	13C3-PFBS	91%		50-150%
	13C3-PFHxS	90%		50-150%
	13C8-PFOS	88%		50-150%
	13C8-FOSA	67%		50-150%
	d3-MeFOSA	50%		50-150%
	d3-MeFOSAA	104%		50-150%
	d5-EtFOSAA	110%		50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	91%		50-150%
	13C3-HFPO-DA	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

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: FA95133
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.

FA95133

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.	Project No. 60667657.4 Phase:
TO No.: 80KSC021F0096	AECOM Project Manager: **Jennifer Joyal**	Send Inv Instructions in MSA # 195-24548-GV03	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # Brittany Follet/ 419-302-0236	Dustin Slater/ 407-766-0747	Deliver Sample Kits AECOM Depot, 523 18th Street, Orlando	Report to Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: SGS	Turnaround Time(specify): Standard 14 day	Deliver Samples To SGS Orlando	Site-Spicific WS#15 from QAPP: 15-2, 15-27, & 15-28

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 VOC by SW8260B	HCl ~~1,4-Dioxane by SW8260B-SIM~~	4 DEG SVOC by SW8270D	4 DEG ~~PAH by SW8270D-SIM~~	4 DEG RCRA Metals by SW6010	4 DEG Sb, Be, Ni,& Tl by SW6010	DI/MeOH VOC by SW8260B	4DEG Select PFAS by 537	4DEG VOC by SW8260B		Comments
1	PFAS-IDW-20220425-01	PFAS-IDW	20220425	1300	IDW	IDW	C	13	3	3	4	2	1		-	2	3		
2	PFAS-IDW-20220425-02	PFAS-IDW	20220425	1350	IDW	IDW	C	13	3	3	4	2	1		-	2	3		
	~~PFAS-IDW-20220425-03~~	~~PFAS-IDW~~	~~20220425~~		~~IDW~~	~~IDW~~	~~G~~	~~11~~	~~3~~	~~3~~	~~2~~	~~2~~	~~1~~		~~-~~				
	~~PFAS-IDW-202202-04~~	~~PFAS-IDW~~	~~202202~~		~~IDS~~	~~IDW~~	~~G~~	~~5~~	~~-~~	~~1~~	~~1~~	~~1~~	~~1~~		~~3~~				
3	PFAS-IDW-20220425-05	PFAS-IDW	20220425	1415	IDS	IDW	G	8	-	-	2	1	1		3	2			
	~~PFAS-IDW-202202-06~~	~~PFAS-IDW~~	~~202202~~		~~IDS~~	~~IDW~~	~~G~~	~~5~~	~~-~~	~~-~~	~~1~~	~~1~~	~~1~~		~~3~~				
	PFAS-TB01-20220425	PFAS-TB01	20220425	1230	WQ	TB	G	2	2										

INITIAL ASSESSMENT SM

LABEL VERIFICATION 2.6 CIM

***Field* Comments:**
Report only per QAPP WS #15-2, 15-27, & 15-28

***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		4/25/22	1615		4/26/22	8:21
2		4/26/22	9:54		4/26/22	958
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 4/13

FA95133: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA95133 **Client:** AECOM **Project:** NASA KSC

Date / Time Received: 4/26/2022 9:58:00 AM **Delivery Method:** COURIER **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

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 PM INFORMED US TO SEPARATE THIS JOB AND FA95131 DUE TO PFAS BEING RAN AS DOD AND OTHER SAMPLES BEING NORMAL.

SM001
Rev. Date 05/24/17

Technician: SAMUELM Date: 4/26/2022 9:58:00 AM Reviewer: _____ Date: _____

FA95133: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95133
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91059	EPA 537M QSM5.3 B-15						
OP91059-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	95	%	73-129
OP91059-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	94	%	72-129
OP91059-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	93	%	72-129
OP91059-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	93	%	72-130
OP91059-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	93	%	71-133
OP91059-BS	375-95-1	Perfluorononanoic acid	BSP	REC	96	%	69-130
OP91059-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	94	%	71-129
OP91059-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	98	%	69-133
OP91059-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	95	%	72-134
OP91059-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	83	%	65-144
OP91059-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	94	%	71-132
OP91059-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	96	%	72-130
OP91059-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	95	%	71-127
OP91059-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	93	%	68-131
OP91059-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	98	%	69-134
OP91059-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	93	%	65-140
OP91059-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	96	%	69-127
OP91059-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	95	%	53-142
OP91059-BS	754-91-6	PFOSA	BSP	REC	93	%	67-137
OP91059-BS	31506-32-8	MeFOSA	BSP	REC	90	%	68-141
OP91059-BS	2355-31-9	MeFOSAA	BSP	REC	83	%	65-136
OP91059-BS	2991-50-6	EtFOSAA	BSP	REC	83	%	61-135
OP91059-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	113	%	63-143
OP91059-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	111	%	64-140
OP91059-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	95	%	67-138
OP91059-MS*	375-22-4	Perfluorobutanoic acid	MS	REC	96	%	73-129
OP91059-MS*	2706-90-3	Perfluoropentanoic acid	MS	REC	95	%	72-129
OP91059-MS*	307-24-4	Perfluorohexanoic acid	MS	REC	96	%	72-129
OP91059-MS*	375-85-9	Perfluoroheptanoic acid	MS	REC	93	%	72-130
OP91059-MS*	335-67-1	Perfluorooctanoic acid	MS	REC	83	%	71-133
OP91059-MS*	375-95-1	Perfluorononanoic acid	MS	REC	95	%	69-130
OP91059-MS*	335-76-2	Perfluorodecanoic acid	MS	REC	95	%	71-129
OP91059-MS*	2058-94-8	Perfluoroundecanoic acid	MS	REC	98	%	69-133
OP91059-MS*	307-55-1	Perfluorododecanoic acid	MS	REC	97	%	72-134
OP91059-MS*	72629-94-8	Perfluorotridecanoic acid	MS	REC	87	%	65-144
OP91059-MS*	376-06-7	Perfluorotetradecanoic acid	MS	REC	95	%	71-132
OP91059-MS*	375-73-5	Perfluorobutanesulfonic acid	MS	REC	94	%	72-130
OP91059-MS*	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	90	%	71-127
OP91059-MS*	355-46-4	Perfluorohexanesulfonic acid	MS	REC	88	%	68-131
OP91059-MS*	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	96	%	69-134
OP91059-MS*	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	86	%	65-140
OP91059-MS*	68259-12-1	Perfluorononanesulfonic acid	MS	REC	100	%	69-127

* Sample used for QC is not from job FA95133

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95133
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91059-MS*	335-77-3	Perfluorodecanesulfonic acid	MS	REC	93	%	53-142
OP91059-MS*	754-91-6	PFOSA	MS	REC	96	%	67-137
OP91059-MS*	31506-32-8	MeFOSA	MS	REC	89	%	68-141
OP91059-MS*	2355-31-9	MeFOSAA	MS	REC	83	%	65-136
OP91059-MS*	2991-50-6	EtFOSAA	MS	REC	74	%	61-135
OP91059-MS*	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	112	%	63-143
OP91059-MS*	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	113	%	64-140
OP91059-MS*	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	96	%	67-138
OP91059-DUP*	375-22-4	Perfluorobutanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	2706-90-3	Perfluoropentanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	307-24-4	Perfluorohexanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-85-9	Perfluoroheptanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-67-1	Perfluorooctanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-95-1	Perfluorononanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-76-2	Perfluorodecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	2058-94-8	Perfluoroundecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	307-55-1	Perfluorododecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	72629-94-8	Perfluorotridecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	376-06-7	Perfluorotetradecanoic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-73-5	Perfluorobutanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	2706-91-4	Perfluoropentanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	355-46-4	Perfluorohexanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	375-92-8	Perfluoroheptanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	1763-23-1	Perfluorooctanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	68259-12-1	Perfluorononanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	335-77-3	Perfluorodecanesulfonic acid	DUP	RPD	0	%	30
OP91059-DUP*	754-91-6	PFOSA	DUP	RPD	0	%	30
OP91059-DUP*	31506-32-8	MeFOSA	DUP	RPD	0	%	30
OP91059-DUP*	2355-31-9	MeFOSAA	DUP	RPD	0	%	30
OP91059-DUP*	2991-50-6	EtFOSAA	DUP	RPD	0	%	30
OP91059-DUP*	757124-72-4	4:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91059-DUP*	27619-97-2	6:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91059-DUP*	39108-34-4	8:2 Fluorotelomer sulfonate	DUP	RPD	0	%	30
OP91179	EPA 537M QSM5.3 B-15						
OP91179-BS	375-22-4	Perfluorobutanoic acid	BSP	REC	99	%	71-135
OP91179-BS	2706-90-3	Perfluoropentanoic acid	BSP	REC	98	%	69-132
OP91179-BS	307-24-4	Perfluorohexanoic acid	BSP	REC	102	%	70-132
OP91179-BS	375-85-9	Perfluoroheptanoic acid	BSP	REC	97	%	71-131
OP91179-BS	335-67-1	Perfluorooctanoic acid	BSP	REC	98	%	69-133
OP91179-BS	375-95-1	Perfluorononanoic acid	BSP	REC	100	%	72-129
OP91179-BS	335-76-2	Perfluorodecanoic acid	BSP	REC	101	%	69-133
OP91179-BS	2058-94-8	Perfluoroundecanoic acid	BSP	REC	97	%	64-136
OP91179-BS	307-55-1	Perfluorododecanoic acid	BSP	REC	100	%	69-135

* Sample used for QC is not from job FA95133

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95133
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91179-BS	72629-94-8	Perfluorotridecanoic acid	BSP	REC	99	%	66-139
OP91179-BS	376-06-7	Perfluorotetradecanoic acid	BSP	REC	99	%	69-133
OP91179-BS	375-73-5	Perfluorobutanesulfonic acid	BSP	REC	100	%	72-128
OP91179-BS	2706-91-4	Perfluoropentanesulfonic acid	BSP	REC	105	%	73-123
OP91179-BS	355-46-4	Perfluorohexanesulfonic acid	BSP	REC	103	%	67-130
OP91179-BS	375-92-8	Perfluoroheptanesulfonic acid	BSP	REC	109	%	70-132
OP91179-BS	1763-23-1	Perfluorooctanesulfonic acid	BSP	REC	102	%	68-136
OP91179-BS	68259-12-1	Perfluorononanesulfonic acid	BSP	REC	108	%	69-125
OP91179-BS	335-77-3	Perfluorodecanesulfonic acid	BSP	REC	96	%	59-134
OP91179-BS	754-91-6	PFOSA	BSP	REC	102	%	67-137
OP91179-BS	2355-31-9	MeFOSAA	BSP	REC	104	%	63-144
OP91179-BS	2991-50-6	EtFOSAA	BSP	REC	102	%	61-139
OP91179-BS	757124-72-4	4:2 Fluorotelomer sulfonate	BSP	REC	106	%	62-145
OP91179-BS	27619-97-2	6:2 Fluorotelomer sulfonate	BSP	REC	102	%	64-140
OP91179-BS	39108-34-4	8:2 Fluorotelomer sulfonate	BSP	REC	105	%	65-137
OP91179-MS	375-22-4	Perfluorobutanoic acid	MS	REC	86	%	71-135
OP91179-MS	2706-90-3	Perfluoropentanoic acid	MS	REC	85	%	69-132
OP91179-MS	307-24-4	Perfluorohexanoic acid	MS	REC	88	%	70-132
OP91179-MS	375-85-9	Perfluoroheptanoic acid	MS	REC	84	%	71-131
OP91179-MS	335-67-1	Perfluorooctanoic acid	MS	REC	85	%	69-133
OP91179-MS	375-95-1	Perfluorononanoic acid	MS	REC	87	%	72-129
OP91179-MS	335-76-2	Perfluorodecanoic acid	MS	REC	87	%	69-133
OP91179-MS	2058-94-8	Perfluoroundecanoic acid	MS	REC	84	%	64-136
OP91179-MS	307-55-1	Perfluorododecanoic acid	MS	REC	88	%	69-135
OP91179-MS	72629-94-8	Perfluorotridecanoic acid	MS	REC	87	%	66-139
OP91179-MS	376-06-7	Perfluorotetradecanoic acid	MS	REC	86	%	69-133
OP91179-MS	375-73-5	Perfluorobutanesulfonic acid	MS	REC	87	%	72-128
OP91179-MS	2706-91-4	Perfluoropentanesulfonic acid	MS	REC	92	%	73-123
OP91179-MS	355-46-4	Perfluorohexanesulfonic acid	MS	REC	88	%	67-130
OP91179-MS	375-92-8	Perfluoroheptanesulfonic acid	MS	REC	93	%	70-132
OP91179-MS	1763-23-1	Perfluorooctanesulfonic acid	MS	REC	87	%	68-136
OP91179-MS	68259-12-1	Perfluorononanesulfonic acid	MS	REC	94	%	69-125
OP91179-MS	335-77-3	Perfluorodecanesulfonic acid	MS	REC	84	%	59-134
OP91179-MS	754-91-6	PFOSA	MS	REC	89	%	67-137
OP91179-MS	2355-31-9	MeFOSAA	MS	REC	92	%	63-144
OP91179-MS	2991-50-6	EtFOSAA	MS	REC	88	%	61-139
OP91179-MS	757124-72-4	4:2 Fluorotelomer sulfonate	MS	REC	90	%	62-145
OP91179-MS	27619-97-2	6:2 Fluorotelomer sulfonate	MS	REC	88	%	64-140
OP91179-MS	39108-34-4	8:2 Fluorotelomer sulfonate	MS	REC	89	%	65-137
OP91179-MSD	375-22-4	Perfluorobutanoic acid	MSD	REC	91	%	71-135
OP91179-MSD	375-22-4	Perfluorobutanoic acid	MSD	RPD	10	%	30
OP91179-MSD	2706-90-3	Perfluoropentanoic acid	MSD	REC	90	%	69-132
OP91179-MSD	2706-90-3	Perfluoropentanoic acid	MSD	RPD	10	%	30
OP91179-MSD	307-24-4	Perfluorohexanoic acid	MSD	REC	94	%	70-132
OP91179-MSD	307-24-4	Perfluorohexanoic acid	MSD	RPD	10	%	30

* Sample used for QC is not from job FA95133

QC Evaluation: DOD QSM5.x Limits

Job Number: FA95133
Account: AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation
Collected: 04/25/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP91179-MSD	375-85-9	Perfluoroheptanoic acid	MSD	REC	90	%	71-131
OP91179-MSD	375-85-9	Perfluoroheptanoic acid	MSD	RPD	11	%	30
OP91179-MSD	335-67-1	Perfluorooctanoic acid	MSD	REC	90	%	69-133
OP91179-MSD	335-67-1	Perfluorooctanoic acid	MSD	RPD	10	%	30
OP91179-MSD	375-95-1	Perfluorononanoic acid	MSD	REC	93	%	72-129
OP91179-MSD	375-95-1	Perfluorononanoic acid	MSD	RPD	10	%	30
OP91179-MSD	335-76-2	Perfluorodecanoic acid	MSD	REC	93	%	69-133
OP91179-MSD	335-76-2	Perfluorodecanoic acid	MSD	RPD	11	%	30
OP91179-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	REC	90	%	64-136
OP91179-MSD	2058-94-8	Perfluoroundecanoic acid	MSD	RPD	11	%	30
OP91179-MSD	307-55-1	Perfluorododecanoic acid	MSD	REC	94	%	69-135
OP91179-MSD	307-55-1	Perfluorododecanoic acid	MSD	RPD	9	%	30
OP91179-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	REC	93	%	66-139
OP91179-MSD	72629-94-8	Perfluorotridecanoic acid	MSD	RPD	11	%	30
OP91179-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	REC	91	%	69-133
OP91179-MSD	376-06-7	Perfluorotetradecanoic acid	MSD	RPD	10	%	30
OP91179-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	REC	92	%	72-128
OP91179-MSD	375-73-5	Perfluorobutanesulfonic acid	MSD	RPD	10	%	30
OP91179-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	REC	97	%	73-123
OP91179-MSD	2706-91-4	Perfluoropentanesulfonic acid	MSD	RPD	9	%	30
OP91179-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	REC	94	%	67-130
OP91179-MSD	355-46-4	Perfluorohexanesulfonic acid	MSD	RPD	10	%	30
OP91179-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	REC	99	%	70-132
OP91179-MSD	375-92-8	Perfluoroheptanesulfonic acid	MSD	RPD	10	%	30
OP91179-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	REC	88	%	68-136
OP91179-MSD	1763-23-1	Perfluorooctanesulfonic acid	MSD	RPD	5	%	30
OP91179-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	REC	98	%	69-125
OP91179-MSD	68259-12-1	Perfluorononanesulfonic acid	MSD	RPD	8	%	30
OP91179-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	REC	90	%	59-134
OP91179-MSD	335-77-3	Perfluorodecanesulfonic acid	MSD	RPD	11	%	30
OP91179-MSD	754-91-6	PFOSA	MSD	REC	94	%	67-137
OP91179-MSD	754-91-6	PFOSA	MSD	RPD	9	%	30
OP91179-MSD	31506-32-8	MeFOSA	MSD	RPD	11	%	30
OP91179-MSD	2355-31-9	MeFOSAA	MSD	REC	96	%	63-144
OP91179-MSD	2355-31-9	MeFOSAA	MSD	RPD	8	%	30
OP91179-MSD	2991-50-6	EtFOSAA	MSD	REC	90	%	61-139
OP91179-MSD	2991-50-6	EtFOSAA	MSD	RPD	5	%	30
OP91179-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	REC	99	%	62-145
OP91179-MSD	757124-72-4	4:2 Fluorotelomer sulfonate	MSD	RPD	13	%	30
OP91179-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	REC	96	%	64-140
OP91179-MSD	27619-97-2	6:2 Fluorotelomer sulfonate	MSD	RPD	12	%	30
OP91179-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	REC	95	%	65-137
OP91179-MSD	39108-34-4	8:2 Fluorotelomer sulfonate	MSD	RPD	10	%	30

* Sample used for QC is not from job FA95133

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q810-IBLK	3Q59279.D	1	05/09/22	MV	n/a	n/a	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

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	109%	50-150%
	13C5-PFPeA	110%	50-150%
	13C5-PFHxA	110%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q810-IBLK	3Q59279.D	1	05/09/22	MV	n/a	n/a	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	110%	50-150%
	13C8-PFOA	111%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	112%	50-150%
	13C7-PFUnDA	112%	50-150%
	13C2-PFDoDA	111%	50-150%
	13C2-PFTeDA	110%	50-150%
	13C3-PFBS	109%	50-150%
	13C3-PFHxS	110%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	115%	50-150%
	d3-MeFOSA	115%	50-150%
	d3-MeFOSAA	109%	50-150%
	d5-EtFOSAA	113%	50-150%
	13C2-4:2FTS	109%	50-150%
	13C2-6:2FTS	112%	50-150%
	13C2-8:2FTS	119%	50-150%
	13C3-HFPO-DA	107%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q810-IBLK	3Q59351.D	1	05/10/22	MV	n/a	n/a	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

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	112%	50-150%
	13C5-PFPeA	112%	50-150%
	13C5-PFHxA	112%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q810-IBLK	3Q59351.D	1	05/10/22	MV	n/a	n/a	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	112%	50-150%
	13C8-PFOA	118%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	110%	50-150%
	13C7-PFUnDA	120%	50-150%
	13C2-PFDoDA	119%	50-150%
	13C2-PFTeDA	114%	50-150%
	13C3-PFBS	111%	50-150%
	13C3-PFHxS	115%	50-150%
	13C8-PFOS	109%	50-150%
	13C8-FOSA	129%	50-150%
	d3-MeFOSA	129%	50-150%
	d3-MeFOSAA	129%	50-150%
	d5-EtFOSAA	130%	50-150%
	13C2-4:2FTS	109%	50-150%
	13C2-6:2FTS	120%	50-150%
	13C2-8:2FTS	125%	50-150%
	13C3-HFPO-DA	112%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1278-IBLK	2Q91288.D	1	05/15/22	JB	n/a	n/a	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

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	101%	50-150%
	13C5-PFHxA	101%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q1278-IBLK	2Q91288.D	1	05/15/22	JB	n/a	n/a	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	101%	50-150%
	13C9-PFNA	102%	50-150%
	13C6-PFDA	103%	50-150%
	13C7-PFUnDA	101%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	111%	50-150%
	13C3-PFBS	99%	50-150%
	13C3-PFHxS	99%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSA	99%	50-150%
	d3-MeFOSAA	105%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	94%	50-150%
	13C3-HFPO-DA	89%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	5Q960.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

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	101%	50-150%
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	105%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	5Q960.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	106%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	111%	50-150%
	13C2-PFDoDA	103%	50-150%
	13C2-PFTeDA	88%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	109%	50-150%
	13C8-PFOS	110%	50-150%
	13C8-FOSA	101%	50-150%
	d3-MeFOSA	83%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	101%	50-150%
	13C2-6:2FTS	107%	50-150%
	13C2-8:2FTS	98%	50-150%
	13C3-HFPO-DA	100%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	3Q59294.D	1	05/09/22	MV	05/04/22	OP91059	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

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	109%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	108%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MB	3Q59294.D	1	05/09/22	MV	05/04/22	OP91059	S3Q810

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	110%	50-150%
	13C9-PFNA	109%	50-150%
	13C6-PFDA	109%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	100%	50-150%
	13C3-PFBS	107%	50-150%
	13C3-PFHxS	108%	50-150%
	13C8-PFOS	107%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSAA	112%	50-150%
	d5-EtFOSAA	112%	50-150%
	13C2-4:2FTS	108%	50-150%
	13C2-6:2FTS	114%	50-150%
	13C2-8:2FTS	119%	50-150%
	13C3-HFPO-DA	96%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-MB	2Q91318.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

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	83%	50-150%
	13C5-PFPeA	86%	50-150%
	13C5-PFHxA	87%	50-150%

Method Blank Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-MB	2Q91318.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	89%	50-150%
	13C8-PFOA	90%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	91%	50-150%
	13C2-PFDoDA	93%	50-150%
	13C2-PFTeDA	102%	50-150%
	13C3-PFBS	85%	50-150%
	13C3-PFHxS	85%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	88%	50-150%
	d3-MeFOSA	86%	50-150%
	d3-MeFOSAA	100%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	85%	50-150%
	13C2-6:2FTS	87%	50-150%
	13C2-8:2FTS	85%	50-150%
	13C3-HFPO-DA	72%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q18-IBLK	5Q953.D	1	05/06/22	NG	n/a	n/a	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91059-BS, OP91059-DUP, OP91059-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	107%	50-150%
	13C5-PFPeA	108%	50-150%
	13C5-PFHxA	110%	50-150%

Instrument Blank

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q18-IBLK	5Q953.D	1	05/06/22	NG	n/a	n/a	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

OP91059-BS, OP91059-DUP, OP91059-MS

CAS No.	ID Standard Recoveries		Limits
	13C4-PFHpA	111%	50-150%
	13C8-PFOA	115%	50-150%
	13C9-PFNA	115%	50-150%
	13C6-PFDA	113%	50-150%
	13C7-PFUnDA	110%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	113%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	114%	50-150%
	13C8-FOSA	118%	50-150%
	d3-MeFOSAA	108%	50-150%
	d5-EtFOSAA	115%	50-150%
	13C2-4:2FTS	105%	50-150%
	13C2-6:2FTS	108%	50-150%
	13C2-8:2FTS	104%	50-150%
	13C3-HFPO-DA	107%	50-150%

Blank Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-BS	5Q959.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0760	95	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0750	94	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0747	93	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0746	93	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0741	93	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0766	96	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0754	94	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0785	98	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0762	95	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0666	83	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0751	94	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0765	96	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0762	95	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0744	93	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0780	98	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0745	93	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0767	96	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0759	95	53-142
754-91-6	PFOSA	0.08	0.0742	93	67-137
31506-32-8	MeFOSA	0.08	0.0718	90	68-141
2355-31-9	MeFOSAA	0.08	0.0666	83	65-136
2991-50-6	EtFOSAA	0.08	0.0663	83	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0902	113	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0890	111	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0757	95	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0739	92	60-140
919005-14-4	ADONA	0.08	0.0741	93	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0820	103	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0781	98	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	50-150%
	13C5-PFPeA	105%	50-150%
	13C5-PFHxA	108%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-BS	5Q959.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	108%	50-150%
	13C8-PFOA	106%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	108%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	108%	50-150%
	13C2-PFTeDA	90%	50-150%
	13C3-PFBS	110%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	111%	50-150%
	13C8-FOSA	99%	50-150%
	d3-MeFOSA	71%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	111%	50-150%
	13C2-4:2FTS	110%	50-150%
	13C2-6:2FTS	112%	50-150%
	13C2-8:2FTS	108%	50-150%
	13C3-HFPO-DA	107%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-BS	2Q91317.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

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	9.8	98	69-132
307-24-4	Perfluorohexanoic acid	10	10.2	102	70-132
375-85-9	Perfluoroheptanoic acid	10	9.7	97	71-131
335-67-1	Perfluorooctanoic acid	10	9.8	98	69-133
375-95-1	Perfluorononanoic acid	10	10	100	72-129
335-76-2	Perfluorodecanoic acid	10	10.1	101	69-133
2058-94-8	Perfluoroundecanoic acid	10	9.7	97	64-136
307-55-1	Perfluorododecanoic acid	10	10	100	69-135
72629-94-8	Perfluorotridecanoic acid	10	9.9	99	66-139
376-06-7	Perfluorotetradecanoic acid	10	9.9	99	69-133
375-73-5	Perfluorobutanesulfonic acid	10	10	100	72-128
2706-91-4	Perfluoropentanesulfonic acid	10	10.5	105	73-123
355-46-4	Perfluorohexanesulfonic acid	10	10.3	103	67-130
375-92-8	Perfluoroheptanesulfonic acid	10	10.9	109	70-132
1763-23-1	Perfluorooctanesulfonic acid	10	10.2	102	68-136
68259-12-1	Perfluorononanesulfonic acid	10	10.8	108	69-125
335-77-3	Perfluorodecanesulfonic acid	10	9.6	96	59-134
754-91-6	PFOSA	10	10.2	102	67-137
31506-32-8	MeFOSA	10	9.8	98	60-140
2355-31-9	MeFOSAA	10	10.4	104	63-144
2991-50-6	EtFOSAA	10	10.2	102	61-139
757124-72-4	4:2 Fluorotelomer sulfonate	10	10.6	106	62-145
27619-97-2	6:2 Fluorotelomer sulfonate	10	10.2	102	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	10	10.5	105	65-137
13252-13-6	HFPO-DA (GenX)	10	11.2	112	60-140
919005-14-4	ADONA	10	9.1	91	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	10	9.2	92	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	10	9.5	95	60-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	93%	50-150%
	13C5-PFHxA	93%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-BS	2Q91317.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFHpA	95%	50-150%
	13C8-PFOA	93%	50-150%
	13C9-PFNA	95%	50-150%
	13C6-PFDA	95%	50-150%
	13C7-PFUnDA	95%	50-150%
	13C2-PFDoDA	98%	50-150%
	13C2-PFTeDA	106%	50-150%
	13C3-PFBS	89%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	87%	50-150%
	13C8-FOSA	91%	50-150%
	d3-MeFOSA	89%	50-150%
	d3-MeFOSAA	104%	50-150%
	d5-EtFOSAA	106%	50-150%
	13C2-4:2FTS	88%	50-150%
	13C2-6:2FTS	89%	50-150%
	13C2-8:2FTS	87%	50-150%
	13C3-HFPO-DA	77%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MS	5Q964.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-22	5Q963.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	Compound	FA95101-22 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0392		0.167	0.200	96	73-129
2706-90-3	Perfluoropentanoic acid	0.0912		0.167	0.249	95	72-129
307-24-4	Perfluorohexanoic acid	0.161		0.167	0.321	96	72-129
375-85-9	Perfluoroheptanoic acid	0.0430		0.167	0.198	93	72-130
335-67-1	Perfluorooctanoic acid	0.0829		0.167	0.222	83	71-133
375-95-1	Perfluorononanoic acid	0.0083	U	0.167	0.159	95	69-130
335-76-2	Perfluorodecanoic acid	0.0083	U	0.167	0.158	95	71-129
2058-94-8	Perfluoroundecanoic acid	0.0083	U	0.167	0.163	98	69-133
307-55-1	Perfluorododecanoic acid	0.0083	U	0.167	0.161	97	72-134
72629-94-8	Perfluorotridecanoic acid	0.0083	U	0.167	0.145	87	65-144
376-06-7	Perfluorotetradecanoic acid	0.0083	U	0.167	0.159	95	71-132
375-73-5	Perfluorobutanesulfonic acid	0.0461		0.167	0.203	94	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.0565		0.167	0.206	90	71-127
355-46-4	Perfluorohexanesulfonic acid	0.494		0.167	0.640	88	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.0254		0.167	0.185	96	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.334		0.167	0.478	86	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	0.155	93	53-142
754-91-6	PFOSA	0.0083	U	0.167	0.160	96	67-137
31506-32-8	MeFOSA	0.017	U	0.167	0.149	89	68-141
2355-31-9	MeFOSAA	0.017	U	0.167	0.139	83	65-136
2991-50-6	EtFOSAA	0.017	U	0.167	0.123	74	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.017	U	0.167	0.187	112	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.0065	J	0.167	0.195	113	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.017	U	0.167	0.160	96	67-138
13252-13-6	HFPO-DA (GenX)	0.017	U	0.167	0.154	92	60-140
919005-14-4	ADONA	0.017	U	0.167	0.160	96	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.017	U	0.167	0.162	97	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.017	U	0.167	0.171	103	60-140

CAS No.	ID Standard Recoveries	MS	FA95101-22	Limits
	13C4-PFBA	96%	100%	50-150%
	13C5-PFPeA	96%	100%	50-150%
	13C5-PFHxA	96%	102%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-MS	5Q964.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-22	5Q963.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries	MS	FA95101-22	Limits
	13C4-PFHpA	96%	102%	50-150%
	13C8-PFOA	106%	123%	50-150%
	13C9-PFNA	96%	105%	50-150%
	13C6-PFDA	102%	110%	50-150%
	13C7-PFUnDA	99%	102%	50-150%
	13C2-PFDoDA	94%	100%	50-150%
	13C2-PFTeDA	78%	92%	50-150%
	13C3-PFBS	105%	108%	50-150%
	13C3-PFHxS	99%	102%	50-150%
	13C8-PFOS	97%	102%	50-150%
	13C8-FOSA	97%	105%	50-150%
	d3-MeFOSAA	97%	109%	50-150%
	d5-EtFOSAA	100%	112%	50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	98%		50-150%
	13C3-HFPO-DA	94%		50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-MS	2Q91320.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278
OP91179-MSD	2Q91321.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278
FA95133-3	2Q91319.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

CAS No.	Compound	FA95133-3 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		10.3	8.8	86	10.7	9.7	91	10	71-135/30
2706-90-3	Perfluoropentanoic acid	1.1 U		10.3	8.7	85	10.7	9.6	90	10	69-132/30
307-24-4	Perfluorohexanoic acid	1.1 U		10.3	9.1	88	10.7	10.1	94	10	70-132/30
375-85-9	Perfluoroheptanoic acid	1.1 U		10.3	8.6	84	10.7	9.6	90	11	71-131/30
335-67-1	Perfluorooctanoic acid	1.1 U		10.3	8.7	85	10.7	9.6	90	10	69-133/30
375-95-1	Perfluorononanoic acid	1.1 U		10.3	9.0	87	10.7	9.9	93	10	72-129/30
335-76-2	Perfluorodecanoic acid	1.1 U		10.3	8.9	87	10.7	9.9	93	11	69-133/30
2058-94-8	Perfluoroundecanoic acid	1.1 U		10.3	8.6	84	10.7	9.6	90	11	64-136/30
307-55-1	Perfluorododecanoic acid	1.1 U		10.3	9.1	88	10.7	10.0	94	9	69-135/30
72629-94-8	Perfluorotridecanoic acid	1.1 U		10.3	8.9	87	10.7	9.9	93	11	66-139/30
376-06-7	Perfluorotetradecanoic acid	1.1 U		10.3	8.8	86	10.7	9.7	91	10	69-133/30
375-73-5	Perfluorobutanesulfonic acid	1.1 U		10.3	8.9	87	10.7	9.8	92	10	72-128/30
2706-91-4	Perfluoropentanesulfonic acid	1.1 U		10.3	9.5	92	10.7	10.4	97	9	73-123/30
355-46-4	Perfluorohexanesulfonic acid	1.1 U		10.3	9.1	88	10.7	10.1	94	10	67-130/30
375-92-8	Perfluoroheptanesulfonic acid	1.1 U		10.3	9.6	93	10.7	10.6	99	10	70-132/30
1763-23-1	Perfluorooctanesulfonic acid	1.1 U		10.3	8.9	87	10.7	9.4	88	5	68-136/30
68259-12-1	Perfluorononanesulfonic acid	1.1 U		10.3	9.7	94	10.7	10.5	98	8	69-125/30
335-77-3	Perfluorodecanesulfonic acid	1.1 U		10.3	8.6	84	10.7	9.6	90	11	59-134/30
754-91-6	PFOSA	1.1 U		10.3	9.2	89	10.7	10.1	94	9	67-137/30
31506-32-8	MeFOSA	1.1 U		10.3	8.9	87	10.7	9.9	93	11	60-140/30
2355-31-9	MeFOSAA	1.1 U		10.3	9.5	92	10.7	10.3	96	8	63-144/30
2991-50-6	EtFOSAA	1.1 U		10.3	9.1	88	10.7	9.6	90	5	61-139/30
757124-72-4	4:2 Fluorotelomer sulfonate	1.1 U		10.3	9.3	90	10.7	10.6	99	13	62-145/30
27619-97-2	6:2 Fluorotelomer sulfonate	1.1 U		10.3	9.1	88	10.7	10.3	96	12	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	1.1 U		10.3	9.2	89	10.7	10.2	95	10	65-137/30
13252-13-6	HFPO-DA (GenX)	1.1 U		10.3	9.6	93	10.7	11.2	105	15	60-140/30
919005-14-4	ADONA	1.1 U		10.3	8.1	79	10.7	9.0	84	11	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	1.1 U		10.3	8.1	79	10.7	9.0	84	11	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	1.1 U		10.3	8.6	84	10.7	9.5	89	10	60-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA95133-3	Limits
	13C4-PFBA	95%	98%	83%	50-150%
	13C5-PFPeA	101%	103%	89%	50-150%
	13C5-PFHxA	101%	103%	91%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91179-MS	2Q91320.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278
OP91179-MSD	2Q91321.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278
FA95133-3	2Q91319.D	1	05/15/22	JB	05/12/22	OP91179	S2Q1278

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-3

CAS No.	ID Standard Recoveries	MS	MSD	FA95133-3	Limits
	13C4-PFHpA	103%	105%	94%	50-150%
	13C8-PFOA	102%	104%	94%	50-150%
	13C9-PFNA	103%	106%	96%	50-150%
	13C6-PFDA	105%	107%	98%	50-150%
	13C7-PFUnDA	105%	105%	95%	50-150%
	13C2-PFDoDA	105%	107%	97%	50-150%
	13C2-PFTeDA	115%	119%	105%	50-150%
	13C3-PFBS	97%	100%	91%	50-150%
	13C3-PFHxS	98%	99%	90%	50-150%
	13C8-PFOS	97%	103%	88%	50-150%
	13C8-FOSA	70%	80%	67%	50-150%
	d3-MeFOSA	58%	65%	50%	50-150%
	d3-MeFOSAA	111%	115%	104%	50-150%
	d5-EtFOSAA	116%	118%	110%	50-150%
	13C2-4:2FTS	97%	98%	89%	50-150%
	13C2-6:2FTS	96%	98%	91%	50-150%
	13C2-8:2FTS	96%	99%	91%	50-150%
	13C3-HFPO-DA	85%	83%	72%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-DUP	5Q966.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-23	5Q965.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	Compound	FA95101-23 ug/l	Q	DUP ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.017 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0083 U		ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0083 U		ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0083 U		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0083 U		ND		nc	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	0.0083 U		ND		nc	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	FA95101-23	Limits
	13C4-PFBA	89%	101%	50-150%
	13C5-PFPeA	88%	101%	50-150%
	13C5-PFHxA	91%	103%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA95133
Account: MEFLOR AECOM, Inc
Project: NASA KSC, PFAS SA & Mitigation

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP91059-DUP	5Q966.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18
FA95101-23	5Q965.D	1	05/06/22	NG	05/04/22	OP91059	S5Q18

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.3 B-15

FA95133-1, FA95133-2

CAS No.	ID Standard Recoveries	DUP	FA95101-23	Limits
	13C4-PFHpA	93%	105%	50-150%
	13C8-PFOA	104%	122%	50-150%
	13C9-PFNA	94%	108%	50-150%
	13C6-PFDA	91%	106%	50-150%
	13C7-PFUnDA	93%	102%	50-150%
	13C2-PFDoDA	89%	102%	50-150%
	13C2-PFTeDA	80%	94%	50-150%
	13C3-PFBS	96%	109%	50-150%
	13C3-PFHxS	95%	108%	50-150%
	13C8-PFOS	93%	106%	50-150%
	13C8-FOSA	93%	108%	50-150%
	d3-MeFOSAA	93%	106%	50-150%
	d5-EtFOSAA	92%	112%	50-150%
	13C2-4:2FTS	89%		50-150%
	13C2-6:2FTS	95%		50-150%
	13C2-8:2FTS	82%		50-150%
	13C3-HFPO-DA	85%		50-150%

* = Outside of Control Limits.

ATTACHMENT B

SOIL BORING LOG

BORING NUMBER MTA-SB0008

AECOM

TOTAL DEPTH 55 FT BGS
PAGE 1 OF 1

CLIENT NASA
PROJECT NAME Kennedy Space Center
PROJECT NUMBER KSC
SITE NAME Morpheus Testing Area
DATE STARTED 04/22/2022 **COMPLETED** 04/22/2022
SURVEYING BY
DRILLING CONTRACTOR Environmental Drilling Service
ON **Ground Elevation** N/A
DRILLING EQUIPMENT Geoprobe
EASTING N/A **NORTHING** N/A
DRILLING METHOD Direct push
HOLE DIAMETER 2.25 ft
LOGGED BY Chris Marshall **CHECKED BY** N/A
CASING TYPE N/A

DEPTH (ft)	SAMPLE TYPE	RECOVERY %	TESTS AND ANALYSIS	U.S.C.S.	GRAPHIC LOG		MATERIAL DESCRIPTION
0			PID = 0 ppm	SP		0.00	Poorly graded sand (SP), fine, subangular - 10YR 7/1 (light gray), dry - no odor, no staining - non-cohesive, very loose
5	HA	100	PID = 0.2 ppm PID = 0 ppm	SP		2.00	Poorly graded sand with silt (SP-SM), very fine, subangular, 5-15% silt - 10YR 2/2 (very dark brown / dusky yellowish brown), dry - no odor, no staining - non-cohesive, loose
10	DP	80	PID = 0 ppm PID = 0.3 ppm	SP OL		5.00 8.50	Poorly graded sand (SP), fine, subangular - 10YR 5/2 (grayish brown), wet - no odor, no staining - non-cohesive
15	DP	64	PID = 0.6 ppm PID = 0 ppm	SP		12.50	Organic soil (OL), Trace roots - 10YR 2/1 (black), wet - no odor, no staining - non-cohesive, medium dense
20	DP	50	PID = 0 ppm PID = 0 ppm	SP		15.00	Poorly graded sand (SP), very fine, subangular - 10YR 5/6 (yellowish brown), wet - no odor, no staining - non-cohesive, loose
25	DP	64	PID = 0 ppm PID = 0 ppm PID = 0.1 ppm	GP GP		20.00 23.25	Poorly graded sand (SP), very fine, subangular, <10% clay - 10YR 3/2 (very dark grayish brown), wet - no odor, no staining - non-cohesive, loose
30	DP	80	PID = 0 ppm PID = 0 ppm				Poorly graded gravel with sand (GP), medium to coarse, subrounded, 10-20% fine sand, <10% clay - 10YR 6/1 (gray), wet - no odor, no staining - non-cohesive, loose
35	DP	0	PID = 0 ppm	SM		35.00	Poorly graded gravel (GP), coarse, subrounded, <10% fine sand, 25-30 litho based on material removed from jammed core sleeve, 30-35 litho based on material at both ends of jammed core barrel. - 10YR 6/1 (gray), wet - no odor, no staining - non-cohesive, loose
40	DP	90	PID = 0 ppm PID = 0 ppm PID = 0.1 ppm				Silty sand (SM), very fine, poorly graded, subrounded, 10-20% silt, <10% subrounded, medium gravel, Gravel is composed of shell fragments - 5Y 5/1 (gray), wet - no odor, no staining - non-cohesive, loose
45	DP	80	PID = 0 ppm PID = 0 ppm PID = 0 ppm				
50	DP	100	PFAS, TOCfraction (46-48 ft bgs) PID = 0.1 ppm PID = 0 ppm	CL		47.50	Lean clay (CL), <10% subrounded, medium gravel, <10% subrounded, medium gravel, Gravel is composed of shell fragments - 10Y 5/1 (greenish gray), wet - no odor, no staining - cohesive, medium stiff
55	DP	96	PID = 0 ppm PID = 0 ppm PID = 0 ppm	SM		50.50	Silty sand (SM), very fine, poorly graded, subrounded, 10-20% silt, <10% subrounded, medium gravel, Gravel is composed of shell fragments - 5Y 5/1 (gray), wet - no odor, no staining - non-cohesive, loose

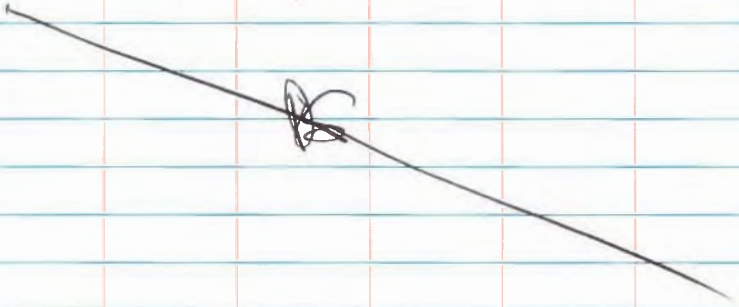
Bottom of borehole at 55 feet.

ATTACHMENT C

FIELD NOTES

0730- Austin Slaten onsite at SLF.
-Check in and get radio.
Weather: Slight drizzle, cool, 53°F.
0800- Collect MTA-SW0001-001.0-20220208
0815- Collect MTA-SB0001-000.5-20220208
0820- Collect MTA-SB0001-002.0-20220208
0830- Collect MTA-SB0002-000.5-20220208
0835- Collect MTA-SB0002 002.0-20220208
0845- Collect MTA-SB0004-000.5-20220208
0850- Collect MTA-SB0004-002.0-20220208
0855- Collect MTA-SB0003-000.5-20220208
0900- Collect MTA-SB0003-002.0-20220208
0915- Collect MTA-SB0005-000.5-20220208
0920- Collect MTA-SB0005-002.0-20220208
0925- Collect MTA-SB0006-000.5-20220208
0930- Collect MTA-SB0006-002.0-20220208
0940- Collect MTA-SB0007-000.5-20220208
0945- Collect MTA-SB0007-002.0-20220208
1000- Collect MTA-GT0001-000.1-20220208
-Finished sampling Morpheus site.
Return Radio & check out at SLF.
1015- Head to Fire Station 2 to finish up sampling.
1022- Arrive at Fire Station 2.

1030 - Collect FS2-SB0053-000.5-20220208
1035 - Collect FS2-SB0053-002.0-20220208
1045 - Collect FS2-SB0054-000.5-20220208
1050 - Collect FS2-SB0054-002.0-20220208
1105 - Collect FS2-SB0055-000.5-20220208
1110 - Collect FS2-SB0055-002.0-20220208
1120 - Collect FS2-SB0056-000.5-20220208
1125 - Collect FS2-SB0056-002.0-20220208
1150 - Collect FS2-CT0001-000.1-20220208
1205 - Collect FS2-CT0002-000.1-20220208
- Head to VAB North to collect concrete sample
1215 - Collect VABN-CT0001-000.1-20220208
- finished collecting all samples
1245 - Collect PFAS-FB01-20220208
1305 - DS offsite for SGS in Orlando.
1420 - Drop samples off at SGS.



4/22/22 MTA-SB0008 PFAS SAMP CM/ND

07:45 CNDS MARSHALL & NICK DESANTIS MEET EDS DRILL CREW IN TOWN / FLIGHT CONTROL PARKING LOT FOR RADIO, INSTRUCTIONS, AND PONTE VEDRA CAFE KEY.

08:20 CREW ONSITE AT MTA-SB0008 LOCATION. CM CONDUCTS TAILGATE MEETING AND REVIEWS SCOPE OF WORK, WHICH IS ADVANCE & SOIL BORING WITH CONTINUOUS LOGGING AND SCREENING.

08:40 CM CALIBRATES PID, ND COLLECTS SOILS DURING POST HOLING TO CLEAN BOREHOLE

09:27 DESCRIBE 1ST CORE 5-10' CORE

11:09 LOGGING CONTINUED THROUGH 40-45' CORE

12:42 REFUSAL AT 55' BLS

13:00 QUICK LUNCH.

13:30 RETURN TO GROUT BOREHOLE

14:15 BORE HOLE GROUTED. CM COLLECTS SOIL SAMPLE ABOVE CVD1 FOR PFAS AND TOC PER MOS.

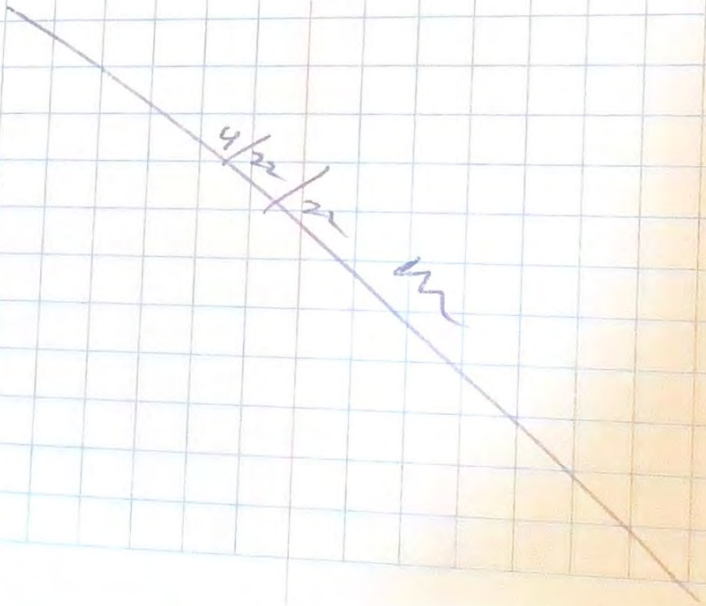
MTA-SB0008 CM/ND

4/22/22 PFAS SAMP

SOIL COC, PID SCREENING, AND SOIL BORING LOGS COMPLETED DIGITALLY.

1500 SITE SECURED, MOBILIZE OFFSITE AND RETURN RADIO AND KEY TO INT TOWER. CM/ND ALSO RESPONDED WITH INT DRILLERS AT VABV-SB0001 IDW LOCATION TO ADD MTA IDW TO DRUM SPILL.

15:30 COMPLETE LOGGING PAPERWORK. ALL OFFSITE.



ATTACHMENT D

PHOTO LOG

AECOM	PHOTOGRAPHIC LOG
Project: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: Morpheus Test Area	**Site Location:** Kennedy Space Center, FL

Photo No. 1	
Date: 04/22/22	
Location: Morpheus Test Area	
Description: MTA-SB0008	

Photo No. 2	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SW0001	

AECOM	PHOTOGRAPHIC LOG
Project: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: Morpheus Test Area	**Site Location:** Kennedy Space Center, FL

Photo No. 3	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0001	

Photo No. 4	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0002	

AECOM	PHOTOGRAPHIC LOG
Project: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: Morpheus Test Area	**Site Location:** Kennedy Space Center, FL

Photo No. 5	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0004	

Photo No. 6	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0003	

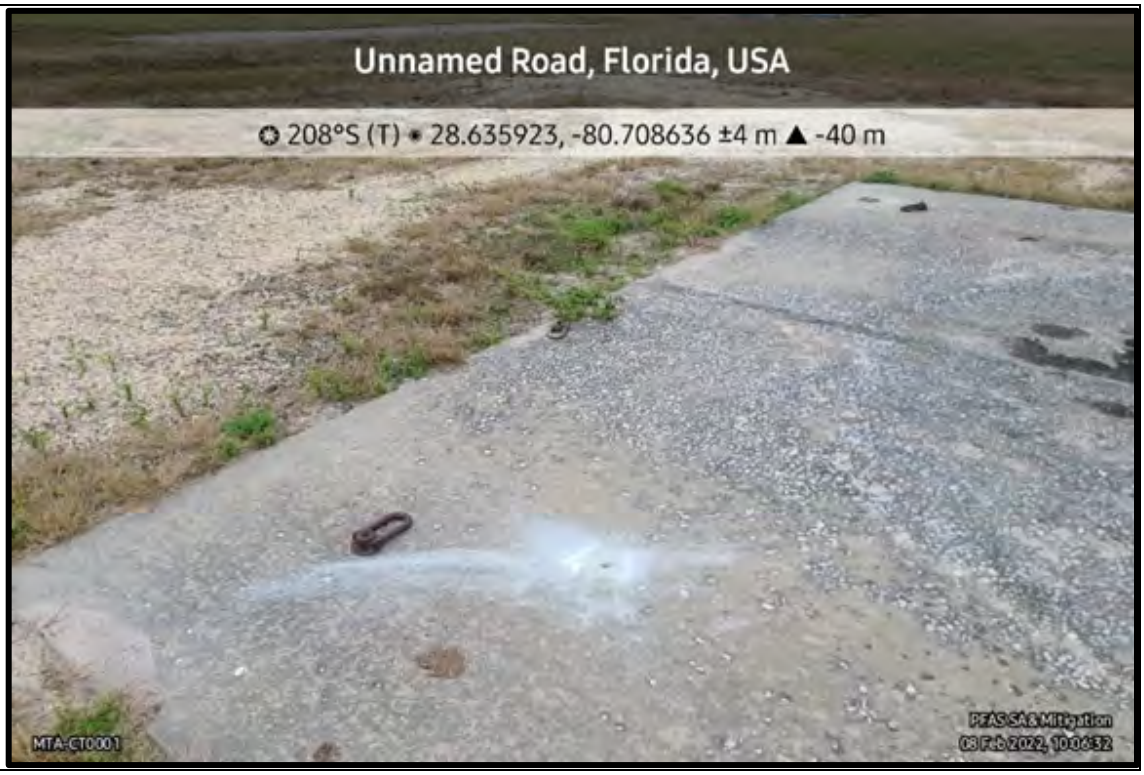
AECOM	PHOTOGRAPHIC LOG
Project: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: Morpheus Test Area	**Site Location:** Kennedy Space Center, FL

Photo No. 7	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0005	

Photo No. 8	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB006	

AECOM	PHOTOGRAPHIC LOG
Project: PFAS Site Assessment and Mitigation	**Project Number:** 80KSC021F0096
Site Name: Morpheus Test Area	**Site Location:** Kennedy Space Center, FL

Photo No. 9	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-SB0007	

Photo No. 10	
Date: 02/08/22	
Location: Morpheus Test Area	
Description: MTA-CT0001	

ATTACHMENT E

INVESTIGATION DERIVED WASTE INVENTORY

Site	Generation Date	Media	Source	% Full	Pallet ID	Drum/Tank ID Number	Contact	Location of Drums/Tanks	IDW Origination	pH	Concentrations (AQ=µg/L; SO= mg/kg)	Tie Down Strap Yes/No
VABN, MTA, and A3RB	12/8/21-3/22/22	Soil	VABN- SB0001, VABN-SB0002, A3RB-SB0047, MTA-SB0008	30%	225175	220928	Megan Garcia (407) 488-7726	VABN	Soil cuttings from soil cores	NA	**Lab Report FA95131 (IDW-20220425-03)** 8260D= All analytes non-detect 8270E= All analytes non-detect Metals Sb= 0.57 U As= 2.21 Ba= 5.51 Be= 0.22 U Cd= 0.22 U Cr= 4.4 Pb= 0.44 U Hg= 0.010 I Ni= 0.93 I Se= 1.1 U Ag= 0.39 I Tl= 0.48 U **Lab Report FA95133 (IDW-20220425-03)** PFHpA = 0.00055 U PFHxS = 0.00055 U PFHxA = 0.00055 U PFBS = 0.00055 U PFOA = 0.00055 U MeFOSAA = 0.00055 U EtFOSAA = 0.00055 U PFOS = 0.00055 U PFAS = 0.00055 U	Yes
VABN, FS2, and A3RB	12/8/2021-1/27/22	Liquid	VABN- DPT0003 , FS2-DPT0006, FS2-DPT0007, A3RB-DPT0008, A3RB-DPT0009	80%	225175	220927	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	7.14	**Lab Report FA95131 (IDW-20220425-01)** 8260D= All analytes non-detect 8270E= All analytes non-detect Metals Sb= 1.0 U As= 1.3 U Ba= 5.4 I Be= 0.20 U Cd= 0.20 U Cr= 11.6 Pb= 10 U Hg= 0.030 U Ni= 7.7 I Se= 3.0 U Ag= 0.90 I Tl= 1.4 U **Lab Report FA95133 (IDW-20220425-01)** PFHpA = 0.021 U PFHxS = 0.232 PFHxA = 0.0240 J PFBS = 0.021 U PFOA = 0.021 U MeFOSAA = 0.042 U EtFOSAA = 0.042 U PFOS = 0.101 PFAS = 0.122	Yes
VABN	12/8/2021-1/27/22	Liquid	VABN- DPT0004, VABN-DPT0005, VABN-DPT0006, VABN- DPT0007	80%	225175	226070	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	7.03		Yes
VABN, FS2, and A3RB	12/8/2021-1/27/22	Liquid	VABN-DPT0008, A3RB-DPT0010, A3RB-DPT001, A3RB-DPT0012, FS2-DPT0008	80%	225175	226069	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	7.09		Yes
FS2 and VABN	2/1/2022-2/23/22	Liquid	FS2-DPT0015, FS2-DPT0013, VABN-DPT0009	80%	226068	226066	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	7.06		Yes
FS2	01/27/22	Liquid	FS2-DPT0012, FS2-DPT0014, FS2-DPT0015	80%	226068	226065	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	7.13	**Lab Report FA95131 (IDW-20220425-02)** 8260D = All analytes non-detect 8270E= All analytes non-detect Metals Sb= 1.0 U As= 2.5 I Ba= 30.1 I Be= 0.20 I Cd= 0.20 U Cr= 72.6 Pb= 3.2 I Hg= 0.030 U Ni= 21.6 I Se= 2.9 U Ag= 0.70 I Tl= 1.4 U **Lab Report FA95133 (IDW-20220425-02)** PFHpA = 0.021 U PFHxS = 0.115 PFHxA = 0.021 U PFBS = 0.021 U PFOA = 0.0612 MeFOSAA = 0.042 U EtFOSAA = 0.042 U PFOS = 0.306 PFAS = 0.3672	Yes
FS2 and VABN	2/1/2022-3/30/22	Liquid	FS2-DPT0013, VABN-DPT0009, A3RB-DPT0013, A3RB-DPT0014, A3RB-DPT0015	80%	226068	226067	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	6.74		Yes
A3RB	03/30/22	Liquid	A3RB-DPT0015, A3RB-DPT0016	30%	226068	226064	Megan Garcia (407) 488-7726	VABN	Groundwater DPT (purge and decon)	6.77		Yes
A3RB	5/23/22-5/24/22	Liquid	A3RB-MW0003-A3RB-MW0010	80%	226847	226850	Megan Garcia (407) 488-7726	CCF	Groundwater MW Install (purge and decon)	7.78	**Lab Report FA98419 (IDW-20220825-02)** 8260D Acetone= 125 All other analytes non-detect 8270E= All analytes non-detect Metals Sb= 1.0 U As= 1.3 U Ba= 1.0 I Be= 0.20 U Cd= 0.20 U Cr= 2.0 I Pb= 1.1 U	Yes

A3RB	5/24/22 - 6/13/22	Liquid	A3RB-MW0001-A3RB-MW0010; A3RB-DPT0017 - AR3B-DPT0019	80%	226847	226849	Megan Garcia (407) 488-7726	CCF	Groundwater MW Install, Sampling, and DPT (purge and decon)	8.13	(Continued) Hg= 0.038 I Ni= 1.9 I Se= 2.9 U Ag= 0.70 U Tl= 1.4 U **Lab Report FA98418 (IDW-20220825-02)** PFHpA = 0.0030 J PFHxS = 0.449 PFHxA = 0.0150 PFBS = 0.341 PFOA = 0.0083 MeFOSAA = 0.0080 U EtFOSAA = 0.0080 U PFOS = 0.467 PFAS = 0.4753	Yes
A3RB	06/13/22	Soil	A3RB-SB0048	10%	226847	226848	Megan Garcia (407) 488-7726	CCF	Soil cuttings from soil cores	NA	**Lab Report FA98419 (IDW-20220825-01)** 8260D= All analytes non-detect 8270E= All analytes non-detect Metals Sb= 0.61 U As= 0.83 I Ba= 3.7 I Be= 0.12 U Cd= 0.23 U Cr= 4.3 I Pb= 0.47 U Hg= 0.0042 U Ni= 0.44 I Se= 1.1 U Ag= 0.19 U Tl= 0.26 U **Lab Report FA98418 (IDW-20220825-01)** PFHpA = 0.00057 U PFHxS = 0.00080 J PFHxA = 0.00057 U PFBS = 0.00057 U PFOA = 0.00057 U MeFOSAA = 0.00057 U EtFOSAA = 0.00057 U PFOS = 0.00033 J PFAS = 0.0009	Yes

Notes:
µg/L = micrograms per liter
mg/kg - milligrams per kilogram
U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit
I = The analyte was detected between method detection limit and practical quantitation level
Bold = Analyte was detected
NA = Not applicable
DPT = Direct Push Technology

PFOA = Perfluorooctanoic acid
PFSA = Perfluoroalkylsulfonates
MeFOSAA = Perfluorooctanesulfonamidoacetic acids
EtFOSAA = Perfluorooctanesulfonamidoacetic acids
PFOS = Perfluorooctanesulfonic acid
PFAS = PFOA + PFOS
PFNA = Perfluorononanoic acid
PFBS = Perfluorobutanesulfonic acid
PFHxS = Perfluorohexanesulfonic acid
HFPO-DA = Hexafluoropropylene oxide dimer acid
PFHpA = Perluoroheptanoic acid
PFHxA = Perfluorohexanoic acid