LAUNCH COMPLEX 39A OPERATIONS SUPPORT BUILDING AREA
SWMU 111
YEAR 3 AIR SPARGE SYSTEM
PERFORMANCE MONITORING REPORT
KENNEDY SPACE CENTER, FLORIDA

Prepared for:



National Aeronautics and Space Administration
Kennedy Space Center, Florida

December 2024
Revision 0

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December 2024

PROFESSIONAL ENGINEER CERTIFICATION

This Air Sparge System Performance Monitoring Report for the Launch Complex 39A Operations Support Building Area, Solid Waste Management Unit 111, at Kennedy Space Center, Florida, dated December 2024, has been prepared by or under the responsible supervision, direction, or control of the Florida-licensed professional engineer whose signature and seal appear below. This document and the work described herein complies with standard professional practices and requirements of Chapter 62-780, Florida Administrative Code (F.A.C.) and other rules of the Florida Department of Environmental Protection according to Rule 62-780.400(1), F.A.C.



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ABBREVIATIONS AND ACRONYMS

AOSB	Launch Complex 39A Operations Support Building Area
AS	Air Sparge
bls	below land surface
cDCE	cis-1,2-Dichloroethene
cfm	cubic feet per minute
COC	Contaminant of Concern
CS	Confirmation Sampling
CSWP	Confirmation Sampling Work Plan
DO	Dissolved Oxygen
DPT	Direct Push Technology
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
HDPE	High-Density Polyethylene
IDIQ	Indefinite Delivery Indefinite Quantity
IDW	Investigation-Derived Waste
IM	Interim Measure
IWP	Implementation Work Plan
KSC	Kennedy Space Center
KSCRT	Kennedy Space Center Remediation Team
LC39A	Launch Complex 39A
LOC	Location of Concern
LTM	Long-Term Monitoring
MCL	maximum contaminant level
mg/L	milligrams per liter
mV	millivolt
NADC	Natural Attenuation Default Concentration
NASA	National Aeronautics and Space Administration
ng/L	nanogram per liter

ACRONYMS AND ABBREVIATIONS (CONTINUED)

NTU	nephelometric unit
OFW	Outstanding Florida Waters
O&M	Operation and Maintenance
ORP	Oxidation Reduction Potential
PFAS	Per- and Polyfluoroalkyl Substances
PFHxS	Perfluorohexanesulfonic
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic acid
PMR	Performance Monitoring Report
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act Facility
RSL	Investigation Regional Screening Level
SAR	Solid Waste Management Unit Assessment Report
SOP	Standard Operating Procedure
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
tDCE	trans-1,2-Dichloroethene
Tetra Tech	Tetra Tech, Inc.
USEPA	United States Environmental Protection
VC	Agency Vinyl Chloride
VOC	Volatile Organic Compound
°C	degrees Celsius
µg/L	micrograms per liter
µS/cm	microSiemens per centimeter

EXECUTIVE SUMMARY

This Air Sparge (AS) System Performance Monitoring Report (PMR) presents the findings, observations, and results for Year 3 of operation, maintenance, and monitoring activities for the AS Interim Measure (IM) at the Launch Complex 39A Operations Support Building Area (AOSB) at Kennedy Space Center (KSC), Florida. This report was presented as an Advance Data Package during the October 2024 KSC Remediation Team (KSCRT) meeting. The reporting period for activities covered under this PMR is from August 2023 through October 2024.

An AS IM was implemented at AOSB in 2021 to remediate groundwater contaminated with volatile organic compounds (VOCs) within the treatment zone to support transition to long-term monitoring (LTM) while being protective of nearby Outstanding Florida Waters (OFW). The AS treatment zone covers the footprint of the VOC plume where groundwater concentrations exceed State of Florida Groundwater Cleanup Target Levels (GCTLs) (approximately 0.6 acres). The system includes 26 AS wells, with 13 wells installed to a total depth of 31 feet below land surface (bls) and the other 13 wells installed to a total depth of 46 feet bls. The overall Corrective Action Objective of the site is to reach a point in plume treatment where transition to LTM is reasonable and effective while maintaining OFW compliance.

This PMR includes information about the following Year 3 activities at AOSB:

- AS system operations and maintenance (O&M) for the reporting period of August 2023 to October 2024;
- Performance monitoring results for semi-annual groundwater sampling events conducted in January 2024 and July 2024;
- Sampling results for per- and polyfluoroalkyl substances (PFAS) collected from select monitoring wells during the July 2024 sampling event; and,
- Shutdown of the AS system and transition to long-term monitoring.

O&M activities and results from Year 3 indicate that the AS system at AOSB operated as designed and continued to meet the IM objective. Following Year 1 of AS operations, the AS system was modified to operate AS wells 06, 08, 14, 15, 16, 17, and 26 in the MW0009 area and AS wells 01, 02, 03, 05, 11, 12, 19, 20, 21, 24, and 25 along the edge of the former low concentration plume to continue being protective of OFW. AS wells 04, 07, 09, 10, 13, 18, 22, and 23 were shut off based on the area around them being less than GCTLs. The same operation plan was followed for through October 2024 when the system was shut down to transition to long-term monitoring. The overall runtime of the AS system from August 2023 through October 2024 was approximately 71%, with primary downtime attributed to groundwater sampling activities, system maintenance, and power outages.

The performance sampling schedule for Year 3 included 11 monitoring wells sampled semi-annually. Sampling events were conducted in January and July 2024. Performance monitoring results continue to show consistent reduction in contaminant of concern (COC) concentrations over time in monitoring wells compared to baseline levels, with concentrations reduced to less than GCTLs in all wells except MW0009 as of July 2024. The highest trichloroethene (TCE) concentration during baseline sampling in May 2021 was 620 micrograms per liter (µg/L) at MW0009, which has been reduced to 5.0 µg/L as of the July 2024 sampling event. Cis-1,2-dichloroethene (cDCE) concentrations were less than the GCTL in all wells during the January and July 2024 events. Vinyl chloride (VC) concentrations were also less than the GCTL in all wells, including MW0009 where VC concentrations were previously above the GCTL during the first year of AS operations.

In addition to routine performance monitoring, select wells were sampled for PFAS during the July 2024 sampling event. Samples collected at MW0009, MW0010, and MW0011 in April 2022 and July 2023 were analyzed for PFAS with PFAS detected in MW0010 and MW0011. During the Year 3 reporting period, samples from MW0010 and MW0011 were analyzed for PFAS until a PFAS-specific investigation is completed at the site. There were no exceedances of the Florida provisional GCTLs for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) (individual or combined). PFOA and perfluorohexanesulfonic acid (PFHxS) concentrations in MW0010 exceeded the USEPA maximum contaminant levels (MCLs) with

concentrations of 20.8 and 10.9 nanograms per liter (ng/L), respectively, while PFOA exceeded the USEPA Regional Screening level, but not the MCL, with a concentration of 2.1 ng/L. PFOA, PFOS, and PFHxS concentrations in MW0011 exceeded the maximum contaminant levels with concentrations of 18.5, 5.6, and 14 ng/L, respectively. PFAS at AOSB will be addressed under the KSC Center-wide PFAS investigation moving forward.

Recommendations for the path forward were presented to the KSCRT at the October 2024 meeting. Team consensus was reached to transition from the AS IM to LTM with quarterly sampling of monitoring wells MW0001 through MW0011 (Meeting Minute 2410-M09, Decisions 2410-D17). The AS system was shut down on October 30, 2024. The compressor trailer was removed from the site, and the AS headers lines were capped. The manifold distribution trailer and piping infrastructure will remain in place in event rebound is observed and additional treatment is necessary. The first LTM quarterly sampling event is scheduled for January 2025.

SECTION I
INTRODUCTION

This Air Sparge (AS) System Performance Monitoring Report (PMR) presents Year 3 field investigation, operation and maintenance (O&M), and performance monitoring activities for the AS Interim Measure (IM) at the Launch Complex 39A Operations Support Building Area (AOSB) at Kennedy Space Center (KSC), Florida. The contaminants of concern (COCs) at AOSB are trichloroethene (TCE), cis-1,2-dichloroethene (cDCE), trans-1,2-dichloroethene (tDCE), and vinyl chloride (VC). AOSB has been designated as Solid Waste Management Unit (SWMU) 111 under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program. This document was prepared by Tetra Tech, Inc. (Tetra Tech) for the National Aeronautics and Space Administration (NASA) under Indefinite Delivery Indefinite Quantity (IDIQ) Contract 80KSC019D0011/80KSC020F0042.

The AS system at AOSB was implemented in 2021 to treat a chlorinated solvent groundwater plume that resulted from historical operations supporting NASA’s Space Program. The system includes 26 AS wells with depths ranging from 31 to 46 feet below land surface (bls), and treatment footprint covering approximately 0.6 acres. Following system start-up in July 2021, O&M and performance monitoring activities were implemented with the initial year detailed in the AS System Construction Completion and PMR (NASA, 2022).

This Year 3 PMR includes the following information:

- AS system operations and maintenance (O&M) for the reporting period of August 2023 to October 2024;
- Performance monitoring results for semi-annual groundwater sampling events conducted in January 2024 and July 2024;
- Sampling results for per- and polyfluoroalkyl substances (PFAS) collected from select monitoring wells during the July 2024 sampling event; and,
- Shutdown of the AS system and transition to long-term monitoring.

Year 3 activities at AOSB were presented in an Advance Data Package (ADP) during the October 2024 KSC Remediation Team (KSCRT) Meeting. The ADP and meeting minutes are included in Appendix A.

1.1 PURPOSE

The purpose of this report is to summarize the most recent activities that were performed to operate and monitor the AS system at AOSB, as well as present the third year of performance monitoring results. The reporting period for the activities included in this report extends from August 2023 through October 2024. These activities were conducted in accordance with the Air Sparge System Construction Completion and Performance Monitoring Report (NASA, 2022), Implementation Work Plan (IWP) (NASA, 2021), and the Site-Specific Safety and Health Plan (NASA, 2020). Recommendations for future O&M and performance monitoring are also included in this report.

1.2 SITE BACKGROUND

KSC is located in the northern section of Merritt Island, which is a barrier island bordered on the east by the Banana River Lagoon and on the west by the Indian River Lagoon. Figure 1-1 shows the location of AOSB within KSC's boundaries. The AOSB site is located near SWMU 008 (Launch Complex 39A [LC39A]), on the southern side of the Pad A By-Pass Road about halfway between Saturn Causeway and Samuel C. Phillips Parkway, as shown on Figure 1-2. The property encompasses approximately 39 acres. The AOSB site is bordered to the south and west by Pintail Creek, which is classified as Outstanding Florida Waters (OFW). Historical aerial photographs show that this area was active between 1968 and 1992. The area served as a laydown and tank storage area for early LC39A operations.

1.3 REMEDIAL HISTORY

Previous investigations and remedial activities leading up to implementation of the AS IM are summarized below.

August 2009: A SWMU Assessment Report (SAR) and Confirmation Sampling (CS) Work Plan (CSWP) was completed for AOSB (NASA, 2009). The report included site reconnaissance

and interviews with personnel with knowledge of past and present work practices and operations at the site, and potential environmental impacts related to operations were identified at AOSB. The SAR/CSWP identified nine locations of concern (LOCs) at AOSB and recommended CS to confirm the presence or absence of contamination at the LOCs.

January 2016 – December 2017: Soil and groundwater CS was conducted at the nine LOCs identified in the SAR/CSWP. Based on contaminant levels not exceeding the greater of background concentrations, Soil Cleanup Target Levels, or Groundwater Cleanup Target Levels (GCTLs), no further action was recommended for LOCs 2 through 9 for soil and LOCs 2 through 6, 8, and 9 for groundwater at AOSB (Meeting Minute 1801-M04, Decisions 1801-D10, D12, D14 through D17, D19 and D20). After reviewing the Florida Department of Environmental Protection (FDEP) Guidance for Comparing Background and Site Chemical Concentrations in Soil (FDEP, 2012), it was also recommended that LOC 1 was not a waste cleanup site under the RCRA permit and was therefore eliminated as a LOC. Based on volatile organic compound (VOC) exceedances in groundwater at LOC 7, a RCRA Facility Investigation (RFI) was recommended for groundwater at LOC 7 (Meeting Minute 1801-M04, Decisions 1801-D18), and an RFI Work Plan was provided as an Appendix in the CS Report (NASA, 2018).

September – December 2018: RFI sampling activities at the AOSB site were conducted from September to December 2018, and included direct push technology (DPT) sampling, permanent monitoring well installation and sampling, soil coring, and soil sampling for fraction of organic carbon measurements to aid in determining contaminant mass. A VOC plume was delineated, approximately 205 feet by 115 feet, oriented in a southwest-northeast direction and extending from the dirt road used as a bus turnaround to the southwest corner of the site near Pintail Creek, classified as an OFW. The COCs in the plume included TCE, cDCE, tDCE, and VC. One location within the plume was identified with COC concentrations exceeding FDEP Natural Attenuation Default Concentrations (NADCs). RFI results were presented at the December 2018 KSCRT Meeting, and consensus was reached for the horizontal and vertical delineation of groundwater contamination (Meeting Minute 1812-M16, Decision Item 1812-D65). The delineated VOC plume from the RFI characterization is shown on Figure 1-3. It was also

recommended, and Team consensus was reached, to proceed to design of an AS system to address OFW concerns based on potential contaminant migration.

June 2019: An IM Work Plan was approved by FDEP in June 2019. The treatment area was agreed to be 0.6 acres, which covered the area of GCTL exceedances. The AS system design consisted of 26 AS wells, with 13 to a total depth of 31 feet bls, and the other 13 extending to a total depth of 46 feet bls (NASA, 2019).

February 2021 - July 2022: The AS IM was implemented at AOSB in 2021 to remediate VOC contaminated groundwater within the treatment zone to support transition to long term monitoring (LTM) while being protective of the nearby OFW. System installation activities (including installation of wells, piping, manifolds, and trailer) were completed between February and June 2021. Baseline groundwater sampling was conducted in May 2021 for VOCs and 1,4-dioxane. No further 1,4-dioxane sampling was warranted based on all results less than laboratory detection limits. AS system start-up and commissioning were completed in June and July 2021. The first year of performance monitoring results showed that concentrations of COCs had been reduced to below GCTLs in all wells except MW0009. In this well, TCE concentrations reduced from 620 micrograms per liter (µg/L) in May 2021 to 36 µg/L in July 2022; however, VC concentrations increased from 11 µg/L to 18 µg/L during this timeframe. Select wells were also sampled for PFAS during the April 2022 event. PFAS compounds were detected in two of the three wells, with one perfluorooctanoic acid (PFOA) detection exceeding the United States Environmental Protection Agency (USEPA) Resident Tap Water Regional Screening Level (RSL). Year 1 performance monitoring activities and results were presented to the KSCRT in October 2022 and documented in the Air Sparge System Construction Completion and Performance Monitoring Report (NASA, 2022).

July 2022 – July 2023: Following Year 1 of AS operations, the AS system was modified in July 2022 to operate AS wells 06, 08, 14, 15, 16, 17, and 26 in the MW0009 area and AS wells 01, 02, 03, 05, 11, 12, 19, 20, 21, 24, and 25 along the edge of the former low concentration plume to continue being protective of OFW. AS wells 04, 07, 09, 10, 13, 18, 22, and 23 were shut off based on the area around them being less than GCTLs. The 18 active wells all operated 24 hours per day during Year 2.

The performance sampling schedule for Year 2 was modified to reduce sampling frequency for all wells to semi-annual, with sampling events conducted in January and July 2023. Performance monitoring results continue to show consistent reduction in COC concentrations over time in monitoring wells compared to baseline levels, with concentrations reduced to less than GCTLs in all wells except MW0009 by July 2023. The highest TCE concentration during baseline sampling in May 2021 was 620 micrograms per liter (µg/L) at MW0009, which has been reduced to 4.1 µg/L as of the July 2023 sampling event. cDCE concentrations were less than the GCTL in all wells during the January and July 2023 events. VC concentrations were also less than the GCTL in all wells, including MW0009 where VC concentrations were previously above the GCTL during the first year of AS operations.

Due to residual TCE concentrations exceeding the GCTL in MW0009, a focused DPT investigation was conducted to determine if any contamination exists beyond MW0009 and the influence of the AS treatment zone. Two DPT locations identified COC concentrations exceeding GCTLs, with maximum results of 6 µg/L (TCE) and 3 µg/L (VC). The exceedances were found at locations currently within the AS treatment area. Based on results from this DPT investigation, it was determined that COCs in the MW0009 area are not present at concentrations greater than GCTLs outside of the active treatment area, and therefore no modifications to the system are proposed.

In addition to routine performance monitoring, samples from select wells were analyzed for PFAS during the July 2023 sampling event. Samples collected from MW0009, MW0010, and MW0011 in July 2023 were analyzed for PFAS, but none exceeded the Florida provisional GCTLs or November 2023 USEPA RSLs, which was the screening criteria at the time of Year 2 PMR preparation.

Year 2 performance monitoring activities and results were presented to the KSCRT in October 2023 and documented in the Year 2 Air Sparge Performance Monitoring Report (NASA, 2023).

1.4 LITHOLOGY

In general, surficial materials in this portion of KSC are characterized as fine to medium sands with intermittent lenses of shells and clay. At approximately 8 and 32 feet bls, there are layers

containing some clay, and a confining clay unit is present at approximately 47 feet bls. Much of this area was constructed in the early 1960s from dredge materials derived from nearby wetland areas. A generalized geologic cross-section is presented on Figure 1-4.

1.5 HYDROLOGY

The topography of the AOSB site is generally flat. Pintail Creek, which is classified as an OFW, is located adjacent to the site, to the west and south. Groundwater conditions are characterized by a relatively shallow surficial aquifer encountered at less than 3 to 8 feet bls to approximately 70 to 150 feet bls. Based on groundwater elevations collected at site monitoring wells, groundwater generally flows towards the south/southeast, toward Pintail Creek. Groundwater at adjacent LC39A is classified as non-potable Class G-II due to the limited areal extent of groundwater with total dissolved solids less than 10,000 milligrams per liter (mg/L) and proximity to seawater (NASA, 2003).

1.6 INTERIM MEASURE OBJECTIVE

The objective of the AS IM is to remediate VOC-contaminated groundwater within the treatment zone to support transition to LTM while being protective of the nearby OFW. The treatment zone for the AS design covers the footprint of the VOC plume where groundwater concentrations exceed GCTLs. The overall Corrective Action Objective for the site is to reach a point in plume treatment where transition to LTM is reasonable and effective while maintaining OFW compliance. Based on performance of the IM, AS operations may be modified, as appropriate, to achieve the IM objective.

1.7 REPORT ORGANIZATION

The remainder of this document is organized as follows:

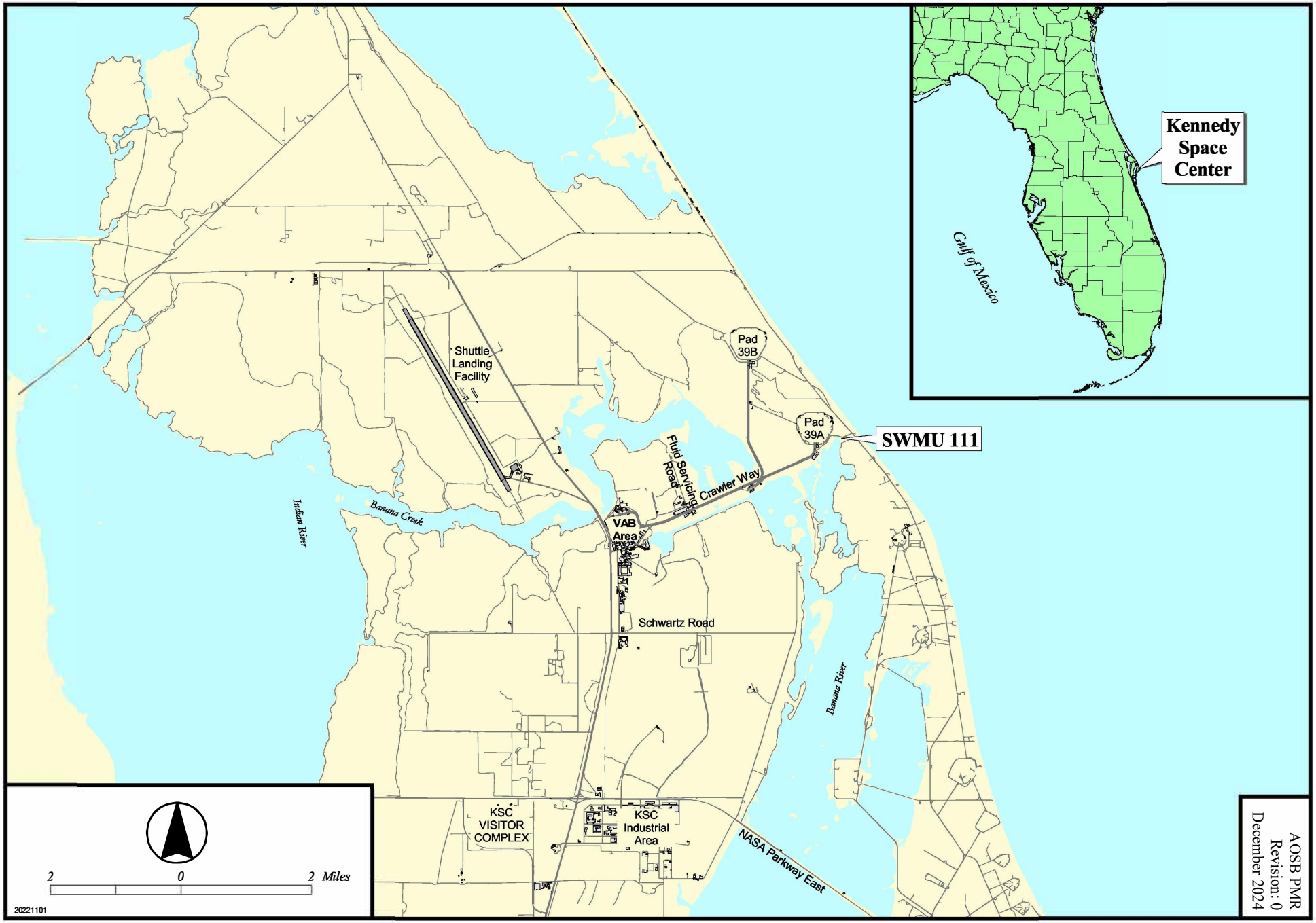
Section II: System Operation and Maintenance – This section details efforts associated with O&M of the AS system at AOSB from August 2023 to October 2024.

Section III: Performance Monitoring – Summarizes results from performance monitoring conducted in January 2024 and July 2024.

Section IV: Conclusions and Recommendations – This section provides a summary of the activities conducted in support of the IM and presents system operation recommendations based on groundwater monitoring results.

Section V: References – This section provides a listing of the references cited in this report.

FIGURE 1-1 LOCATION OF KENNEDY SPACE CENTER AND LC39A OPERATIONS SUPPORT BUILDING AREA
SWMU 111, KENNEDY SPACE CENTER, FLORIDA

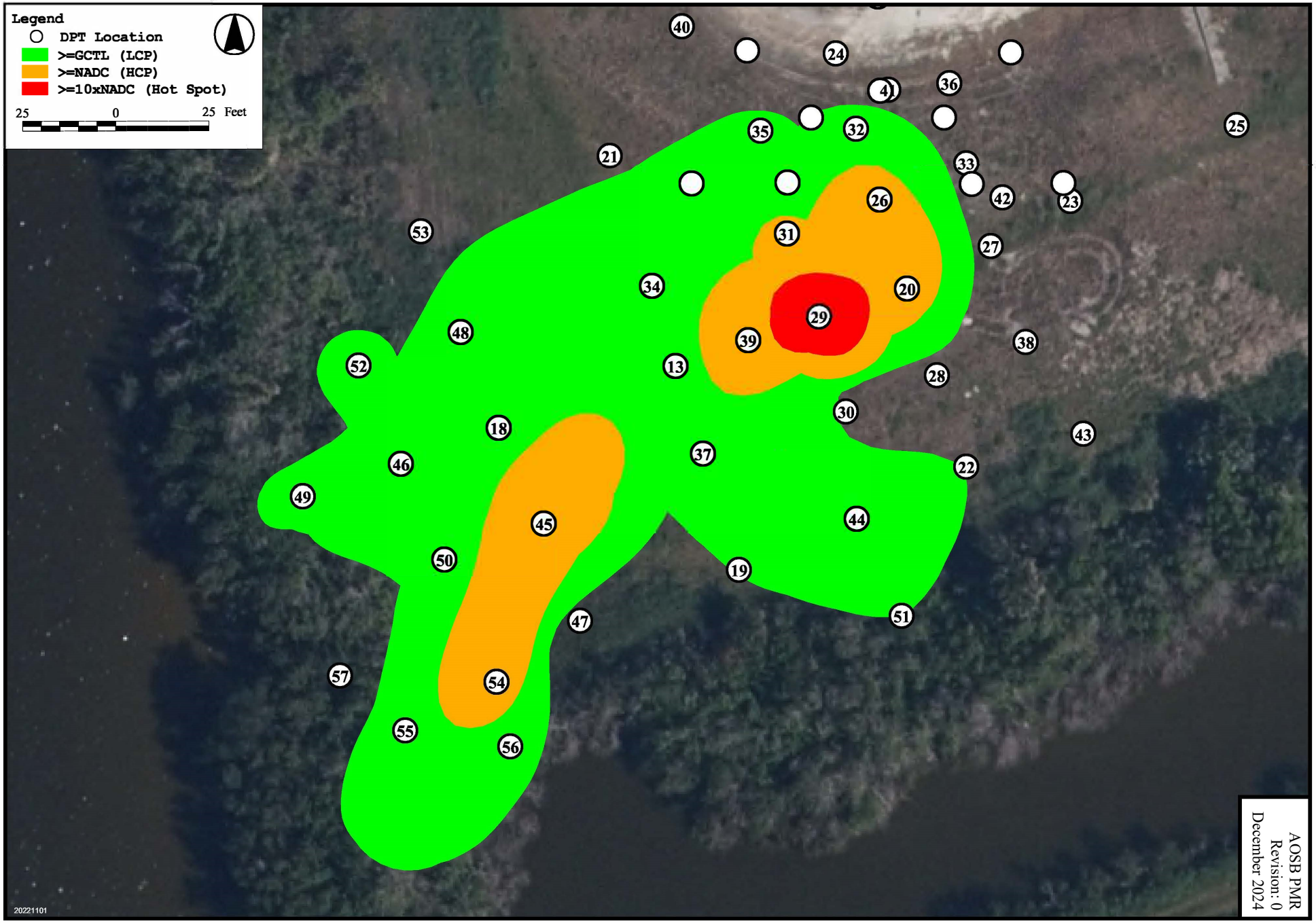


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FIGURE 1-2 SITE LOCATION
SWMU 111, KENNEDY SPACE CENTER, FLORIDA

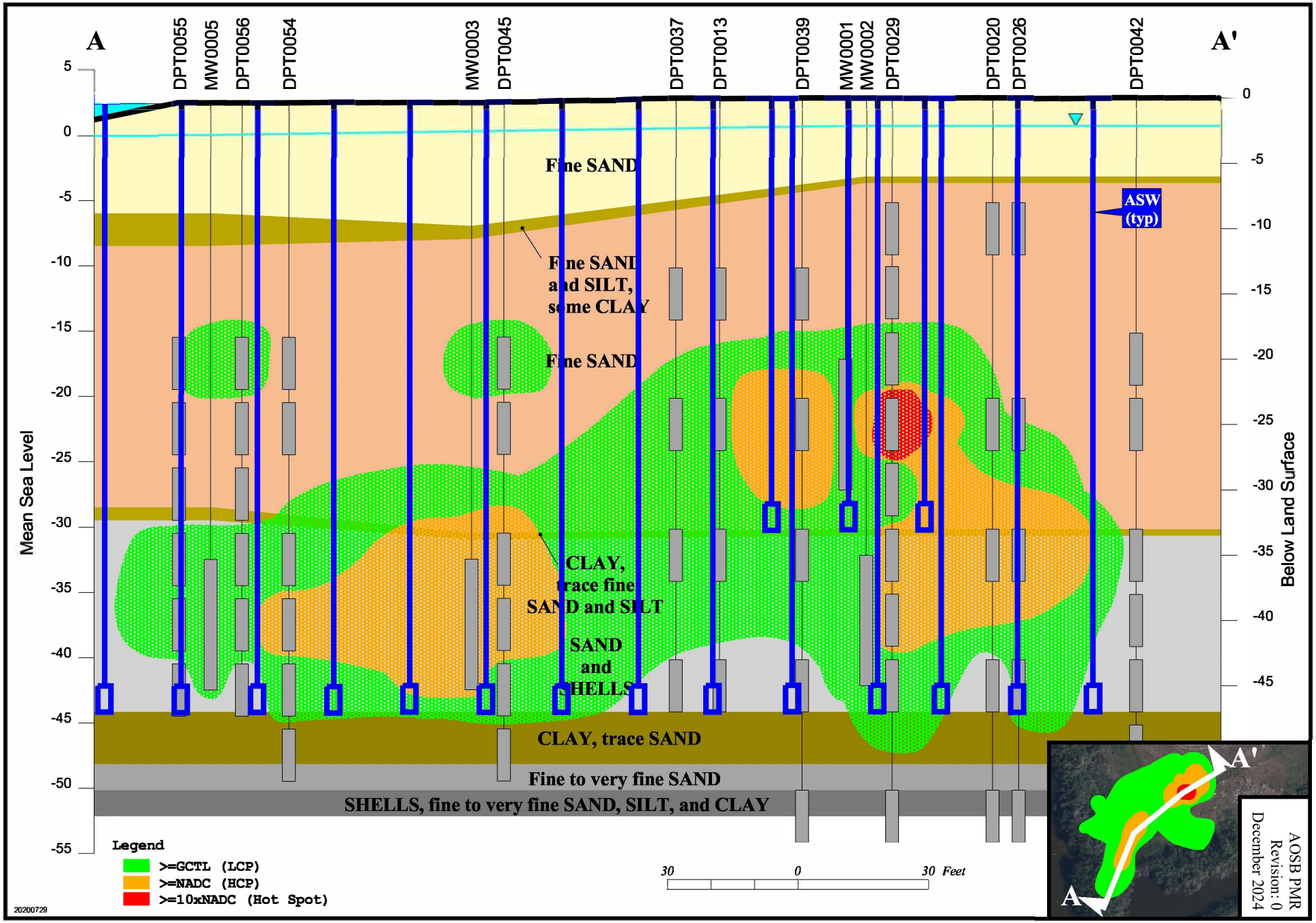


FIGURE 1-3 RFI CHARACTERIZATION MAP
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



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FIGURE 1-4 CVOC LITHOLOGIC/PLUME CROSS SECTION A-A'
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



SECTION II
SYSTEM OPERATION AND MAINTENANCE

2.1 SYSTEM OPERATION AND MAINTENANCE

This section includes O&M activities conducted for Year 3 of AOSB AS system operations. The Year 3 reporting period presented in this report extends from August 2023 through October 2024.

The AOSB AS system was installed in 2021 and consists of 26 AS wells, split between four treatment zones, with depths from 31 to 46 feet bls (Figure 2-1). Air is supplied via an AS compressor trailer and distributed by a manifold trailer. The system layout is shown on Figure 2-2. Full-scale system operations began in July 2021. Additional details about the AS system are documented in the AS System Construction Completion and PMR (NASA, 2022).

2.2 SITE VISITS AND OPERATIONAL SUMMARY

Year 3 O&M activities were conducted through periodic site visits and monitoring of the system. During the site visits, the system's processes and components were observed for abnormal conditions (e.g., excessive noises, leaks, temperature, or vibrations) and various components were inspected. In addition, assessment of differential pressures across the filtration units and process equipment was conducted and general housekeeping was performed around the system trailer and components. Any maintenance conducted during the reporting period was recorded and is described in this report.

Following Year 1 of system operations, modifications were made to address remaining TCE and VC GCTL exceedances in MW0009. For Year 2, AS wells 06, 08, 14, 15, 16, 17, and 26 continued operation in the MW0009 area, and AS wells 01, 02, 03, 05, 11, 12, 19, 20, 21, 24, and 25 continued operation to protect the nearby OFW. The remaining AS wells (04, 07, 09, 10, 13, 18, 22, and 23) were shut off as these AS wells were not located along the OFW boundary and concentrations of COCs in nearby monitoring wells did not exceed GCTLs at the end of the Year 1 operating period. No changes were made for Year 3 of system operation.

The 18 active AS wells were simultaneously operated 24 hours per day, which was an increase from the original design where each AS well operated for a total of 12 hours per day. Due to the increase in number of AS wells operating simultaneously (18 in modified operation versus 13 in original operation) and flow capacity of the air compressor (74 cubic feet per minute [cfm]), the flowrate for each well was reduced from a target of 5 cfm to 3 cfm. Although the flowrate to each well decreased, the total amount of air supplied to each well daily increased from 3,600 to 4,320 cubic feet per day as all active wells operated twice as long. Table 2-1 shows the modified flow design for Year 2 of system operations. Flow and pressure data for each AS well was recorded weekly and evaluated to ensure the AS system was operating as designed.

The overall runtime for the Year 3 reporting period was 68 percent. A summary of system runtime and system downtime is provided in Table 2-2. The system was shut down for various monitoring and maintenance activities throughout the Year 3 operational period. The AS system (including receiver tank, manifolds, etc.) and associated process lines were depressurized prior to conducting maintenance activities. The AS system was shut down approximately one week prior to each semi-annual groundwater sampling event in January 2024 and July 2024. Additional system shutdowns included:

- System off in October 2023 due to NASA power outage
- System off in November 2023 due to NASA power outage
- Blown oil line in compressor in January 2024
- Power outage in May, August, and September 2024
- Compressor down due to broken belts in June and July 2024
- Hurricane Milton in October 2024

Since the objective of the IM has been met, team consensus was reached to shut down the AS system and transition to LTM at the October 2024 meeting (Meeting Minute 2410-M10, Decision 2410-D17). The AS system was shut down on October 30, 2024. The compressor trailer was removed from the site, and the AS headers lines were capped. The manifold distribution trailer and piping infrastructure will remain in place in event rebound is observed and additional treatment is necessary.

2.3 SYSTEM MAINTENANCE

Routine maintenance activities were conducted during the periodic site visits while the system was operating. Activities included inspecting the AS wells, air compressor, heat exchanger, condensate treatment system, and air and coalescing filters. Scheduled compressor maintenance was also conducted for the 4,000-hour and 8,000-hour milestones, which occurred approximately every six months during the reporting period. Maintenance was executed in a manner that minimized emergencies or unscheduled shutdowns. The maintenance activities for the reporting period are described in further detail below.

The following activities were typically performed during the site visits:

- Inspection of flow meters, transmitters, and AS system components for leakage and excessive vibration, noise, or abnormal temperatures;
- Inspection of oil levels and lubrication;
- Inspection of the condensate treatment system;
- Assessment of differential pressures across filtration units and process equipment;
- Recording of system operational data, including at a minimum, flowrates and pressures, and comparing data to design conditions and previous operating data;
- Repairing and cleaning equipment as needed; and
- Housekeeping.

Routine lubrication maintenance typically included the following:

- Inspection of the oil level during each visit and addition of oil as needed;
- Lubrication of bearings with grease lubricant; and

- Purging of condensate in headers. Due to length of the headers, routine purging is conducted to minimize line moisture.

Routine filtration maintenance typically included the following:

- Replacement of the oil filter;
- Replacement of air intake filters; and
- Removal of oil accumulated in the condensate oil/water separator.

Scheduled compressor maintenance included the following:

- Changed oil;
- Replaced the oil filter;
- Replaced the inlet air filter;
- Adjusted the drive belt tension;
- Replaced the primary and secondary discharge air/oil filters;
- Restarted the system to check the oil level and for leaks; and
- Tested the relief valve.

Table 2-1. Year 3 Operation Flow Balance

Zone	Number of AS Wells	Flow Per Well (cfm)	Total Zone Flow (cfm)	Time						Operational Hours/Day	cf/day
				0000	0400	0800	1200	1600	2000		
1	6	3	18	18	18	18	18	18	18	24	25,920
2	3	3	9	9	9	9	9	9	9	24	12,960
3	4	3	12	12	12	12	12	12	12	24	17,280
4	5	3	15	15	15	15	15	15	15	24	21,600
Total AS Wells	**18**	**Total Flow (cfm)**		**54**	**54**	**54**	**54**	**54**	**54**	**96**	**77,760**
		Within System		Under	Under	Under	Under	Under	Under	Target 90%	
		Compressor Duty		73%	73%	73%	73%	73%	73%		
		Wells Operating		18	18	18	18	18	18		

Notes:

System Compressor: Schulz 4020e Dynamic 20HP (capable of 74 cfm @ 125psi)

Operational period for flow balance was August 2023 to October 2024.

AS - air sparge.

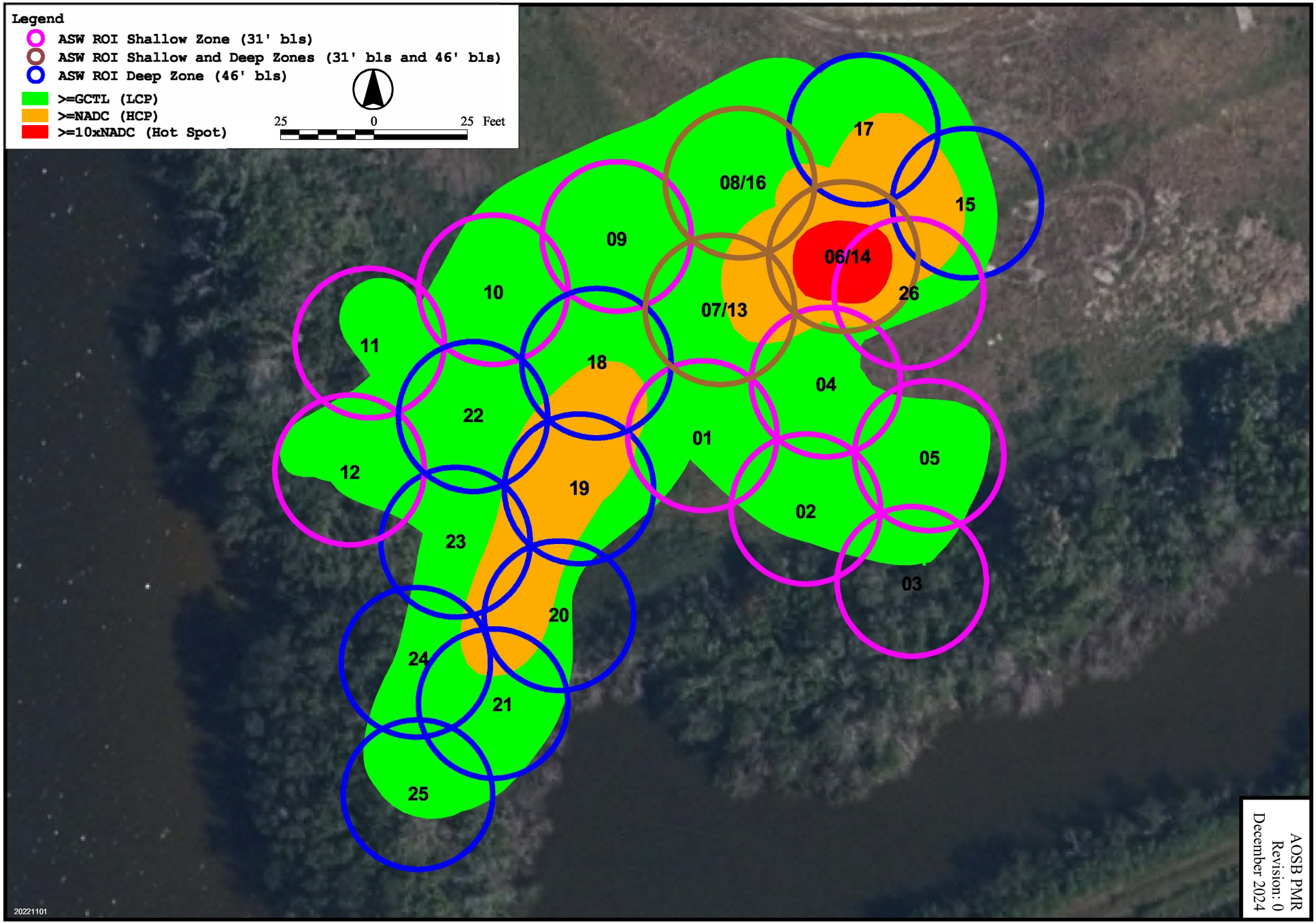
cfm - cubic feet per minute.

cf - cubic feet.

Table 2-2. Air Sparge System Operational Runtime for August 2023 through October 2024

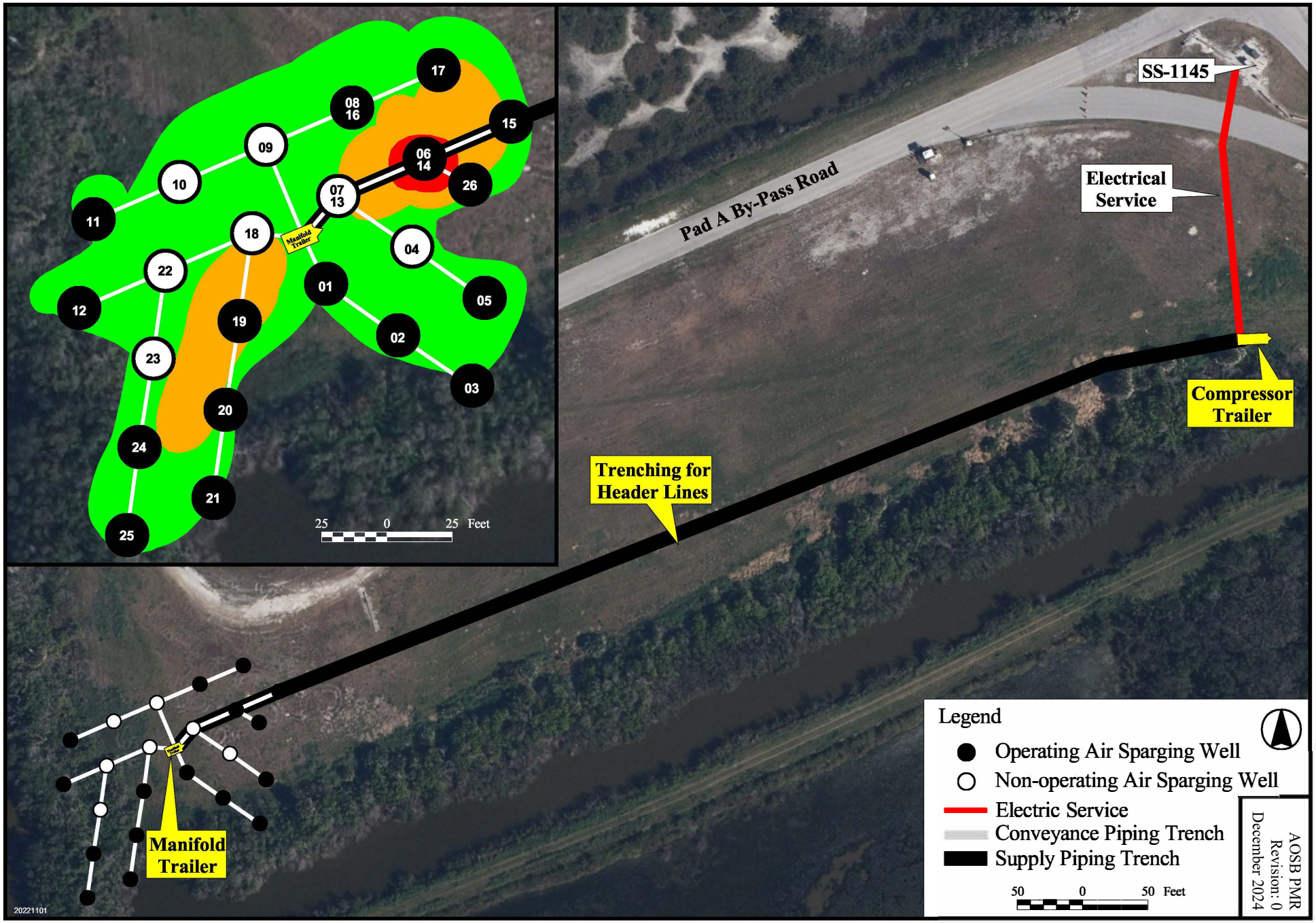
Year	Month	Days in Month	Hours Elapsed	Runtime Hours	Downtime (hours)	Downtime (days)	Monthly Runtime	Downtime Contributing Factor
2023	August	31	744	744	0	0	100%	
	September	30	720	720	0	0	100%	
	October	31	744	144	600	25	19%	Sysytem off due to NASA power outage
	November	30	720	288	432	18	40%	Sysytem off due to NASA power outage
	December	31	744	552	192	8	74%	Performance sampling
2024	January	31	744	264	480	20	35%	Performance sampling and blown oil line in compressor
	February	29	696	588	108	5	84%	Performance sampling
	March	31	744	744	0	0	100%	
	April	30	720	720	0	0	100%	
	May	31	744	684	60	3	92%	Power outage
	June	30	720	444	276	12	62%	Compressor down to belts breaking
	July	31	744	216	528	22	29%	Compressor down to belts breaking; performance sampling
	August	31	744	312	432	312	42%	Compressor down due to phase loss ; Scheduled NASA power outage; Power outage due to lightning strike
	September	30	720	474	246	474	66%	Power outage due to lightning strike
	October	31	744	564	180	564	76%	HURCON shutdown for Hurricane Milton; Removed compressor system from site
Total		**458**	**10,992**	**7,458**	**3,534**	**1,462**	**68%**	**Total Period Runtime**

FIGURE 2-1 AIR SPARGING ZONE LAYOUT
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



AOSB PMR
Revision: 0
December 2024

FIGURE 2-2 AIR SPARGE SYSTEM LAYOUT
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



SECTION III
PERFORMANCE MONITORING

3.1 PERFORMANCE MONITORING

This section discusses the performance monitoring conducted to evaluate the progress and performance of the AOSB AS IM during Year 3 of operation. Year 3 performance monitoring activities and results were presented to the KSCRT during the October 2024 meeting.

3.2 PERFORMANCE MONITORING PROGRAM

The purpose of performance monitoring is to gauge the effectiveness of the AS groundwater treatment system by tracking groundwater chemistry, water levels, field measurement parameters, and COC concentrations at the site. Performance monitoring was conducted on a semi-annual basis during the third year of operation in January 2024 and July 2024. A total of 11 performance monitoring wells were sampled during each event. The locations of the 11 performance monitoring wells are shown on Figure 3-1. All groundwater samples collected were analyzed for VOCs via USEPA Method 8260D by Eurofins Orlando in Altamonte Springs, Florida. During the July 2024 event, select groundwater samples were also analyzed for PFAS by the U.S. Department of Defense Quality Systems Manual, Version 5.3, Table B-15 Method, by SGS North America Inc. in Orlando, Florida. Quality Assurance/Quality Control samples including field blanks, field duplicates, and equipment blanks were also collected for PFAS analysis. Table 3-1 summarizes the performance monitoring locations, sampling rationale, frequencies, and analytes.

Prior to groundwater sample collection, depth-to-water measurements were obtained from each performance monitoring well. This was done to calculate groundwater elevations and subsequently generate contour maps that show groundwater gradient and flow direction in the surficial aquifer across the site. Headspace within all 11 performance monitoring wells was screened with a photoionization detector during each performance monitoring event for health and safety monitoring.

Low-flow sampling techniques were employed during groundwater sampling activities, and each monitoring well was purged and sampled using a peristaltic pump and dedicated Teflon or high-density polyethylene (HDPE) tubing. Only HDPE tubing was used for wells sampled for PFAS to avoid cross contamination with Teflon tubing. Sample tubing was placed at the mid-point of the well screen. For each well, groundwater was pumped using a low-flow sampling technique and field readings were collected at set timed intervals until the readings stabilized. At that time, a groundwater sample was collected for laboratory analysis. The field measurements were collected and stabilized in accordance with FDEP's SOP for Field Sampling (FDEP, 2017) before groundwater sample collection, ensuring samples were representative of surficial aquifer conditions. All monitoring wells were purged and sampled in accordance with FDEP Standard Operating Procedures (SOPs) and applicable sections of the KSC Sampling and Analysis Plan for the RCRA Corrective Action Program (NASA, 2017). Both preserved and unpreserved vials were collected for VOC analysis to ensure headspace fell within acceptable criteria due to visibly observed effervescent issues in some samples. This has been common at several other KSC sites so both preserved and unpreserved vials were utilized to provide the laboratory with additional sample volume, if needed. All purge water generated through sampling was containerized in totes, characterized, and managed per KSC's investigation-derived waste (IDW) management protocols. Miscellaneous trash, construction debris, and personal protective equipment (PPE) generated during field activities was wiped clean and disposed of in an appropriate trash container.

3.3 PERFORMANCE MONITORING RESULTS

The results of groundwater performance monitoring events were used to assess and confirm the performance of the AS IM and to support optimization of the IM. Performance monitoring results are provided in Table 3-2. A groundwater elevation summary table with the January and July 2024 semi-annual monitoring events is provided as Table 3-3. Previous water level data is also provided in Table 3-3 for reference. Field measurement data including pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation reduction potential (ORP) is included in Table 3-4. Laboratory analytical results for all groundwater samples are provided in

Appendix B. Sampling field forms and log sheets are provided in Appendix C. The performance monitoring results are discussed in the following subsections.

3.3.1 Groundwater Elevation. Water levels were measured at 11 monitoring wells during each of the semi-annual sampling events. These synoptic measurements were converted to groundwater elevations (see Table 3-3) and interpreted onto groundwater contour maps. The resulting potentiometric surface maps are presented as Figures 3-2 and 3-3 for the January 2024 and July 2024 events, respectively, and were used to illustrate the behavior of groundwater flow during each event and how flow may be affected by AS system operations. All wells were considered for contouring purposes within this interval. The following presents a more detailed discussion of the groundwater flow trends as AS system operations progressed during its third year of operation.

3.3.1.1 Potentiometric Surface – January 2024. In January 2024, groundwater generally flowed inwards toward the center of the plume (Figure 3-2). From the northwestern quadrant, groundwater flowed southeast towards the center of the plume. From the southeastern quadrant, groundwater flowed in a northwest direction towards the center of the plume. Groundwater in the central area of the plume appeared to flow northeast and away from Pintail Creek. The observed groundwater flow during the January 2024 event was similar to the groundwater flow observed during the January 2023 event but different from the observed flow in January 2022, where groundwater flow was generally observed to the south toward Pintail Creek throughout the entire treatment area.

3.3.1.2 Potentiometric Surface – July 2024. In July 2024, groundwater generally flowed from the northwest to the southeast towards the former high-concentration plume. Groundwater from the southwestern portion of the plume flowed inward in a western direction. The observed groundwater flow during the July 2024 was similar to the groundwater flow observed during the July 2023 event but different from the observed flow in July 2022, where groundwater flow was generally observed to the south toward Pintail Creek throughout the entire treatment area.

3.3.2 Field Measurements. Temperature, pH, specific conductance, DO, turbidity, and ORP were measured and recorded in the field during monitoring well sampling activities. These field

measurements, compiled during the semi-annual sampling events, are summarized in Table 3-4. Field measurements from baseline and Year 1 performance sampling are also included in this table for reference. Sample log sheets prepared in the field are included in Appendix C. The following presents a summary of field measurements taken during each of the semi-annual sampling events.

During the January 2024 semi-annual sampling event, groundwater temperatures in the 11 wells sampled ranged from 22.90 to 25.80 degrees Celsius (°C), with an average of 24.33 °C. Readings of pH ranged from 6.56 to 7.30, with an average of 6.78. Specific conductance ranged from 31,984 to 68,934 microSiemens per centimeter (µS/cm), with an average of 57,068 µS/cm. DO values varied from 0.03 to 4.30 mg/L, with an average value of 0.91 mg/L. Turbidity readings ranged from 1.13 to 17.60 nephelometric units (NTU), with an average value of 8.48 NTU. ORP readings ranged from -202.3 to 2.1 millivolts (mV), with an average reading of -53.6 mV.

During the July 2024 semi-annual sampling event, groundwater temperatures in the 11 wells sampled ranged from 26.60 to 28.10 °C, with an average of 27.24 °C. Readings of pH ranged from 6.64 to 7.34, with an average of 6.92. Specific conductance ranged from 39,377 to 69,557 µS/cm, with an average of 62,173 µS/cm. DO values ranged from 0.04 to 0.39 mg/L, with an average value of 0.17 mg/L. Turbidity readings ranged from 0.02 to 17.00 NTU, with an average value of 6.55 NTU. ORP readings ranged from -144.5 to 4.9 mV, with an average reading of -35.8 mV.

3.3.3 Groundwater Analytical Results. Performance monitoring groundwater samples were collected and analyzed in accordance with the prescribed schedule and analyte list (Table 3-1). A summary of performance monitoring results is presented in Table 3-2. Samples from select wells (MW0010 and MW0011) were also analyzed for PFAS during the July 2024 event. The PFAS results are presented in Table 3-5. Laboratory analytical reports are provided in Appendix B. The VOC performance monitoring analytical data are visually shown on Figure 3-4.

3.3.3.1 January 2024 Sampling Results. The first semi-annual sampling event for Year 3 was conducted from January 17-18, 2024, approximately 30 months after system operations began.

Maximum concentrations of TCE, cDCE, and VC in January 2024 were 6.7 µg/L, 4.1 µg/L, and 1.2 µg/L, respectively. All tDCE concentrations were less than the laboratory detection limit (0.95 µg/L).

MW0009 was the only well with a COC concentration (TCE) greater than its respective GCTL. At MW0009, TCE concentrations remained greater than the GCTL and increased from 4.1 µg/L in July 2023 to 6.7 µg/L in January 2024; however, this is still significantly less than the baseline concentration (620 µg/L). cDCE concentrations at MW0009 increased to 4.1 µg/L from 3.4 µg/L in July 2023 but is significantly less than the 93 µg/L at baseline. VC concentration at MW0009 was less than the laboratory detection limit in (0.71 µg/L) for the second consecutive sampling event.

3.3.3.2 July 2024 Sampling Results. The second semi-annual sampling event for Year 3 was conducted from July 24-25, 2024, approximately 36 months after system operations began.

Maximum concentrations of TCE, cDCE, and VC in July 2024 were 5.0 µg/L, 2.4 µg/L, and 1.0 µg/L, respectively. All tDCE concentrations were less than the laboratory detection limit (0.73 µg/L).

MW0009 was the only well with a COC concentration (TCE) greater than its respective GCTL. At MW0009, TCE concentrations decreased from 6.7 µg/L in January 2024 to 5.0 µg/L in July 2024 and remain well less than the baseline concentration (620 µg/L). cDCE concentrations at MW0009 decreased to 2.4 µg/L from 4.1 µg/L in January 2024 and 93 µg/L at baseline. VC concentration at MW0009 was less than the laboratory detection limit (0.71 µg/L) in July 2024 marking the third consecutive event with VC concentrations less than the GCTL.

In addition to routine performance monitoring, select wells were sampled for PFAS during the July 2024 sampling event. Samples were analyzed for PFAS at MW0009, MW0010, and MW0011 in April 2022 and July 2023 sampling event with PFAS detected in MW0010 and MW0011. Samples were analyzed for PFAS during the Year 3 reporting period to monitor PFAS concentrations in MW0010 and MW0011 until an investigation is completed at the site. In July 2024, there were no exceedances of the Florida provisional GCTLs for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) (individual or combined). PFOA and

perfluorohexanesulfonic acid (PFHxS) concentrations in MW0010 exceeded the USEPA maximum contaminant levels (MCL) with concentrations of 20.8 and 10.9 nanograms per liter (ng/L), respectively, while PFOA exceed the USEPA RSL, but not the MCL, with a concentration of 2.1 ng/L. PFOA, PFOS, and PFHxS concentrations in MW0011 exceeded the maximum contaminant levels with concentrations of 18.5, 5.6, and 14 ng/L, respectively. A summary of PFAS sampling results is included in Table 3-5. Laboratory packages for the PFAS samples are provided in Appendix B. PFAS at AOSB will be addressed under the KSC Center-wide PFAS investigation moving forward

3.4 PERFORMANCE EVALUTION AND CONTAMINANT REDUCTION

Performance of the AS IM is measured through contaminant reduction. By the end of the third year of system operations, groundwater concentrations in the plume decreased to or remained less than GCTLs for TCE, cDCE, tDCE, and VC in all wells except MW0009. The baseline sample collected from MW0009 in May 2021 contained a detection of TCE (620 µg/L) that exceeded the NADC. TCE concentrations in this well reduced to 5.0 µg/L in July 2024, corresponding to a 99.2% reduction. cDCE concentrations at MW0009 have also decreased from 93 µg/L (baseline) to 2.4 µg/L (July 2024), while VC concentrations have decreased from 11 µg/L to less than the laboratory detection limit of 0.71 µg/L during this same timeframe. Three other wells (MW0001, MW0002, and MW0003) had TCE, cDCE, and/or VC concentrations greater than their respective GCTLs during baseline sampling; however, concentrations in each of these wells have decreased to less than GCTLs in July 2023 and have not exceeded GCTLs since then.

Table 3-1. Year 3 Performance Monitoring Plan

Monitoring Well (AOSB-)	Screen Interval (ft bls)	Monitoring Function	Sampling Frequency
MW0001	20-30	Active treatment zone; monitor former HS area	Semi-Annual
MW0002	35-45	Active treatment zone; monitor former HCP area downgradient of MW0009	Semi-Annual
MW0003	35-45	Active treatment zone; monitor former HCP area downgradient of MW0009	Semi-Annual
MW0004	20-30	Active treatment zone; monitor former LCP edge along OFW	Semi-Annual
MW0005	35-45	Active treatment zone; monitor former LCP edge along OFW	Semi-Annual
MW0006	20-30	Monitor former LCP area upgradient of HCPs/HS	Semi-Annual
MW0007	35-45	Monitor former LCP area downgradient of MW0009	Semi-Annual
MW0008	20-30	Active treatment zone; monitor LCP edge along OFW	Semi-Annual
MW0009	35-45	Active treatment zone; monitor LCP	Semi-Annual
MW0010*	10-20	Active treatment zone; monitor OFW in shallow interval	Semi-Annual
MW0011*	10-20	Active treatment zone; monitor OFW in shallow interval	Semi-Annual

Notes:

ft bls = feet below land surface.
HCP = High Concentration Plume.
HS = Hot Spot.
LCP = Low Concentration Plume.
OFW = Outstanding Florida Waters.
All samples analyzed for VOCs via USEPA method 8260D
Semi-annual events conducted in January 2024 and July 2024.
*Samples analyzed for PFAS during July 2024 event.

Table 3-2. Performance Monitoring Analytical Results

Sample Location (AOSB-)	Screened Interval (feet bls)	Sample Date	TCE	cDCE	tDCE	VC
MW0001	20-30	5/10/2021	**3.9**	**6.5**	**2.8**	**4.9**
		10/13/2021	**1.8 I**	**5.4**	**1.2 I**	**1.4 I**
		1/11/2022	0.89 U	**1.7 I**	0.73 U	0.71 U
		4/14/2022	0.89 U	**0.91 I**	0.73 U	0.71 U
		7/12/2022	0.89 U	**0.70 I**	0.73 U	0.71 U
		1/11/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	**0.22 I**	**0.41 I**	0.50 U	0.50 U
		1/18/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U
MW0002	35-45	5/10/2021	**9.2**	**42**	**2.3 I**	**2.2 I**
		10/13/2021	**2.8**	**7.3**	0.73 U	0.71 U
		1/11/2022	**1.2 I**	**1.7 I**	0.73 U	0.71 U
		4/14/2022	0.89 U	**0.80 I**	0.73 U	0.71 U
		7/12/2022	**2.0 I**	**2.5**	0.73 U	0.71 U
		1/11/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	**0.24 I**	0.20 U	0.50 U	0.50 U
		1/18/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U
MW0003	35-45	5/10/2021	**70**	**120**	**1.4 I**	**4.1**
		10/13/2021	**7.8**	**23**	0.73 U	**3.9**
		1/10/2022	**2.0 I**	**7.1**	0.73 U	**0.79 I**
		4/14/2022	**1.2 I**	**0.72 I**	0.73 U	0.71 U
		7/12/2022	**1.1 I**	**1.6 I**	0.73 U	0.71 U
		1/12/2023	**4.0 I**	**2.1**	0.95 U	0.64 U
		7/11/2023	**1.3**	**0.92 I**	0.50 U	0.50 U
		1/18/2024	**2.5**	**0.85 I**	0.73 U	0.71 U
		7/24/2024	**3.0**	**1.0**	0.73 U	0.71 U
MW0004	20-30	5/10/2021	0.89 U	**4.0**	**1.9 I**	0.71 U
		10/13/2021	0.89 U	**2.4 I**	0.73 U	0.71 U
		1/10/2022	0.89 U	**1.9 I**	0.73 U	0.71 U
		4/14/2022	0.89 U	**1.9 I**	0.73 U	0.71 U
		7/11/2022	0.89 U	**0.96 I**	0.73 U	0.71 U
		1/11/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	**0.30 I**	**1.3**	0.50 U	0.50 U
		1/17/2024	0.89 U	**4.0**	0.73 U	0.71 U
		7/25/2024	0.89 U	**1.3**	0.73 U	0.71 U

Table 3-2. Performance Monitoring Analytical Results (continued)

Sample Location (AOSB-)	Screened Interval (feet bls)	Sample Date	TCE	cDCE	tDCE	VC
MW0005	35-45	5/6/2021	0.89 U	**14**	0.73 U	0.71 U
		10/13/2021	0.89 U	**4.8**	0.73 U	**1.1 I**
		1/10/2022	0.89 U	**1.0 I**	0.73 U	**0.92 I**
		4/14/2022	0.89 U	**0.75 I**	0.73 U	0.71 U
		7/11/2022	0.89 U	0.53 U	0.73 U	0.71 U
		1/12/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	0.15 U	0.20 U	0.50 U	**0.55 I**
		1/17/2024	0.89 U	0.53 U	0.73 U	**0.82 I**
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U
MW0006	20-30	5/10/2021	**1.1 I**	**1.5 I**	0.73 U	**0.76 I**
		10/13/2021	0.89 U	**1.2 I**	0.73 U	0.71 U
		1/10/2022	0.89 U	**1.3 I**	0.73 U	0.71 U
		4/14/2022	0.89 U	**1.3 I**	0.73 U	0.71 U
		7/11/2022	0.89 U	**1.2 I**	0.73 U	0.71 U
		1/11/2023	0.79 U	**1.0**	0.95 U	**0.78 I**
		7/11/2023	0.15 U	**0.92 I**	0.50 U	**0.76 I**
		1/17/2024	0.89 U	**1.3**	0.73 U	**1.2**
		7/25/2024	0.89 U	0.53 U	0.73 U	**1.0**
MW0007	35-45	5/10/2021	0.89 U	0.53 U	0.73 U	0.71 U
		10/13/2021	0.89 U	**1.3 I**	0.73 U	0.71 U
		1/11/2022	0.89 U	0.53 U	0.73 U	0.71 U
		4/14/2022	0.89 U	0.53 U	0.73 U	0.71 U
		7/12/2022	0.89 U	0.53 U	0.73 U	0.71 U
		1/11/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/10/2023	0.15 U	0.20 U	0.50 U	0.50 U
		1/18/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U
MW0008	20-30	5/6/2021	0.89 U	**7.1**	**2.0 I**	0.71 U
		10/13/2021	0.89 U	**1.7 I**	**1.1 I**	**1.1 I**
		1/11/2022	0.89 U	0.53 U	0.73 U	0.71 U
		4/14/2022	0.89 U	0.53 U	0.73 U	0.71 U
		7/12/2022	0.89 U	0.53 U	0.73 U	0.71 U
		1/12/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	0.15 U	0.20 U	0.50 U	0.50 U
		1/17/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U

Table 3-2. Performance Monitoring Analytical Results (continued)

Sample Location (AOSB-)	Screened Interval (feet bls)	Sample Date	TCE	cDCE	tDCE	VC
MW0009	35-45	5/10/2021	**620**	**93**	**2.6 I**	**11**
		10/13/2021	**130**	**73**	**1.9 I**	**23**
		1/11/2022	**94**	**70**	**1.1 I**	**54**
		4/15/2022	**19**	**21**	0.73 U	**9.8**
		7/12/2022	**36**	**50**	**0.97 I**	**18**
		1/11/2023	**8.8**	**8.5**	0.95 U	**1.4 I**
		7/12/2023	**4.1**	**3.4**	0.50 U	0.50 U
		1/18/2024	**6.7**	**4.1**	0.73 U	0.71 U
		7/25/2024	**5**	**2.4**	0.73 U	0.71 U
MW0010	10-20	5/6/2021	0.89 U	**1.2 I**	**3.9**	0.71 U
		10/13/2021	0.89 U	**0.92 I**	0.73 U	0.71 U
		1/10/2022	0.89 U	0.53 U	0.73 U	0.71 U
		4/15/2022	0.89 U	**1.0 I**	**1.2 I**	0.71 U
		7/12/2022	0.89 U	0.53 U	0.73 U	0.71 U
		1/12/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/12/2023	0.15 U	0.20 U	0.50 U	0.50 U
		1/17/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/25/2024	0.89 U	0.53 U	0.73 U	0.71 U
MW0011	10-20	5/10/2021	0.89 U	**0.75 I**	0.73 U	0.71 U
		10/13/2021	0.89 U	0.53 U	0.73 U	0.71 U
		1/10/2022	0.89 U	0.53 U	0.73 U	0.71 U
		4/15/2022	0.89 U	0.53 U	0.73 U	0.71 U
		7/11/2022	0.89 U	0.53 U	0.73 U	0.71 U
		1/11/2023	0.79 U	0.71 U	0.95 U	0.64 U
		7/11/2023	0.15 U	0.20 U	0.50 U	0.50 U
		1/17/2024	0.89 U	0.53 U	0.73 U	0.71 U
		7/24/2024	0.89 U	0.53 U	0.73 U	0.71 U

Notes:

Concentrations in micrograms per liter (µg/L).

Bold indicates a concentration is greater than the method detection limit.

Shading indicates State of Florida Groundwater Cleanup Target Level (GCTL) exceedance
TCE = 3 µg/L, cDCE = 70 µg/L, tDCE = 100 µg/L, VC = 1 µg/L.

bls = below land surface.

U = Value was reported as below the method detection limit, therefore the detection limit is shown.

I = Value is between method detection limit and practical quantitation limit.

TCE = trichloroethene.

cDCE = cis-1,2-dichloroethene.

tDCE = trans-1,2-dichloroethene.

VC = vinyl chloride.

NA = Not analyzed.

Table 3-3. Groundwater Elevations

Monitoring Well Name (AOSB-)	Screened Interval (feet bls)	Top of Casing Elevation (feet)	Measurement Date	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet)
MW0001	20-30	2.85	May-21	2.54	0.31
		2.85	Oct-21	2.55	0.30
		2.85	Jan-22	2.75	0.10
		2.85	Apr-22	3.30	-0.45
		2.85	Jul-22	3.13	-0.28
		2.85	Jan-23	3.05	-0.20
		2.85	Jul-23	2.69	0.16
		2.85	Jan-24	2.95	-0.10
		2.85	Jul-24	3.29	-0.44
MW0002	35-45	2.83	May-21	2.06	0.77
		2.83	Oct-21	2.54	0.29
		2.83	Jan-22	2.78	0.05
		2.83	Apr-22	3.40	-0.57
		2.83	Jul-22	3.97	-1.14
		2.83	Jan-23	3.53	-0.70
		2.83	Jul-23	3.47	-0.64
		2.83	Jan-24	3.19	-0.36
		2.83	Jul-24	3.31	-0.48
MW0003	35-45	2.54	May-21	2.08	0.46
		2.54	Oct-21	2.15	0.39
		2.54	Jan-22	2.40	0.14
		2.54	Apr-22	2.96	-0.42
		2.54	Jul-22	3.85	-1.31
		2.54	Jan-23	3.11	-0.57
		2.54	Jul-23	3.18	-0.64
		2.54	Jan-24	2.91	-0.37
		2.54	Jul-24	3.06	-0.52
MW0004	20-30	2.06	May-21	1.62	0.44
		2.06	Oct-21	1.62	0.44
		2.06	Jan-22	1.80	0.26
		2.06	Apr-22	2.47	-0.41
		2.06	Jul-22	2.22	-0.16
		2.06	Jan-23	2.25	-0.19
		2.06	Jul-23	1.79	0.27
		2.06	Jan-24	2.05	0.01
		2.06	Jul-24	2.43	-0.37

Table 3-3. Groundwater Elevations (continued)

Monitoring Well Name (AOSB-)	Screened Interval (feet bls)	Top of Casing Elevation (feet)	Measurement Date	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet)
MW0005	35-45	2.52	May-21	2.31	0.21
		2.52	Oct-21	2.23	0.29
		2.52	Jan-22	1.70	0.82
		2.52	Apr-22	3.18	-0.66
		2.52	Jul-22	3.72	-1.20
		2.52	Jan-23	3.02	-0.50
		2.52	Jul-23	3.10	-0.58
		2.52	Jan-24	2.87	-0.35
		2.52	Jul-24	3.00	-0.48
MW0006	20-30	2.35	May-21	2.15	0.20
		2.35	Oct-21	1.70	0.65
		2.35	Jan-22	1.98	0.37
		2.35	Apr-22	2.60	-0.25
		2.35	Jul-22	2.36	-0.01
		2.35	Jan-23	2.44	-0.09
		2.35	Jul-23	1.95	0.40
		2.35	Jan-24	2.25	0.10
		2.35	Jul-24	2.65	-0.30
MW0007	35-45	2.70	May-21	2.17	0.53
		2.70	Oct-21	2.48	0.22
		2.70	Jan-22	2.70	0.00
		2.70	Apr-22	3.31	-0.61
		2.70	Jul-22	4.24	-1.54
		2.70	Jan-23	3.48	-0.78
		2.70	Jul-23	3.48	-0.78
		2.70	Jan-24	3.17	-0.47
		2.70	Jul-24	3.31	-0.61
MW0008	20-30	2.58	May-21	2.38	0.20
		2.58	Oct-21	2.45	0.13
		2.58	Jan-22	2.60	-0.02
		2.58	Apr-22	3.15	-0.57
		2.58	Jul-22	2.97	-0.39
		2.58	Jan-23	3.04	-0.46
		2.58	Jul-23	2.55	0.03
		2.58	Jan-24	2.89	-0.31
		2.58	Jul-24	3.22	-0.64

Table 3-3. Groundwater Elevations (continued)

Monitoring Well Name (AOSB-)	Screened Interval (feet bls)	Top of Casing Elevation (feet)	Measurement Date	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet)
MW0009	35-45	2.79	May-21	2.15	0.64
		2.79	Oct-21	2.44	0.35
		2.79	Jan-22	2.72	0.07
		2.79	Apr-22	3.02	-0.23
		2.79	Jul-22	3.97	-1.18
		2.79	Jan-23	3.50	-0.71
		2.79	Jul-23	3.44	-0.65
		2.79	Jan-24	3.17	-0.38
		2.79	Jul-24	3.25	-0.46
MW0010	10-20	2.60	May-21	2.59	0.01
		2.60	Oct-21	2.80	-0.20
		2.60	Jan-22	2.45	0.15
		2.60	Apr-22	2.94	-0.34
		2.60	Jul-22	2.92	-0.32
		2.60	Jan-23	2.90	-0.30
		2.60	Jul-23	2.47	0.13
		2.60	Jan-24	2.66	-0.06
		2.60	Jul-24	2.95	-0.35
MW0011	10-20	1.77	May-21	1.72	0.05
		1.77	Oct-21	1.30	0.47
		1.77	Jan-22	1.50	0.27
		1.77	Apr-22	2.16	-0.39
		1.77	Jul-22	1.97	-0.20
		1.77	Jan-23	2.00	-0.23
		1.77	Jul-23	1.53	0.24
		1.77	Jan-24	1.88	-0.11
		1.77	Jul-24	1.90	-0.13

Notes:

All elevations are in feet North American Vertical Datum of 1988.
bls = below land surface.
btoc = below top of casing.

Table 3-4. Field Measurements

Well ID (AOSB-)	Sample Date	pH (S.U.)	Temp. (°C)	Cond. (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW0001	May-21	6.85	26.30	66,631	0.23	4.19	-150.6
	Oct-21	6.52	28.60	75,333	0.06	38.70	10.3
	Jan-22	6.72	26.60	67,305	0.05	9.60	-43.7
	Apr-22	6.58	26.90	62,075	0.23	8.38	50.9
	Jul-22	6.99	28.39	75,306	0.18	7.11	93.7
	Jan-23	6.45	25.50	59,690	0.11	7.85	-36.0
	Jul-23	6.51	25.60	63,364	0.34	3.27	30.5
	Jan-24	6.61	25.80	65,385	0.33	12.70	-63.7
	Jul-24	6.79	27.80	69,557	0.26	9.71	-15.2
MW0002	May-21	6.97	26.19	59,596	0.08	8.40	-140.0
	Oct-21	6.75	29.00	70,524	2.08	71.90	121.3
	Jan-22	7.34	25.70	64,722	0.57	2.52	-3.1
	Apr-22	7.19	26.60	59,541	1.24	11.30	53.8
	Jul-22	7.44	28.60	73,223	0.68	2.25	65.0
	Jan-23	7.28	24.70	64,345	4.07	4.72	7.9
	Jul-23	7.36	25.70	68,980	4.28	6.51	37.8
	Jan-24	7.30	25.40	68,934	4.30	17.60	-18.2
	Jul-24	7.34	27.00	68,751	0.39	7.36	4.9
MW0003	May-21	7.03	26.80	58,419	0.28	4.68	-163.0
	Oct-21	6.72	28.10	65,442	1.30	8.47	75.8
	Jan-22	7.31	23.70	56,500	0.59	1.75	-41.5
	Apr-22	7.09	26.32	77,698	0.73	7.98	115.4
	Jul-22	7.78	27.84	69,427	1.66	3.48	1.4
	Jan-23	6.63	25.30	60,155	1.14	1.15	-38.5
	Jul-23	6.87	25.10	63,649	2.64	8.48	49.9
	Jan-24	6.85	24.40	64,585	1.88	7.02	-3.4
	Jul-24	6.91	27.50	67,740	0.12	2.40	-30.5
MW0004	May-21	6.81	24.79	58,036	0.45	1.37	-251.0
	Oct-21	6.42	27.80	71,624	0.37	8.06	71.0
	Jan-22	6.83	24.40	57,440	1.04	9.50	33.2
	Apr-22	6.68	26.53	79,582	0.14	13.71	89.4
	Jul-22	7.32	27.87	69,487	0.84	9.18	46.4
	Jan-23	6.72	23.80	54,940	0.63	8.70	16.3
	Jul-23	6.66	23.90	57,730	0.54	8.81	58.2
	Jan-24	6.56	23.40	56,156	0.46	9.11	-11.4
	Jul-24	6.79	26.60	63,230	0.22	17.00	-5.2

Table 3-4. Field Measurements (continued)

Well ID (AOSB-)	Sample Date	pH (S.U.)	Temp. (°C)	Cond. (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW0005	May-21	6.99	25.62	60,814	0.06	1.88	-212.0
	Oct-21	6.72	26.30	53,058	0.19	4.30	215.0
	Jan-22	6.92	25.50	56,300	0.17	8.90	27.5
	Apr-22	6.72	27.80	58,630	0.56	OR	62.8
	Jul-22	7.14	29.50	72,445	0.75	47.77	54.3
	Jan-23	6.53	24.90	58,955	0.05	9.95	-36.3
	Jul-23	6.63	24.90	62,308	0.16	3.38	71.2
	Jan-24	6.73	23.50	60,488	0.08	13.50	-67.0
	Jul-24	6.84	26.90	67,250	0.26	9.01	-33.5
MW0006	May-21	7.08	26.68	62,115	0.19	9.29	-170.9
	Oct-21	6.85	27.10	54,995	0.03	2.05	-97.5
	Jan-22	7.05	24.20	57,333	0.07	0.52	-135.5
	Apr-22	6.86	25.72	81,660	0.01	0.77	-90.7
	Jul-22	7.34	27.91	70,529	0.13	0.35	-91.4
	Jan-23	6.61	24.10	57,090	0.09	0.95	-160.5
	Jul-23	6.66	25.20	59,703	0.12	3.19	-51.8
	Jan-24	6.73	22.90	57,502	0.03	1.13	-202.3
	Jul-24	6.80	27.00	64,857	0.05	0.02	-144.5
MW0007	May-21	7.04	27.39	59,241	0.37	11.93	-109.7
	Oct-21	6.75	27.71	54350	2.57	5.17	-109.0
	Jan-22	7.03	25.00	62,360	0.13	2.42	-27.0
	Apr-22	6.92	27.22	79,813	0.71	5.05	70.5
	Jul-22	7.53	27.98	75,147	4.14	1.01	135.2
	Jan-23	6.87	24.90	62,890	4.11	2.82	-21.0
	Jul-23	6.76	26.80	64,680	1.39	6.21	199.6
	Jan-24	6.79	25.50	65,173	0.75	4.44	-41.3
	Jul-24	7.02	27.20	66,422	0.20	7.08	-16.6
MW0008	May-21	7.08	25.47	65,114	0.22	4.65	-127.4
	Oct-21	6.53	27.50	60,715	0.20	9.55	-27.5
	Jan-22	6.73	25.50	65,222	0.09	4.01	-56.0
	Apr-22	6.50	26.90	61,655	0.29	3.50	14.0
	Jul-22	6.97	31.24	77,111	0.10	6.12	34.7
	Jan-23	6.38	26.00	59,650	0.11	4.25	-46.5
	Jul-23	6.51	26.10	61,930	0.26	4.88	-51.7
	Jan-24	6.56	24.90	61,051	0.04	9.84	-117.8
	Jul-24	6.64	26.70	67,257	0.06	11.00	-81.8

Table 3-4. Field Measurements (continued)

Well ID (AOSB-)	Sample Date	pH (S.U.)	Temp. (°C)	Cond. (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW0009	May-21	7.03	26.88	56,047	0.23	12.81	-117.2
	Oct-21	6.61	27.40	63,247	1.89	9.80	98.9
	Jan-22	9.93	24.20	60,310	0.10	2.85	-163.0
	Apr-22	6.72	25.6	56631	0.12	2.21	-45.7
	Jul-22	7.30	29.41	74,553	0.33	1.16	80.3
	Jan-23	6.74	24.80	56,995	1.04	0.95	-28.5
	Jul-23	6.74	25.60	60,325	0.93	9.89	48.2
	Jan-24	6.81	24.80	57,642	0.92	8.02	-44.3
	Jul-24	6.84	27.30	60,540	0.18	2.16	-16.4
MW0010	May-21	7.09	26.50	42,484	0.07	2.55	-278.5
	Oct-21	6.78	27.40	39,265	3.00	2.50	4.6
	Jan-22	6.98	25.80	38,275	0.37	4.28	36.0
	Apr-22	6.80	24.40	26,966	0.14	3.16	-28.8
	Jul-22	7.52	26.18	48,135	0.33	9.77	92.1
	Jan-23	6.84	25.00	35,511	1.13	1.55	-43.0
	Jul-23	6.88	24.00	38,426	1.42	3.33	61.2
	Jan-24	6.76	23.50	38,854	0.81	6.00	-22.0
	Jul-24	7.04	27.50	48,932	0.04	3.28	-23.4
MW0011	May-21	7.44	25.16	33,260	0.03	1.76	-303.5
	Oct-21	6.70	28.40	36,075	1.56	6.36	23.8
	Jan-22	7.25	24.60	29,780	5.11	0.67	-85.0
	Apr-22	6.95	25.01	40,597	0.05	1.08	118.9
	Jul-22	7.46	29.35	39,181	0.59	1.18	30.9
	Jan-23	6.87	24.60	29,690	1.60	1.05	-14.8
	Jul-23	6.98	23.90	32,117	1.87	7.74	70.1
	Jan-24	6.83	23.50	31,984	0.42	3.97	2.1
	Jul-24	7.13	28.10	39,377	0.05	3.04	-31.0

Notes:
Field measurements displayed are final stabilized measurements collected before sampling.
SC = Specific conductance in microSiemens per centimeter (µS/cm).
DO = Dissolved oxygen in milligrams per liter (mg/L).
Turb. = Turbidity in nephelometric turbidity units (NTUs).
ORP = Oxidation-reduction potential in millivolts (mV).
NM = Not measured.
S.U. = Standard Units.
°C = Degree Celcius.
OR = Over detectable range.

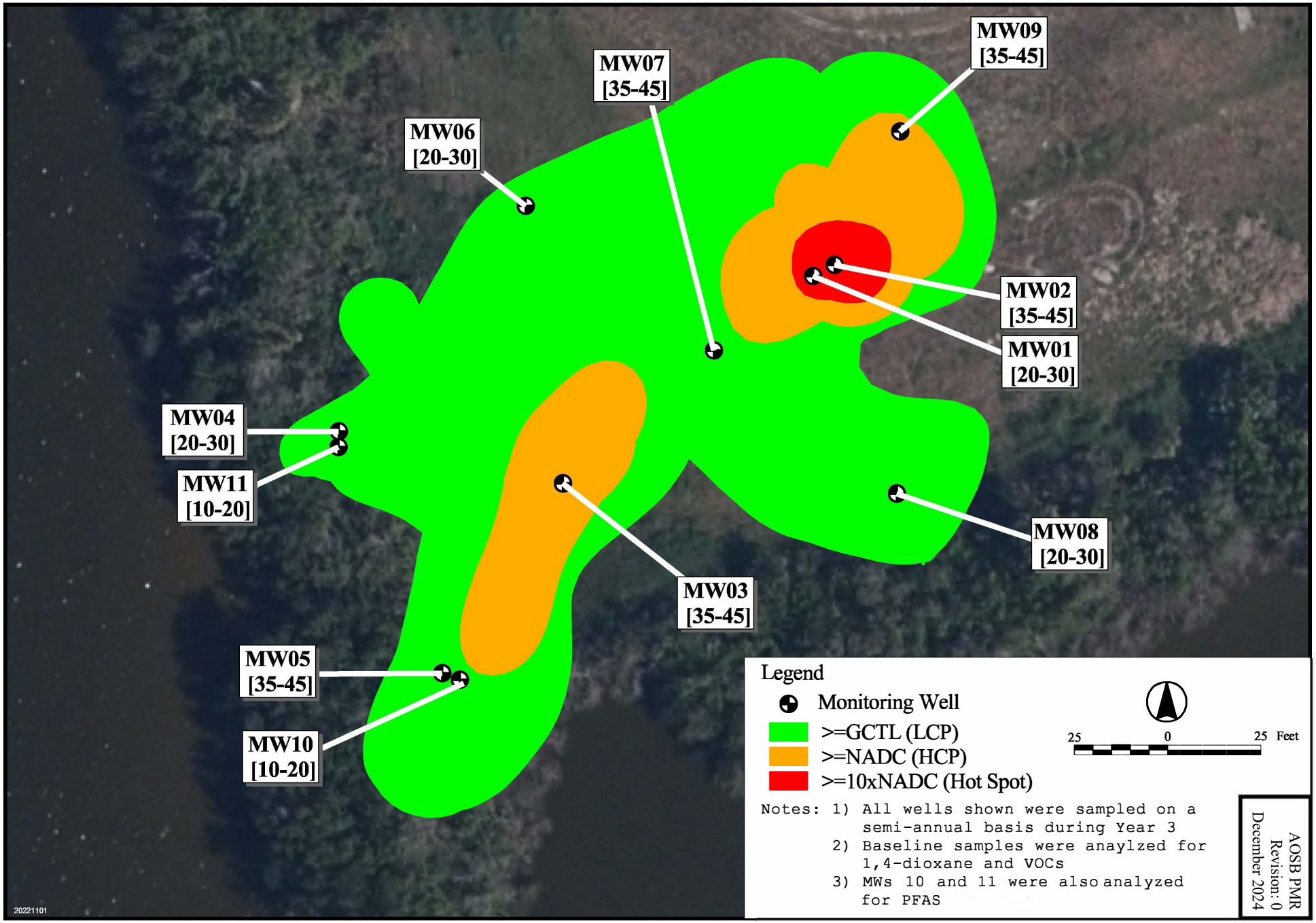
Table 3.5. Groundwater Sampling Results for Per- and Polyfluoroalkyl Substances

Analyte	Florida pGCTL	USEPA MCLs	USEPA RSL	MW0009		MW0010			MW0011		
				April 2022	July 2023	April 2022	July 2023	July 2024	April 2022	July 2023	July 2024
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3ODS)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	--		--	1.7 U	1.8 U	**2.0 I**	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	--		--	NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
Hexafluoropropylene oxide dimer acid (HFPO-DA/GenX)	--	10	1.5	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	1.8 U
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	9.1 U	1.8 U	1.8 U	8.9 U
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	NA	1.8 U	1.8 U	NA
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	--		--	NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	--		--	NA	3.6 U	NA	3.5 U	9.1 U	NA	3.6 U	8.9 U
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	--		--	1.7 U	1.8 U	1.7 U	1.8 U	NA	1.8 U	1.8 U	NA
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	--		--	NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
Perfluoro-1-butanesulfonic acid (PFBS)	--		600	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	0.89 U
Perfluoro-1-decanesulfonic acid (PFDS)	--		--	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluoro-1-heptanesulfonic acid (PFHpS)	--		--	0.85 U	0.89 U	0.86 U	0.88 U	0.91 U	0.89 U	0.89 U	0.89 U
Perfluoro-1-nonanesulfonic acid (PFNS)	--		--	0.85 U	0.89 U	0.86 U	0.88 U	0.91 U	0.89 U	0.89 U	0.89 U
Perfluoro-1-octanesulfonamide (PFOSA)	--		--	NA	0.89 U	NA	0.88 U	4.5 U	NA	0.89 U	4.5 U
Perfluoro-1-pentanesulfonic acid (PFPeS)	--		--	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	0.89 U
Perfluorododecanesulfonic acid (PFDOS)	--			NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
Perfluorohexanesulfonic acid (PFHxS)	--	10	39	0.85 U	0.89 U	**5.4**	**3.5**	**10.9**	**2.7 I**	**2.1 I**	**14**
Perfluoro-n-butanoic acid (PFBA)	--		1,800	0.85 U	**2.1 I**	**10 I**	**11**	**16.6 I**	**11**	**14**	**21.7 I**
Perfluoro-n-decanoic acid (PFDA)	--		0.004	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluoro-n-dodecanoic acid (PFDoA)	--		100	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluoro-n-heptanoic acid (PFHpA)	--		--	0.85 U	0.89 U	**1.6 I**	0.88 U	**9.4 I**	**1.3 I**	0.89 U	**6.1 I**
Perfluoro-n-hexadecanoic acid (PFHxDA)	--		--	NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
Perfluoro-n-hexanoic acid (PFHxA)	--		990	0.85 U	0.89 U	**2.1 I**	**1.5 I**	**6.5 I**	**1.7 I**	0.89 U	**10.5 I**
Perfluoro-n-nonanoic acid (PFNA)	--	10	5.9	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	0.89 U
Perfluoro-n-octadecanoic acid (PFODA)	--		80,000	NA	1.8 U	NA	1.8 U	NA	NA	1.8 U	NA
Perfluoro-n-octanoic acid (PFOA)	70	4.0	0.0027	0.85 U	0.89 U	**12**	**3.0 I**	**20.8**	**4.7**	0.89 U	**18.5**
Perfluoro-n-pentanoic acid (PFPeA)	--		--	0.85 U	0.89 U	**2.1 I**	**2.4 I**	**7.7 I**	**2.1 I**	**4.3**	**12.3** I
Perfluoro-n-tetradecanoic acid (PFTeDA)	--		2,000	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluoro-n-tridecanoic acid (PFTrDA)	--		--	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluoro-n-undecanoic acid (PFUdA)	--		600	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U
Perfluorooctanesulfonic acid (PFOS)	70	4.0	0.2	0.85 U	0.89 U	**3.2 I**	0.88 U	**2.1 I**	**1.3 I**	0.89 U	**5.6**

Notes:

Concentrations in nanograms per liter (ng/L).
Bold text indicates that analyte was detected.
Black hading indicates that result is greater than November 2024 United States Environmental Protection Agency Resident Tap Water Target Hazard Quotient = 0.1 Regional Screening Level
Orange shading indicates that result is greater than United States Environmental Protection Agency Maximum Contaminant Level.
Hazard index was not calculated for any of the samples as it requires two or more detected results of HFPO-DA, PFBS, PFHxS, or PFNA
U = Not detected at or above Detection Limit (DL).
I = Value is between the laboratory DL and limit of quantiation (LOQ)
NA = Not analyzed.
pGCTL = FDEP Provisional Groundwater Cleanup Target Level per the FDEP PFAS Dynamic Plan, March 2022
A data quality review was performed by Tetra Tech's data manager and the results provided in this table were found to have been generated in conformance with good analytical practices. Some minor nonconformance issues were noted in the quality control elements associated with project samples, and the appropriate data qualification was applied to the affected results as needed. Additional details on data quality are included in the analytical reports provided in the Appendices.

FIGURE 3-1 PERFORMANCE MONITORING WELL LOCATION MAP
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



AOSB PMR
Revision: 0
December 2024

FIGURE 3-2 JANUARY 2024 GROUNDWATER CONTOUR MAP
SWMU 111, KENNEDY SPACE CENTER, FLORIDA

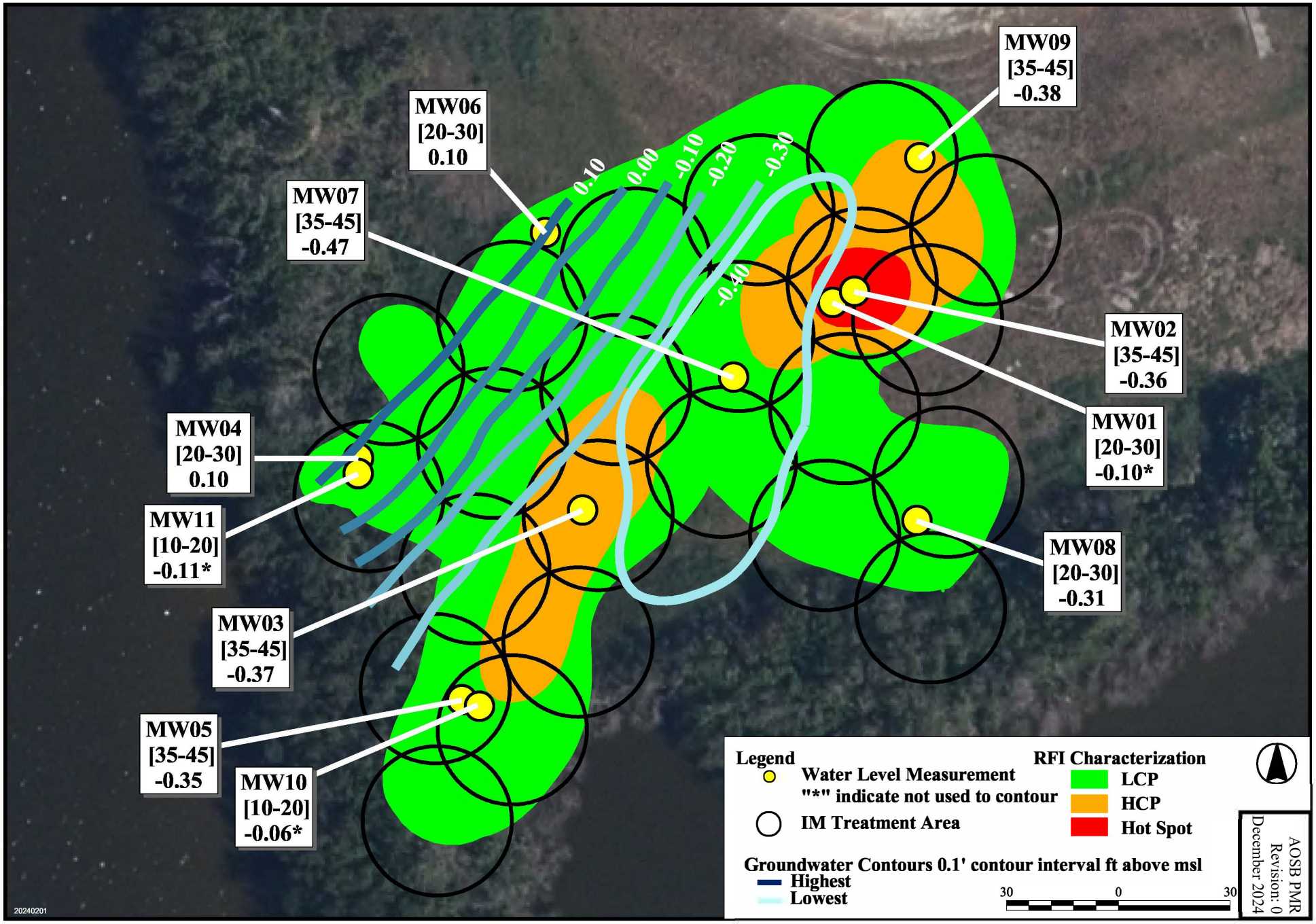
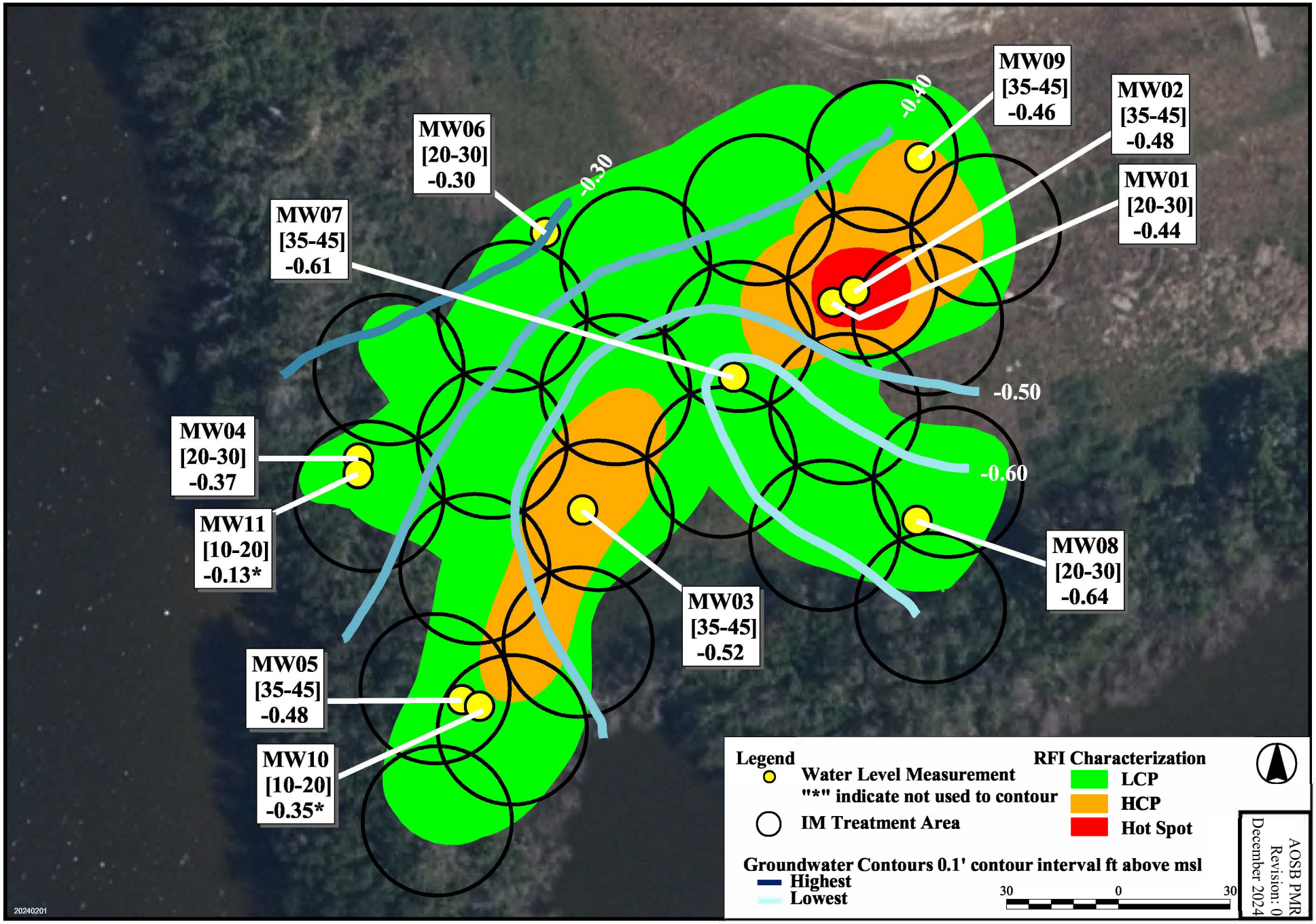


FIGURE 3-3 JULY 2024 GROUNDWATER CONTOUR MAP
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



MW0006 [20-30]	TCE	cDCE	tDCE	VC
05/2021	1.1 I	1.5 I	0.73 U	0.76 I
10/2021	0.89 U	1.2 I	0.73 U	0.71 U
01/2022	0.89 U	1.3 I	0.73 U	0.71 U
04/2022	0.89 U	1.3 I	0.73 U	0.71 U
07/2022	0.89 U	1.2 I	0.73 U	0.71 U
01/2023	0.79 U	1.0	0.95 U	0.78 I
07/2023	0.15 U	0.92 I	0.50 U	0.76 I
01/2024	0.89 U	1.3	0.73 U	1.2
07/2024	0.89 U	0.53 U	0.73 U	1.0

MW0004 [20-30]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	4.0	1.9 I	0.71 U
10/2021	0.89 U	2.4 I	0.73 U	0.71 U
01/2022	0.89 U	1.9 I	0.73 U	0.71 U
04/2022	0.89 U	1.9 I	0.73 U	0.71 U
07/2022	0.89 U	0.96 I	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.30 I	1.3	0.50 U	0.50 U
01/2024	0.89 U	4.0	0.73 U	0.71 U
07/2024	0.89 U	1.3	0.73 U	0.71 U

MW0011 [10-20]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	0.75 I	0.73 U	0.71 U
10/2021	0.89 U	0.53 U	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0005 [35-45]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	14	0.73 U	0.71 U
10/2021	0.89 U	4.8	0.73 U	1.1 I
01/2022	0.89 U	1.0 I	0.73 U	0.92 I
04/2022	0.89 U	0.75 I	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.55 I
01/2024	0.89 U	0.53 U	0.73 U	0.82 I
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0010 [10-20]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	1.2 I	3.9	0.71 U
10/2021	0.89 U	0.92 I	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	1.0 I	1.2 I	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0003 [35-45]	TCE	cDCE	tDCE	VC
05/2021	70	120	1.4 I	4.1
10/2021	7.8	23	0.73 U	3.9
01/2022	2.0 I	7.1	0.73 U	0.79 I
04/2022	1.2 I	0.72 I	0.73 U	0.71 U
07/2022	1.1 I	1.6 I	0.73 U	0.71 U
01/2023	4.0 I	2.1	0.95 U	0.64 U
07/2023	1.3	0.92 I	0.50 U	0.50 U
01/2024	2.5	0.85 I	0.73 U	0.71 U
07/2024	3.0	1.0	0.73 U	0.71 U

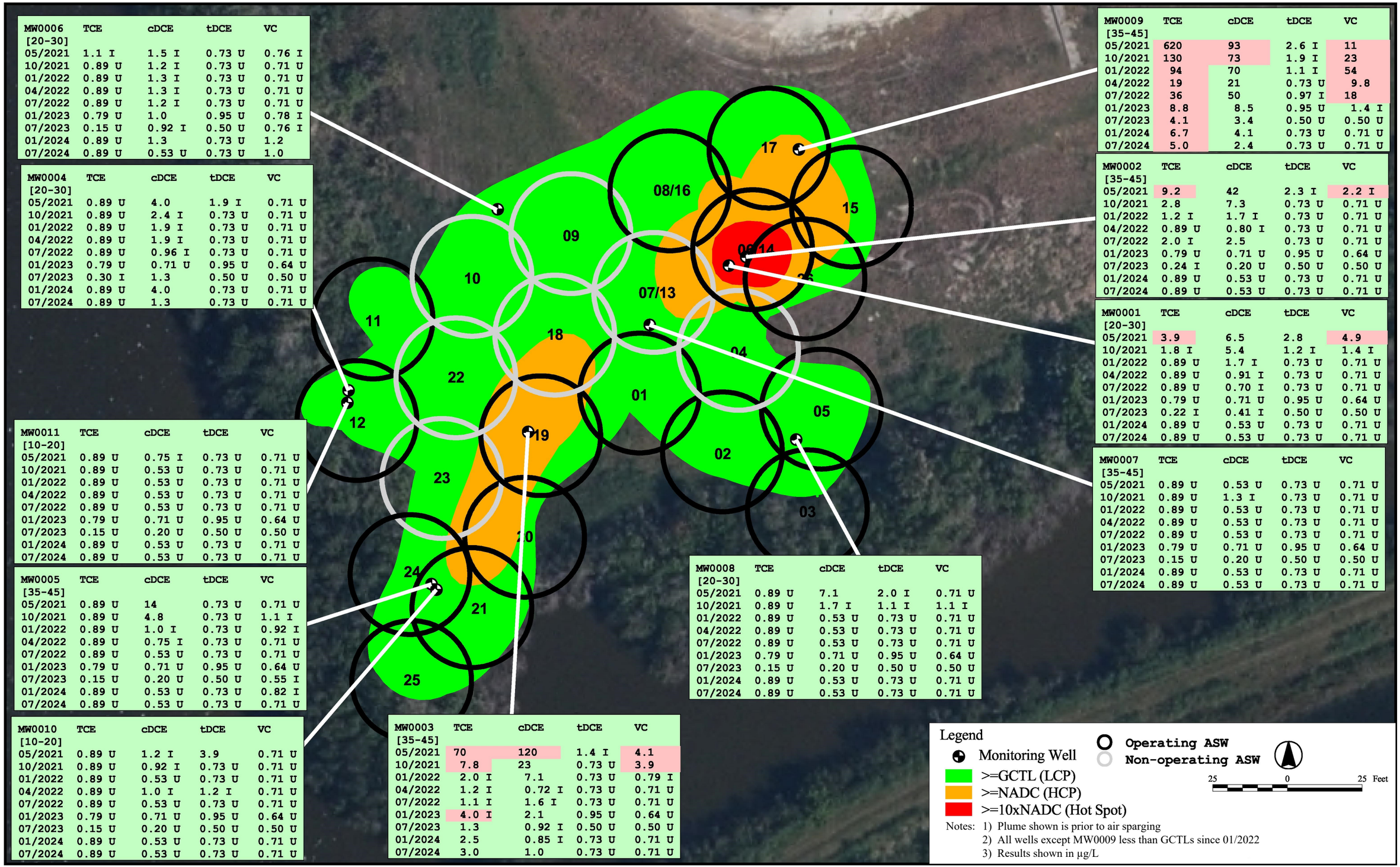
MW0008 [20-30]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	7.1	2.0 I	0.71 U
10/2021	0.89 U	1.7 I	1.1 I	1.1 I
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0009 [35-45]	TCE	cDCE	tDCE	VC
05/2021	620	93	2.6 I	11
10/2021	130	73	1.9 I	23
01/2022	94	70	1.1 I	54
04/2022	19	21	0.73 U	9.8
07/2022	36	50	0.97 I	18
01/2023	8.8	8.5	0.95 U	1.4 I
07/2023	4.1	3.4	0.50 U	0.50 U
01/2024	6.7	4.1	0.73 U	0.71 U
07/2024	5.0	2.4	0.73 U	0.71 U

MW0002 [35-45]	TCE	cDCE	tDCE	VC
05/2021	9.2	42	2.3 I	2.2 I
10/2021	2.8	7.3	0.73 U	0.71 U
01/2022	1.2 I	1.7 I	0.73 U	0.71 U
04/2022	0.89 U	0.80 I	0.73 U	0.71 U
07/2022	2.0 I	2.5	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.24 I	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0001 [20-30]	TCE	cDCE	tDCE	VC
05/2021	3.9	6.5	2.8	4.9
10/2021	1.8 I	5.4	1.2 I	1.4 I
01/2022	0.89 U	1.7 I	0.73 U	0.71 U
04/2022	0.89 U	0.91 I	0.73 U	0.71 U
07/2022	0.89 U	0.70 I	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.22 I	0.41 I	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0007 [35-45]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	0.53 U	0.73 U	0.71 U
10/2021	0.89 U	1.3 I	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U



Legend

- Monitoring Well
- >=GCTL (LCP)
- >=NADC (HCP)
- >=10xNADC (Hot Spot)
- Operating ASW
- Non-operating ASW

25 0 25 Feet

Notes:
1) Plume shown is prior to air sparging
2) All wells except MW0009 less than GCTLs since 01/2022
3) Results shown in µg/L

20240201

SECTION IV
CONCLUSIONS AND RECOMMENDATIONS

Based on Year 3 system operations and performance monitoring, the AS system at AOSB is operating as designed and continues to meet the IM objective. Performance monitoring results indicate that the hot spot and high-concentration plume identified during the RFI characterization are no longer present and COC concentrations in groundwater have been reduced to less than GCTLs in all wells except MW0009, as of the July 2024 sampling event. The TCE concentration in this well, which exceeded the NADC during baseline sampling (620 µg/L), have been reduced to 5.0 µg/L, which represents a 99.2% reduction. As of July 2024, the two locations where cDCE concentrations were above the GCTL during baseline (MW0003 at 120 µg/L and MW0009 at 93 µg/L), have been reduced to less than the GCTL (MW0003 at 1.0 µg/L and MW0009 at 2.4 µg/L). VC concentrations in MW0009 decreased from 11 µg/L during the baseline to less than the laboratory detection limit of 0.71 µg/L as of July 2024.

Initial PFAS sampling in April 2022 identified the presence of PFAS at AOSB. Results indicated MW0010 and MW0011 had USEPA RSL exceedances of PFOA and PFOS. Subsequently, samples were analyzed for PFAS during the July 2024 sampling event to monitor concentrations at the site. Results indicated that PFAS concentrations in MW0010 and MW0011 continue to exceed MCLs; however, the wells do not exceed the Florida provisional GCTLs for PFOA and PFOS (individual or combined). PFAS at AOSB will be addressed under the KSC Center-wide PFAS investigation moving forward.

Since the objective of the IM has been met, team consensus was reached to shut down the AS system and transition to LTM at the October 2024 meeting (Meeting Minute 2410-M10, Decision 2410-D17). The AS system was shut down on October 30, 2024. The compressor trailer was removed from the site, and the AS headers lines were capped. The manifold distribution trailer and piping infrastructure will remain in place in event rebound is observed and additional treatment is necessary. Quarterly LTM at MW0001 through MW0011 is scheduled to begin January 2025. Table 4-1 describes the LTM plan, and Figure 4-1 shows the LTM sampling locations.

The contents of this report were presented at the October 2024 KSCRT meeting, which included recommendations for system shutdown and transition to LTM. The ADP and meeting minutes from the October 2024 KSCRT meeting are provided in Appendix A.

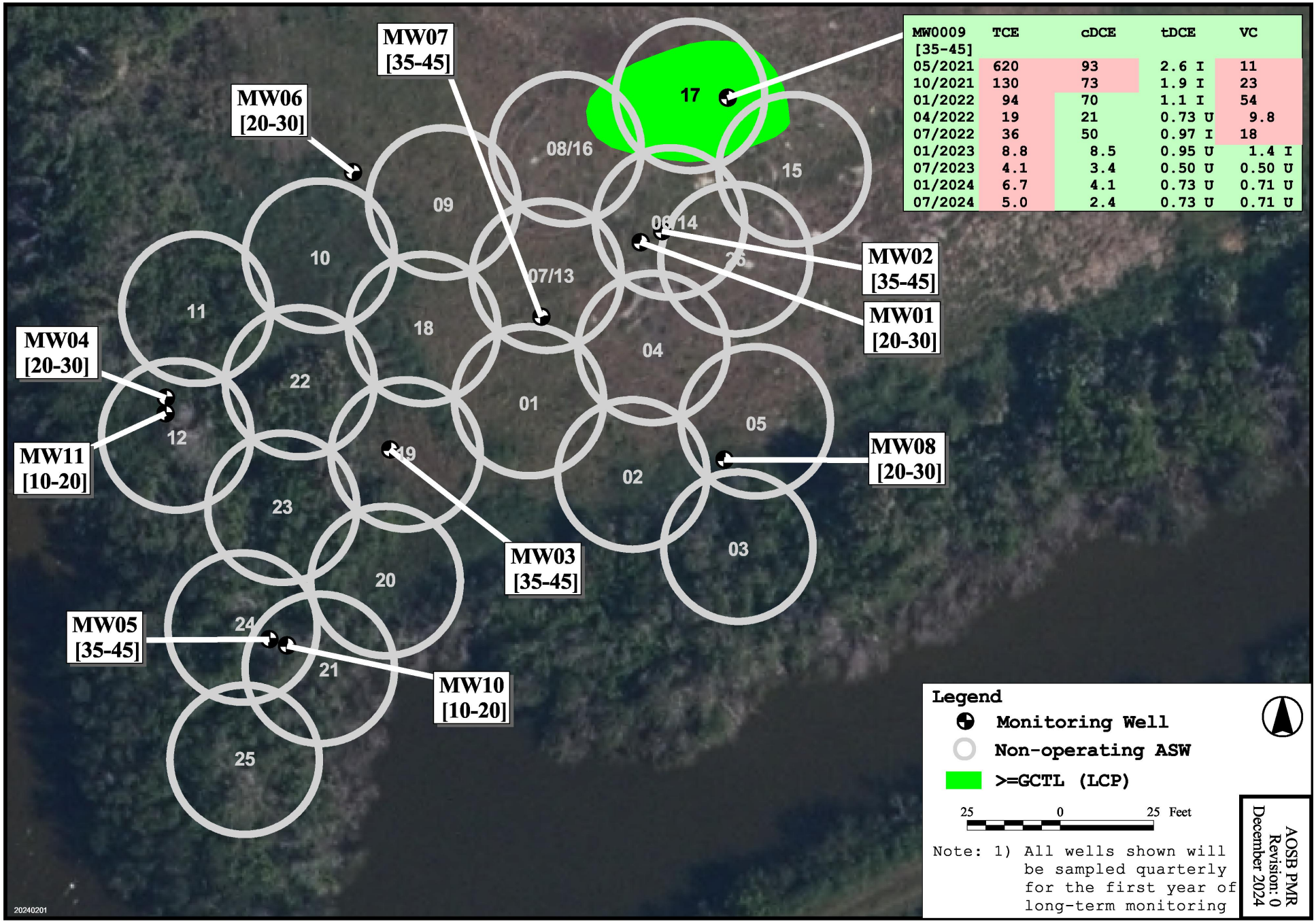
Table 4-1. Long Term Monitoring Plan

Monitoring Well (AOSB-)	Screen Interval (ft bls)	Monitoring Function	Sampling Frequency
MW0001	20-30	Monitor former HS area	Quarterly
MW0002	35-45	Monitor former HCP area downgradient of MW0009	Quarterly
MW0003	35-45	Monitor former HCP area downgradient of MW0009	Quarterly
MW0004	20-30	Monitor former LCP edge along OFW	Quarterly
MW0005	35-45	Monitor former LCP edge along OFW	Quarterly
MW0006	20-30	Monitor former LCP area upgradient of HCPs/HS	Quarterly
MW0007	35-45	Monitor former LCP area downgradient of MW0009	Quarterly
MW0008	20-30	Monitor LCP edge along OFW	Quarterly
MW0009	35-45	Monitor LCP	Quarterly
MW0010	10-20	Monitor OFW in shallow interval	Quarterly
MW0011	10-20	Monitor OFW in shallow interval	Quarterly

Notes:

ft bls = feet below land surface.
HCP = High Concentration Plume.
HS = Hot Spot.
LCP = Low Concentration Plume.
OFW = Outstanding Florida Waters.
All samples will be analyzed for VOCs via USEPA method 8260D
Quarterly long term monitoring scheduled to begin January 2025.

FIGURE 4-1 LONG-TERM MONITORING PLAN
SWMU 111, KENNEDY SPACE CENTER, FLORIDA



SECTION V
REFERENCES

Florida Department of Environmental Protection (FDEP), 2012. Guidance for Comparing Background and Site Chemical Concentrations in Soil. January.

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NASA, 2021. Launch Complex 39A Operations Support Building Area, SWMU 111, Implementation Work Plan. Kennedy Space Center, Florida. Revision 1. April.

NASA, 2022. Launch Complex 39A Operations Support Building Area, SWMU 111, Air Sparge System Construction Completion and Performance Monitoring Report. Kennedy Space Center, Florida. Revision 0. December.

NASA, 2023. Launch Complex 39A Operations Support Building Area, SWMU 111, Year 2 Air Sparge System Performance Monitoring Report. Kennedy Space Center, Florida. Revision 0. December.

United States Environmental Protection Agency (USEPA), 2024. Regional Screening Levels, Generic Tables for Resident Tap Water for THQ=0.1. November 2024. https://www.epa.gov/risk/regional-screening-levels-rsls

APPENDIX A

OCTOBER 2024 ADVANCE DATA PACKAGE AND KSCRT MEETING MINUTES

2024 Annual Update (Year 3) on the Interim Measure Operation, Maintenance, and Groundwater Monitoring at Launch Complex 39A Operations Support Building Area (AOSB), SWMU 111



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This Advance Data Package (ADP) was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this ADP outdated.

Objectives

- Site Background, Remedial history, Site conditions
- System operation and maintenance
- Year 3 Performance Monitoring Results
- Conclusions
- Recommendations
- Path Forward
- Team Consensus

Background and History

Confirmation sampling conducted from Jan 2016 to Dec 2017

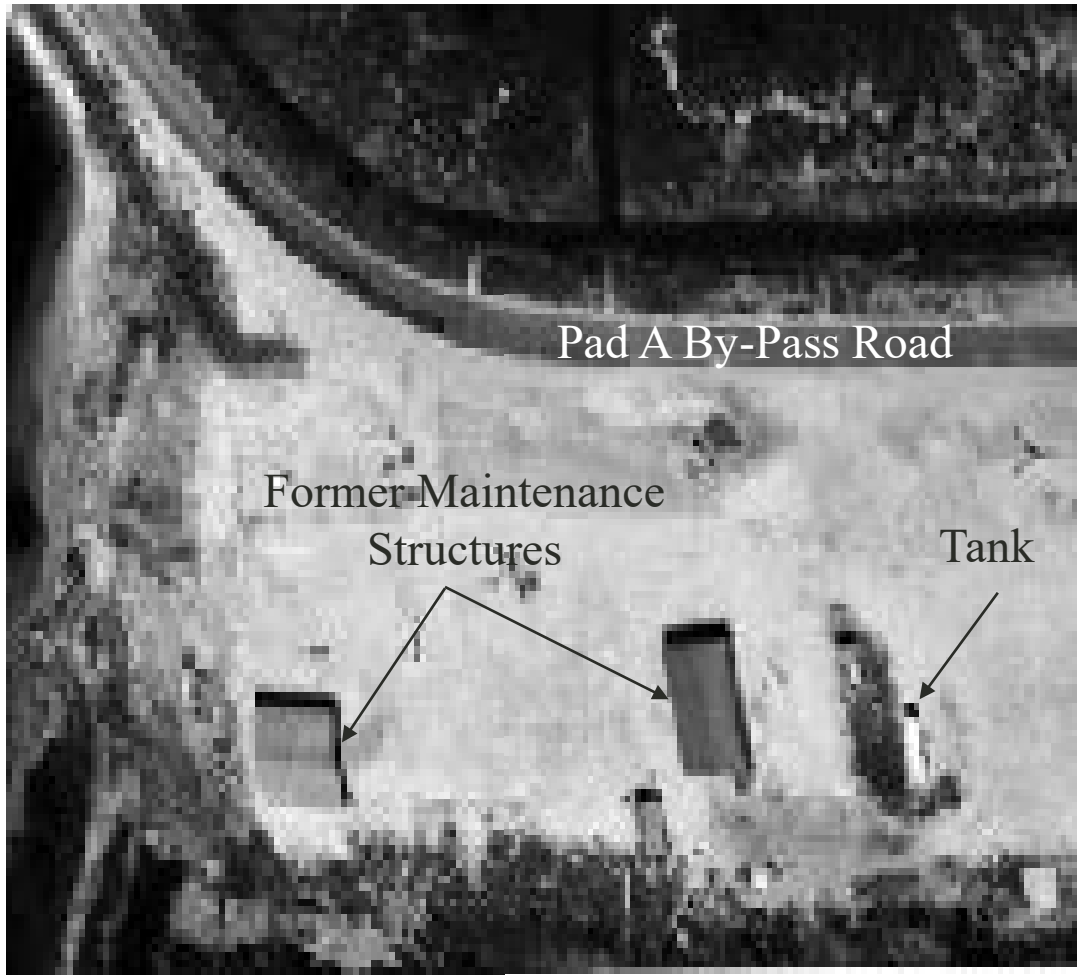
- Nine locations of concern (LOCs) were identified and investigated
- NFA for soil at all LOCs
- NFA for groundwater at all LOCs except LOC 7
- RFI recommended for LOC 7, area designated SWMU 111
  - Served as laydown/tank storage and possible maintenance area for early LC39A operations
  - Active between 1968 and 1992
  - Potential releases from stored tanks and maintenance activities

RFI activities conducted from Sept to Nov 2018

- TCE, cDCE, and VC exceeded GCTLs and NADCs
- Freon not detected in groundwater
- Team consensus reached for horizontal delineation of CVOCs and to proceed to IMWP for air sparge system to address Outstanding Florida Water concerns (Meeting Minute 1812-M16, D65 and D66)
- RFI Progress Report approved by FDEP 14-Jun-19

IMWP approved by FDEP June 2019

- Treatment area 0.6 acres
- 26 Air Sparging Wells (ASWs)
  - 13 ASWs total depth 31 ft bls and 13 ASWs total depth 46 ft bls



LOC 7

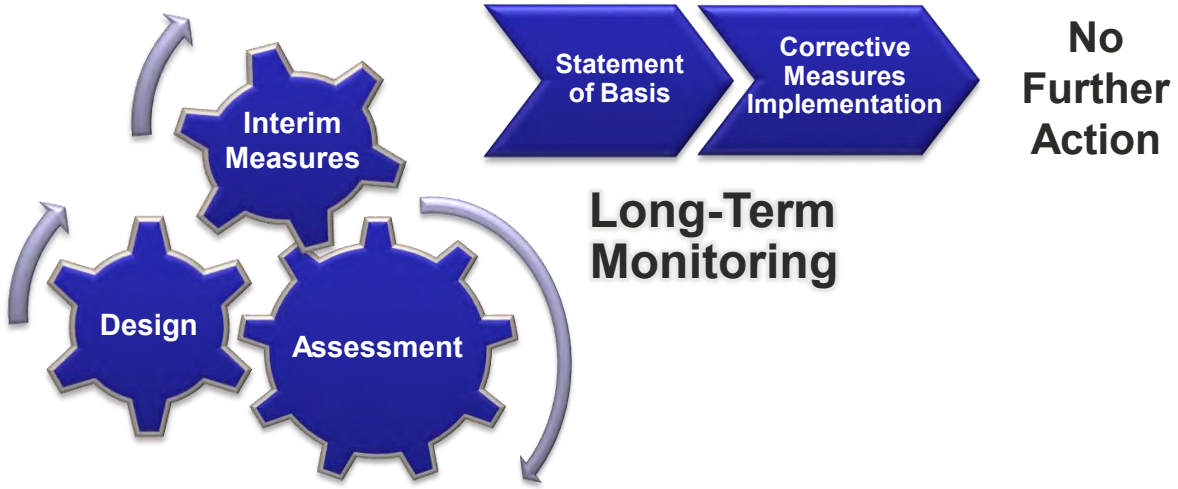
Where we are in the RCRA Process?

- Site is in RCRA Facility Investigation for volatile organic compounds (VOCs) in groundwater from a traditional RCRA stand-point
- Adaptive site management is being utilized through on-going assessment, design, and interim measures

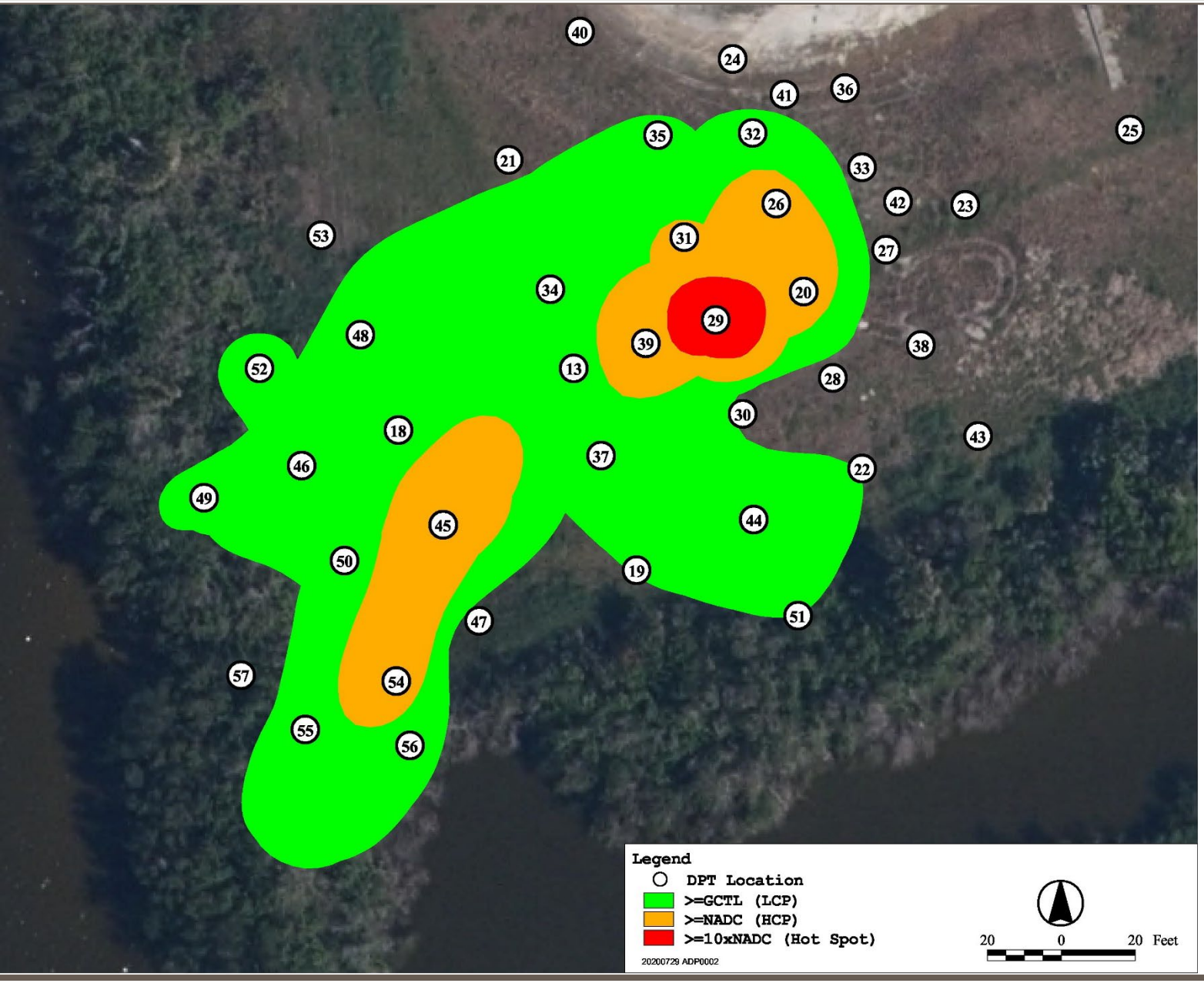
Traditional Linear Approach to RCRA Corrective Actions



KSC Approach to RCRA Corrective Actions (Engineering Evaluation Process)



RFI Plume Delineation (2018)



Interval (ft bls):	00-10	10-20	20-30	30-40	40-50	>50
	TCE					
Samples:	22	25	47	60	54	18
Detections:	1	8	26	19	6	2
>GCTL:	0	3	8	17	4	0
>NADC:	0	0	1	5	1	0
>10xNADC:	0	0	1	0	0	0
Maximum (ppb):	1	8	9,900	1,400	352	2
Average (ppb):	1	3	384	322	66	2
	cDCE					
Samples:	22	25	47	60	54	18
Detections:	5	14	45	24	5	0
>GCTL:	0	0	2	4	0	0
>NADC:	0	0	1	0	0	0
>10xNADC:	0	0	0	0	0	0
Maximum (ppb):	2	13	2,600	190	14	0
Average (ppb):	1	6	74	42	4	0
	tDCE					
Samples:	22	25	47	60	54	18
Detections:	4	13	34	1	0	0
>GCTL:	0	0	0	0	0	0
>NADC:	0	0	0	0	0	0
>10xNADC:	0	0	0	0	0	0
Maximum (ppb):	3	10	16	1	0	0
Average (ppb):	2	5	4	1	0	0
	VC					
Samples:	22	25	47	60	54	18
Detections:	0	10	21	20	6	0
>GCTL:	0	10	20	19	5	0
>NADC:	0	0	2	6	0	0
>10xNADC:	0	0	1	0	0	0
Maximum (ppb):	0	6	4,400	610	5	0
Average (ppb):	0	2	241	102	2	0

Contaminant distribution by depth interval

- Includes all DPT samples collected from 2016 to 2018, 226 groundwater samples collected from 41 locations

TCE, cDCE, and VC are COCs in the groundwater, Freon not detected

- Highest concentrations found in the 20-30 ft bls interval
- More widespread exceedances found in the 30-40 ft bls interval
- Maximum concentrations TCE: 9900 µg/L, cDCE: 2600 µg/L, and VC: 4400 µg/L
- Horizontal and vertical extents delineated per KSCRT Decision 1806-D65

RFI Mass Estimate

Interval (ft bls)	TCE Dissolved (lb)	TCE Sorbed (lb)	TCE Total (lb)		cDCE Dissolved (lb)	cDCE Sorbed (lb)	cDCE Total (lb)		VC Dissolved (lb)	VC Sorbed (lb)	VC Total (lb)	
0 - 10	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
10 - 20	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
20 - 30	0.77	1.40	2.17	26%	0.27	0.21	0.48	63%	0.37	0.11	0.47	43%
30 - 40	0.58	5.14	5.72	70%	0.06	0.23	0.29	37%	0.25	0.35	0.61	56%
40 - 50	0.02	0.27	0.30	4%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
50 - 60	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
>60	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
Totals:	1.38	6.82	8.19		0.33	0.43	0.77		0.62	0.46	1.09	

Interval (ft bls)	FOC	Porosity	Bulk Density (lb/ft3)
0 - 10	0.0078	0.30	110
10 - 20	0.0029	0.30	110
20 - 30	0.0029	0.30	110
30 - 40	0.0140	0.30	110
40 - 50	0.0180	0.30	110
50 - 60	0.0064	0.25	125
>60	0.0023	0.30	110

Plume	Dissolved (lb)	Sorbed (lb)	Total (lb)	
LCP	0.58	2.39	2.97	30%
HCP	1.07	4.39	5.46	54%
Hot Spot	0.68	0.93	1.62	16%
Totals:	2.33	7.71	10.04	

Mass of Contaminants Calculation:

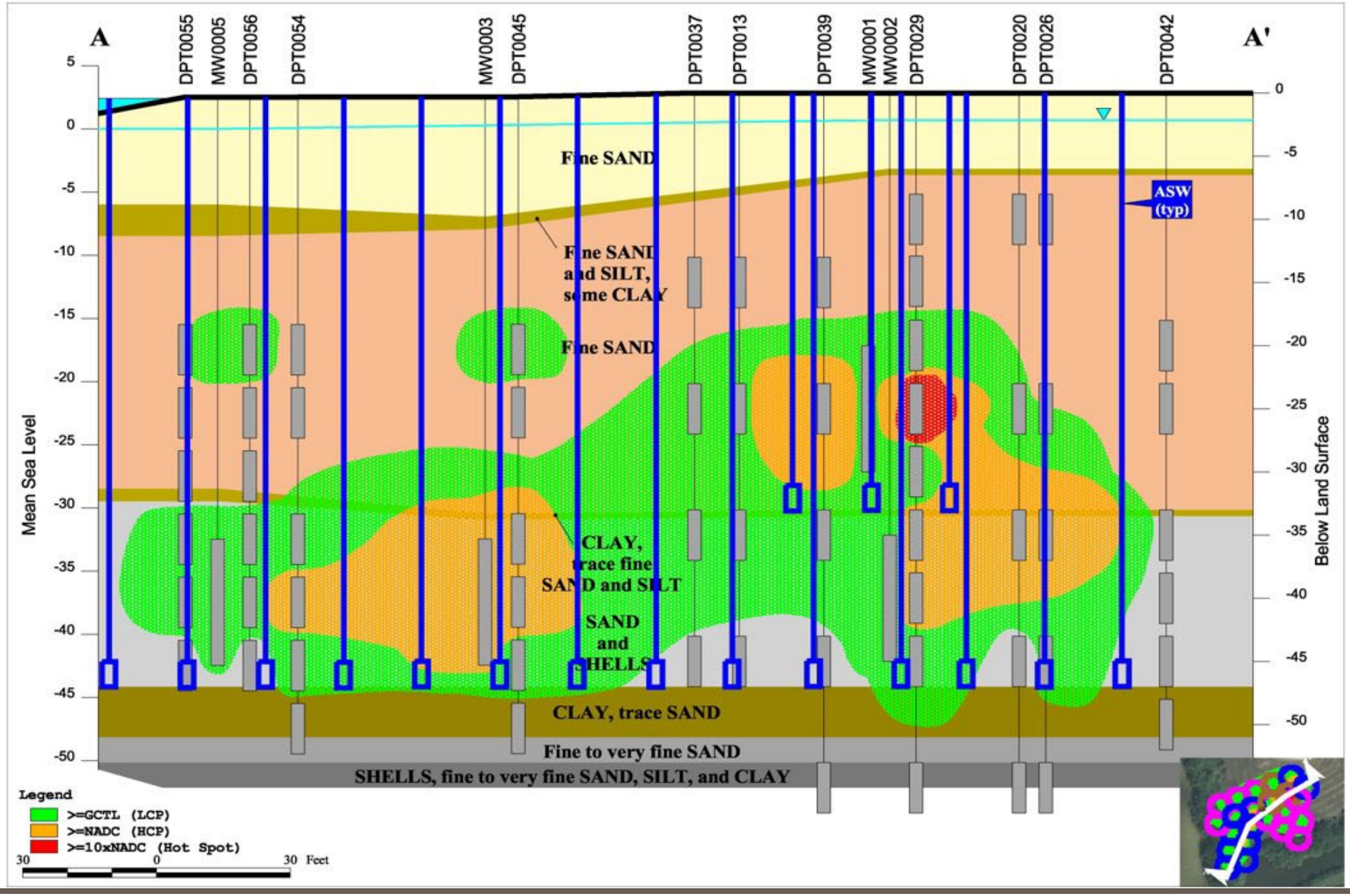
To determine the mass of a contaminant in the aqueous phase, the volume of groundwater was first estimated by multiplying the area of the footprint of the plume by the thickness of the plume by the porosity. This volume was multiplied by the estimated average concentration of the contaminant to yield the mass in the aqueous phase.

To determine the mass of a contaminant in the sorbed phase, the mass of soil was first estimated by multiplying the area of the footprint of the plume by the thickness of the plume by the bulk density of the soil. The concentration of the contaminant in the sorbed phase was estimated by multiplying the average groundwater concentration by the organic carbon partition coefficient by the estimated fraction organic carbon. The mass of the soil was multiplied by the estimated average concentration in the sorbed phase to yield the mass in the sorbed phase.

Organic carbon coefficients used in mass calculation are TCE = 107, cDCE = 45, and VC = 17 L/kg (Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents, AFCEE, 2004)

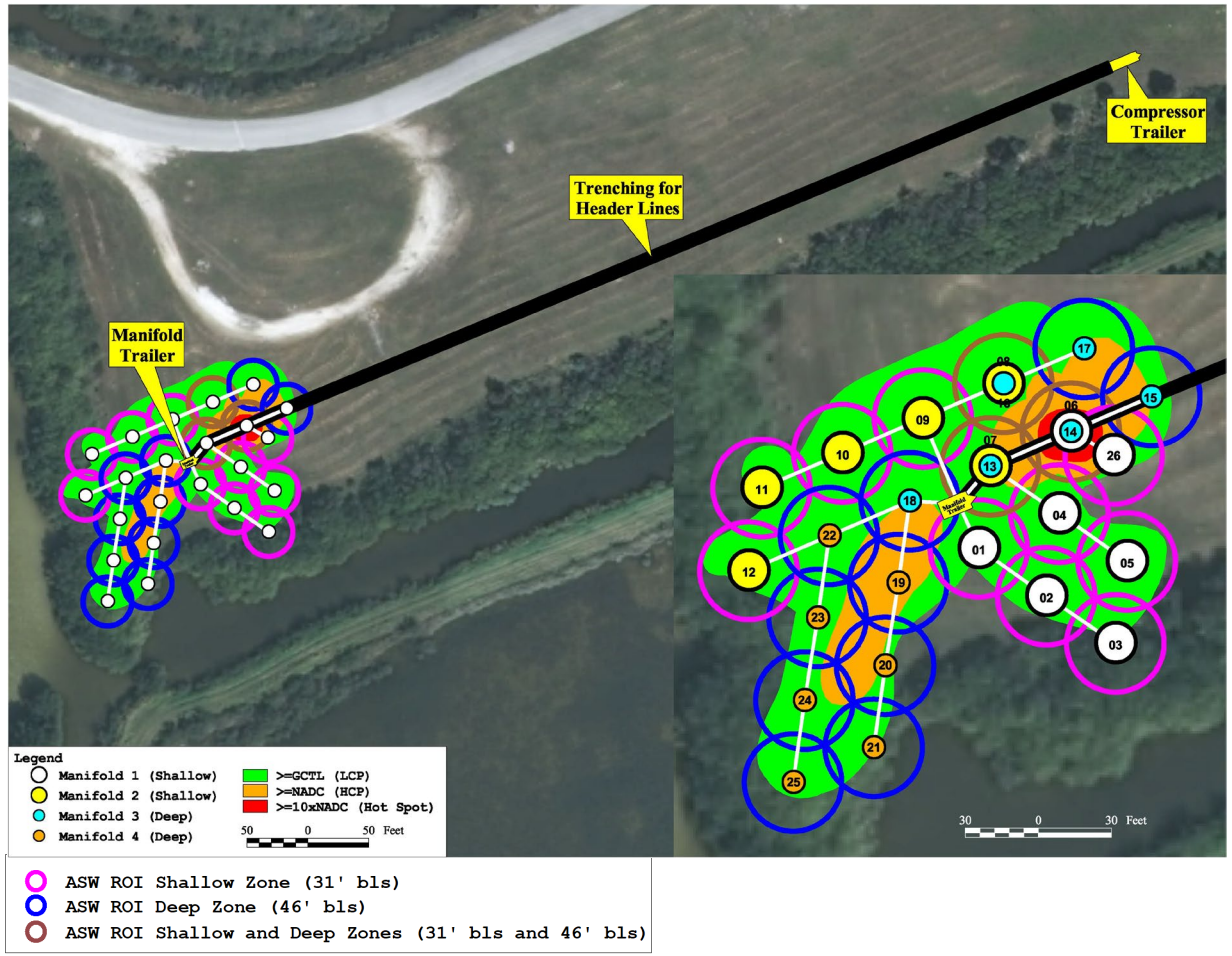
Soil samples were collected from the following six intervals: 0 to 1, 17 to 18, 32 to 33.5, 36 to 37, 48 to 49, and 53 to 54 feet bls. The soil samples were sent to ENCO Laboratories in Orlando, Florida, for fraction of carbon analysis.

Geologic Cross Section with Plume and AS Wells



Interim Measure Overview

- Objective: To remediate contaminated groundwater within treatment zone to support transition to LTM while being protective of nearby Outstanding Florida Waters (OFW)
- Full-scale operation began in July 2021
- System Design:
  - Two treatment intervals utilizing 26 ASWs
  - Shallow interval: 13 ASWs at 31 feet bls
  - Deep interval: 13 ASWs at 46 feet bls
  - 20-foot radius of influence, horizontal spacing 35-foot center to center
  - 5 CFM per ASW
- Compressor system:
  - 20 HP rotary screw compressor capable of 65 cfm at 34 psig with moisture separator
  - Four manifold zones with PLC-based controls/telemetry package
- Year 3 Performance sampling:
  - Groundwater sampling conducted at 11 monitoring wells on a semi-annual basis and analyzed for VOCs with collection of field parameters; select wells monitored for PFAS



Air Sparge System Trailers



Air Sparge Compressor Trailer



Interior of Compressor Trailer

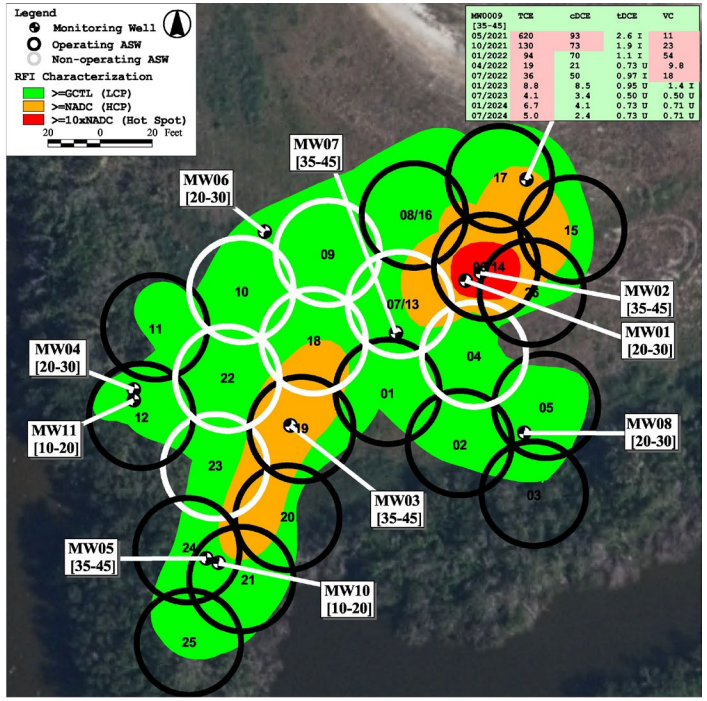


Manifold Trailer

Year Three System Operation and Maintenance

- ASW operating on 24/7 cycle (18 ASWs)
  - MW0009 area: ASWs 6, 8, 14, 15, 16, 17, and 26
  - OFW: ASWs 1, 2, 3, 5, 11, 12, 19, 20, 21, 24, and 25
- Turned off: ASWs 4, 7, 9, 10, 13, 18, 22, and 23

Total Available Time			System Operational Time				
Month	Days In Month	Hours in Month	Downtime (day)	Downtime (hr)	Runtime (hr)	Runtime (%)	Downtime Contributing Factor
Aug-23	31	744	0	0	744	100%	
Sep-23	30	720	0	0	720	100%	
Oct-23	31	744	25	600	144	19%	System off due to NASA power outage
Nov-23	30	720	18	432	288	40%	System off due to NASA power outage
Dec-23	31	744	8	192	552	74%	Performance sampling
Jan-24	31	744	20	480	264	35%	Performance sampling and blown oil line in compressor
Feb-24	29	696	5	108	588	84%	Performance sampling
Mar-24	31	744	0	0	744	100%	
Apr-24	30	720	0	0	720	100%	
May-24	31	744	3	60	684	92%	Power outage
Jun-24	30	720	12	276	444	62%	Compressor down due to belts breaking
Jul-24	31	744	22	528	216	29%	Compressor down due to belts breaking; performance sampling
Total	**366**	**8,784**	**112**	**2,676**	**6,108**	**70%**	



Monthly Site Visits:
- Inspect oil level on each visit and add oil as needed
- Lubricate bearings with grease lubricant
- Purge header condensate
- Record individual sparging well flow and pressure

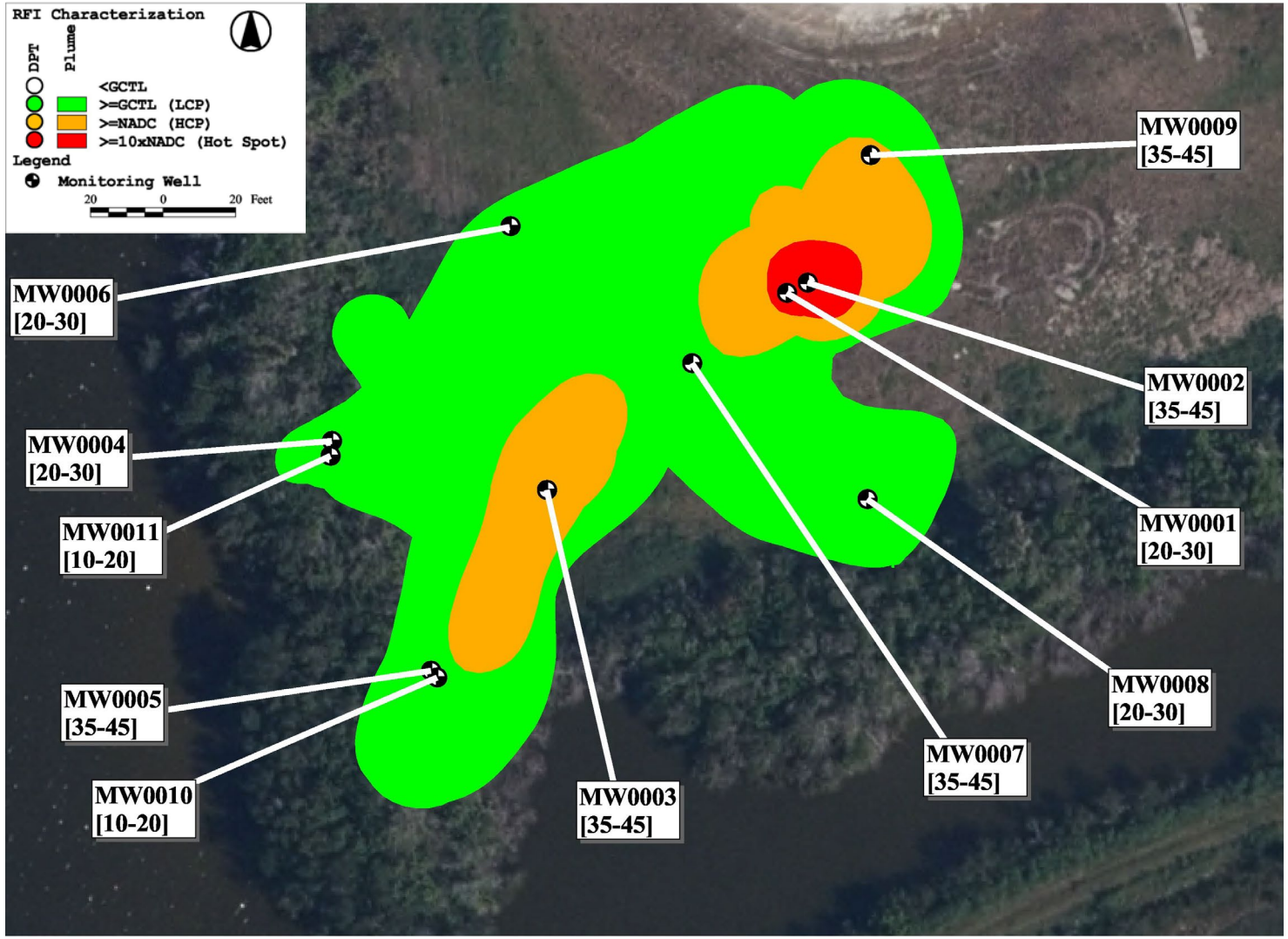
Routine Filtration Maintenance:
- Replace oil filter
- Replace building ambient air intake filters
- Remove oil accumulated in condensate oil/water separator

Compressor Maintenance Service Events:
- Blown oil line replace
- Compressor belts replaced

Year Three Performance Monitoring Sampling Plan

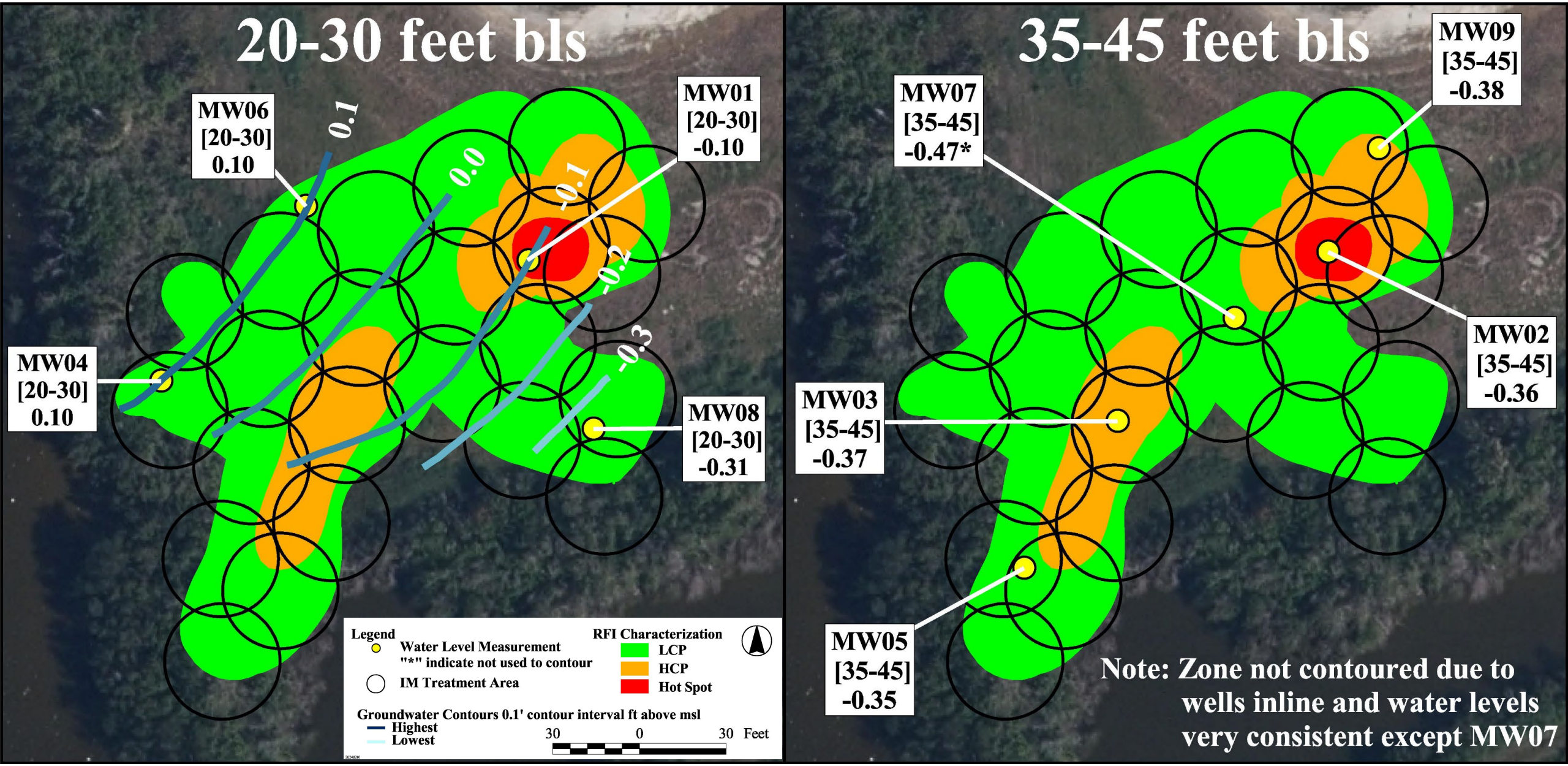
Well ID (AOSB-) [Screen Interval, ft bls]	Monitoring Function	Year 3
MW0001 [20-30]	Treatment zone; monitor HS interior	Semi-Annual
MW0002 [35-45]	Treatment zone; monitor HS interior	Semi-Annual
MW0003 [35-45]	Treatment zone; monitor southwestern HCP interior	Semi-Annual
MW0004 [20-30]	Treatment zone; monitor LCP edge along OFW	Semi-Annual
MW0005 [35-45]	Treatment zone; monitor LCP edge along OFW	Semi-Annual
MW0006 [20-30]	Treatment zone; monitor LCP edge along northern LCP edge	Semi-Annual
MW0007 [35-45]	Treatment zone; monitor downgradient of HS	Semi-Annual
MW0008 [20-30]	Treatment zone; monitor LCP edge along OFW	Semi-Annual
MW0009 [35-45]	Treatment zone; monitor northeastern HCP edge/upgradient of HS	Semi-Annual
MW0010 [10-20]	Treatment zone; monitor LCP edge /monitor OFW downgradient of HCPs and HS	Semi-Annual
MW0011 [10-20]	Treatment zone; monitor LCP edge along OFW	Semi-Annual

Notes:
- All sampled analyzed for VOCs via EPA method 8260D
- MW0010 and MW0011 also analyzed for PFAS

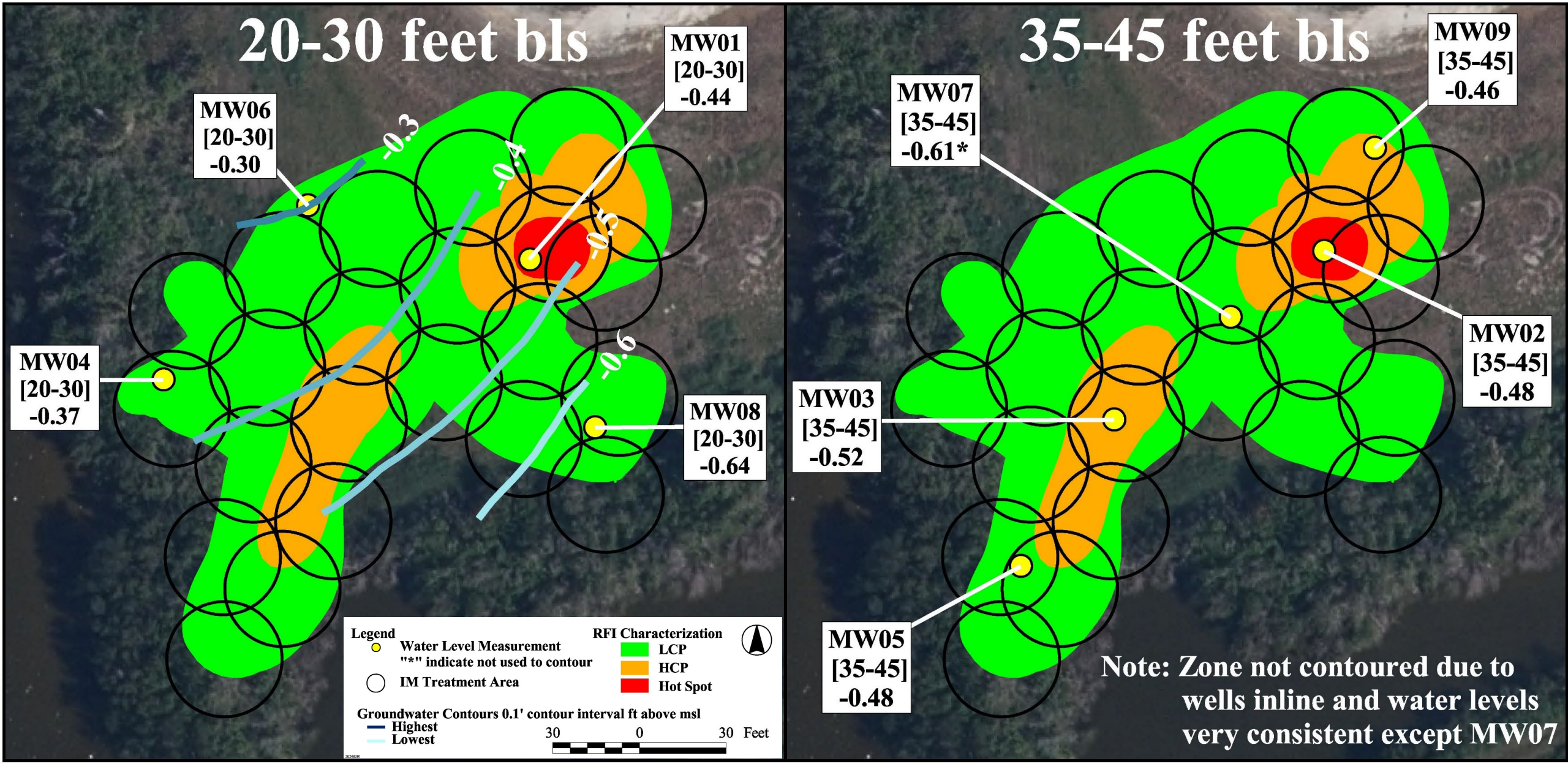


Note: MW09 is 150' (south) to 190' (west) from surface water

January 2023 Potentiometric Surface Maps (Flow similar to historic contouring)



July 2023 Potentiometric Surface Maps (Flow similar to historic contouring)



Year Three Performance Monitoring Results

MW0006 [20-30]	TCE	cDCE	tDCE	VC
05/2021	1.1 I	1.5 I	0.73 U	0.76 I
10/2021	0.89 U	1.2 I	0.73 U	0.71 U
01/2022	0.89 U	1.3 I	0.73 U	0.71 U
04/2022	0.89 U	1.3 I	0.73 U	0.71 U
07/2022	0.89 U	1.2 I	0.73 U	0.71 U
01/2023	0.79 U	1.0	0.95 U	0.78 I
07/2023	0.15 U	0.92 I	0.50 U	0.76 I
01/2024	0.89 U	1.3	0.73 U	1.2
07/2024	0.89 U	0.53 U	0.73 U	1.0

MW0004 [20-30]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	4.0	1.9 I	0.71 U
10/2021	0.89 U	2.4 I	0.73 U	0.71 U
01/2022	0.89 U	1.9 I	0.73 U	0.71 U
04/2022	0.89 U	1.9 I	0.73 U	0.71 U
07/2022	0.89 U	0.96 I	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.30 I	1.3	0.50 U	0.50 U
01/2024	0.89 U	4.0	0.73 U	0.71 U
07/2024	0.89 U	1.3	0.73 U	0.71 U

MW0011 [10-20]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	0.75 I	0.73 U	0.71 U
10/2021	0.89 U	0.53 U	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0005 [35-45]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	14	0.73 U	0.71 U
10/2021	0.89 U	4.8	0.73 U	1.1 I
01/2022	0.89 U	1.0 I	0.73 U	0.92 I
04/2022	0.89 U	0.75 I	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.55 I
01/2024	0.89 U	0.53 U	0.73 U	0.82 I
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0010 [10-20]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	1.2 I	3.9	0.71 U
10/2021	0.89 U	0.92 I	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	1.0 I	1.2 I	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0003 [35-45]	TCE	cDCE	tDCE	VC
05/2021	70	120	1.4 I	4.1
10/2021	7.8	23	0.73 U	3.9
01/2022	2.0 I	7.1	0.73 U	0.79 I
04/2022	1.2 I	0.72 I	0.73 U	0.71 U
07/2022	1.1 I	1.6 I	0.73 U	0.71 U
01/2023	4.0 I	2.1	0.95 U	0.64 U
07/2023	1.3	0.92 I	0.50 U	0.50 U
01/2024	2.5	0.85 I	0.73 U	0.71 U
07/2024	3.0	1.0	0.73 U	0.71 U

MW0008 [20-30]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	7.1	2.0 I	0.71 U
10/2021	0.89 U	1.7 I	1.1 I	1.1 I
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0009 [35-45]	TCE	cDCE	tDCE	VC
05/2021	620	93	2.6 I	11
10/2021	130	73	1.9 I	23
01/2022	94	70	1.1 I	54
04/2022	19	21	0.73 U	9.8
07/2022	36	50	0.97 I	18
01/2023	8.8	8.5	0.95 U	1.4 I
07/2023	4.1	3.4	0.50 U	0.50 U
01/2024	6.7	4.1	0.73 U	0.71 U
07/2024	5.0	2.4	0.73 U	0.71 U

MW0002 [35-45]	TCE	cDCE	tDCE	VC
05/2021	9.2	42	2.3 I	2.2 I
10/2021	2.8	7.3	0.73 U	0.71 U
01/2022	1.2 I	1.7 I	0.73 U	0.71 U
04/2022	0.89 U	0.80 I	0.73 U	0.71 U
07/2022	2.0 I	2.5	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.24 I	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0001 [20-30]	TCE	cDCE	tDCE	VC
05/2021	3.9	6.5	2.8	4.9
10/2021	1.8 I	5.4	1.2 I	1.4 I
01/2022	0.89 U	1.7 I	0.73 U	0.71 U
04/2022	0.89 U	0.91 I	0.73 U	0.71 U
07/2022	0.89 U	0.70 I	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.22 I	0.41 I	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

MW0007 [35-45]	TCE	cDCE	tDCE	VC
05/2021	0.89 U	0.53 U	0.73 U	0.71 U
10/2021	0.89 U	1.3 I	0.73 U	0.71 U
01/2022	0.89 U	0.53 U	0.73 U	0.71 U
04/2022	0.89 U	0.53 U	0.73 U	0.71 U
07/2022	0.89 U	0.53 U	0.73 U	0.71 U
01/2023	0.79 U	0.71 U	0.95 U	0.64 U
07/2023	0.15 U	0.20 U	0.50 U	0.50 U
01/2024	0.89 U	0.53 U	0.73 U	0.71 U
07/2024	0.89 U	0.53 U	0.73 U	0.71 U

Legend

- Monitoring Well
- >=GCTL (LCP)
- >=NADC (HCP)
- >=10xNADC (Hot Spot)
- Operating ASW
- Non-operating ASW

25 0 25 Feet

Note: RFI Characterization Plume from 2018 prior to air sparging is shown.

TCE

- MW0009 exceeded TCE GCTL during the January 2024 (6.7 µg/L) and July 2024 (5.0 µg/L) sampling events; Increase from 4.0 µg/L in July 2023
- Detection of 3 µg/L at MW0003 in July 2024

cDCE

- No exceedances of GCTL in January and July of 2024
- Detections observed in July 2024 included MW0003 (1.0 µg/L) MW0004 (1.3 µg/L), and MW0009 (2.4 µg/L)

tDCE

- No detections of tDCE in January and July 2024

VC

- No exceedances of GCTL in January and July of 2024
- Detections in MW0006 at 1.2 and 1.0 µg/L during January and July, respectively

MW0009 Area DPT Sampling (June 2023)

DPT0060	TCE	cDCE	tDCE	VC	
25'	1 U	23	2	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0065	TCE	cDCE	tDCE	VC	
25'	1 U	12	1 U	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0059	TCE	cDCE	tDCE	VC	
25'	2	4	1 U	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

MW0009 [35-45]	TCE	cDCE	tDCE	VC
05/2021	620	93	2.6 I	11
10/2021	130	73	1.9 I	23
01/2022	94	70	1.1 I	54
04/2022	19	21	0.73 U	9.8
07/2022	36	50	0.97 I	18
01/2023	8.8	8.5	0.95 U	1.4 I
07/2023	4.1	3.4	0.50 U	0.50 U

DPT0064	TCE	cDCE	tDCE	VC	
25'	1	6	1 U	1 U	06/2023
35'	1	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0061	TCE	cDCE	tDCE	VC	
25'	1 U	26	2	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

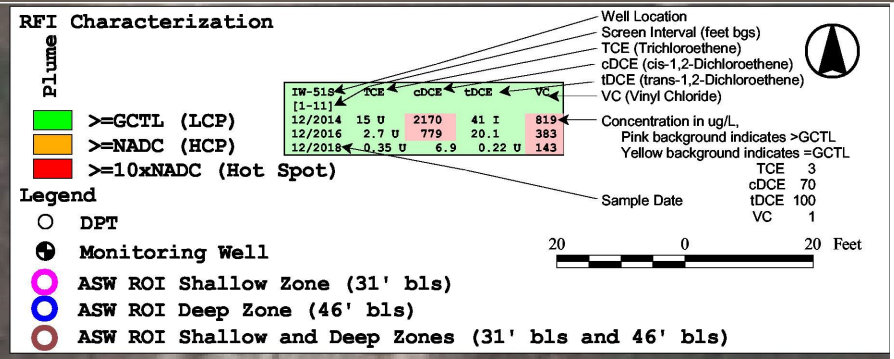
DPT0058	TCE	cDCE	tDCE	VC	
25'	6	23	3	3	06/2023
35'	5	7	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0066	TCE	cDCE	tDCE	VC	
25'	1 U	29	2	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0063	TCE	cDCE	tDCE	VC	
25'	4	3	1 U	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

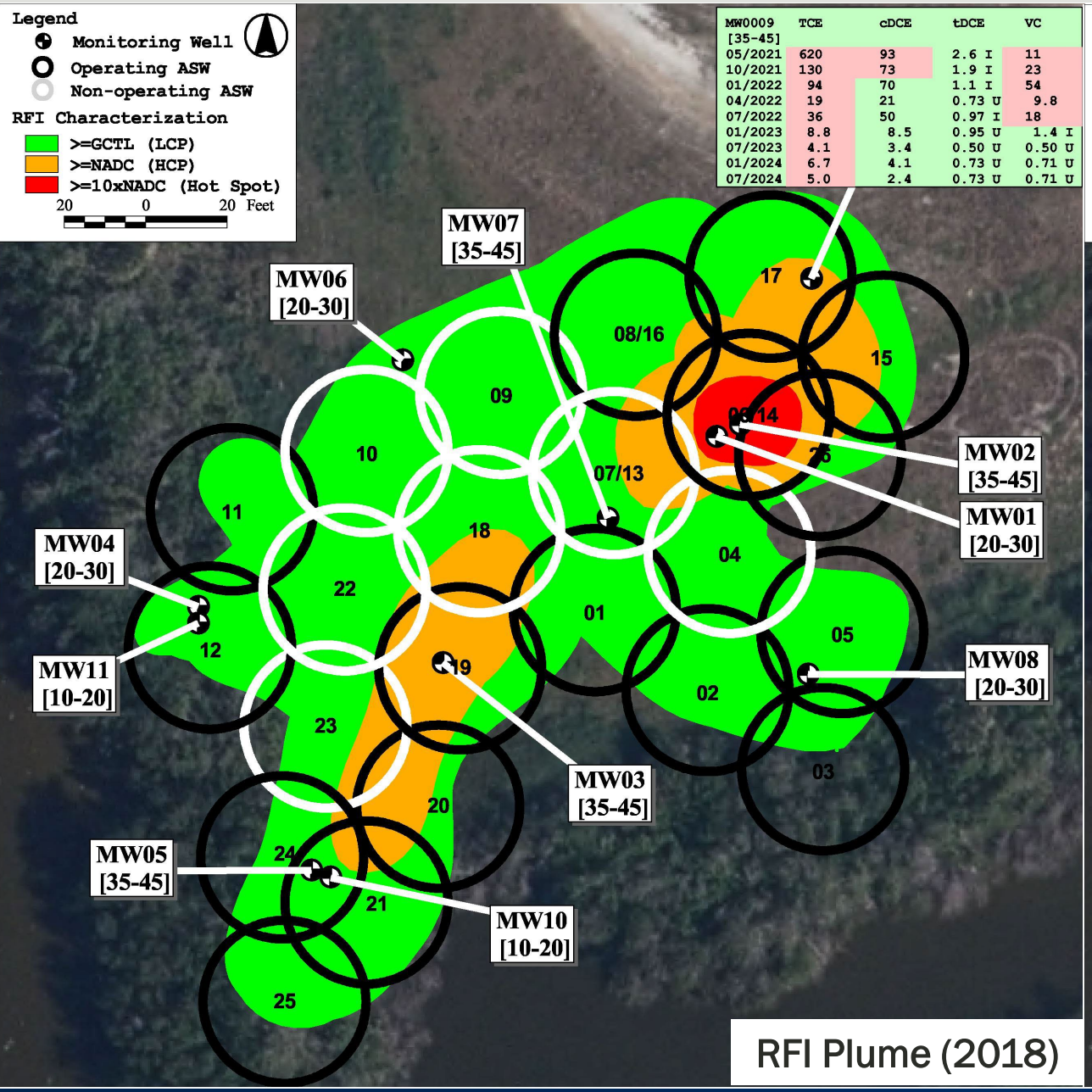
DPT0062	TCE	cDCE	tDCE	VC	
25'	1 U	18	2	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

DPT0067	TCE	cDCE	tDCE	VC	
25'	1 U	20	3	1 U	06/2023
35'	1 U	1 U	1 U	1 U	06/2023
40'	1 U	1 U	1 U	1 U	06/2023
45'	1 U	1 U	1 U	1 U	06/2023
55'	1 U	1 U	1 U	1 U	06/2023

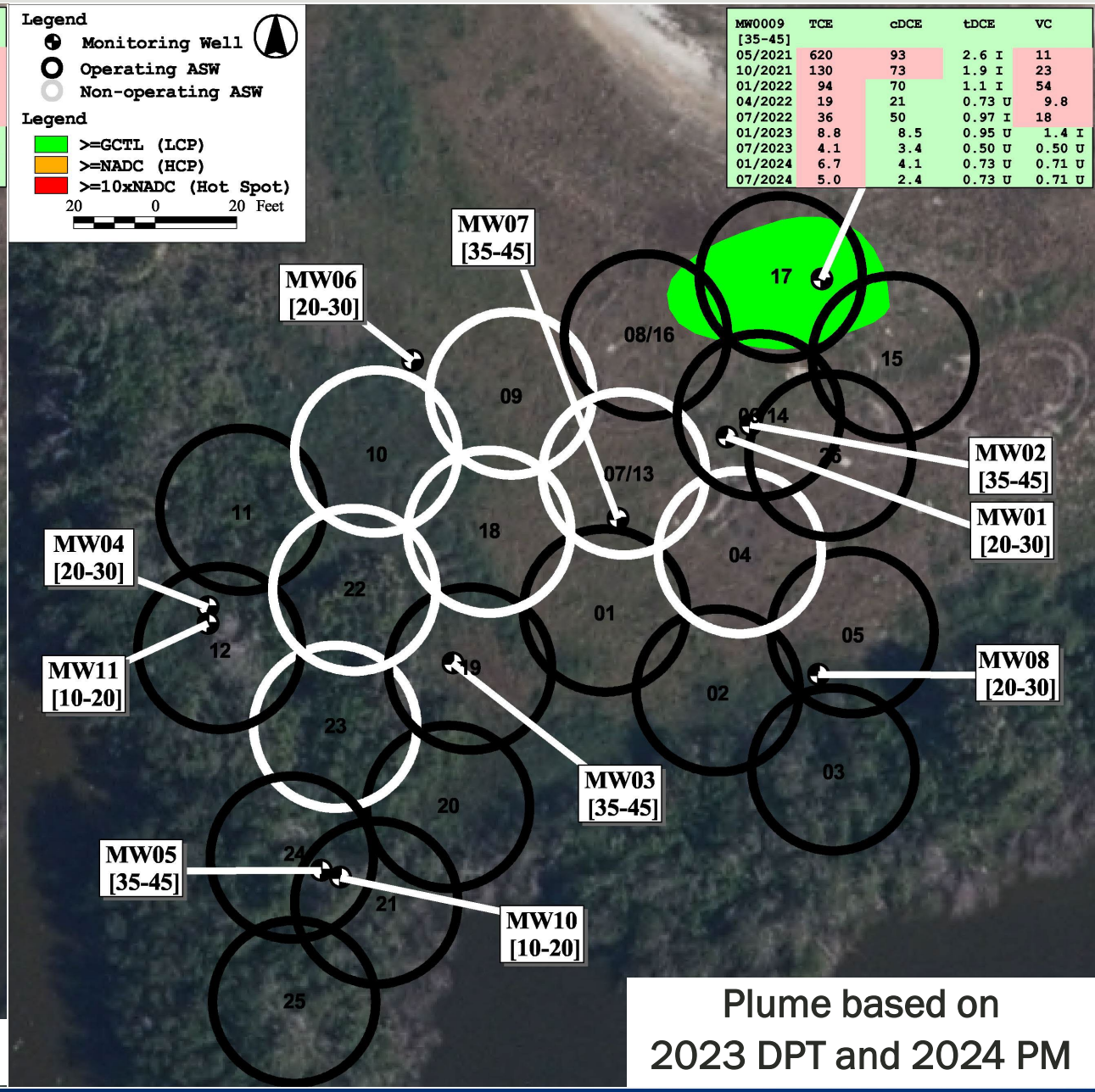


- DPT Investigation was conducted in June 2023 at the end of Year 2 of AS system operation to delineate the extent of contamination around MW0009 and beyond the AS treatment zone
- 10 DPT locations sampled at 25, 35, 40, 45, and 55 feet bls intervals
- Three TCE detections within treatment zone
  - DPT0058: 6 µg/L at 25' and 5 µg/L at 35'
  - DPT0063: 4 µg/L at 25'

Plume Comparison



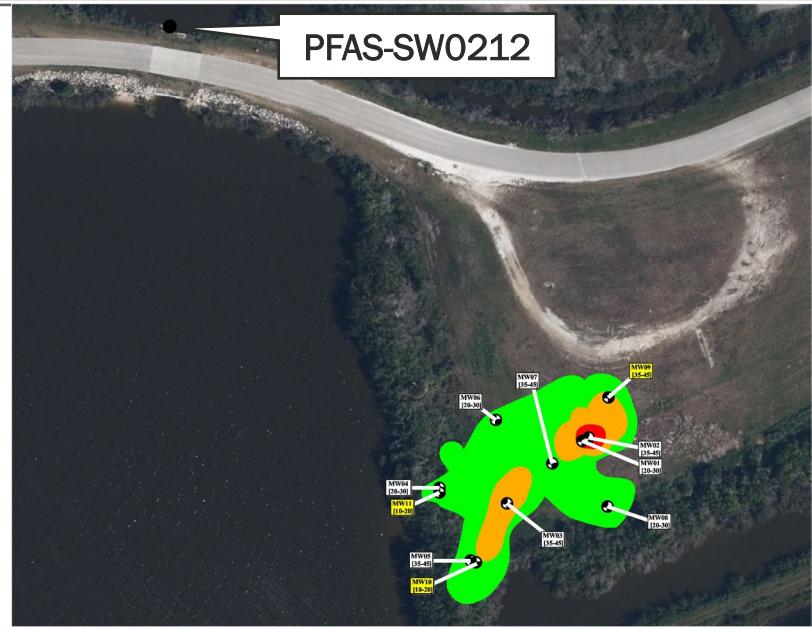
RFI Plume (2018)

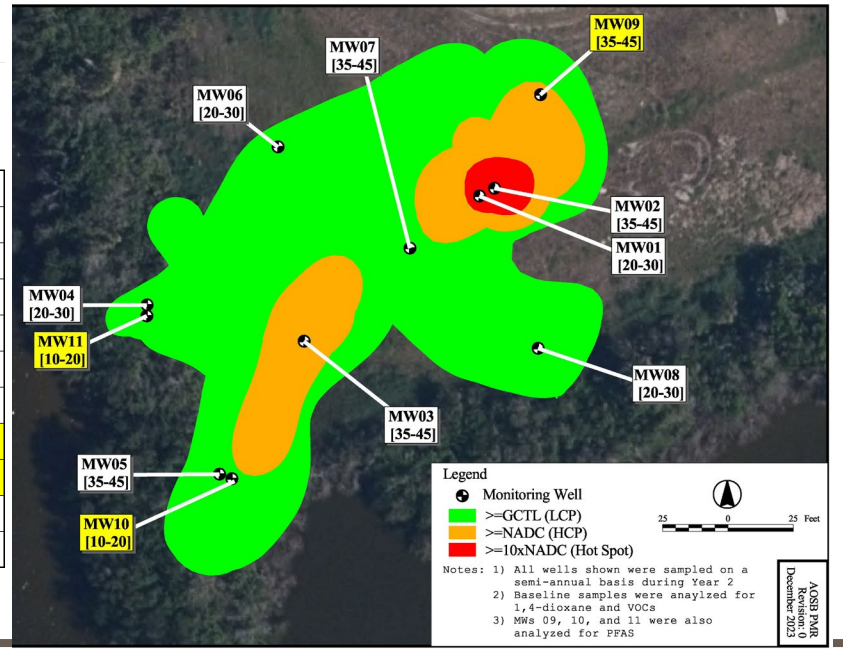


Plume based on 2023 DPT and 2024 PM

PFAS Sampling at AOSB

- No source identified for PFAS, PFAS sampling due to presents in IDW
  - Three MWs sampled April 2022 and July 2023 (MW0009, 0010, and 0011 [highlighted in yellow])
  - MW0010 and MW0011 sampled in July 2024
  - Detected results shown in bold
  - No exceedances of pGCTLs for PFOS/PFOA (individual or combined)
  - PFAS-SW0212 located approximately 500 feet from AOSB
    - Higher concentrations of PFOS and PFOA in surface water than AOSB wells
  - Screened against May 2024 EPA RSLs
    - RSL exceedances shaded in black





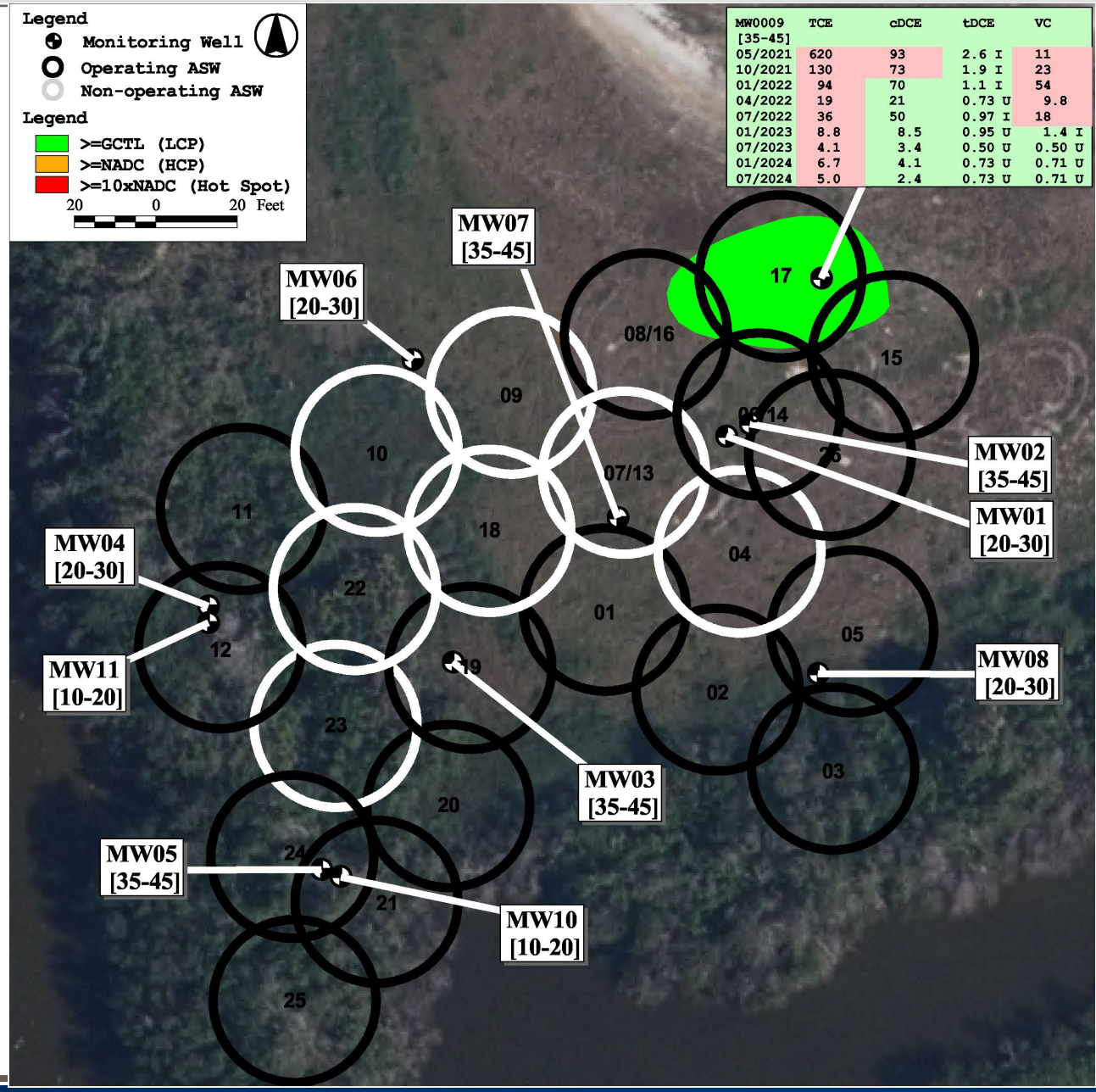
	pGCTL	RSL	MW0009		MW0010			MW0011			PFAS-SW0212	
			4/15/2022	7/12/2023	4/15/2022	7/12/2023	7/24/2024	4/15/2022	7/11/2023	7/24/2024	4/26/2023	10/24/2023
HFPO-DA		1.5	1.7 U	3.6 U	1.7 U	3.5 U	9.1 U	1.8 U	3.6 U	8.9 U	7.4 U	7.5 U
PFBS		600	0.85 U	1.8 U	0.86 U	1.8 U	4.5 U	0.89 U	1.8 U	0.89 U	**4.4**	**5.2**
PFBA		1800	0.85 U	**2.1**	**10 J**	**11 J**	**16.6 I**	**11**	**14 J**	**21.7 I**	**18.8**	**16.7 J**
PFODA		80,000	NA	1.8 U	NA	1.8 U	4.5 U	NA	1.8 U	4.5 U	3.7 U	19 U
PFHxS		39	0.85 U	1.8 U	**5.4**	**3.5**	**10.9**	**2.7 J**	**2.1**	**14**	**25.7**	**34.5**
PFHxA		990	0.85 U	1.8 U	**2.1 J**	**1.5**	**6.5 I**	**1.7 J**	1.8 U	**10.5 I**	**9**	**11.2**
PFNA		5.9	0.85 U	1.8 U	0.86 U	1.8 U	4.5 U	0.89 U	1.8 U	0.89 U	**1 J**	**1.3 J**
PFOS	70	0.2	0.85 U	1.8 U	**3.2 J**	1.8 U	**2.1 I**	**1.3 J**	1.8 U	**5.6**	**29.5**	**39.8**
PFOA	70	0.0027	0.85 U	1.8 U	**12**	**3**	**20.8**	**4.7**	1.8 U	**18.5**	**6.7**	**8.8**
PFTetA		2,000	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U	3.7 U	3.8 U
PFUDA		600	0.85 U	0.89 U	0.86 U	0.88 U	4.5 U	0.89 U	0.89 U	4.5 U	3.7 U	3.8 U

Note: All results in the table are reported in nanograms per liter.

Conclusions, Recommendations, and Path Forward

- AS system is operating as designed
  - IM is meeting objective
    - Hot Spot and HCP no longer present
      - MW09 is the only well exceeding GCTLs as of July 2024
      - Four other wells with detections below GCTLs during Year 3
    - Protective of nearby OFW
- Recommend shutting down the AS system and moving to long term monitoring
  - **Test Consensus:** Transition from AS IM to long term monitoring with quarterly sampling of monitoring wells MW0001 through MW0011
- PFAS will be addressed under the KSC Center-wide PFAS investigation

Well ID (AOSB-)	Depth Interval (ft bls)	VOCs/ Field Parameters
MW0001	20-30	X
MW0002	35-45	X
MW0003	35-45	X
MW0004	20-30	X
MW0005	35-45	X
MW0006	20-30	X
MW0007	35-45	X
MW0008	20-30	X
MW0009	35-45	X
MW0010	10-20	X
MW0011	10-20	X



2410-M09 Mark Jonnet/Tetra Tech

Launch Complex 39A Operations Support Building Area (SWMU 111) Year 3 Annual Operations and Performance Monitoring

Objective: The objective of this ADP is to present the Year 3 performance monitoring results, conclusions, recommendations, and a path forward.

Description:

The objective at this site is to remediate contaminated groundwater within treatment zone to support transition to LTM while being protective of nearby Outstanding Florida Waters (OFW). A full-scale operation began in July 2021. The System Design included two treatment intervals utilizing 26 ASWs. Thirteen ASWs at 31 ft bls in the shallow interval and 13 ASWs at 46 ft bls in the deep interval. There was a 20-foot radius of influence, horizontal spacing 35-foot center to center 5 CFM per ASW. The compressor system includes a 20 HP rotary screw compressor capable of 65 cfm at 34 psig with moisture separator. Four manifold zones with PLC-based controls/telemetry package.

Year 3 Performance sampling included groundwater sampling conducted at 11 monitoring wells on a semi-annual basis and analyzed for VOCs with collection of field parameters; select wells monitored for PFAS. No source has been identified for PFAS, PFAS sampling due to presence in IDW. Three MWs sampled April 2022 and July 2023 (MW0009, 0010, and 0011). MW0010 and MW0011 sampled in July 2024. There were no exceedances of pGCTLs for PFOS/PFOA (individual or combined).

PFAS-SW0212 is located approximately 500 feet from AOSB. Higher concentrations of PFOS and PFOA in surface water than AOSB wells. Screened against May 2024 EPA RSLs RSL exceedances shaded in black.

In conclusion, the AS system is operating as designed. The IM is meeting the objective. Hot Spot and the HCP are no longer present. MW09 is the only well exceeding GCTLs as of July 2024. Four other wells with detections below GCTLs during Year 3. Protective of nearby OFW. Recommend shutting down the AS system and moving to long term monitoring. PFAS will be addressed under the KSC Center-wide PFAS investigation.

The Team reached consensus to transition from air sparge (AS) interim measure (IM) to long term monitoring (LTM) with quarterly sampling of monitoring wells MW0001 through MW0011 (2410-D17).

FDEP inquired what the timeframe is for shutting the system down and when will sampling post shutdown occur. Teta Tech responded that sampling would take place in January 2025. FDEP further inquired when the transition to LTM will take place. Tetra Tech stated the system shut down will take place next week and sampling will occur in January 2025. This will allow the aquifer to sit for two months prior to sampling.

NASA added that the infrastructure will remain in place, but the system is rented and will be returned. If we see rebound, we can always implement another system at this site.

Results: Decision Items 2410-D17

Three MWs sampled April 2022 and July 2023 (MW0009, 0010, and 0011). MW0010 and MW0011 sampled in July 2024. There were no exceedances of pGCTLs for PFOS/PFOA (individual or combined).

PFAS-SW0212 is located approximately 500 feet from AOSB. Higher concentrations of PFOS and PFOA in surface water than AOSB wells. Screened against May 2024 EPA RSLs RSL exceedances shaded in black.

In conclusion, the AS system is operating as designed. The IM is meeting the objective. Hot Spot and the HCP are no longer present. MW09 is the only well exceeding GCTLs as of July 2024. Four other wells with detections below GCTLs during Year 3. Protective of nearby OFW. Recommend shutting down the AS system and moving to long term monitoring. PFAS will be addressed under the KSC Center-wide PFAS investigation.

The Team reached consensus to transition from air sparge (AS) interim measure (IM) to long term monitoring (LTM) with quarterly sampling of monitoring wells MW0001 through MW0011 (**2410-D17).**

FDEP inquired what the timeframe is for shutting the system down and when will sampling post shutdown occur. Teta Tech responded that sampling would take place in January 2025. FDEP further inquired when the transition to LTM will take place. Tetra Tech stated the system shut down will take place next week and sampling will occur in January 2025. This will allow the aquifer to sit for two months prior to sampling.

NASA added that the infrastructure will remain in place, but the system is rented and will be returned. If we see rebound, we can always implement another system at this site.

Results: Decision Items 2410-D17

APPENDIX B

LABORATORY ANALYTICAL REPORTS

National Aeronautics and
Space Administration

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Signature

Date: 2/21/2023

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Company Representative Title: Business Unit Manager
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National Aeronautics and
Space Administration

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Caitlin Brice, M.S.
Signature

12/27/18
Date

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Legal Reviewed
CM

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Company Representative E-Mail: caitlin.brice@sgs.com

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Mark Jonnet
Tetra Tech, Inc.
Foster Plaza 7
661 Anderson Drive
Suite 200
Pittsburgh, Pennsylvania 15220-2745

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JOB DESCRIPTION

NASA KSC AOSB LC39A

JOB NUMBER

670-33400-1

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs FL 32701

See page two for job notes and contact information.

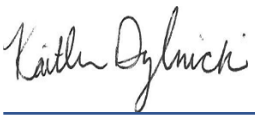
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Job Notes

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Authorized for release by
Kaitlin Dylnicki, Project Manager
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Definitions/Glossary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
670-33400-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 1/19/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

GC/MS VOA
Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 670-72534 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8260D: The continuing calibration verification (CCV) associated with batch 670-72534 recovered above the upper control limit for 1,1-Dichloroethene, Acetone and Chloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCVIS 670-72534/4).

Method 8260D: The continuing calibration verification (CCV) associated with batch 670-72534 recovered outside acceptance criteria, low biased, for 1,1-Dichloroethene and Dichlorodifluoromethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0011-015.0-20240117 — Lab Sample ID: 670-33400-1

No Detections.

Client Sample ID: AOSB-MW0004-025.0-20240117 — Lab Sample ID: 670-33400-2

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.0		1.0	0.53	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0005-040.0-20240117 — Lab Sample ID: 670-33400-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.82	I	1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0010-015.0-20240117 — Lab Sample ID: 670-33400-4

No Detections.

Client Sample ID: AOSB-MW0008-025.0-20240117 — Lab Sample ID: 670-33400-5

No Detections.

Client Sample ID: AOSB-MW0006-025.0-20240117 — Lab Sample ID: 670-33400-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.3		1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	1.2		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0003-040.0-20240118 — Lab Sample ID: 670-33400-7

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.84	I	5.0	0.80	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	0.85	I	1.0	0.53	ug/L	1		8260D	Total/NA
Trichloroethene	2.5		1.0	0.89	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0009-040.0-20240118 — Lab Sample ID: 670-33400-8

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	2.2		1.0	0.94	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	4.1		1.0	0.53	ug/L	1		8260D	Total/NA
Trichloroethene	6.7		1.0	0.89	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0007-040.0-20240118 — Lab Sample ID: 670-33400-9

No Detections.

Client Sample ID: AOSB-MW0001-025.0-20240118 — Lab Sample ID: 670-33400-10

No Detections.

Client Sample ID: AOSB-MW0002-040.0-20240118 — Lab Sample ID: 670-33400-11

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Orlando

Client: Tetra Tech, Inc.
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-33400-1

Client Sample ID: AOSB-MW0011-015.0-20240117
Date Collected: 01/17/24 11:10
Date Received: 01/19/24 08:00

Lab Sample ID: 670-33400-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 15:20	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 15:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 15:20	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 15:20	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 15:20	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 15:20	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 15:20	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 15:20	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 15:20	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 15:20	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 15:20	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 15:20	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 15:20	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 15:20	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 15:20	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 15:20	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 15:20	1
Acetone	25	U	50	25	ug/L			01/22/24 15:20	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 15:20	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 15:20	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 15:20	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 15:20	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 15:20	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 15:20	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 15:20	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 15:20	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 15:20	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 15:20	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 15:20	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 15:20	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 15:20	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 15:20	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 15:20	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 15:20	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 15:20	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 15:20	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 15:20	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 15:20	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 15:20	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 15:20	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 15:20	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 15:20	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 15:20	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 15:20	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 15:20	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 15:20	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*41 - 142*		*01/22/24 15:20*	*1*

Client Sample ID: AOSB-MW0011-015.0-20240117
Lab Sample ID: 670-33400-1

Date Collected: 01/17/24 11:10
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*53 - 146*		*01/22/24 15:20*	*1*
Toluene-d8 (Surr)	*100*		*40 - 146*		*01/22/24 15:20*	*1*

Client Sample ID: AOSB-MW0004-025.0-20240117
Lab Sample ID: 670-33400-2

Date Collected: 01/17/24 11:35
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 15:02	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 15:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 15:02	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 15:02	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 15:02	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 15:02	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 15:02	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 15:02	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 15:02	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 15:02	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 15:02	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 15:02	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 15:02	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 15:02	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 15:02	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 15:02	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 15:02	1
Acetone	25	U	50	25	ug/L			01/22/24 15:02	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 15:02	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 15:02	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 15:02	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 15:02	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 15:02	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 15:02	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 15:02	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 15:02	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 15:02	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 15:02	1
cis-1,2-Dichloroethene	**4.0**		1.0	0.53	ug/L			01/22/24 15:02	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 15:02	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 15:02	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 15:02	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 15:02	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 15:02	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 15:02	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 15:02	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 15:02	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 15:02	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 15:02	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 15:02	1

Client Sample ID: AOSB-MW0004-025.0-20240117
Lab Sample ID: 670-33400-2

Date Collected: 01/17/24 11:35
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 15:02	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 15:02	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 15:02	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 15:02	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 15:02	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 15:02	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*41 - 142*		*01/22/24 15:02*	*1*
Dibromofluoromethane (Surr)	*103*		*53 - 146*		*01/22/24 15:02*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 15:02*	*1*

Client Sample ID: AOSB-MW0005-040.0-20240117
Lab Sample ID: 670-33400-3

Date Collected: 01/17/24 12:04
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 15:38	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 15:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 15:38	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 15:38	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 15:38	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 15:38	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 15:38	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 15:38	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 15:38	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 15:38	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 15:38	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 15:38	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 15:38	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 15:38	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 15:38	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 15:38	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 15:38	1
Acetone	25	U	50	25	ug/L			01/22/24 15:38	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 15:38	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 15:38	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 15:38	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 15:38	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 15:38	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 15:38	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 15:38	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 15:38	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 15:38	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 15:38	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 15:38	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 15:38	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 15:38	1

Client Sample ID: AOSB-MW0005-040.0-20240117
Lab Sample ID: 670-33400-3

Date Collected: 01/17/24 12:04
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 15:38	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 15:38	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 15:38	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 15:38	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 15:38	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 15:38	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 15:38	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 15:38	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 15:38	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 15:38	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 15:38	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 15:38	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 15:38	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 15:38	1
Vinyl chloride	**0.82**	**I**	1.0	0.71	ug/L			01/22/24 15:38	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41 - 142*		*01/22/24 15:38*	*1*
Dibromofluoromethane (Surr)	*100*		*53 - 146*		*01/22/24 15:38*	*1*
Toluene-d8 (Surr)	*97*		*40 - 146*		*01/22/24 15:38*	*1*

Client Sample ID: AOSB-MW0010-015.0-20240117
Lab Sample ID: 670-33400-4

Date Collected: 01/17/24 12:29
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 15:56	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 15:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 15:56	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 15:56	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 15:56	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 15:56	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 15:56	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 15:56	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 15:56	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 15:56	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 15:56	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 15:56	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 15:56	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 15:56	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 15:56	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 15:56	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 15:56	1
Acetone	25	U	50	25	ug/L			01/22/24 15:56	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 15:56	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 15:56	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 15:56	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 15:56	1

Client Sample ID: AOSB-MW0010-015.0-20240117
Lab Sample ID: 670-33400-4

Date Collected: 01/17/24 12:29
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 15:56	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 15:56	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 15:56	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 15:56	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 15:56	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 15:56	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 15:56	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 15:56	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 15:56	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 15:56	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 15:56	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 15:56	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 15:56	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 15:56	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 15:56	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 15:56	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 15:56	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 15:56	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 15:56	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 15:56	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 15:56	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 15:56	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 15:56	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 15:56	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*41 - 142*		*01/22/24 15:56*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*01/22/24 15:56*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 15:56*	*1*

Client Sample ID: AOSB-MW0008-025.0-20240117
Lab Sample ID: 670-33400-5

Date Collected: 01/17/24 13:00
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 16:13	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 16:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 16:13	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 16:13	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 16:13	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 16:13	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 16:13	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 16:13	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 16:13	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 16:13	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 16:13	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 16:13	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 16:13	1

Client Sample ID: AOSB-MW0008-025.0-20240117
Lab Sample ID: 670-33400-5

Date Collected: 01/17/24 13:00
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 16:13	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 16:13	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 16:13	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 16:13	1
Acetone	25	U	50	25	ug/L			01/22/24 16:13	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 16:13	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 16:13	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 16:13	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 16:13	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 16:13	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 16:13	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 16:13	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 16:13	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 16:13	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 16:13	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 16:13	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 16:13	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 16:13	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 16:13	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 16:13	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 16:13	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 16:13	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 16:13	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 16:13	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 16:13	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 16:13	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 16:13	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 16:13	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 16:13	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 16:13	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 16:13	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 16:13	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 16:13	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*41 - 142*		*01/22/24 16:13*	*1*
Dibromofluoromethane (Surr)	*100*		*53 - 146*		*01/22/24 16:13*	*1*
Toluene-d8 (Surr)	*98*		*40 - 146*		*01/22/24 16:13*	*1*

Client Sample ID: AOSB-MW0006-025.0-20240117
Lab Sample ID: 670-33400-6

Date Collected: 01/17/24 13:33
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 16:31	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 16:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 16:31	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 16:31	1

Client: Tetra Tech, Inc.
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-33400-1

Client Sample ID: AOSB-MW0006-025.0-20240117
Date Collected: 01/17/24 13:33
Date Received: 01/19/24 08:00

Lab Sample ID: 670-33400-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 16:31	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 16:31	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 16:31	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 16:31	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 16:31	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 16:31	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 16:31	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 16:31	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 16:31	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 16:31	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 16:31	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 16:31	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 16:31	1
Acetone	25	U	50	25	ug/L			01/22/24 16:31	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 16:31	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 16:31	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 16:31	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 16:31	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 16:31	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 16:31	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 16:31	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 16:31	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 16:31	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 16:31	1
cis-1,2-Dichloroethene	**1.3**		1.0	0.53	ug/L			01/22/24 16:31	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 16:31	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 16:31	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 16:31	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 16:31	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 16:31	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 16:31	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 16:31	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 16:31	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 16:31	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 16:31	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 16:31	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 16:31	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 16:31	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 16:31	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 16:31	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 16:31	1
Vinyl chloride	**1.2**		1.0	0.71	ug/L			01/22/24 16:31	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*41 - 142*		*01/22/24 16:31*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*01/22/24 16:31*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 16:31*	*1*

Client: Tetra Tech, Inc.
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-33400-1

Client Sample ID: AOSB-MW0003-040.0-20240118
Date Collected: 01/18/24 09:38
Date Received: 01/19/24 08:00

Lab Sample ID: 670-33400-7
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 16:48	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 16:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 16:48	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 16:48	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 16:48	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 16:48	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 16:48	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 16:48	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 16:48	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 16:48	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 16:48	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 16:48	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 16:48	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 16:48	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 16:48	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 16:48	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 16:48	1
Acetone	25	U	50	25	ug/L			01/22/24 16:48	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 16:48	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 16:48	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 16:48	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 16:48	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 16:48	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 16:48	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 16:48	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 16:48	1
Chloroform	**0.84**	**I**	5.0	0.80	ug/L			01/22/24 16:48	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 16:48	1
cis-1,2-Dichloroethene	**0.85**	**I**	1.0	0.53	ug/L			01/22/24 16:48	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 16:48	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 16:48	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 16:48	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 16:48	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 16:48	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 16:48	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 16:48	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 16:48	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 16:48	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 16:48	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 16:48	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 16:48	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 16:48	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 16:48	1
Trichloroethene	**2.5**		1.0	0.89	ug/L			01/22/24 16:48	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 16:48	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 16:48	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41 - 142*		*01/22/24 16:48*	*1*

Client Sample ID: AOSB-MW0003-040.0-20240118
Lab Sample ID: 670-33400-7

Date Collected: 01/18/24 09:38
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*01/22/24 16:48*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 16:48*	*1*

Client Sample ID: AOSB-MW0009-040.0-20240118
Lab Sample ID: 670-33400-8

Date Collected: 01/18/24 10:08
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 17:06	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 17:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 17:06	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 17:06	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 17:06	1
1,1-Dichloroethene	**2.2**		1.0	0.94	ug/L			01/22/24 17:06	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 17:06	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 17:06	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 17:06	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 17:06	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 17:06	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 17:06	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 17:06	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 17:06	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 17:06	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 17:06	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 17:06	1
Acetone	25	U	50	25	ug/L			01/22/24 17:06	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 17:06	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 17:06	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 17:06	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 17:06	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 17:06	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 17:06	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 17:06	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 17:06	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 17:06	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 17:06	1
cis-1,2-Dichloroethene	**4.1**		1.0	0.53	ug/L			01/22/24 17:06	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 17:06	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 17:06	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 17:06	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 17:06	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 17:06	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 17:06	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 17:06	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 17:06	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 17:06	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 17:06	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 17:06	1

Client Sample ID: AOSB-MW0009-040.0-20240118
Lab Sample ID: 670-33400-8

Date Collected: 01/18/24 10:08
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 17:06	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 17:06	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 17:06	1
Trichloroethene	**6.7**		1.0	0.89	ug/L			01/22/24 17:06	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 17:06	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 17:06	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*41 - 142*		*01/22/24 17:06*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*01/22/24 17:06*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 17:06*	*1*

Client Sample ID: AOSB-MW0007-040.0-20240118
Lab Sample ID: 670-33400-9

Date Collected: 01/18/24 10:35
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 17:24	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 17:24	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 17:24	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 17:24	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 17:24	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 17:24	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 17:24	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 17:24	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 17:24	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 17:24	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 17:24	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 17:24	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 17:24	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 17:24	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 17:24	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 17:24	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 17:24	1
Acetone	25	U	50	25	ug/L			01/22/24 17:24	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 17:24	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 17:24	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 17:24	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 17:24	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 17:24	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 17:24	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 17:24	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 17:24	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 17:24	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 17:24	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 17:24	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 17:24	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 17:24	1

Client Sample ID: AOSB-MW0007-040.0-20240118
Lab Sample ID: 670-33400-9

Date Collected: 01/18/24 10:35
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 17:24	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 17:24	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 17:24	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 17:24	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 17:24	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 17:24	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 17:24	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 17:24	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 17:24	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 17:24	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 17:24	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 17:24	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 17:24	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 17:24	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 17:24	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*41 - 142*		*01/22/24 17:24*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*01/22/24 17:24*	*1*
Toluene-d8 (Surr)	*101*		*40 - 146*		*01/22/24 17:24*	*1*

Client Sample ID: AOSB-MW0001-025.0-20240118
Lab Sample ID: 670-33400-10

Date Collected: 01/18/24 11:10
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 17:41	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 17:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 17:41	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 17:41	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 17:41	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 17:41	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 17:41	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 17:41	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 17:41	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 17:41	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 17:41	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 17:41	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 17:41	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 17:41	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 17:41	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 17:41	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 17:41	1
Acetone	25	U	50	25	ug/L			01/22/24 17:41	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 17:41	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 17:41	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 17:41	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 17:41	1

Client Sample ID: AOSB-MW0001-025.0-20240118

Lab Sample ID: 670-33400-10

Date Collected: 01/18/24 11:10

Matrix: Water

Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 17:41	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 17:41	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 17:41	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 17:41	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 17:41	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 17:41	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 17:41	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 17:41	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 17:41	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 17:41	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 17:41	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 17:41	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 17:41	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 17:41	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 17:41	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 17:41	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 17:41	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 17:41	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 17:41	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 17:41	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 17:41	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 17:41	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 17:41	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 17:41	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*41 - 142*		*01/22/24 17:41*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*01/22/24 17:41*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*01/22/24 17:41*	*1*

Client Sample ID: AOSB-MW0002-040.0-20240118

Lab Sample ID: 670-33400-11

Date Collected: 01/18/24 11:34

Matrix: Water

Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 17:59	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 17:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 17:59	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 17:59	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 17:59	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 17:59	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 17:59	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 17:59	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 17:59	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 17:59	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 17:59	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 17:59	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 17:59	1

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0002-040.0-20240118
Lab Sample ID: 670-33400-11
Date Collected: 01/18/24 11:34
Matrix: Water
Date Received: 01/19/24 08:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 17:59	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 17:59	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 17:59	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 17:59	1
Acetone	25	U	50	25	ug/L			01/22/24 17:59	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 17:59	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 17:59	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 17:59	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 17:59	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 17:59	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 17:59	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 17:59	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 17:59	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 17:59	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 17:59	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 17:59	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 17:59	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 17:59	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 17:59	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 17:59	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 17:59	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 17:59	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 17:59	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 17:59	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 17:59	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 17:59	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 17:59	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 17:59	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 17:59	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 17:59	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 17:59	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 17:59	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 17:59	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 17:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*01/22/24 17:59*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*01/22/24 17:59*	*1*
Toluene-d8 (Surr)	*97*		*40 - 146*		*01/22/24 17:59*	*1*

Surrogate Summary

Client: Tetra Tech, Inc.
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-33400-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)								
		BFB	DBFM	TOL						
Lab Sample ID	Client Sample ID	(41-142)	(53-146)	(40-146)						
670-33336-A-9 MS	Matrix Spike	102	100	98						
670-33336-A-9 MSD	Matrix Spike Duplicate	102	100	99						
670-33400-1	AOSB-MW0011-015.0-20240117	103	100	100						
670-33400-2	AOSB-MW0004-025.0-20240117	107	103	99						
670-33400-3	AOSB-MW0005-040.0-20240117	104	100	97						
670-33400-4	AOSB-MW0010-015.0-20240117	106	99	99						
670-33400-5	AOSB-MW0008-025.0-20240117	108	100	98						
670-33400-6	AOSB-MW0006-025.0-20240117	103	99	99						
670-33400-7	AOSB-MW0003-040.0-20240118	104	101	99						
670-33400-8	AOSB-MW0009-040.0-20240118	106	99	99						
670-33400-9	AOSB-MW0007-040.0-20240118	104	101	101						
670-33400-10	AOSB-MW0001-025.0-20240118	105	101	99						
670-33400-11	AOSB-MW0002-040.0-20240118	102	101	97						
LCS 670-72534/1004	Lab Control Sample	104	99	100						
MB 670-72534/8	Method Blank	106	98	100						

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 670-72534/8
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			01/22/24 13:34	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			01/22/24 13:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			01/22/24 13:34	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			01/22/24 13:34	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			01/22/24 13:34	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			01/22/24 13:34	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			01/22/24 13:34	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			01/22/24 13:34	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			01/22/24 13:34	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			01/22/24 13:34	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			01/22/24 13:34	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			01/22/24 13:34	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			01/22/24 13:34	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			01/22/24 13:34	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			01/22/24 13:34	1
2-Hexanone	2.5	U	20	2.5	ug/L			01/22/24 13:34	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			01/22/24 13:34	1
Acetone	25	U	50	25	ug/L			01/22/24 13:34	1
Benzene	0.71	U	1.0	0.71	ug/L			01/22/24 13:34	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			01/22/24 13:34	1
Bromoform	0.75	U	1.0	0.75	ug/L			01/22/24 13:34	1
Bromomethane	0.95	U	2.0	0.95	ug/L			01/22/24 13:34	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			01/22/24 13:34	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			01/22/24 13:34	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			01/22/24 13:34	1
Chloroethane	0.98	U	2.0	0.98	ug/L			01/22/24 13:34	1
Chloroform	0.80	U	5.0	0.80	ug/L			01/22/24 13:34	1
Chloromethane	0.82	U	2.0	0.82	ug/L			01/22/24 13:34	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			01/22/24 13:34	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			01/22/24 13:34	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			01/22/24 13:34	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			01/22/24 13:34	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			01/22/24 13:34	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			01/22/24 13:34	1
Isopropylbenzene	0.67	U	2.0	0.67	ug/L			01/22/24 13:34	1
Methyl acetate	0.95	U	10	0.95	ug/L			01/22/24 13:34	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			01/22/24 13:34	1
Methylene Chloride	5.0	U	10	5.0	ug/L			01/22/24 13:34	1
Styrene	0.61	U	1.0	0.61	ug/L			01/22/24 13:34	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			01/22/24 13:34	1
Toluene	0.72	U	1.0	0.72	ug/L			01/22/24 13:34	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			01/22/24 13:34	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			01/22/24 13:34	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			01/22/24 13:34	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			01/22/24 13:34	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			01/22/24 13:34	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			01/22/24 13:34	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 670-72534/8
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*106*		*41 - 142*		*01/22/24 13:34*	*1*
Dibromofluoromethane (Surr)	*98*		*53 - 146*		*01/22/24 13:34*	*1*
Toluene-d8 (Surr)	*100*		*40 - 146*		*01/22/24 13:34*	*1*

Lab Sample ID: LCS 670-72534/1004
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	21.8		ug/L		109	57 - 148
1,1,2,2-Tetrachloroethane	20.0	21.7		ug/L		108	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	20.4		ug/L		102	47 - 173
1,1,2-Trichloroethane	20.0	21.0		ug/L		105	57 - 141
1,1-Dichloroethane	20.0	24.4		ug/L		122	57 - 142
1,1-Dichloroethene	20.0	23.5		ug/L		117	47 - 139
1,2,4-Trichlorobenzene	20.0	19.9		ug/L		99	52 - 159
1,2-Dibromo-3-Chloropropane	20.0	19.7		ug/L		99	48 - 150
1,2-Dibromoethane (EDB)	20.0	20.3		ug/L		102	57 - 140
1,2-Dichlorobenzene	20.0	22.0		ug/L		110	63 - 131
1,2-Dichloroethane	20.0	21.2		ug/L		106	50 - 156
1,2-Dichloropropane	20.0	22.7		ug/L		113	61 - 133
1,3-Dichlorobenzene	20.0	22.5		ug/L		112	66 - 129
1,4-Dichlorobenzene	20.0	19.6		ug/L		98	65 - 133
2-Butanone (MEK)	200	228		ug/L		114	10 - 180
2-Hexanone	200	216		ug/L		108	12 - 180
4-Methyl-2-pentanone	200	217		ug/L		108	19 - 180
Acetone	200	245		ug/L		122	10 - 180
Benzene	20.0	22.4		ug/L		112	56 - 136
Bromodichloromethane	20.0	22.4		ug/L		112	58 - 135
Bromoform	20.0	20.6		ug/L		103	46 - 148
Bromomethane	20.0	19.3		ug/L		96	10 - 173
Carbon disulfide	20.0	21.8		ug/L		109	43 - 153
Carbon tetrachloride	20.0	23.1		ug/L		116	54 - 156
Chlorobenzene	20.0	21.9		ug/L		110	51 - 139
Chloroethane	20.0	30.8		ug/L		154	27 - 180
Chloroform	20.0	23.4		ug/L		117	58 - 139
Chloromethane	20.0	18.5		ug/L		93	33 - 154
cis-1,2-Dichloroethene	20.0	24.0		ug/L		120	56 - 128
cis-1,3-Dichloropropene	20.0	23.9		ug/L		119	64 - 128
Cyclohexane	20.0	23.4		ug/L		117	14 - 151
Dibromochloromethane	20.0	20.5		ug/L		102	50 - 140
Dichlorodifluoromethane	20.0	12.0		ug/L		60	10 - 180
Ethylbenzene	20.0	21.6		ug/L		108	63 - 133
Isopropylbenzene	20.0	22.7		ug/L		114	60 - 132
m,p-Xylenes	20.0	19.7		ug/L		98	64 - 133
Methyl acetate	40.0	42.5		ug/L		106	70 - 130
Methyl tert-butyl ether	20.0	22.8		ug/L		114	51 - 145
Methylene Chloride	20.0	20.9		ug/L		105	43 - 142

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 670-72534/1004
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
o-Xylene	20.0	22.1		ug/L		111	61 - 129
Styrene	20.0	22.8		ug/L		114	59 - 136
Tetrachloroethene	20.0	20.1		ug/L		100	60 - 147
Toluene	20.0	20.7		ug/L		103	64 - 131
trans-1,2-Dichloroethene	20.0	22.1		ug/L		110	54 - 134
trans-1,3-Dichloropropene	20.0	21.8		ug/L		109	65 - 149
Trichloroethene	20.0	21.8		ug/L		109	62 - 135
Trichlorofluoromethane	20.0	22.1		ug/L		110	56 - 155
Vinyl chloride	20.0	21.8		ug/L		109	20 - 167
Xylenes, Total	40.0	41.8		ug/L		105	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*41 - 142*
Dibromofluoromethane (Surr)	*99*		*53 - 146*
Toluene-d8 (Surr)	*100*		*40 - 146*

Lab Sample ID: 670-33336-A-9 MS
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	80	U	2000	2310		ug/L		116	57 - 148
1,1,2,2-Tetrachloroethane	54	U	2000	2240		ug/L		112	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	440		2000	2310		ug/L		94	50 - 150
1,1,2-Trichloroethane	76	U	2000	2250		ug/L		113	57 - 141
1,1-Dichloroethane	62	U	2000	2450		ug/L		122	57 - 142
1,1-Dichloroethene	94	U	2000	2470		ug/L		124	49 - 139
1,2,4-Trichlorobenzene	70	U	2000	2020		ug/L		101	52 - 159
1,2-Dibromo-3-Chloropropane	96	U	2000	2170		ug/L		109	48 - 150
1,2-Dibromoethane (EDB)	78	U	2000	2060		ug/L		103	50 - 150
1,2-Dichlorobenzene	73	U	2000	2200		ug/L		110	63 - 131
1,2-Dichloroethane	63	U	2000	2190		ug/L		109	50 - 156
1,2-Dichloropropane	80	U	2000	2320		ug/L		116	61 - 133
1,3-Dichlorobenzene	77	U	2000	2110		ug/L		106	66 - 129
1,4-Dichlorobenzene	76	U	2000	1870		ug/L		94	65 - 133
2-Butanone (MEK)	450	U	20000	23300		ug/L		117	10 - 180
2-Hexanone	250	U	20000	23500		ug/L		118	12 - 180
4-Methyl-2-pentanone	500	U	20000	23600		ug/L		118	19 - 180
Acetone	2500	U	20000	23400		ug/L		117	10 - 180
Benzene	71	U	2000	2260		ug/L		113	56 - 136
Bromodichloromethane	52	U	2000	2250		ug/L		113	58 - 135
Bromoform	75	U	2000	2040		ug/L		102	46 - 148
Bromomethane	95	U	2000	2040		ug/L		102	10 - 173
Carbon disulfide	250	U	2000	1990		ug/L		99	43 - 153
Carbon tetrachloride	94	U	2000	2340		ug/L		117	54 - 156
Chlorobenzene	72	U	2000	2190		ug/L		109	51 - 139
Chloroethane	98	U	2000	2740		ug/L		137	27 - 180
Chloroform	80	U	2000	2360		ug/L		118	59 - 139

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 670-33336-A-9 MS
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloromethane	82	U	2000	2630		ug/L		132	33 - 154
cis-1,2-Dichloroethene	9200	J3	2000	9810	J3	ug/L		33	56 - 128
cis-1,3-Dichloropropene	59	U	2000	2270		ug/L		113	64 - 128
Cyclohexane	93	U	2000	2460		ug/L		123	14 - 141
Dibromochloromethane	50	U	2000	2080		ug/L		104	50 - 150
Dichlorodifluoromethane	74	U	2000	2480		ug/L		124	10 - 180
Ethylbenzene	69	U	2000	2240		ug/L		112	63 - 133
Isopropylbenzene	67	U	2000	2340		ug/L		117	60 - 132
m,p-Xylenes	130	U	2000	2070		ug/L		103	64 - 133
Methyl acetate	95	U	4000	4860		ug/L		121	50 - 150
Methyl tert-butyl ether	60	U	2000	2300		ug/L		115	50 - 150
Methylene Chloride	500	U	2000	2040		ug/L		102	43 - 142
o-Xylene	53	U	2000	2190		ug/L		110	61 - 129
Styrene	61	U	2000	2130		ug/L		107	59 - 136
Tetrachloroethene	76	U	2000	2180		ug/L		109	60 - 147
Toluene	72	U	2000	2060		ug/L		103	64 - 131
trans-1,2-Dichloroethene	73	U	2000	2320		ug/L		116	54 - 134
trans-1,3-Dichloropropene	73	U	2000	2210		ug/L		110	65 - 149
Trichloroethene	5700	J3	2000	6560	J3	ug/L		45	62 - 135
Trichlorofluoromethane	94	U	2000	2410		ug/L		120	56 - 155
Vinyl chloride	2200		2000	4390		ug/L		110	20 - 167
Xylenes, Total	130	U	4000	4260		ug/L		107	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*
Dibromofluoromethane (Surr)	*100*		*53 - 146*
Toluene-d8 (Surr)	*98*		*40 - 146*

Lab Sample ID: 670-33336-A-9 MSD
Matrix: Water
Analysis Batch: 72534

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	80	U	2000	2300		ug/L		115	57 - 148	1	25
1,1,2,2-Tetrachloroethane	54	U	2000	2150		ug/L		107	60 - 139	4	17
1,1,2-Trichloro-1,2,2-trifluoroethane	440		2000	2280		ug/L		92	50 - 150	2	30
1,1,2-Trichloroethane	76	U	2000	2280		ug/L		114	57 - 141	1	16
1,1-Dichloroethane	62	U	2000	2410		ug/L		121	57 - 142	2	24
1,1-Dichloroethene	94	U	2000	2480		ug/L		124	49 - 139	0	16
1,2,4-Trichlorobenzene	70	U	2000	2000		ug/L		100	52 - 159	1	24
1,2-Dibromo-3-Chloropropane	96	U	2000	1920		ug/L		96	48 - 150	12	21
1,2-Dibromoethane (EDB)	78	U	2000	2050		ug/L		103	50 - 150	1	16
1,2-Dichlorobenzene	73	U	2000	2210		ug/L		110	63 - 131	0	25
1,2-Dichloroethane	63	U	2000	2220		ug/L		111	50 - 156	2	18
1,2-Dichloropropane	80	U	2000	2360		ug/L		118	61 - 133	2	26
1,3-Dichlorobenzene	77	U	2000	2120		ug/L		106	66 - 129	0	23
1,4-Dichlorobenzene	76	U	2000	1890		ug/L		95	65 - 133	1	23
2-Butanone (MEK)	450	U	20000	21600		ug/L		108	10 - 180	8	29

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 670-33336-A-9 MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 72534

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-Hexanone	250	U	20000	21300		ug/L		107	12 - 180	10	28
4-Methyl-2-pentanone	500	U	20000	21400		ug/L		107	19 - 180	10	24
Acetone	2500	U	20000	21400		ug/L		107	10 - 180	9	19
Benzene	71	U	2000	2270		ug/L		113	56 - 136	0	14
Bromodichloromethane	52	U	2000	2210		ug/L		111	58 - 135	2	19
Bromoform	75	U	2000	1990		ug/L		99	46 - 148	3	18
Bromomethane	95	U	2000	2110		ug/L		106	10 - 173	3	29
Carbon disulfide	250	U	2000	1960		ug/L		98	43 - 153	2	26
Carbon tetrachloride	94	U	2000	2390		ug/L		119	54 - 156	2	27
Chlorobenzene	72	U	2000	2210		ug/L		110	51 - 139	1	13
Chloroethane	98	U	2000	3040		ug/L		152	27 - 180	10	22
Chloroform	80	U	2000	2260		ug/L		113	59 - 139	5	17
Chloromethane	82	U	2000	2540		ug/L		127	33 - 154	4	31
cis-1,2-Dichloroethene	9200	J3	2000	9650	J3	ug/L		24	56 - 128	2	17
cis-1,3-Dichloropropene	59	U	2000	2180		ug/L		109	64 - 128	4	20
Cyclohexane	93	U	2000	2460		ug/L		123	14 - 141	0	30
Dibromochloromethane	50	U	2000	2010		ug/L		101	50 - 150	3	18
Dichlorodifluoromethane	74	U	2000	2500		ug/L		125	10 - 180	1	26
Ethylbenzene	69	U	2000	2230		ug/L		111	63 - 133	1	18
Isopropylbenzene	67	U	2000	2300		ug/L		115	60 - 132	2	23
m,p-Xylenes	130	U	2000	2070		ug/L		103	64 - 133	0	18
Methyl acetate	95	U	4000	4710		ug/L		118	50 - 150	3	30
Methyl tert-butyl ether	60	U	2000	2180		ug/L		109	50 - 150	5	22
Methylene Chloride	500	U	2000	2060		ug/L		103	43 - 142	1	23
o-Xylene	53	U	2000	2190		ug/L		109	61 - 129	0	16
Styrene	61	U	2000	2140		ug/L		107	59 - 136	0	32
Tetrachloroethene	76	U	2000	2140		ug/L		107	60 - 147	2	21
Toluene	72	U	2000	2040		ug/L		102	64 - 131	1	16
trans-1,2-Dichloroethene	73	U	2000	2250		ug/L		113	54 - 134	3	20
trans-1,3-Dichloropropene	73	U	2000	2150		ug/L		108	65 - 149	3	17
Trichloroethene	5700	J3	2000	6610	J3	ug/L		47	62 - 135	1	20
Trichlorofluoromethane	94	U	2000	2410		ug/L		121	56 - 155	0	22
Vinyl chloride	2200		2000	4410		ug/L		111	20 - 167	0	24
Xylenes, Total	130	U	4000	4260		ug/L		107	50 - 150	0	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*
Dibromofluoromethane (Surr)	*100*		*53 - 146*
Toluene-d8 (Surr)	*99*		*40 - 146*

QC Association Summary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

GC/MS VOA

Analysis Batch: 72534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-33400-1	AOSB-MW0011-015.0-20240117	Total/NA	Water	8260D	
670-33400-2	AOSB-MW0004-025.0-20240117	Total/NA	Water	8260D	
670-33400-3	AOSB-MW0005-040.0-20240117	Total/NA	Water	8260D	
670-33400-4	AOSB-MW0010-015.0-20240117	Total/NA	Water	8260D	
670-33400-5	AOSB-MW0008-025.0-20240117	Total/NA	Water	8260D	
670-33400-6	AOSB-MW0006-025.0-20240117	Total/NA	Water	8260D	
670-33400-7	AOSB-MW0003-040.0-20240118	Total/NA	Water	8260D	
670-33400-8	AOSB-MW0009-040.0-20240118	Total/NA	Water	8260D	
670-33400-9	AOSB-MW0007-040.0-20240118	Total/NA	Water	8260D	
670-33400-10	AOSB-MW0001-025.0-20240118	Total/NA	Water	8260D	
670-33400-11	AOSB-MW0002-040.0-20240118	Total/NA	Water	8260D	
MB 670-72534/8	Method Blank	Total/NA	Water	8260D	
LCS 670-72534/1004	Lab Control Sample	Total/NA	Water	8260D	
670-33336-A-9 MS	Matrix Spike	Total/NA	Water	8260D	
670-33336-A-9 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Lab Chronicle

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0011-015.0-20240117
Lab Sample ID: 670-33400-1
Date Collected: 01/17/24 11:10
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 15:20

Client Sample ID: AOSB-MW0004-025.0-20240117
Lab Sample ID: 670-33400-2
Date Collected: 01/17/24 11:35
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 15:02

Client Sample ID: AOSB-MW0005-040.0-20240117
Lab Sample ID: 670-33400-3
Date Collected: 01/17/24 12:04
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 15:38

Client Sample ID: AOSB-MW0010-015.0-20240117
Lab Sample ID: 670-33400-4
Date Collected: 01/17/24 12:29
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 15:56

Client Sample ID: AOSB-MW0008-025.0-20240117
Lab Sample ID: 670-33400-5
Date Collected: 01/17/24 13:00
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 16:13

Client Sample ID: AOSB-MW0006-025.0-20240117
Lab Sample ID: 670-33400-6
Date Collected: 01/17/24 13:33
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 16:31

Client Sample ID: AOSB-MW0003-040.0-20240118
Lab Sample ID: 670-33400-7
Date Collected: 01/18/24 09:38
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 16:48

Lab Chronicle

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0009-040.0-20240118
Lab Sample ID: 670-33400-8
Date Collected: 01/18/24 10:08
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 17:06

Client Sample ID: AOSB-MW0007-040.0-20240118
Lab Sample ID: 670-33400-9
Date Collected: 01/18/24 10:35
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 17:24

Client Sample ID: AOSB-MW0001-025.0-20240118
Lab Sample ID: 670-33400-10
Date Collected: 01/18/24 11:10
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 17:41

Client Sample ID: AOSB-MW0002-040.0-20240118
Lab Sample ID: 670-33400-11
Date Collected: 01/18/24 11:34
Matrix: Water
Date Received: 01/19/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	72534	KG	EET ORL	01/22/24 17:59

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Laboratory: Eurofins Orlando

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Florida	NELAP	E83018	06-30-24

Method Summary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET ORL
5030C	Purge and Trap	SW846	EET ORL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984

Sample Summary

Client: Tetra Tech, Inc.
Job ID: 670-33400-1
Project/Site: NASA KSC AOSB LC39A

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-33400-1	AOSB-MW0011-015.0-20240117	Water	01/17/24 11:10	01/19/24 08:00
670-33400-2	AOSB-MW0004-025.0-20240117	Water	01/17/24 11:35	01/19/24 08:00
670-33400-3	AOSB-MW0005-040.0-20240117	Water	01/17/24 12:04	01/19/24 08:00
670-33400-4	AOSB-MW0010-015.0-20240117	Water	01/17/24 12:29	01/19/24 08:00
670-33400-5	AOSB-MW0008-025.0-20240117	Water	01/17/24 13:00	01/19/24 08:00
670-33400-6	AOSB-MW0006-025.0-20240117	Water	01/17/24 13:33	01/19/24 08:00
670-33400-7	AOSB-MW0003-040.0-20240118	Water	01/18/24 09:38	01/19/24 08:00
670-33400-8	AOSB-MW0009-040.0-20240118	Water	01/18/24 10:08	01/19/24 08:00
670-33400-9	AOSB-MW0007-040.0-20240118	Water	01/18/24 10:35	01/19/24 08:00
670-33400-10	AOSB-MW0001-025.0-20240118	Water	01/18/24 11:10	01/19/24 08:00
670-33400-11	AOSB-MW0002-040.0-20240118	Water	01/18/24 11:34	01/19/24 08:00

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 3646 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G09237	AOSB	Mark Jonnet	(412) 921-8622	Eurofins - Kait Lin Dylnicki
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
Natalie Valle - Natalie Valle		Chuck Jorden	(321) 591-7580	481 Newburyport Ave
		CARRIER/WAYBILL NUMBER		**CITY, STATE**
		Eurofins # 67001818		Altamonte Springs, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2024	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)		TYPE OF ANALYSIS / PRESERVATIVE USED								COMMENTS
									G	G									
									4°C	HCl/4°C									
									8260D (MOD) NASA ASAB Custom List	8260D (MOD) NASA ASAB Custom List									
1/17	1110	AOSB-MW0011-015.0-20240117		10	20	GW	G	4	2	2									
	1135	AOSB-MW0004-025.0-20240117		20	30														
	1204	AOSB-MW0005-040.0-20240117		35	45														
	1229	AOSB-MW0010-015.0-20240117		10	20														
	1300	AOSB-MW0008-025.0-20240117		20	30														
	~~1333~~ 1339	AOSB-MW0006-025.0-20240117		20	30														
1/18	0938	AOSB-MW0003-040.0-20240118		35	45														
	1009	AOSB-MW0009-040.0-20240118		35	40														
	1035	AOSB-MW0007-040.0-20240118		35	40														
	1110	AOSB-MW0001-025.0-20240118		20	30														
	~~1134~~ 1134	AOSB-MW0002-040.0-20240118		35	40														

670-33400 Chain of Custody

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
Natalie Valle	01/18/24	1230	MC	1/19/24	8:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 1.0/1.0

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TtNUS-001 R3 4/03B

1/30/2024

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 670-33400-1

Login Number: 33400

List Number: 1

Creator: Clerisier, Meline

List Source: Eurofins Orlando

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Tetra Tech NUS

NASA KSC LC39

112G09237

SGS Job Number: FC17504

Sampling Date: 07/24/24



Report to:

Tetra-Tech,Inc.
661 Andersen Drive Foster Plaza 7
Pittsburgh, PA 15220
amy.thomson@tetratech.com; mark.jonnet@tetratech.com;
carrie.stock@tetratech.com
ATTN: Amy Thomson

Total number of pages in report: 35

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 unless noted in the narrative, comments or footnotes.

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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EHS.US.CustomerCare@sgs.com

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SGS North America Inc.

Sample Summary

Tetra Tech NUS

Job No: FC17504

NASA KSC LC39
Project No: 112G09237

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FC17504-1	07/24/24	13:12	NV	07/26/24	AQ	Ground Water	AOSB-MW0010-015.0-20240724
FC17504-1D	07/24/24	13:12	NV	07/26/24	AQ	Water Dup/MSD	AOSB-MW0010-015.0-20240724
FC17504-1S	07/24/24	13:12	NV	07/26/24	AQ	Water Matrix Spike	AOSB-MW0010-015.0-20240724
FC17504-2	07/24/24	17:02	NV	07/26/24	AQ	Ground Water	AOSB-MW0011-015.0-20240724
FC17504-3	07/24/24	13:30	NV	07/26/24	AQ	Field Blank Water	AOSB-FB-20240724-01
FC17504-4	07/24/24	17:25	NV	07/26/24	AQ	Equipment Blank	AOSB-EB-20240724-01
FC17504-5	07/24/24	00:00	NV	07/26/24	AQ	Ground Water	AOSB-FD-20240724-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** FC17504

Site: NASA KSC LC39 **Report Date:** 8/15/2024 4:32:07 PM

On 07/26/2024, 3 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC17504 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:** OP4661

Sample(s) FC17504-1MS, FC17504-1MSD, OP4661-MSMSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for 8:2 Fluorotelomer sulfonate, HFPO-DA (GenX), Perfluorodecanoic acid, Perfluoroheptanesulfonic acid, Perfluorohexanoic acid are outside control limits. Probable cause is due to matrix interference.

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

Sample(s) FC17504-1, FC17504-2, FC17504-5 have surrogates outside control limits.

FC17504-1 for 11Cl-PF3OUdS (F-53B Minor): Associated ID Standard outside control limits.

FC17504-1 for 13C2-4:2FTS: Outside control limits.

FC17504-1 for 13C2-8:2FTS: Outside control limits.

FC17504-1 for 13C2-PFDoDA: Outside control limits.

FC17504-1 for 13C2-PFTeDA: Outside control limits.

FC17504-1 for 13C3-HFPO-DA: Outside control limits.

FC17504-1 for 13C3-PFBS: Outside control limits.

FC17504-1 for 13C4-PFBA: Outside control limits.

FC17504-1 for 13C4-PFHpA: Outside control limits.

FC17504-1 for 13C5-PFHxA: Outside control limits.

FC17504-1 for 13C5-PFPeA: Outside control limits.

FC17504-1 for 13C6-PFDA: Outside control limits.

FC17504-1 for 13C7-PFUnDA: Outside control limits.

FC17504-1 for 13C8-FOSA: Outside control limits.

FC17504-1 for 13C8-PFOA: Outside control limits.

FC17504-1 for 13C9-PFNA: Outside control limits.

FC17504-1 for d3-MeFOSAA: Outside control limits.

FC17504-1 for d5-EtFOSAA: Outside control limits.

FC17504-1 for PFOA (Branched Isomers): Associated ID Standard outside control limits.

FC17504-1: Dilution required (EIS recovery standard failure).

FC17504-2 for 13C2-4:2FTS: Outside control limits.

FC17504-2 for 13C2-8:2FTS: Outside control limits.

FC17504-2 for 13C2-PFDoDA: Outside control limits.

FC17504-2 for 13C2-PFTeDA: Outside control limits.

FC17504-2 for 13C3-HFPO-DA: Outside control limits.

FC17504-2 for 13C4-PFBA: Outside control limits.

FC17504-2 for 13C4-PFHpA: Outside control limits.

FC17504-2 for 13C5-PFHxA: Outside control limits.

FC17504-2 for 13C5-PFPeA: Outside control limits.

FC17504-2 for 13C6-PFDA: Outside control limits.

FC17504-2 for 13C7-PFUnDA: Outside control limits.

FC17504-2 for 13C8-FOSA: Outside control limits.

FC17504-2 for d3-MeFOSAA: Outside control limits.

FC17504-2 for d5-EtFOSAA: Outside control limits.

FC17504-2 for HFPO-DA (GenX): Associated ID Standard outside control limits.

MS Semi-volatiles By Method EPA 537M QSM5.3 B-15

Matrix: AQ **Batch ID:** OP4661

FC17504-2: Dilution required (EIS recovery standard failure).

FC17504-5 for 13C2-8:2FTS: Outside control limits.

FC17504-5 for 13C2-PFDoDA: Outside control limits.

FC17504-5 for 13C2-PFTeDA: Outside control limits.

FC17504-5 for 13C3-HFPO-DA: Outside control limits.

FC17504-5 for 13C4-PFBA: Outside control limits.

FC17504-5 for 13C5-PFHxA: Outside control limits.

FC17504-5 for 13C5-PFPeA: Outside control limits.

FC17504-5 for 13C6-PFDA: Outside control limits.

FC17504-5 for 13C7-PFUnDA: Outside control limits.

FC17504-5 for 13C8-FOSA: Outside control limits.

FC17504-5 for d3-MeFOSAA: Outside control limits.

FC17504-5 for d5-EtFOSAA: Outside control limits.

FC17504-5 for HFPO-DA (GenX): Associated ID Standard outside control limits.

FC17504-5 for Perfluorobutanoic acid: Associated ID Standard outside control limits.

FC17504-5: Dilution required (EIS recovery standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Report Generation (signature on file)

Summary of Hits

Job Number: FC17504
Account: Tetra Tech NUS
Project: NASA KSC LC39
Collected: 07/24/24

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FC17504-1	**AOSB-MW0010-015.0-20240724**					
Perfluorobutanoic acid [a]		0.0166 I	0.036	0.0091	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [a]		0.0077 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0065 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0094 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid [b]		0.0208	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0109	0.0036	0.00091	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0021 I	0.0036	0.00091	ug/l	EPA 537M QSM5.3 B-15
PFOA (Branched Isomers) [c]		0.0018	0.0015	0.00036	ug/l	EPA 537M QSM5.3 B-15
PFOA (Linear Isomer) [b]		0.0190	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Branched Isomers)		0.0014 I	0.0015	0.00036	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Linear Isomer)		0.0107	0.0036	0.00091	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0013 I	0.0015	0.00036	ug/l	EPA 537M QSM5.3 B-15
FC17504-2	**AOSB-MW0011-015.0-20240724**					
Perfluorobutanoic acid [a]		0.0217 I	0.036	0.0089	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0123 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0105 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid [b]		0.0061 I	0.018	0.0045	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanoic acid		0.0185	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0140	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0056	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
PFOA (Branched Isomers)		0.0045	0.0014	0.00036	ug/l	EPA 537M QSM5.3 B-15
PFOA (Linear Isomer)		0.0140	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Branched Isomers)		0.0018	0.0014	0.00036	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Linear Isomer)		0.0122	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0042	0.0014	0.00036	ug/l	EPA 537M QSM5.3 B-15
PFOS (Linear Isomer)		0.00092 I	0.0036	0.00089	ug/l	EPA 537M QSM5.3 B-15
FC17504-3	**AOSB-FB-20240724-01**					
No hits reported in this sample.						
FC17504-4	**AOSB-EB-20240724-01**					
No hits reported in this sample.						
FC17504-5	**AOSB-FD-20240724-01**					
Perfluorobutanoic acid [a]		0.0196 I	0.037	0.0093	ug/l	EPA 537M QSM5.3 B-15
Perfluoropentanoic acid [b]		0.0114 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanoic acid [b]		0.0092 I	0.019	0.0046	ug/l	EPA 537M QSM5.3 B-15
Perfluoroheptanoic acid		0.0055	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15

Summary of Hits

Job Number: FC17504
Account: Tetra Tech NUS
Project: NASA KSC LC39
Collected: 07/24/24

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
Perfluorooctanoic acid		0.0180	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorohexanesulfonic acid		0.0136	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
Perfluorooctanesulfonic acid		0.0054	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
PFOA (Branched Isomers)		0.0041	0.0015	0.00037	ug/l	EPA 537M QSM5.3 B-15
PFOA (Linear Isomer)		0.0139	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Branched Isomers)		0.0014 I	0.0015	0.00037	ug/l	EPA 537M QSM5.3 B-15
PFHxS (Linear Isomer)		0.0121	0.0037	0.00093	ug/l	EPA 537M QSM5.3 B-15
PFOS (Branched Isomers)		0.0042	0.0015	0.00037	ug/l	EPA 537M QSM5.3 B-15

(a) Dilution required (EIS recovery standard failure). Associated ID Standard outside control limits.
(b) Dilution required (EIS recovery standard failure).
(c) Associated ID Standard outside control limits.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	AOSB-MW0010-015.0-20240724		
Lab Sample ID:	FC17504-1	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q64427.D	1	08/12/24 05:19	MB	08/08/24 09:55	OP4661	S4Q950
Run #2 [a]	4Q64553.D	5	08/13/24 21:45	MB	08/08/24 09:55	OP4661	S4Q952

	Initial Volume	Final Volume
Run #1	275 ml	1.0 ml
Run #2	275 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0166 [c]	0.036	0.0091	ug/l	I
2706-90-3	Perfluoropentanoic acid [b]	0.0077 [c]	0.018	0.0045	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0065 [c]	0.018	0.0045	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0094 [c]	0.018	0.0045	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0208 [c]	0.018	0.0045	ug/l	
375-95-1	Perfluorononanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
2058-94-8	Perfluoroundecanoic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
307-55-1	Perfluorododecanoic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
72629-94-8	Perfluorotridecanoic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.0045 U [c]	0.018	0.0045	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U [c]	0.018	0.0045	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0109	0.0036	0.00091	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00091 U	0.0036	0.00091	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0021	0.0036	0.00091	ug/l	I
68259-12-1	Perfluorononanesulfonic acid	0.00091 U	0.0036	0.00091	ug/l	
335-77-3	Perfluorodecanesulfonic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA [b]	0.0091 U [c]	0.036	0.0091	ug/l	
2991-50-6	EtFOSAA [b]	0.0091 U [c]	0.036	0.0091	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0091 U [c]	0.036	0.0091	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0018 U	0.0073	0.0018	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: AOSB-MW0010-015.0-20240724
Lab Sample ID: FC17504-1
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0091 U [c]	0.036	0.0091	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0091 U [c]	0.036	0.0091	ug/l	
919005-14-4	ADONA	0.0091 U [c]	0.036	0.0091	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0091 U [c]	0.036	0.0091	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Mino [b]	0.0091 U [c]	0.036	0.0091	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION						
	PFOA (Branched Isomers) [b]	0.0018	0.0015	0.00036	ug/l	
	PFOA (Linear Isomer)	0.0190 [c]	0.018	0.0045	ug/l	
	PFNA (Branched Isomers)	0.0018 U [c]	0.0073	0.0018	ug/l	
	PFNA (Linear Isomer)	0.0045 U [c]	0.018	0.0045	ug/l	
	PFHxS (Branched Isomers)	0.0014	0.0015	0.00036	ug/l	I
	PFHxS (Linear Isomer)	0.0107	0.0036	0.00091	ug/l	
	PFOS (Branched Isomers)	0.0013	0.0015	0.00036	ug/l	I
	PFOS (Linear Isomer)	0.00091 U	0.0036	0.00091	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	22% [d]	30% [d]	50-150%
	13C5-PFPeA	33% [d]	49% [d]	50-150%
	13C5-PFHxA	38% [d]	60%	50-150%
	13C4-PFHpA	42% [d]	59%	50-150%
	13C8-PFOA	48% [d]	65%	50-150%
	13C9-PFNA	48% [d]	61%	50-150%
	13C6-PFDA	38% [d]	56%	50-150%
	13C7-PFUnDA	32% [d]	46% [d]	50-150%
	13C2-PFDoDA	26% [d]	35% [d]	50-150%
	13C2-PFTeDA	12% [d]	24% [d]	50-150%
	13C3-PFBS	46% [d]	59%	50-150%
	13C3-PFHxS	53%	63%	50-150%
	13C8-PFOS	53%	55%	50-150%
	13C8-FOSA	15% [d]	25% [d]	50-150%
	d3-MeFOSAA	25% [d]	45% [d]	50-150%
	d5-EtFOSAA	22% [d]	42% [d]	50-150%
	13C2-4:2FTS	40% [d]	57%	50-150%
	13C2-6:2FTS	51%	62%	50-150%
	13C2-8:2FTS	37% [d]	51%	50-150%
	13C3-HFPO-DA	24% [d]	42% [d]	50-150%

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:	AOSB-MW0010-015.0-20240724		
Lab Sample ID:	FC17504-1	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

CAS No.	Compound	Result	PQL	MDL	Units	Q

(a) Dilution required (EIS recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

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:	AOSB-MW0011-015.0-20240724		
Lab Sample ID:	FC17504-2	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q64430.D	1	08/12/24 06:04	MB	08/08/24 09:55	OP4661	S4Q950
Run #2 [a]	4Q64556.D	5	08/13/24 22:30	MB	08/08/24 09:55	OP4661	S4Q952

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2	280 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0217 [c]	0.036	0.0089	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0123 [c]	0.018	0.0045	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0105 [c]	0.018	0.0045	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0061 [c]	0.018	0.0045	ug/l	I
335-67-1	Perfluorooctanoic acid	0.0185	0.0036	0.00089	ug/l	
375-95-1	Perfluorononanoic acid	0.00089 U	0.0036	0.00089	ug/l	
335-76-2	Perfluorodecanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
307-55-1	Perfluorododecanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0045 U [c]	0.018	0.0045	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0140	0.0036	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0056	0.0036	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0045 U [c]	0.018	0.0045	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0089 U [c]	0.036	0.0089	ug/l	
2991-50-6	EtFOSAA	0.0089 U [c]	0.036	0.0089	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0089 U [c]	0.036	0.0089	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	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: AOSB-MW0011-015.0-20240724
Lab Sample ID: FC17504-2
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0089 U [c]	0.036	0.0089	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0089 U [c]	0.036	0.0089	ug/l	
919005-14-4	ADONA	0.0018 U	0.0071	0.0018	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0089 U [c]	0.036	0.0089	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0089 U [c]	0.036	0.0089	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION						
	PFOA (Branched Isomers)	0.0045	0.0014	0.00036	ug/l	
	PFOA (Linear Isomer)	0.0140	0.0036	0.00089	ug/l	
	PFNA (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFNA (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFHxS (Branched Isomers)	0.0018	0.0014	0.00036	ug/l	
	PFHxS (Linear Isomer)	0.0122	0.0036	0.00089	ug/l	
	PFOS (Branched Isomers)	0.0042	0.0014	0.00036	ug/l	
	PFOS (Linear Isomer)	0.00092	0.0036	0.00089	ug/l	I

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	32% [d]	39% [d]	50-150%
	13C5-PFPeA	40% [d]	56%	50-150%
	13C5-PFHxA	46% [d]	67%	50-150%
	13C4-PFHpA	48% [d]	66%	50-150%
	13C8-PFOA	54%	71%	50-150%
	13C9-PFNA	54%	67%	50-150%
	13C6-PFDA	44% [d]	66%	50-150%
	13C7-PFUnDA	39% [d]	56%	50-150%
	13C2-PFDoDA	35% [d]	50%	50-150%
	13C2-PFTeDA	34% [d]	43% [d]	50-150%
	13C3-PFBS	54%	64%	50-150%
	13C3-PFHxS	60%	69%	50-150%
	13C8-PFOS	61%	63%	50-150%
	13C8-FOSA	28% [d]	48% [d]	50-150%
	d3-MeFOSAA	31% [d]	55%	50-150%
	d5-EtFOSAA	28% [d]	52%	50-150%
	13C2-4:2FTS	47% [d]	63%	50-150%
	13C2-6:2FTS	57%	66%	50-150%
	13C2-8:2FTS	44% [d]	60%	50-150%
	13C3-HFPO-DA	28% [d]	46% [d]	50-150%

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:	AOSB-MW0011-015.0-20240724		
Lab Sample ID:	FC17504-2	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

CAS No.	Compound	Result	PQL	MDL	Units	Q

(a) Dilution required (EIS recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

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: AOSB-FB-20240724-01
Lab Sample ID: FC17504-3
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q64557.D	1	08/13/24 22:45	MB	08/08/24 09:55	OP4661	S4Q952
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.00089 U	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	0.00089 U	0.0036	0.00089	ug/l	
375-85-9	Perfluoroheptanoic acid	0.00089 U	0.0036	0.00089	ug/l	
335-67-1	Perfluorooctanoic acid	0.00089 U	0.0036	0.00089	ug/l	
375-95-1	Perfluorononanoic acid	0.00089 U	0.0036	0.00089	ug/l	
335-76-2	Perfluorodecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
307-55-1	Perfluorododecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0018 U	0.0071	0.0018	ug/l	
2991-50-6	EtFOSAA	0.0018 U	0.0071	0.0018	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	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: AOSB-FB-20240724-01
Lab Sample ID: FC17504-3
Matrix: AQ - Field Blank Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0018 U	0.0071	0.0018	ug/l	
919005-14-4	ADONA	0.0018 U	0.0071	0.0018	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0018 U	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0018 U	0.0071	0.0018	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION						
	PFOA (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFOA (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFNA (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFNA (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFHxS (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFHxS (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFOS (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFOS (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		50-150%
	13C5-PFPeA	71%		50-150%
	13C5-PFHxA	75%		50-150%
	13C4-PFHpA	74%		50-150%
	13C8-PFOA	76%		50-150%
	13C9-PFNA	75%		50-150%
	13C6-PFDA	77%		50-150%
	13C7-PFUnDA	72%		50-150%
	13C2-PFDoDA	54%		50-150%
	13C2-PFTeDA	52%		50-150%
	13C3-PFBS	73%		50-150%
	13C3-PFHxS	74%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	60%		50-150%
	d3-MeFOSAA	75%		50-150%
	d5-EtFOSAA	71%		50-150%
	13C2-4:2FTS	68%		50-150%
	13C2-6:2FTS	71%		50-150%
	13C2-8:2FTS	74%		50-150%
	13C3-HFPO-DA	67%		50-150%

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: AOSB-EB-20240724-01
Lab Sample ID: FC17504-4
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q64560.D	1	08/13/24 23:30	MB	08/08/24 09:55	OP4661	S4Q952
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid	0.0018 U	0.0071	0.0018	ug/l	
2706-90-3	Perfluoropentanoic acid	0.00089 U	0.0036	0.00089	ug/l	
307-24-4	Perfluorohexanoic acid	0.00089 U	0.0036	0.00089	ug/l	
375-85-9	Perfluoroheptanoic acid	0.00089 U	0.0036	0.00089	ug/l	
335-67-1	Perfluorooctanoic acid	0.00089 U	0.0036	0.00089	ug/l	
375-95-1	Perfluorononanoic acid	0.00089 U	0.0036	0.00089	ug/l	
335-76-2	Perfluorodecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
307-55-1	Perfluorododecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA	0.00089 U	0.0036	0.00089	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0018 U	0.0071	0.0018	ug/l	
2991-50-6	EtFOSAA	0.0018 U	0.0071	0.0018	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	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: AOSB-EB-20240724-01
Lab Sample ID: FC17504-4
Matrix: AQ - Equipment Blank
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0018 U	0.0071	0.0018	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX)	0.0018 U	0.0071	0.0018	ug/l	
919005-14-4	ADONA	0.0018 U	0.0071	0.0018	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0018 U	0.0071	0.0018	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0018 U	0.0071	0.0018	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION						
	PFOA (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFOA (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFNA (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFNA (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFHxS (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFHxS (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	
	PFOS (Branched Isomers)	0.00036 U	0.0014	0.00036	ug/l	
	PFOS (Linear Isomer)	0.00089 U	0.0036	0.00089	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	71%		50-150%
	13C5-PFPeA	70%		50-150%
	13C5-PFHxA	72%		50-150%
	13C4-PFHpA	72%		50-150%
	13C8-PFOA	74%		50-150%
	13C9-PFNA	73%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	69%		50-150%
	13C2-PFDoDA	54%		50-150%
	13C2-PFTeDA	55%		50-150%
	13C3-PFBS	72%		50-150%
	13C3-PFHxS	71%		50-150%
	13C8-PFOS	73%		50-150%
	13C8-FOSA	66%		50-150%
	d3-MeFOSAA	73%		50-150%
	d5-EtFOSAA	71%		50-150%
	13C2-4:2FTS	66%		50-150%
	13C2-6:2FTS	69%		50-150%
	13C2-8:2FTS	69%		50-150%
	13C3-HFPO-DA	65%		50-150%

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:	AOSB-FD-20240724-01		
Lab Sample ID:	FC17504-5	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q64435.D	1	08/12/24 07:19	MB	08/08/24 09:55	OP4661	S4Q950
Run #2 [a]	4Q64561.D	5	08/13/24 23:45	MB	08/08/24 09:55	OP4661	S4Q952

	Initial Volume	Final Volume
Run #1	270 ml	1.0 ml
Run #2	270 ml	1.0 ml

CAS No.	Compound	Result	PQL	MDL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS						
375-22-4	Perfluorobutanoic acid [b]	0.0196 [c]	0.037	0.0093	ug/l	I
2706-90-3	Perfluoropentanoic acid	0.0114 [c]	0.019	0.0046	ug/l	I
307-24-4	Perfluorohexanoic acid	0.0092 [c]	0.019	0.0046	ug/l	I
375-85-9	Perfluoroheptanoic acid	0.0055	0.0037	0.00093	ug/l	
335-67-1	Perfluorooctanoic acid	0.0180	0.0037	0.00093	ug/l	
375-95-1	Perfluorononanoic acid	0.00093 U	0.0037	0.00093	ug/l	
335-76-2	Perfluorodecanoic acid	0.0046 U [c]	0.019	0.0046	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0046 U [c]	0.019	0.0046	ug/l	
307-55-1	Perfluorododecanoic acid	0.0046 U [c]	0.019	0.0046	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0046 U [c]	0.019	0.0046	ug/l	
376-06-7	Perfluorotetradecanoic acid [b]	0.0046 U [c]	0.019	0.0046	ug/l	
PERFLUOROALKYLSULFONIC ACIDS						
375-73-5	Perfluorobutanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0136	0.0037	0.00093	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0054	0.0037	0.00093	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.00093 U	0.0037	0.00093	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0046 U [c]	0.019	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDES						
754-91-6	PFOSA [b]	0.0046 U [c]	0.019	0.0046	ug/l	
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS						
2355-31-9	MeFOSAA	0.0093 U [c]	0.037	0.0093	ug/l	
2991-50-6	EtFOSAA	0.0093 U [c]	0.037	0.0093	ug/l	
FLUOROTELOMER SULFONATES						
757124-72-4	4:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0019 U	0.0074	0.0019	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: AOSB-FD-20240724-01
Lab Sample ID: FC17504-5
Matrix: AQ - Ground Water
Method: EPA 537M QSM5.3 B-15 EPA 537 MOD
Project: NASA KSC LC39

Date Sampled: 07/24/24
Date Received: 07/26/24
Percent Solids: n/a

CAS No.	Compound	Result	PQL	MDL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0093 U [c]	0.037	0.0093	ug/l	
NEXT GENERATION PFAS ANALYTES						
13252-13-6	HFPO-DA (GenX) [b]	0.0019 U	0.0074	0.0019	ug/l	
919005-14-4	ADONA	0.0019 U	0.0074	0.0019	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.0093 U [c]	0.037	0.0093	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.0093 U [c]	0.037	0.0093	ug/l	
BRANCHED AND LINEAR ISOMER INFORMATION						
	PFOA (Branched Isomers)	0.0041	0.0015	0.00037	ug/l	
	PFOA (Linear Isomer)	0.0139	0.0037	0.00093	ug/l	
	PFNA (Branched Isomers)	0.00037 U	0.0015	0.00037	ug/l	
	PFNA (Linear Isomer)	0.00093 U	0.0037	0.00093	ug/l	
	PFHxS (Branched Isomers)	0.0014	0.0015	0.00037	ug/l	I
	PFHxS (Linear Isomer)	0.0121	0.0037	0.00093	ug/l	
	PFOS (Branched Isomers)	0.0042	0.0015	0.00037	ug/l	
	PFOS (Linear Isomer)	0.00093 U	0.0037	0.00093	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	32% [d]	42% [d]	50-150%
	13C5-PFPeA	43% [d]	63%	50-150%
	13C5-PFHxA	49% [d]	72%	50-150%
	13C4-PFHpA	51%	73%	50-150%
	13C8-PFOA	57%	77%	50-150%
	13C9-PFNA	57%	73%	50-150%
	13C6-PFDA	46% [d]	69%	50-150%
	13C7-PFUnDA	42% [d]	65%	50-150%
	13C2-PFDoDA	38% [d]	56%	50-150%
	13C2-PFTeDA	34% [d]	44% [d]	50-150%
	13C3-PFBS	57%	72%	50-150%
	13C3-PFHxS	63%	74%	50-150%
	13C8-PFOS	62%	67%	50-150%
	13C8-FOSA	27% [d]	46% [d]	50-150%
	d3-MeFOSAA	34% [d]	62%	50-150%
	d5-EtFOSAA	32% [d]	56%	50-150%
	13C2-4:2FTS	51%	71%	50-150%
	13C2-6:2FTS	60%	73%	50-150%
	13C2-8:2FTS	46% [d]	63%	50-150%
	13C3-HFPO-DA	31% [d]	53%	50-150%

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:	AOSB-FD-20240724-01		
Lab Sample ID:	FC17504-5	**Date Sampled:**	07/24/24
Matrix:	AQ - Ground Water	**Date Received:**	07/26/24
Method:	EPA 537M QSM5.3 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	NASA KSC LC39		

CAS No.	Compound	Result	PQL	MDL	Units	Q

(a) Dilution required (EIS recovery standard failure).
(b) Associated ID Standard outside control limits.
(c) Result is from Run# 2
(d) Outside control limits.

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

FC17504

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 3275 | PAGE 1 OF 1

PROJECT NO: 112G09237	FACILITY: AOSB	PROJECT MANAGER Mark Jomet	PHONE NUMBER 412-921-8622	LABORATORY NAME AND CONTACT: SGS - Andrea Colby
SAMPLERS (SIGNATURE) Natalie Volk		FIELD OPERATIONS LEADER Natalie Volk	PHONE NUMBER 727-288-4184	ADDRESS 4405 Vineland Rd. Suite C-15
		CARRIER/WAYBILL NUMBER NA		CITY, STATE Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	DATE YEAR 2024	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G): P	PRESERVATIVE USED: None	TYPE OF ANALYSIS: PFAS 537 + branched/linear MS/MSD	COMMENTS
1	7/24	1312	AOSB-MW0010-015.0-20240724		10	20	GW	G	6	2	4		
2		1702	AOSB-MW0011-015.0-20240724		10	20			2				
3		1330	AOSB-FB-20240724-01	—	—	—			2				
4		1725	AOSB-EB-20240724-01	—	—	—			2				
5		0000	AOSB-FD-20240724-01	—	—	—			2				

INITIAL ASSESSMENT SP
LABEL VERIFICATION 3.0 IRFC

1. RELINQUISHED BY	DATE 7/25/2024	TIME 1500	1. RECEIVED BY 7/25/24	DATE	TIME 15:00
2. RELINQUISHED BY	DATE 7/25/24	TIME 16:09pm	2. RECEIVED BY SGS	DATE 7/26/24 1609	TIME 1609
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R
FORM NO. TINUS-001

FC17504: Chain of Custody
Page 1 of 2

SGS - Orlando Sample Receipt Summary

Job Number: fc17504 **Client:** TETRA TECH **Project:** 112G09237

Date / Time Received: 7/26/2024 4:09:00 PM **Delivery Method:** FED EX **Airbill #'s:** 7775 9125 7610

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.8);

Cooler Information	Y	or	N
1. Custody Seals Present:	☑		☐
2. Custody Seals Intact:	☑		☐
3. Temp criteria achieved:	☑		☐
4. Cooler temp verification:	IR Gun		
5. Cooler media:	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑

	W	or	S	N/A
3. Type of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles:	☑		☐	
2. Samples presented properly	☑		☐	
3. Sufficient volume/containers recv'd for analysis	☑		☐	
4. Condition of sample:	Intact			
5. Sample recv'd 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 Lab Filtered Metals:

Test Strip Lot #s: pH 0-3: 226422 pH 10-12: Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #

Comments

Sample Receipt Summary 112723 EK Technician: ZANEB Date: 7/26/2024 4:31:20 PM Reviewer: Date:

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: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q950-IBLK	4Q64382.D	1	08/11/24	MB	n/a	n/a	S4Q950

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

FC17504-1, FC17504-2, FC17504-5

CAS No.	Compound	Result	RL	MDL	Units	Q
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	
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	
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	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
	PFOA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFNA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFNA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFHxS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFHxS (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	90%	50-150%
	13C5-PFPeA	90%	50-150%
	13C5-PFHxA	92%	50-150%
	13C4-PFHpA	92%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	93%	50-150%
	13C6-PFDA	99%	50-150%
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	103%	50-150%
	13C3-PFBS	91%	50-150%

Instrument Blank

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q950-IBLK	4Q64382.D	1	08/11/24	MB	n/a	n/a	S4Q950

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

FC17504-1, FC17504-2, FC17504-5

CAS No.	ID Standard Recoveries		Limits
	13C3-PFHxS	91%	50-150%
	13C8-PFOS	92%	50-150%
	13C8-FOSA	98%	50-150%
	d3-MeFOSAA	103%	50-150%
	d5-EtFOSAA	102%	50-150%
	13C2-4:2FTS	81%	50-150%
	13C2-6:2FTS	84%	50-150%
	13C2-8:2FTS	94%	50-150%

Instrument Blank

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q952-IBLK	4Q64542.D	1	08/13/24	MB	n/a	n/a	S4Q952

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFNA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFNA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFHxS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFHxS (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

Instrument Blank

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q952-IBLK	4Q64542.D	1	08/13/24	MB	n/a	n/a	S4Q952

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	89%	50-150%
	13C5-PFPeA	88%	50-150%
	13C5-PFHxA	89%	50-150%
	13C4-PFHpA	90%	50-150%
	13C8-PFOA	90%	50-150%
	13C9-PFNA	90%	50-150%
	13C6-PFDA	100%	50-150%
	13C7-PFUnDA	102%	50-150%
	13C2-PFDoDA	99%	50-150%
	13C2-PFTeDA	94%	50-150%
	13C3-PFBS	88%	50-150%
	13C3-PFHxS	88%	50-150%
	13C8-PFOS	89%	50-150%
	13C8-FOSA	95%	50-150%
	d3-MeFOSAA	99%	50-150%
	d5-EtFOSAA	101%	50-150%
	13C2-4:2FTS	79%	50-150%
	13C2-6:2FTS	82%	50-150%
	13C2-8:2FTS	92%	50-150%

Method Blank Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-MB	4Q64417.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0010	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0010	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0080	0.0020	ug/l	
2991-50-6	EtFOSAA	ND	0.0080	0.0020	ug/l	
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0080	0.0020	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0020	ug/l	
756426-58-1	9Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0020	ug/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0020	ug/l	
	PFOA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFNA (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFNA (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFHxS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFHxS (Linear Isomer)	ND	0.0040	0.0010	ug/l	
	PFOS (Branched Isomers)	ND	0.0016	0.00040	ug/l	
	PFOS (Linear Isomer)	ND	0.0040	0.0010	ug/l	

Method Blank Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-MB	4Q64417.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	70%	50-150%
	13C5-PFPeA	73%	50-150%
	13C5-PFHxA	78%	50-150%
	13C4-PFHpA	75%	50-150%
	13C8-PFOA	76%	50-150%
	13C9-PFNA	73%	50-150%
	13C6-PFDA	75%	50-150%
	13C7-PFUnDA	73%	50-150%
	13C2-PFDoDA	60%	50-150%
	13C2-PFTeDA	57%	50-150%
	13C3-PFBS	77%	50-150%
	13C3-PFHxS	77%	50-150%
	13C8-PFOS	72%	50-150%
	13C8-FOSA	65%	50-150%
	d3-MeFOSAA	78%	50-150%
	d5-EtFOSAA	75%	50-150%
	13C2-4:2FTS	68%	50-150%
	13C2-6:2FTS	71%	50-150%
	13C2-8:2FTS	76%	50-150%

Blank Spike Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-BS	4Q64416.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0811	101	73-129
2706-90-3	Perfluoropentanoic acid	0.08	0.0866	108	72-129
307-24-4	Perfluorohexanoic acid	0.08	0.0840	105	72-129
375-85-9	Perfluoroheptanoic acid	0.08	0.0828	104	72-130
335-67-1	Perfluorooctanoic acid	0.08	0.0803	100	71-133
375-95-1	Perfluorononanoic acid	0.08	0.0842	105	69-130
335-76-2	Perfluorodecanoic acid	0.08	0.0862	108	71-129
2058-94-8	Perfluoroundecanoic acid	0.08	0.0836	105	69-133
307-55-1	Perfluorododecanoic acid	0.08	0.0849	106	72-134
72629-94-8	Perfluorotridecanoic acid	0.08	0.0710	89	65-144
376-06-7	Perfluorotetradecanoic acid	0.08	0.0738	92	71-132
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0863	108	72-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0863	108	71-127
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0863	108	68-131
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0896	112	69-134
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0841	105	65-140
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0869	109	69-127
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0848	106	53-142
754-91-6	PFOSA	0.08	0.0876	110	67-137
2355-31-9	MeFOSAA	0.08	0.0875	109	65-136
2991-50-6	EtFOSAA	0.08	0.0867	108	61-135
757124-72-4	4:2 Fluorotelomer sulfonate	0.08	0.0949	119	63-143
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0938	117	64-140
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0944	118	67-138
13252-13-6	HFPO-DA (GenX)	0.08	0.0910	114	60-140
919005-14-4	ADONA	0.08	0.0804	101	60-140
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.08	0.0900	113	60-140
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.08	0.0961	120	60-140
	PFOA (Branched Isomers)		ND		50-150 [a]
	PFOA (Linear Isomer)		0.0803		50-150 [a]
	PFNA (Branched Isomers)		0.0755		50-150 [a]
	PFNA (Linear Isomer)		0.0856		50-150 [a]
	PFHxS (Branched Isomers)		0.0097		50-150 [a]
	PFHxS (Linear Isomer)		0.0764		50-150 [a]
	PFOS (Branched Isomers)		0.0182		50-150 [a]
	PFOS (Linear Isomer)		0.0662		50-150 [a]

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-BS	4Q64416.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	81%	50-150%
	13C5-PFPeA	82%	50-150%
	13C5-PFHxA	86%	50-150%
	13C4-PFHpA	84%	50-150%
	13C8-PFOA	84%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	74%	50-150%
	13C7-PFUnDA	65%	50-150%
	13C2-PFDoDA	51%	50-150%
	13C2-PFTeDA	56%	50-150%
	13C3-PFBS	84%	50-150%
	13C3-PFHxS	87%	50-150%
	13C8-PFOS	84%	50-150%
	13C8-FOSA	72%	50-150%
	d3-MeFOSAA	75%	50-150%
	d5-EtFOSAA	68%	50-150%
	13C2-4:2FTS	87%	50-150%
	13C2-6:2FTS	88%	50-150%
	13C2-8:2FTS	85%	50-150%

(a) Advisory control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-MS	4Q64554.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952
OP4661-MSD	4Q64555.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952
FC17504-1	4Q64427.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950
FC17504-1 [a]	4Q64553.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	Compound	FC17504-1 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	0.0166 [b]	I	0.0714	0.104	122	0.0714	0.0934	108	11	73-129/30
2706-90-3	Perfluoropentanoic acid	0.0077 [b]	I	0.0714	0.0930	119	0.0714	0.0890	114	4	72-129/30
307-24-4	Perfluorohexanoic acid	0.0065 [b]	I	0.0714	0.0997	130*	0.0714	0.0903	117	10	72-129/30
375-85-9	Perfluoroheptanoic acid	0.0094 [b]	I	0.0714	0.102	130	0.0714	0.0945	119	8	72-130/30
335-67-1	Perfluorooctanoic acid	0.0208 [b]		0.0714	0.109	123	0.0714	0.104	116	5	71-133/30
375-95-1	Perfluorononanoic acid	0.018 U [b]		0.0714	0.0729	102	0.0714	0.0664	93	9	69-130/30
335-76-2	Perfluorodecanoic acid	0.018 U [b]		0.0714	0.0929	130*	0.0714	0.0854	120	8	71-129/30
2058-94-8	Perfluoroundecanoic acid	0.018 U [b]		0.0714	0.0860	120	0.0714	0.0797	112	8	69-133/30
307-55-1	Perfluorododecanoic acid	0.018 U [b]		0.0714	0.0907	127	0.0714	0.0809	113	11	72-134/30
72629-94-8	Perfluorotridecanoic acid	0.018 U [b]		0.0714	0.0748	105	0.0714	0.0746	104	0	65-144/30
376-06-7	Perfluorotetradecanoic acid	0.018 U [b]		0.0714	0.0930	130	0.0714	0.0903	126	3	71-132/30
375-73-5	Perfluorobutanesulfonic acid	0.018 U [b]		0.0714	0.0905	127	0.0714	0.0844	118	7	72-130/30
2706-91-4	Perfluoropentanesulfonic acid	0.018 U [b]		0.0714	0.0903	126	0.0714	0.0808	113	11	71-127/30
355-46-4	Perfluorohexanesulfonic acid	0.0109		0.0714	0.0960	119	0.0714	0.0903	111	6	68-131/30
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U		0.0714	0.0987	138*	0.0714	0.0948	133	4	69-134/30
1763-23-1	Perfluorooctanesulfonic acid	0.0021	I	0.0714	0.0911	125	0.0714	0.0932	128	2	65-140/30
68259-12-1	Perfluorononanesulfonic acid	0.0036 U		0.0714	0.0880	123	0.0714	0.0918	129*	4	69-127/30
335-77-3	Perfluorodecanesulfonic acid	0.018 U [b]		0.0714	0.0788	110	0.0714	0.0718	101	9	53-142/30
754-91-6	PFOSA	0.018 U [b]		0.0714	0.0792	111	0.0714	0.0749	105	6	67-137/30
2355-31-9	MeFOSAA	0.036 U [b]		0.0714	0.0916	128	0.0714	0.0859	120	6	65-136/30
2991-50-6	EtFOSAA	0.036 U [b]		0.0714	0.0911	128	0.0714	0.0793	111	14	61-135/30
757124-72-4	4:2 Fluorotelomer sulfonate	0.036 U [b]		0.0714	0.0944	132	0.0714	0.0890	125	6	63-143/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0073 U		0.0714	0.0938	131	0.0714	0.0889	124	5	64-140/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.036 U [b]		0.0714	0.0996	139*	0.0714	0.0934	131	6	67-138/30
13252-13-6	HFPO-DA (GenX)	0.036 U [b]		0.0714	0.108	151*	0.0714	0.0971	136	11	60-140/30
919005-14-4	ADONA	0.036 U [b]		0.0714	0.0846	118	0.0714	0.0803	112	5	60-140/30
756426-58-1	9Cl-PF3ONS (F-53B Major)	0.036 U [b]		0.0714	0.0855	120	0.0714	0.0734	103	15	60-140/30
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	0.036 U [b]		0.0714	0.0913	128	0.0714	0.0848	119	7	60-140/30
	PFOA (Branched Isomers)	0.0018			0.0027			0.0024		12	50-150/30 [c]
	PFOA (Linear Isomer)	0.0190 [b]			0.108			0.102		6	50-150/30 [c]
	PFNA (Branched Isomers)	0.0073 U [b]			0.0729			0.0664		9	50-150/30 [c]
	PFNA (Linear Isomer)	0.018 U [b]			0.0729			0.0664		9	50-150/30 [c]
	PFHxS (Branched Isomers)	0.0014	I		0.0105			0.0096		9	50-150/30 [c]
	PFHxS (Linear Isomer)	0.0107			0.0853			0.0807		6	50-150/30 [c]
	PFOS (Branched Isomers)	0.0013	I		0.0228			0.0216		5	50-150/30 [c]
	PFOS (Linear Isomer)	0.0036 U			0.0681			0.0718		5	50-150/30 [c]

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC17504
Account: TTNASA Tetra Tech NUS
Project: NASA KSC LC39

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4661-MS	4Q64554.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952
OP4661-MSD	4Q64555.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952
FC17504-1	4Q64427.D	1	08/12/24	MB	08/08/24	OP4661	S4Q950
FC17504-1 [a]	4Q64553.D	5	08/13/24	MB	08/08/24	OP4661	S4Q952

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

FC17504-1, FC17504-2, FC17504-3, FC17504-4, FC17504-5

CAS No.	ID Standard Recoveries	MS	MSD	FC17504-1	FC17504-1	Limits
	13C4-PFBA	32%* d	34%* d	22%* d	30%* d	50-150%
	13C5-PFPeA	52%	50%	33%* d	49%* d	50-150%
	13C5-PFHxA	62%	63%	38%* d	60%	50-150%
	13C4-PFHpA	61%	61%	42%* d	59%	50-150%
	13C8-PFOA	66%	67%	48%* d	65%	50-150%
	13C9-PFNA	62%	64%	48%* d	61%	50-150%
	13C6-PFDA	53%	60%	38%* d	56%	50-150%
	13C7-PFUnDA	46%* d	51%	32%* d	46%* d	50-150%
	13C2-PFDoDA	39%* d	45%* d	26%* d	35%* d	50-150%
	13C2-PFTeDA	24%* d	38%* d	12%* d	24%* d	50-150%
	13C3-PFBS	61%	62%	46%* d	59%	50-150%
	13C3-PFHxS	66%	66%	53%	63%	50-150%
	13C8-PFOS	59%	59%	53%	55%	50-150%
	13C8-FOSA	27%* d	33%* d	15%* d	25%* d	50-150%
	d3-MeFOSAA	44%* d	49%* d	25%* d	45%* d	50-150%
	d5-EtFOSAA	41%* d	47%* d	22%* d	42%* d	50-150%
	13C2-4:2FTS	68%	67%	40%* d	57%	50-150%
	13C2-6:2FTS	72%	72%	51%	62%	50-150%
	13C2-8:2FTS	54%	60%	37%* d	51%	50-150%
	13C3-HFPO-DA			24%* d	42%* d	50-150%

(a) Dilution required (EIS recovery standard failure).
(b) Result is from Run #2.
(c) Advisory control limits.
(d) Outside control limits.

* = Outside of Control Limits.

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ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

NASA KSC AOSB LC39A

JOB NUMBER

670-44273-1

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs FL 32701

See page two for job notes and contact information.

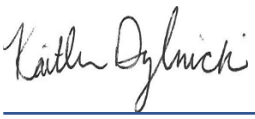
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Job Notes

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Authorization



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Definitions/Glossary

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
670-44273-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 7/25/2024 5:10 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.7°C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 670-102710 recovered above the upper control limit for Methylene Chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCVIS 670-102710/3).

Method 8260D: The continuing calibration verification (CCV) associated with batch 670-102710 recovered outside acceptance criteria, low biased, for Carbon disulfide, Chloromethane and Vinyl chloride. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 670-102941 recovered above the upper control limit for Dichlorodifluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCVIS 670-102941/3).

Method 8260D: The continuing calibration verification (CCV) associated with batch 670-102941 recovered outside acceptance criteria, low biased, for 2-Hexanone, 4-Methyl-2-pentanone and Acetone. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0003-040.0-20240724 — Lab Sample ID: 670-44273-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.53	ug/L	1		8260D	Total/NA
Trichloroethene	3.0		1.0	0.89	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0006-025.0-20240724 — Lab Sample ID: 670-44273-2

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichlorofluoromethane	6.5		1.0	0.94	ug/L	1		8260D	Total/NA
Vinyl chloride	1.0		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0011-015.0-20240724 — Lab Sample ID: 670-44273-3

No Detections.

Client Sample ID: AOSB-MW0002-040.0-20240725 — Lab Sample ID: 670-44273-4

No Detections.

Client Sample ID: AOSB-MW0001-025.0-20240725 — Lab Sample ID: 670-44273-5

No Detections.

Client Sample ID: AOSB-MW0009-040.0-20240725 — Lab Sample ID: 670-44273-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene	1.2		1.0	0.94	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	2.4		1.0	0.53	ug/L	1		8260D	Total/NA
Trichloroethene	5.0		1.0	0.89	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0008-025.0-20240725 — Lab Sample ID: 670-44273-7

No Detections.

Client Sample ID: AOSB-MW0007-040.0-20240725 — Lab Sample ID: 670-44273-8

No Detections.

Client Sample ID: AOSB-MW0004-025.0-20240725 — Lab Sample ID: 670-44273-9

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.3		1.0	0.53	ug/L	1		8260D	Total/NA
Trichlorofluoromethane	1.4		1.0	0.94	ug/L	1		8260D	Total/NA

Client Sample ID: AOSB-MW0005-040.0-20240725 — Lab Sample ID: 670-44273-10

No Detections.

Client Sample ID: AOSB-MW0010-015.0-20240725 — Lab Sample ID: 670-44273-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Tetra Tech Inc
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-44273-1

Client Sample ID: AOSB-MW0003-040.0-20240724
Date Collected: 07/24/24 13:59
Date Received: 07/25/24 17:10

Lab Sample ID: 670-44273-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 14:23	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 14:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 14:23	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 14:23	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 14:23	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 14:23	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 14:23	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 14:23	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 14:23	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 14:23	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 14:23	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 14:23	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 14:23	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 14:23	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 14:23	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 14:23	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 14:23	1
Acetone	25	U	50	25	ug/L			07/29/24 14:23	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 14:23	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 14:23	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 14:23	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 14:23	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 14:23	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 14:23	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 14:23	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 14:23	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 14:23	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 14:23	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.53	ug/L			07/29/24 14:23	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 14:23	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 14:23	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 14:23	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 14:23	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 14:23	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 14:23	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 14:23	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 14:23	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 14:23	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 14:23	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 14:23	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 14:23	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 14:23	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 14:23	1
Trichloroethene	**3.0**		1.0	0.89	ug/L			07/29/24 14:23	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 14:23	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 14:23	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/29/24 14:23*	*1*

Client Sample ID: AOSB-MW0003-040.0-20240724
Lab Sample ID: 670-44273-1

Date Collected: 07/24/24 13:59
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*102*		*53 - 146*		*07/29/24 14:23*	*1*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/29/24 14:23*	*1*

Client Sample ID: AOSB-MW0006-025.0-20240724
Lab Sample ID: 670-44273-2

Date Collected: 07/24/24 15:47
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 14:41	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 14:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 14:41	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 14:41	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 14:41	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 14:41	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 14:41	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 14:41	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 14:41	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 14:41	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 14:41	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 14:41	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 14:41	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 14:41	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 14:41	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 14:41	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 14:41	1
Acetone	25	U	50	25	ug/L			07/29/24 14:41	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 14:41	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 14:41	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 14:41	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 14:41	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 14:41	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 14:41	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 14:41	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 14:41	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 14:41	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 14:41	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 14:41	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 14:41	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 14:41	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 14:41	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 14:41	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 14:41	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 14:41	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 14:41	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 14:41	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 14:41	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 14:41	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 14:41	1

Client Sample ID: AOSB-MW0006-025.0-20240724
Lab Sample ID: 670-44273-2

Date Collected: 07/24/24 15:47
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 14:41	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 14:41	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 14:41	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 14:41	1
Trichlorofluoromethane	**6.5**		1.0	0.94	ug/L			07/29/24 14:41	1
Vinyl chloride	**1.0**		1.0	0.71	ug/L			07/30/24 15:41	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 14:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*07/29/24 14:41*	*1*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*		*07/30/24 15:41*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*07/29/24 14:41*	*1*
Dibromofluoromethane (Surr)	*115*		*53 - 146*		*07/30/24 15:41*	*1*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/29/24 14:41*	*1*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/30/24 15:41*	*1*

Client Sample ID: AOSB-MW0011-015.0-20240724
Lab Sample ID: 670-44273-3

Date Collected: 07/24/24 17:02
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 14:59	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 14:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 14:59	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 14:59	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 14:59	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 14:59	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 14:59	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 14:59	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 14:59	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 14:59	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 14:59	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 14:59	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 14:59	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 14:59	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 14:59	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 14:59	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 14:59	1
Acetone	25	U	50	25	ug/L			07/29/24 14:59	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 14:59	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 14:59	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 14:59	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 14:59	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 14:59	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 14:59	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 14:59	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 14:59	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 14:59	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 14:59	1

Client Sample ID: AOSB-MW0011-015.0-20240724

Lab Sample ID: 670-44273-3

Date Collected: 07/24/24 17:02

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 14:59	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 14:59	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 14:59	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 14:59	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 14:59	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 14:59	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 14:59	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 14:59	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 14:59	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 14:59	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 14:59	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 14:59	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 14:59	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 14:59	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 14:59	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 14:59	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 14:59	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 14:59	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/29/24 14:59*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*07/29/24 14:59*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/29/24 14:59*	*1*

Client Sample ID: AOSB-MW0002-040.0-20240725

Lab Sample ID: 670-44273-4

Date Collected: 07/25/24 09:12

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 15:17	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 15:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 15:17	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 15:17	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 15:17	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 15:17	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 15:17	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 15:17	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 15:17	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 15:17	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 15:17	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 15:17	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 15:17	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 15:17	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 15:17	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 15:17	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 15:17	1
Acetone	25	U	50	25	ug/L			07/29/24 15:17	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 15:17	1

Client Sample ID: AOSB-MW0002-040.0-20240725
Lab Sample ID: 670-44273-4

Date Collected: 07/25/24 09:12
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 15:17	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 15:17	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 15:17	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 15:17	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 15:17	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 15:17	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 15:17	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 15:17	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 15:17	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 15:17	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 15:17	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 15:17	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 15:17	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 15:17	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 15:17	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 15:17	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 15:17	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 15:17	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 15:17	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 15:17	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 15:17	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 15:17	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 15:17	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 15:17	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 15:17	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 15:17	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 15:17	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/29/24 15:17*	*1*
Dibromofluoromethane (Surr)	*102*		*53 - 146*		*07/29/24 15:17*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/29/24 15:17*	*1*

Client Sample ID: AOSB-MW0001-025.0-20240725
Lab Sample ID: 670-44273-5

Date Collected: 07/25/24 10:03
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 15:35	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 15:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 15:35	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 15:35	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 15:35	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 15:35	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 15:35	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 15:35	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 15:35	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 15:35	1

Client Sample ID: AOSB-MW0001-025.0-20240725
Lab Sample ID: 670-44273-5

Date Collected: 07/25/24 10:03
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 15:35	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 15:35	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 15:35	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 15:35	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 15:35	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 15:35	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 15:35	1
Acetone	25	U	50	25	ug/L			07/29/24 15:35	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 15:35	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 15:35	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 15:35	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 15:35	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 15:35	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 15:35	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 15:35	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 15:35	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 15:35	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 15:35	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 15:35	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 15:35	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 15:35	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 15:35	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 15:35	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 15:35	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 15:35	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 15:35	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 15:35	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 15:35	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 15:35	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 15:35	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 15:35	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 15:35	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 15:35	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 15:35	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 15:35	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 15:35	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/29/24 15:35*	*1*
Dibromofluoromethane (Surr)	*103*		*53 - 146*		*07/29/24 15:35*	*1*
Toluene-d8 (Surr)	*98*		*40 - 146*		*07/29/24 15:35*	*1*

Client Sample ID: AOSB-MW0009-040.0-20240725
Lab Sample ID: 670-44273-6

Date Collected: 07/25/24 10:37
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 15:54	1

Client: Tetra Tech Inc
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-44273-1

Client Sample ID: AOSB-MW0009-040.0-20240725
Date Collected: 07/25/24 10:37
Date Received: 07/25/24 17:10

Lab Sample ID: 670-44273-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 15:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 15:54	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 15:54	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 15:54	1
1,1-Dichloroethene	**1.2**		1.0	0.94	ug/L			07/29/24 15:54	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 15:54	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 15:54	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 15:54	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 15:54	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 15:54	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 15:54	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 15:54	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 15:54	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 15:54	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 15:54	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 15:54	1
Acetone	25	U	50	25	ug/L			07/29/24 15:54	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 15:54	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 15:54	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 15:54	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 15:54	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 15:54	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 15:54	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 15:54	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 15:54	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 15:54	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 15:54	1
cis-1,2-Dichloroethene	**2.4**		1.0	0.53	ug/L			07/29/24 15:54	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 15:54	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 15:54	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 15:54	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 15:54	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 15:54	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 15:54	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 15:54	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 15:54	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 15:54	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 15:54	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 15:54	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 15:54	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 15:54	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 15:54	1
Trichloroethene	**5.0**		1.0	0.89	ug/L			07/29/24 15:54	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 15:54	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 15:54	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/29/24 15:54*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/29/24 15:54*	*1*

Client Sample ID: AOSB-MW0009-040.0-20240725

Lab Sample ID: 670-44273-6

Date Collected: 07/25/24 10:37

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/29/24 15:54*	*1*

Client Sample ID: AOSB-MW0008-025.0-20240725

Lab Sample ID: 670-44273-7

Date Collected: 07/25/24 12:05

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 16:12	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 16:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 16:12	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 16:12	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 16:12	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 16:12	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 16:12	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 16:12	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 16:12	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 16:12	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 16:12	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 16:12	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 16:12	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 16:12	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 16:12	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 16:12	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 16:12	1
Acetone	25	U	50	25	ug/L			07/29/24 16:12	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 16:12	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 16:12	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 16:12	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 16:12	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 16:12	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 16:12	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 16:12	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 16:12	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 16:12	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 16:12	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 16:12	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 16:12	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 16:12	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 16:12	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 16:12	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 16:12	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 16:12	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 16:12	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 16:12	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 16:12	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 16:12	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 16:12	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 16:12	1

Client Sample ID: AOSB-MW0008-025.0-20240725
Lab Sample ID: 670-44273-7

Date Collected: 07/25/24 12:05
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 16:12	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 16:12	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 16:12	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 16:12	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 16:12	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*41 - 142*		*07/29/24 16:12*	*1*
Dibromofluoromethane (Surr)	*102*		*53 - 146*		*07/29/24 16:12*	*1*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/29/24 16:12*	*1*

Client Sample ID: AOSB-MW0007-040.0-20240725
Lab Sample ID: 670-44273-8

Date Collected: 07/25/24 12:40
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 16:30	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 16:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 16:30	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 16:30	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 16:30	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 16:30	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 16:30	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 16:30	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 16:30	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 16:30	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 16:30	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 16:30	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 16:30	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 16:30	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 16:30	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 16:30	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 16:30	1
Acetone	25	U	50	25	ug/L			07/29/24 16:30	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 16:30	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 16:30	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 16:30	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 16:30	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 16:30	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 16:30	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 16:30	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 16:30	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 16:30	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 16:30	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 16:30	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 16:30	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 16:30	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 16:30	1

Client Sample ID: AOSB-MW0007-040.0-20240725
Lab Sample ID: 670-44273-8

Date Collected: 07/25/24 12:40
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 16:30	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 16:30	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 16:30	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 16:30	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 16:30	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 16:30	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 16:30	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 16:30	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 16:30	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 16:30	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 16:30	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 16:30	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 16:30	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 16:30	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/29/24 16:30*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*07/29/24 16:30*	*1*
Toluene-d8 (Surr)	*95*		*40 - 146*		*07/29/24 16:30*	*1*

Client Sample ID: AOSB-MW0004-025.0-20240725
Lab Sample ID: 670-44273-9

Date Collected: 07/25/24 13:15
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 16:48	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 16:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 16:48	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 16:48	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 16:48	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 16:48	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 16:48	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 16:48	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 16:48	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 16:48	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 16:48	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 16:48	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 16:48	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 16:48	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 16:48	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 16:48	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 16:48	1
Acetone	25	U	50	25	ug/L			07/29/24 16:48	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 16:48	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 16:48	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 16:48	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 16:48	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 16:48	1

Client Sample ID: AOSB-MW0004-025.0-20240725

Lab Sample ID: 670-44273-9

Date Collected: 07/25/24 13:15

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 16:48	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 16:48	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 16:48	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 16:48	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 16:48	1
cis-1,2-Dichloroethene	**1.3**		1.0	0.53	ug/L			07/29/24 16:48	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 16:48	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 16:48	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 16:48	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 16:48	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 16:48	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 16:48	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 16:48	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 16:48	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 16:48	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 16:48	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 16:48	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 16:48	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 16:48	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 16:48	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 16:48	1
Trichlorofluoromethane	**1.4**		1.0	0.94	ug/L			07/29/24 16:48	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 16:48	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/29/24 16:48*	*1*
Dibromofluoromethane (Surr)	*105*		*53 - 146*		*07/29/24 16:48*	*1*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/29/24 16:48*	*1*

Client Sample ID: AOSB-MW0005-040.0-20240725

Lab Sample ID: 670-44273-10

Date Collected: 07/25/24 14:05

Matrix: Water

Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 17:06	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 17:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 17:06	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 17:06	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 17:06	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 17:06	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 17:06	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 17:06	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 17:06	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 17:06	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 17:06	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 17:06	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 17:06	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 17:06	1

Client Sample ID: AOSB-MW0005-040.0-20240725
Lab Sample ID: 670-44273-10

Date Collected: 07/25/24 14:05
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 17:06	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 17:06	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 17:06	1
Acetone	25	U	50	25	ug/L			07/29/24 17:06	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 17:06	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 17:06	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 17:06	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 17:06	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 17:06	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 17:06	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 17:06	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 17:06	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 17:06	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 17:06	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 17:06	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 17:06	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 17:06	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 17:06	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 17:06	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 17:06	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 17:06	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 17:06	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 17:06	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 17:06	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 17:06	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 17:06	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 17:06	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 17:06	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 17:06	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 17:06	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 17:06	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 17:06	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/29/24 17:06*	*1*
Dibromofluoromethane (Surr)	*102*		*53 - 146*		*07/29/24 17:06*	*1*
Toluene-d8 (Surr)	*98*		*40 - 146*		*07/29/24 17:06*	*1*

Client Sample ID: AOSB-MW0010-015.0-20240725
Lab Sample ID: 670-44273-11

Date Collected: 07/25/24 14:28
Matrix: Water
Date Received: 07/25/24 17:10

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 17:25	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 17:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 17:25	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 17:25	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 17:25	1

Client: Tetra Tech Inc
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-44273-1

Client Sample ID: AOSB-MW0010-015.0-20240725
Date Collected: 07/25/24 14:28
Date Received: 07/25/24 17:10

Lab Sample ID: 670-44273-11
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 17:25	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 17:25	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 17:25	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 17:25	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 17:25	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 17:25	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 17:25	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 17:25	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 17:25	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 17:25	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 17:25	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 17:25	1
Acetone	25	U	50	25	ug/L			07/29/24 17:25	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 17:25	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 17:25	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 17:25	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 17:25	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 17:25	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 17:25	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 17:25	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 17:25	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 17:25	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 17:25	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 17:25	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 17:25	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 17:25	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 17:25	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 17:25	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 17:25	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 17:25	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 17:25	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 17:25	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 17:25	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 17:25	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 17:25	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 17:25	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 17:25	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 17:25	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 17:25	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 17:25	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 17:25	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 17:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/29/24 17:25*	*1*
Dibromofluoromethane (Surr)	*103*		*53 - 146*		*07/29/24 17:25*	*1*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/29/24 17:25*	*1*

Surrogate Summary

Client: Tetra Tech Inc
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-44273-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(41-142)	(53-146)	(40-146)
670-44273-1	AOSB-MW0003-040.0-20240724	99	102	101
670-44273-2	AOSB-MW0006-025.0-20240724	102	101	100
670-44273-2	AOSB-MW0006-025.0-20240724	93	115	97
670-44273-3	AOSB-MW0011-015.0-20240724	100	101	99
670-44273-4	AOSB-MW0002-040.0-20240725	99	102	99
670-44273-5	AOSB-MW0001-025.0-20240725	100	103	98
670-44273-6	AOSB-MW0009-040.0-20240725	99	99	101
670-44273-7	AOSB-MW0008-025.0-20240725	97	102	99
670-44273-8	AOSB-MW0007-040.0-20240725	101	101	95
670-44273-9	AOSB-MW0004-025.0-20240725	99	105	97
670-44273-10	AOSB-MW0005-040.0-20240725	98	102	98
670-44273-11	AOSB-MW0010-015.0-20240725	99	103	101
670-44284-J-4 MS	Matrix Spike	96	101	101
670-44284-J-4 MSD	Matrix Spike Duplicate	98	102	100
LB 670-102608/1-A	Method Blank	96	110	98
LCS 670-102710/4	Lab Control Sample	98	100	100
LCS 670-102941/4	Lab Control Sample	81	102	105
MB 670-102710/7	Method Blank	95	99	100
MB 670-102941/7	Method Blank	94	106	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(41-142)	(53-146)	(40-146)
660-137419-A-1-B MS	Matrix Spike	91	107	97
660-137419-A-1-B MSD	Matrix Spike Duplicate	93	105	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 670-102710/7
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/29/24 12:07	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/29/24 12:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/29/24 12:07	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/29/24 12:07	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/29/24 12:07	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/29/24 12:07	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/29/24 12:07	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/29/24 12:07	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/29/24 12:07	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/29/24 12:07	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/29/24 12:07	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/29/24 12:07	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/29/24 12:07	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/29/24 12:07	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/29/24 12:07	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/29/24 12:07	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/29/24 12:07	1
Acetone	25	U	50	25	ug/L			07/29/24 12:07	1
Benzene	0.71	U	1.0	0.71	ug/L			07/29/24 12:07	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/29/24 12:07	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/29/24 12:07	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/29/24 12:07	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/29/24 12:07	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/29/24 12:07	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/29/24 12:07	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/29/24 12:07	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/29/24 12:07	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/29/24 12:07	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/29/24 12:07	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/29/24 12:07	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/29/24 12:07	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/29/24 12:07	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/29/24 12:07	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/29/24 12:07	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/29/24 12:07	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/29/24 12:07	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/29/24 12:07	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/29/24 12:07	1
Styrene	0.61	U	1.0	0.61	ug/L			07/29/24 12:07	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/29/24 12:07	1
Toluene	0.72	U	1.0	0.72	ug/L			07/29/24 12:07	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/29/24 12:07	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/29/24 12:07	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/29/24 12:07	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/29/24 12:07	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/29/24 12:07	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/29/24 12:07	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 670-102710/7
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*95*		*41 - 142*		*07/29/24 12:07*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/29/24 12:07*	*1*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/29/24 12:07*	*1*

Lab Sample ID: LCS 670-102710/4
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	19.6		ug/L		98	57 - 148
1,1,2,2-Tetrachloroethane	20.0	18.2		ug/L		91	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.6		ug/L		93	47 - 173
1,1,2-Trichloroethane	20.0	19.4		ug/L		97	57 - 141
1,1-Dichloroethane	20.0	19.4		ug/L		97	57 - 142
1,1-Dichloroethene	20.0	17.2		ug/L		86	47 - 139
1,2,4-Trichlorobenzene	20.0	23.1		ug/L		116	52 - 159
1,2-Dibromo-3-Chloropropane	20.0	15.3		ug/L		77	48 - 150
1,2-Dibromoethane (EDB)	20.0	18.6		ug/L		93	57 - 140
1,2-Dichlorobenzene	20.0	21.1		ug/L		106	63 - 131
1,2-Dichloroethane	20.0	18.8		ug/L		94	50 - 156
1,2-Dichloropropane	20.0	20.6		ug/L		103	61 - 133
1,3-Dichlorobenzene	20.0	20.7		ug/L		103	66 - 129
1,4-Dichlorobenzene	20.0	20.9		ug/L		104	65 - 133
2-Butanone (MEK)	200	169		ug/L		84	10 - 180
2-Hexanone	200	169		ug/L		85	12 - 180
4-Methyl-2-pentanone	200	162		ug/L		81	19 - 180
Acetone	200	159		ug/L		79	10 - 180
Benzene	20.0	18.7		ug/L		93	56 - 136
Bromodichloromethane	20.0	20.3		ug/L		102	58 - 135
Bromoform	20.0	18.5		ug/L		92	46 - 148
Bromomethane	20.0	22.5		ug/L		113	10 - 173
Carbon disulfide	20.0	11.0		ug/L		55	43 - 153
Carbon tetrachloride	20.0	19.2		ug/L		96	54 - 156
Chlorobenzene	20.0	20.2		ug/L		101	51 - 139
Chloroethane	20.0	24.4		ug/L		122	27 - 180
Chloroform	20.0	20.8		ug/L		104	58 - 139
Chloromethane	20.0	18.9		ug/L		95	33 - 154
cis-1,2-Dichloroethene	20.0	19.6		ug/L		98	56 - 128
cis-1,3-Dichloropropene	20.0	19.3		ug/L		97	64 - 128
Cyclohexane	20.0	16.7		ug/L		83	14 - 151
Dibromochloromethane	20.0	19.9		ug/L		99	50 - 140
Dichlorodifluoromethane	20.0	20.0		ug/L		100	10 - 180
Ethylbenzene	20.0	19.1		ug/L		95	63 - 133
Isopropylbenzene	20.0	21.0		ug/L		105	60 - 132
m,p-Xylenes	20.0	19.5		ug/L		98	64 - 133
Methyl acetate	40.0	32.2		ug/L		81	70 - 130
Methyl tert-butyl ether	20.0	19.9		ug/L		100	51 - 145
Methylene Chloride	20.0	25.9		ug/L		130	43 - 142

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 670-102710/4
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
o-Xylene	20.0	19.8		ug/L		99	61 - 129
Styrene	20.0	18.6		ug/L		93	59 - 136
Tetrachloroethene	20.0	19.8		ug/L		99	60 - 147
Toluene	20.0	18.6		ug/L		93	64 - 131
trans-1,2-Dichloroethene	20.0	16.7		ug/L		84	54 - 134
trans-1,3-Dichloropropene	20.0	19.3		ug/L		97	65 - 149
Trichloroethene	20.0	19.4		ug/L		97	62 - 135
Trichlorofluoromethane	20.0	22.6		ug/L		113	56 - 155
Vinyl chloride	20.0	23.0		ug/L		115	20 - 167
Xylenes, Total	40.0	39.3		ug/L		98	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*
Dibromofluoromethane (Surr)	*100*		*53 - 146*
Toluene-d8 (Surr)	*100*		*40 - 146*

Lab Sample ID: 670-44284-J-4 MS
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	0.80	U	20.0	20.9		ug/L		105	57 - 148
1,1,2,2-Tetrachloroethane	0.54	U	20.0	20.5		ug/L		102	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	20.0	19.6		ug/L		98	50 - 150
1,1,2-Trichloroethane	0.76	U	20.0	20.8		ug/L		104	57 - 141
1,1-Dichloroethane	0.62	U	20.0	19.2		ug/L		96	57 - 142
1,1-Dichloroethene	0.94	U	20.0	17.6		ug/L		88	49 - 139
1,2,4-Trichlorobenzene	0.70	U	20.0	22.4		ug/L		112	52 - 159
1,2-Dibromo-3-Chloropropane	0.96	U	20.0	17.5		ug/L		87	48 - 150
1,2-Dibromoethane (EDB)	0.78	U	20.0	19.7		ug/L		98	50 - 150
1,2-Dichlorobenzene	0.73	U	20.0	21.5		ug/L		107	63 - 131
1,2-Dichloroethane	0.63	U	20.0	19.5		ug/L		97	50 - 156
1,2-Dichloropropane	0.80	U	20.0	21.0		ug/L		105	61 - 133
1,3-Dichlorobenzene	0.77	U	20.0	21.8		ug/L		109	66 - 129
1,4-Dichlorobenzene	0.76	U	20.0	21.2		ug/L		106	65 - 133
2-Butanone (MEK)	4.5	U	200	183		ug/L		91	10 - 180
2-Hexanone	2.5	U	200	201		ug/L		100	12 - 180
4-Methyl-2-pentanone	5.0	U	200	190		ug/L		95	19 - 180
Acetone	25	U	200	169		ug/L		85	10 - 180
Benzene	0.71	U	20.0	19.4		ug/L		97	56 - 136
Bromodichloromethane	0.52	U	20.0	20.2		ug/L		101	58 - 135
Bromoform	0.75	U	20.0	19.6		ug/L		98	46 - 148
Bromomethane	0.95	U	20.0	23.7		ug/L		119	10 - 173
Carbon disulfide	2.5	U	20.0	10.7		ug/L		53	43 - 153
Carbon tetrachloride	0.94	U	20.0	20.9		ug/L		105	54 - 156
Chlorobenzene	0.72	U	20.0	21.5		ug/L		107	51 - 139
Chloroethane	0.98	U	20.0	23.4		ug/L		117	27 - 180
Chloroform	0.80	U	20.0	20.4		ug/L		102	59 - 139

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 670-44284-J-4 MS
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloromethane	0.82	U	20.0	21.1		ug/L		106	33 - 154
cis-1,2-Dichloroethene	0.53	U	20.0	18.4		ug/L		92	56 - 128
cis-1,3-Dichloropropene	0.59	U	20.0	19.3		ug/L		96	64 - 128
Cyclohexane	0.93	U	20.0	18.3		ug/L		91	14 - 141
Dibromochloromethane	0.50	U	20.0	20.6		ug/L		103	50 - 150
Dichlorodifluoromethane	0.74	U	20.0	22.3		ug/L		111	10 - 180
Ethylbenzene	0.69	U	20.0	21.1		ug/L		106	63 - 133
Isopropylbenzene	0.67	U	20.0	22.7		ug/L		113	60 - 132
m,p-Xylenes	1.3	U	20.0	21.4		ug/L		107	64 - 133
Methyl acetate	0.95	U	40.0	35.6		ug/L		89	50 - 150
Methyl tert-butyl ether	0.60	U	20.0	20.0		ug/L		100	50 - 150
Methylene Chloride	5.0	U	20.0	17.3		ug/L		86	43 - 142
o-Xylene	0.53	U	20.0	21.8		ug/L		109	61 - 129
Styrene	0.61	U	20.0	20.4		ug/L		102	59 - 136
Tetrachloroethene	0.76	U	20.0	21.7		ug/L		108	60 - 147
Toluene	0.72	U	20.0	20.0		ug/L		100	64 - 131
trans-1,2-Dichloroethene	0.73	U	20.0	17.5		ug/L		87	54 - 134
trans-1,3-Dichloropropene	0.73	U	20.0	19.8		ug/L		99	65 - 149
Trichloroethene	0.89	U	20.0	19.8		ug/L		99	62 - 135
Trichlorofluoromethane	0.94	U	20.0	25.5		ug/L		128	56 - 155
Vinyl chloride	0.71	U	20.0	25.3		ug/L		127	20 - 167
Xylenes, Total	1.3	U	40.0	43.2		ug/L		108	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*
Toluene-d8 (Surr)	*101*		*40 - 146*

Lab Sample ID: 670-44284-J-4 MSD
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	0.80	U	20.0	21.5		ug/L		107	57 - 148	3	25
1,1,2,2-Tetrachloroethane	0.54	U	20.0	20.2		ug/L		101	60 - 139	1	17
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	20.0	20.1		ug/L		101	50 - 150	2	30
1,1,2-Trichloroethane	0.76	U	20.0	21.2		ug/L		106	57 - 141	2	16
1,1-Dichloroethane	0.62	U	20.0	20.2		ug/L		101	57 - 142	5	24
1,1-Dichloroethene	0.94	U	20.0	16.8		ug/L		84	49 - 139	5	16
1,2,4-Trichlorobenzene	0.70	U	20.0	24.2		ug/L		121	52 - 159	7	24
1,2-Dibromo-3-Chloropropane	0.96	U	20.0	20.5		ug/L		103	48 - 150	16	21
1,2-Dibromoethane (EDB)	0.78	U	20.0	20.5		ug/L		103	50 - 150	4	16
1,2-Dichlorobenzene	0.73	U	20.0	22.3		ug/L		112	63 - 131	4	25
1,2-Dichloroethane	0.63	U	20.0	20.0		ug/L		100	50 - 156	3	18
1,2-Dichloropropane	0.80	U	20.0	21.6		ug/L		108	61 - 133	3	26
1,3-Dichlorobenzene	0.77	U	20.0	21.9		ug/L		109	66 - 129	0	23
1,4-Dichlorobenzene	0.76	U	20.0	21.5		ug/L		108	65 - 133	1	23
2-Butanone (MEK)	4.5	U	200	190		ug/L		95	10 - 180	4	29

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 670-44284-J-4 MSD
Matrix: Water
Analysis Batch: 102710

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-Hexanone	2.5	U	200	213		ug/L		106	12 - 180	6	28
4-Methyl-2-pentanone	5.0	U	200	196		ug/L		98	19 - 180	3	24
Acetone	25	U	200	180		ug/L		90	10 - 180	6	19
Benzene	0.71	U	20.0	19.5		ug/L		98	56 - 136	0	14
Bromodichloromethane	0.52	U	20.0	21.5		ug/L		107	58 - 135	6	19
Bromoform	0.75	U	20.0	20.2		ug/L		101	46 - 148	3	18
Bromomethane	0.95	U	20.0	23.1		ug/L		115	10 - 173	3	29
Carbon disulfide	2.5	U	20.0	11.2		ug/L		56	43 - 153	4	26
Carbon tetrachloride	0.94	U	20.0	20.9		ug/L		105	54 - 156	0	27
Chlorobenzene	0.72	U	20.0	21.7		ug/L		109	51 - 139	1	13
Chloroethane	0.98	U	20.0	24.4		ug/L		122	27 - 180	4	22
Chloroform	0.80	U	20.0	21.0		ug/L		105	59 - 139	3	17
Chloromethane	0.82	U	20.0	21.7		ug/L		109	33 - 154	3	31
cis-1,2-Dichloroethene	0.53	U	20.0	20.2		ug/L		101	56 - 128	9	17
cis-1,3-Dichloropropene	0.59	U	20.0	19.9		ug/L		100	64 - 128	3	20
Cyclohexane	0.93	U	20.0	18.6		ug/L		93	14 - 141	2	30
Dibromochloromethane	0.50	U	20.0	20.7		ug/L		104	50 - 150	1	18
Dichlorodifluoromethane	0.74	U	20.0	22.5		ug/L		112	10 - 180	1	26
Ethylbenzene	0.69	U	20.0	20.9		ug/L		105	63 - 133	1	18
Isopropylbenzene	0.67	U	20.0	23.1		ug/L		115	60 - 132	2	23
m,p-Xylenes	1.3	U	20.0	21.2		ug/L		106	64 - 133	1	18
Methyl acetate	0.95	U	40.0	35.3		ug/L		88	50 - 150	1	30
Methyl tert-butyl ether	0.60	U	20.0	21.2		ug/L		106	50 - 150	6	22
Methylene Chloride	5.0	U	20.0	17.8		ug/L		89	43 - 142	3	23
o-Xylene	0.53	U	20.0	21.6		ug/L		108	61 - 129	1	16
Styrene	0.61	U	20.0	20.0		ug/L		100	59 - 136	2	32
Tetrachloroethene	0.76	U	20.0	22.2		ug/L		111	60 - 147	2	21
Toluene	0.72	U	20.0	20.5		ug/L		102	64 - 131	2	16
trans-1,2-Dichloroethene	0.73	U	20.0	18.3		ug/L		91	54 - 134	5	20
trans-1,3-Dichloropropene	0.73	U	20.0	20.9		ug/L		104	65 - 149	5	17
Trichloroethene	0.89	U	20.0	20.1		ug/L		100	62 - 135	1	20
Trichlorofluoromethane	0.94	U	20.0	25.5		ug/L		128	56 - 155	0	22
Vinyl chloride	0.71	U	20.0	25.4		ug/L		127	20 - 167	0	24
Xylenes, Total	1.3	U	40.0	42.8		ug/L		107	50 - 150	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*
Toluene-d8 (Surr)	*100*		*40 - 146*

Lab Sample ID: LB 670-102608/1-A
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	80	U	100	80	ug/L			07/30/24 12:37	100
1,1,2,2-Tetrachloroethane	54	U	100	54	ug/L			07/30/24 12:37	100
1,1,2-Trichloro-1,2,2-trifluoroethane	73	U	200	73	ug/L			07/30/24 12:37	100

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LB 670-102608/1-A
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	76	U	200	76	ug/L			07/30/24 12:37	100
1,1-Dichloroethane	62	U	100	62	ug/L			07/30/24 12:37	100
1,1-Dichloroethene	94	U	100	94	ug/L			07/30/24 12:37	100
1,2,4-Trichlorobenzene	70	U	200	70	ug/L			07/30/24 12:37	100
1,2-Dibromo-3-Chloropropane	96	U	1000	96	ug/L			07/30/24 12:37	100
1,2-Dibromoethane (EDB)	78	U	1200	78	ug/L			07/30/24 12:37	100
1,2-Dichlorobenzene	73	U	100	73	ug/L			07/30/24 12:37	100
1,2-Dichloroethane	63	U	100	63	ug/L			07/30/24 12:37	100
1,2-Dichloropropane	80	U	100	80	ug/L			07/30/24 12:37	100
1,3-Dichlorobenzene	77	U	100	77	ug/L			07/30/24 12:37	100
1,4-Dichlorobenzene	76	U	100	76	ug/L			07/30/24 12:37	100
2-Butanone (MEK)	450	U	1000	450	ug/L			07/30/24 12:37	100
2-Hexanone	250	U	2000	250	ug/L			07/30/24 12:37	100
4-Methyl-2-pentanone	500	U	2000	500	ug/L			07/30/24 12:37	100
Acetone	2500	U	5000	2500	ug/L			07/30/24 12:37	100
Benzene	71	U	100	71	ug/L			07/30/24 12:37	100
Bromodichloromethane	52	U	100	52	ug/L			07/30/24 12:37	100
Bromoform	75	U	100	75	ug/L			07/30/24 12:37	100
Bromomethane	95	U	200	95	ug/L			07/30/24 12:37	100
Carbon disulfide	250	U	500	250	ug/L			07/30/24 12:37	100
Carbon tetrachloride	94	U	100	94	ug/L			07/30/24 12:37	100
Chlorobenzene	72	U	100	72	ug/L			07/30/24 12:37	100
Chloroethane	98	U	200	98	ug/L			07/30/24 12:37	100
Chloroform	80	U	500	80	ug/L			07/30/24 12:37	100
Chloromethane	82	U	200	82	ug/L			07/30/24 12:37	100
cis-1,2-Dichloroethene	53	U	100	53	ug/L			07/30/24 12:37	100
cis-1,3-Dichloropropene	59	U	100	59	ug/L			07/30/24 12:37	100
Cyclohexane	93	U	500	93	ug/L			07/30/24 12:37	100
Dibromochloromethane	50	U	100	50	ug/L			07/30/24 12:37	100
Dichlorodifluoromethane	74	U	100	74	ug/L			07/30/24 12:37	100
Ethylbenzene	69	U	100	69	ug/L			07/30/24 12:37	100
Isopropylbenzene	67	U	100	67	ug/L			07/30/24 12:37	100
Methyl acetate	95	U	1000	95	ug/L			07/30/24 12:37	100
Methyl tert-butyl ether	60	U	200	60	ug/L			07/30/24 12:37	100
Methylene Chloride	500	U	1000	500	ug/L			07/30/24 12:37	100
Styrene	61	U	100	61	ug/L			07/30/24 12:37	100
Tetrachloroethene	76	U	100	76	ug/L			07/30/24 12:37	100
Toluene	72	U	100	72	ug/L			07/30/24 12:37	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/30/24 12:37	100
trans-1,3-Dichloropropene	73	U	100	73	ug/L			07/30/24 12:37	100
Trichloroethene	89	U	100	89	ug/L			07/30/24 12:37	100
Trichlorofluoromethane	94	U	100	94	ug/L			07/30/24 12:37	100
Vinyl chloride	71	U	100	71	ug/L			07/30/24 12:37	100
Xylenes, Total	130	U	200	130	ug/L			07/30/24 12:37	100

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*07/30/24 12:37*	*100*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/30/24 12:37*	*100*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LB 670-102608/1-A
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	LB %Recovery	LB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		40 - 146		07/30/24 12:37	100

Lab Sample ID: MB 670-102941/7
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.80	U	1.0	0.80	ug/L			07/30/24 11:49	1
1,1,2,2-Tetrachloroethane	0.54	U	1.0	0.54	ug/L			07/30/24 11:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.73	U	2.0	0.73	ug/L			07/30/24 11:49	1
1,1,2-Trichloroethane	0.76	U	2.0	0.76	ug/L			07/30/24 11:49	1
1,1-Dichloroethane	0.62	U	1.0	0.62	ug/L			07/30/24 11:49	1
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/30/24 11:49	1
1,2,4-Trichlorobenzene	0.70	U	2.0	0.70	ug/L			07/30/24 11:49	1
1,2-Dibromo-3-Chloropropane	0.96	U	10	0.96	ug/L			07/30/24 11:49	1
1,2-Dibromoethane (EDB)	0.78	U	12	0.78	ug/L			07/30/24 11:49	1
1,2-Dichlorobenzene	0.73	U	1.0	0.73	ug/L			07/30/24 11:49	1
1,2-Dichloroethane	0.63	U	1.0	0.63	ug/L			07/30/24 11:49	1
1,2-Dichloropropane	0.80	U	1.0	0.80	ug/L			07/30/24 11:49	1
1,3-Dichlorobenzene	0.77	U	1.0	0.77	ug/L			07/30/24 11:49	1
1,4-Dichlorobenzene	0.76	U	1.0	0.76	ug/L			07/30/24 11:49	1
2-Butanone (MEK)	4.5	U	10	4.5	ug/L			07/30/24 11:49	1
2-Hexanone	2.5	U	20	2.5	ug/L			07/30/24 11:49	1
4-Methyl-2-pentanone	5.0	U	20	5.0	ug/L			07/30/24 11:49	1
Acetone	25	U	50	25	ug/L			07/30/24 11:49	1
Benzene	0.71	U	1.0	0.71	ug/L			07/30/24 11:49	1
Bromodichloromethane	0.52	U	1.0	0.52	ug/L			07/30/24 11:49	1
Bromoform	0.75	U	1.0	0.75	ug/L			07/30/24 11:49	1
Bromomethane	0.95	U	2.0	0.95	ug/L			07/30/24 11:49	1
Carbon disulfide	2.5	U	5.0	2.5	ug/L			07/30/24 11:49	1
Carbon tetrachloride	0.94	U	1.0	0.94	ug/L			07/30/24 11:49	1
Chlorobenzene	0.72	U	1.0	0.72	ug/L			07/30/24 11:49	1
Chloroethane	0.98	U	2.0	0.98	ug/L			07/30/24 11:49	1
Chloroform	0.80	U	5.0	0.80	ug/L			07/30/24 11:49	1
Chloromethane	0.82	U	2.0	0.82	ug/L			07/30/24 11:49	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/30/24 11:49	1
cis-1,3-Dichloropropene	0.59	U	1.0	0.59	ug/L			07/30/24 11:49	1
Cyclohexane	0.93	U	5.0	0.93	ug/L			07/30/24 11:49	1
Dibromochloromethane	0.50	U	1.0	0.50	ug/L			07/30/24 11:49	1
Dichlorodifluoromethane	0.74	U	1.0	0.74	ug/L			07/30/24 11:49	1
Ethylbenzene	0.69	U	1.0	0.69	ug/L			07/30/24 11:49	1
Isopropylbenzene	0.67	U	1.0	0.67	ug/L			07/30/24 11:49	1
Methyl acetate	0.95	U	10	0.95	ug/L			07/30/24 11:49	1
Methyl tert-butyl ether	0.60	U	2.0	0.60	ug/L			07/30/24 11:49	1
Methylene Chloride	5.0	U	10	5.0	ug/L			07/30/24 11:49	1
Styrene	0.61	U	1.0	0.61	ug/L			07/30/24 11:49	1
Tetrachloroethene	0.76	U	1.0	0.76	ug/L			07/30/24 11:49	1
Toluene	0.72	U	1.0	0.72	ug/L			07/30/24 11:49	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 670-102941/7
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/30/24 11:49	1
trans-1,3-Dichloropropene	0.73	U	1.0	0.73	ug/L			07/30/24 11:49	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/30/24 11:49	1
Trichlorofluoromethane	0.94	U	1.0	0.94	ug/L			07/30/24 11:49	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/30/24 11:49	1
Xylenes, Total	1.3	U	2.0	1.3	ug/L			07/30/24 11:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/30/24 11:49*	*1*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*07/30/24 11:49*	*1*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/30/24 11:49*	*1*

Lab Sample ID: LCS 670-102941/4
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	19.7		ug/L		98	57 - 148
1,1,2,2-Tetrachloroethane	20.0	14.4		ug/L		72	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	16.0		ug/L		80	47 - 173
1,1,2-Trichloroethane	20.0	17.7		ug/L		89	57 - 141
1,1-Dichloroethane	20.0	17.1		ug/L		86	57 - 142
1,1-Dichloroethene	20.0	14.7		ug/L		73	47 - 139
1,2,4-Trichlorobenzene	20.0	19.8		ug/L		99	52 - 159
1,2-Dibromo-3-Chloropropane	20.0	18.1		ug/L		91	48 - 150
1,2-Dibromoethane (EDB)	20.0	18.1		ug/L		91	57 - 140
1,2-Dichlorobenzene	20.0	18.5		ug/L		93	63 - 131
1,2-Dichloroethane	20.0	16.3		ug/L		82	50 - 156
1,2-Dichloropropane	20.0	17.4		ug/L		87	61 - 133
1,3-Dichlorobenzene	20.0	18.8		ug/L		94	66 - 129
1,4-Dichlorobenzene	20.0	18.8		ug/L		94	65 - 133
2-Butanone (MEK)	200	174		ug/L		87	10 - 180
2-Hexanone	200	148		ug/L		74	12 - 180
4-Methyl-2-pentanone	200	158		ug/L		79	19 - 180
Acetone	200	134		ug/L		67	10 - 180
Benzene	20.0	17.3		ug/L		86	56 - 136
Bromodichloromethane	20.0	18.0		ug/L		90	58 - 135
Bromoform	20.0	16.9		ug/L		85	46 - 148
Bromomethane	20.0	15.8		ug/L		79	10 - 173
Carbon disulfide	20.0	11.3		ug/L		57	43 - 153
Carbon tetrachloride	20.0	17.9		ug/L		90	54 - 156
Chlorobenzene	20.0	16.9		ug/L		84	51 - 139
Chloroethane	20.0	16.1		ug/L		80	27 - 180
Chloroform	20.0	17.8		ug/L		89	58 - 139
Chloromethane	20.0	14.7		ug/L		74	33 - 154
cis-1,2-Dichloroethene	20.0	17.1		ug/L		85	56 - 128
cis-1,3-Dichloropropene	20.0	17.4		ug/L		87	64 - 128
Cyclohexane	20.0	16.2		ug/L		81	14 - 151

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 670-102941/4
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Dibromochloromethane	20.0	20.0		ug/L		100	50 - 140
Dichlorodifluoromethane	20.0	13.4		ug/L		67	10 - 180
Ethylbenzene	20.0	17.7		ug/L		88	63 - 133
Isopropylbenzene	20.0	16.3		ug/L		81	60 - 132
m,p-Xylenes	20.0	18.5		ug/L		92	64 - 133
Methyl acetate	40.0	32.2		ug/L		81	70 - 130
Methyl tert-butyl ether	20.0	18.6		ug/L		93	51 - 145
Methylene Chloride	20.0	17.7		ug/L		89	43 - 142
o-Xylene	20.0	17.8		ug/L		89	61 - 129
Styrene	20.0	17.6		ug/L		88	59 - 136
Tetrachloroethene	20.0	20.8		ug/L		104	60 - 147
Toluene	20.0	16.8		ug/L		84	64 - 131
trans-1,2-Dichloroethene	20.0	16.7		ug/L		83	54 - 134
trans-1,3-Dichloropropene	20.0	19.6		ug/L		98	65 - 149
Trichloroethene	20.0	18.6		ug/L		93	62 - 135
Trichlorofluoromethane	20.0	17.0		ug/L		85	56 - 155
Vinyl chloride	20.0	16.8		ug/L		84	20 - 167
Xylenes, Total	40.0	36.3		ug/L		91	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*81*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*
Toluene-d8 (Surr)	*105*		*40 - 146*

Lab Sample ID: 660-137419-A-1-B MS
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Matrix Spike
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	80	U	2000	2050		ug/L		102	57 - 148
1,1,2,2-Tetrachloroethane	54	U	2000	1620		ug/L		81	60 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	73	U	2000	1710		ug/L		86	50 - 150
1,1,2-Trichloroethane	76	U	2000	1780		ug/L		89	57 - 141
1,1-Dichloroethane	62	U	2000	1650		ug/L		82	57 - 142
1,1-Dichloroethene	94	U	2000	1650		ug/L		83	49 - 139
1,2,4-Trichlorobenzene	70	U	2000	1640		ug/L		82	52 - 159
1,2-Dibromo-3-Chloropropane	96	U	2000	1900		ug/L		95	48 - 150
1,2-Dibromoethane (EDB)	78	U	2000	1980		ug/L		99	50 - 150
1,2-Dichlorobenzene	73	U	2000	1730		ug/L		86	63 - 131
1,2-Dichloroethane	63	U	2000	1760		ug/L		88	50 - 156
1,2-Dichloropropane	80	U	2000	1630		ug/L		82	61 - 133
1,3-Dichlorobenzene	77	U	2000	1730		ug/L		87	66 - 129
1,4-Dichlorobenzene	76	U	2000	1680		ug/L		84	65 - 133
2-Butanone (MEK)	450	U	20000	17600		ug/L		88	10 - 180
2-Hexanone	250	U	20000	17200		ug/L		86	12 - 180
4-Methyl-2-pentanone	500	U	20000	16000		ug/L		80	19 - 180
Acetone	2500	U	20000	13900		ug/L		69	10 - 180
Benzene	71	U	2000	1610		ug/L		81	56 - 136

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 660-137419-A-1-B MS
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Matrix Spike
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Bromodichloromethane	52	U	2000	1920		ug/L		96	58 - 135
Bromoform	75	U	2000	1830		ug/L		92	46 - 148
Bromomethane	95	U	2000	1550		ug/L		78	10 - 173
Carbon disulfide	250	U	2000	1260		ug/L		63	43 - 153
Carbon tetrachloride	94	U	2000	1850		ug/L		92	54 - 156
Chlorobenzene	72	U	2000	1630		ug/L		81	51 - 139
Chloroethane	98	U	2000	1660		ug/L		83	27 - 180
Chloroform	80	U	2000	1870		ug/L		93	59 - 139
Chloromethane	82	U	2000	1440		ug/L		72	33 - 154
cis-1,2-Dichloroethene	53	U	2000	1610		ug/L		81	56 - 128
cis-1,3-Dichloropropene	59	U	2000	1680		ug/L		84	64 - 128
Cyclohexane	93	U	2000	1410		ug/L		70	14 - 141
Dibromochloromethane	50	U	2000	2080		ug/L		104	50 - 150
Dichlorodifluoromethane	74	U	2000	1390		ug/L		70	10 - 180
Ethylbenzene	69	U	2000	1720		ug/L		86	63 - 133
Isopropylbenzene	67	U	2000	1710		ug/L		85	60 - 132
m,p-Xylenes	130	U	2000	1730		ug/L		86	64 - 133
Methyl acetate	95	U	4000	3250		ug/L		81	50 - 150
Methyl tert-butyl ether	60	U	2000	1840		ug/L		92	50 - 150
Methylene Chloride	500	U	2000	1690		ug/L		85	43 - 142
o-Xylene	53	U	2000	1680		ug/L		84	61 - 129
Styrene	61	U	2000	1740		ug/L		87	59 - 136
Tetrachloroethene	76	U	2000	2000		ug/L		100	60 - 147
Toluene	72	U	2000	1660		ug/L		83	64 - 131
trans-1,2-Dichloroethene	73	U	2000	1600		ug/L		80	54 - 134
trans-1,3-Dichloropropene	73	U	2000	1960		ug/L		98	65 - 149
Trichloroethene	89	U	2000	1830		ug/L		92	62 - 135
Trichlorofluoromethane	94	U	2000	1860		ug/L		93	56 - 155
Vinyl chloride	71	U	2000	1570		ug/L		79	20 - 167
Xylenes, Total	130	U	4000	3410		ug/L		85	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*
Dibromofluoromethane (Surr)	*107*		*53 - 146*
Toluene-d8 (Surr)	*97*		*40 - 146*

Lab Sample ID: 660-137419-A-1-B MSD
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	80	U	2000	1970		ug/L		99	57 - 148	4	25
1,1,2,2-Tetrachloroethane	54	U	2000	1630		ug/L		82	60 - 139	1	17
1,1,2-Trichloro-1,2,2-trifluoroetha ne	73	U	2000	1640		ug/L		82	50 - 150	4	30
1,1,2-Trichloroethane	76	U	2000	1770		ug/L		88	57 - 141	1	16
1,1-Dichloroethane	62	U	2000	1580		ug/L		79	57 - 142	4	24
1,1-Dichloroethene	94	U	2000	1670		ug/L		83	49 - 139	1	16
1,2,4-Trichlorobenzene	70	U	2000	1780		ug/L		89	52 - 159	8	24

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 660-137419-A-1-B MSD
Matrix: Water
Analysis Batch: 102941

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dibromo-3-Chloropropane	96	U	2000	1880		ug/L		94	48 - 150	1	21
1,2-Dibromoethane (EDB)	78	U	2000	1910		ug/L		96	50 - 150	3	16
1,2-Dichlorobenzene	73	U	2000	1770		ug/L		89	63 - 131	3	25
1,2-Dichloroethane	63	U	2000	1730		ug/L		87	50 - 156	2	18
1,2-Dichloropropane	80	U	2000	1610		ug/L		80	61 - 133	1	26
1,3-Dichlorobenzene	77	U	2000	1740		ug/L		87	66 - 129	0	23
1,4-Dichlorobenzene	76	U	2000	1690		ug/L		84	65 - 133	1	23
2-Butanone (MEK)	450	U	20000	17700		ug/L		89	10 - 180	1	29
2-Hexanone	250	U	20000	16900		ug/L		85	12 - 180	2	28
4-Methyl-2-pentanone	500	U	20000	15700		ug/L		79	19 - 180	2	24
Acetone	2500	U	20000	13500		ug/L		68	10 - 180	3	19
Benzene	71	U	2000	1570		ug/L		79	56 - 136	3	14
Bromodichloromethane	52	U	2000	1810		ug/L		90	58 - 135	6	19
Bromoform	75	U	2000	1940		ug/L		97	46 - 148	6	18
Bromomethane	95	U	2000	1660		ug/L		83	10 - 173	6	29
Carbon disulfide	250	U	2000	1280		ug/L		64	43 - 153	2	26
Carbon tetrachloride	94	U	2000	1850		ug/L		93	54 - 156	0	27
Chlorobenzene	72	U	2000	1630		ug/L		81	51 - 139	0	13
Chloroethane	98	U	2000	1490		ug/L		75	27 - 180	10	22
Chloroform	80	U	2000	1860		ug/L		93	59 - 139	0	17
Chloromethane	82	U	2000	1300		ug/L		65	33 - 154	10	31
cis-1,2-Dichloroethene	53	U	2000	1650		ug/L		83	56 - 128	2	17
cis-1,3-Dichloropropene	59	U	2000	1620		ug/L		81	64 - 128	3	20
Cyclohexane	93	U	2000	1380		ug/L		69	14 - 141	2	30
Dibromochloromethane	50	U	2000	2080		ug/L		104	50 - 150	0	18
Dichlorodifluoromethane	74	U	2000	1270		ug/L		63	10 - 180	9	26
Ethylbenzene	69	U	2000	1720		ug/L		86	63 - 133	0	18
Isopropylbenzene	67	U	2000	1750		ug/L		87	60 - 132	2	23
m,p-Xylenes	130	U	2000	1720		ug/L		86	64 - 133	1	18
Methyl acetate	95	U	4000	3260		ug/L		82	50 - 150	0	30
Methyl tert-butyl ether	60	U	2000	1820		ug/L		91	50 - 150	1	22
Methylene Chloride	500	U	2000	1630		ug/L		81	43 - 142	4	23
o-Xylene	53	U	2000	1710		ug/L		85	61 - 129	2	16
Styrene	61	U	2000	1740		ug/L		87	59 - 136	0	32
Tetrachloroethene	76	U	2000	2010		ug/L		101	60 - 147	1	21
Toluene	72	U	2000	1600		ug/L		80	64 - 131	3	16
trans-1,2-Dichloroethene	73	U	2000	1580		ug/L		79	54 - 134	2	20
trans-1,3-Dichloropropene	73	U	2000	1970		ug/L		99	65 - 149	1	17
Trichloroethene	89	U	2000	1850		ug/L		93	62 - 135	1	20
Trichlorofluoromethane	94	U	2000	1850		ug/L		93	56 - 155	1	22
Vinyl chloride	71	U	2000	1590		ug/L		79	20 - 167	1	24
Xylenes, Total	130	U	4000	3430		ug/L		86	50 - 150	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*
Dibromofluoromethane (Surr)	*105*		*53 - 146*
Toluene-d8 (Surr)	*97*		*40 - 146*

QC Association Summary

Client: Tetra Tech Inc
Project/Site: NASA KSC AOSB LC39A

Job ID: 670-44273-1

GC/MS VOA

Leach Batch: 102608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 670-102608/1-A	Method Blank	Total/NA	Water	1311	
660-137419-A-1-B MS	Matrix Spike	TCLP	Water	1311	
660-137419-A-1-B MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Analysis Batch: 102710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-44273-1	AOSB-MW0003-040.0-20240724	Total/NA	Water	8260D	
670-44273-2	AOSB-MW0006-025.0-20240724	Total/NA	Water	8260D	
670-44273-3	AOSB-MW0011-015.0-20240724	Total/NA	Water	8260D	
670-44273-4	AOSB-MW0002-040.0-20240725	Total/NA	Water	8260D	
670-44273-5	AOSB-MW0001-025.0-20240725	Total/NA	Water	8260D	
670-44273-6	AOSB-MW0009-040.0-20240725	Total/NA	Water	8260D	
670-44273-7	AOSB-MW0008-025.0-20240725	Total/NA	Water	8260D	
670-44273-8	AOSB-MW0007-040.0-20240725	Total/NA	Water	8260D	
670-44273-9	AOSB-MW0004-025.0-20240725	Total/NA	Water	8260D	
670-44273-10	AOSB-MW0005-040.0-20240725	Total/NA	Water	8260D	
670-44273-11	AOSB-MW0010-015.0-20240725	Total/NA	Water	8260D	
MB 670-102710/7	Method Blank	Total/NA	Water	8260D	
LCS 670-102710/4	Lab Control Sample	Total/NA	Water	8260D	
670-44284-J-4 MS	Matrix Spike	Total/NA	Water	8260D	
670-44284-J-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 102941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-44273-2	AOSB-MW0006-025.0-20240724	Total/NA	Water	8260D	
LB 670-102608/1-A	Method Blank	Total/NA	Water	8260D	102608
MB 670-102941/7	Method Blank	Total/NA	Water	8260D	
LCS 670-102941/4	Lab Control Sample	Total/NA	Water	8260D	
660-137419-A-1-B MS	Matrix Spike	TCLP	Water	8260D	102608
660-137419-A-1-B MSD	Matrix Spike Duplicate	TCLP	Water	8260D	102608

Lab Chronicle

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0003-040.0-20240724
Lab Sample ID: 670-44273-1
Date Collected: 07/24/24 13:59
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 14:23

Client Sample ID: AOSB-MW0006-025.0-20240724
Lab Sample ID: 670-44273-2
Date Collected: 07/24/24 15:47
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 14:41
Total/NA	Analysis	8260D		1	102941	AAM	EET ORL	07/30/24 15:41

Client Sample ID: AOSB-MW0011-015.0-20240724
Lab Sample ID: 670-44273-3
Date Collected: 07/24/24 17:02
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 14:59

Client Sample ID: AOSB-MW0002-040.0-20240725
Lab Sample ID: 670-44273-4
Date Collected: 07/25/24 09:12
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 15:17

Client Sample ID: AOSB-MW0001-025.0-20240725
Lab Sample ID: 670-44273-5
Date Collected: 07/25/24 10:03
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 15:35

Client Sample ID: AOSB-MW0009-040.0-20240725
Lab Sample ID: 670-44273-6
Date Collected: 07/25/24 10:37
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 15:54

Client Sample ID: AOSB-MW0008-025.0-20240725
Lab Sample ID: 670-44273-7
Date Collected: 07/25/24 12:05
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 16:12

Lab Chronicle

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Client Sample ID: AOSB-MW0007-040.0-20240725
Lab Sample ID: 670-44273-8
Date Collected: 07/25/24 12:40
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 16:30

Client Sample ID: AOSB-MW0004-025.0-20240725
Lab Sample ID: 670-44273-9
Date Collected: 07/25/24 13:15
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 16:48

Client Sample ID: AOSB-MW0005-040.0-20240725
Lab Sample ID: 670-44273-10
Date Collected: 07/25/24 14:05
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 17:06

Client Sample ID: AOSB-MW0010-015.0-20240725
Lab Sample ID: 670-44273-11
Date Collected: 07/25/24 14:28
Matrix: Water
Date Received: 07/25/24 17:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	102710	AAM	EET ORL	07/29/24 17:25

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984

Accreditation/Certification Summary

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Laboratory: Eurofins Orlando

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Florida	NELAP	E83018	06-30-25

Method Summary

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET ORL
5030C	Purge and Trap	SW846	EET ORL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984

Sample Summary

Client: Tetra Tech Inc
Job ID: 670-44273-1
Project/Site: NASA KSC AOSB LC39A

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-44273-1	AOSB-MW0003-040.0-20240724	Water	07/24/24 13:59	07/25/24 17:10
670-44273-2	AOSB-MW0006-025.0-20240724	Water	07/24/24 15:47	07/25/24 17:10
670-44273-3	AOSB-MW0011-015.0-20240724	Water	07/24/24 17:02	07/25/24 17:10
670-44273-4	AOSB-MW0002-040.0-20240725	Water	07/25/24 09:12	07/25/24 17:10
670-44273-5	AOSB-MW0001-025.0-20240725	Water	07/25/24 10:03	07/25/24 17:10
670-44273-6	AOSB-MW0009-040.0-20240725	Water	07/25/24 10:37	07/25/24 17:10
670-44273-7	AOSB-MW0008-025.0-20240725	Water	07/25/24 12:05	07/25/24 17:10
670-44273-8	AOSB-MW0007-040.0-20240725	Water	07/25/24 12:40	07/25/24 17:10
670-44273-9	AOSB-MW0004-025.0-20240725	Water	07/25/24 13:15	07/25/24 17:10
670-44273-10	AOSB-MW0005-040.0-20240725	Water	07/25/24 14:05	07/25/24 17:10
670-44273-11	AOSB-MW0010-015.0-20240725	Water	07/25/24 14:28	07/25/24 17:10

Tetra Tech, Inc.

CHAIN OF CUSTODY | NUMBER No. 3273 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G09237	AOSB	Mark Jannet	412-921-8622	Eurofins - Kaitlin Dylnicki
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER**	**PHONE NUMBER**	**ADDRESS**
Natalie Volk		Natalie Volk	727-288-4184	481 Newburyport Avenue
		CARRIER/WAYBILL NUMBER		**CITY, STATE**
		Eurofins # 670018 18		Altamonte Springs, FL 32701

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE (YEAR 2024)	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)									COMMENTS
									G	G								
									PRESERVATIVE USED									
									None	HCl								
									TYPE OF ANALYSIS									
									82600 - MOD AOSB									
									82600 - MOD AOSB									
7/24	~~1359~~ 1359	~~AOSB-MW0003-040.0-20240724~~ AOSB-MW0003-040.0-20240724		35	45	GW	G	4	2	2								
↓	1547	AOSB-MW0006-025.0-20240724		20	30													
↓	1702	AOSB-MW0011-015.0-20240724		10	20													
7/25	0912	AOSB-MW0002-040.0-20240725		35	45													
	1003	AOSB-MW0001-025-20240725		20	30													
	1037	AOSB-MW0009-040.0-20240725		35	45													
	1205	AOSB-MW0008-025.0-20240725		20	30													
	1240	AOSB-MW0007-040.0-20240725		35	45													
	1315	AOSB-MW0004-025.0-20240725		20	30													
	1405	AOSB-MW0005-040.0-20240725		35	45													
↓	1428	AOSB-MW0010-015.0-20240725		10	20	↓	↓	↓	↓	↓								

670-44273-01 Chain of Custody

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	7/25/2024	1538	1. RECEIVED BY	7/25/24	1540
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	7/25/24	1710

COMMENTS

SDG

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TtNUS-001 6/02R

Login Sample Receipt Checklist

Client: Tetra Tech Inc

Job Number: 670-44273-1

Login Number: 44273

List Source: Eurofins Orlando

List Number: 1

Creator: Bittle, David W

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX C

FIELD FORMS AND LOG SHEETS

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0001	Sample ID:	AOSB-MW0001-025.0-20240118
Date:	1/18/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.91	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.91
Well Screen Interval Depth (ft bls):	20 to 30				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	20	Bottom Depth:	30		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.0635 Liters 30 - 2.91 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.025 = vol x3 **0.675** Liters 0 + 0.005 X 40 + 0.475

Initial Pump or Tubing Depth in Well (feet):	25	Final Pump or Tubing Depth in Well (feet):	25	Purging Initiated At:	10:54
Purging Ended At:	11:08	Total Vol. Purged (Liters):	2.8		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:04	2	2	200	3.02	6.61	25.8	65553	0.36	17.6	-59.2	None
11:06	0.4	2.4	200	3.92	6.61	25.9	65499	0.36	14.5	-60.6	None
11:08	0.4	2.8	200	3.92	6.61	25.8	65385	0.33	12.7	-63.7	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 11:10	Sampling Ended At: 11:14
Natalie Volk /Tetra Tech		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0002	Sample ID:	AOSB-MW0002-040.0-20240118
Date:	1/18/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.02	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	3.02
Well Screen Interval Depth (ft bls):	35 to 45				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	35	Bottom Depth:	45		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.297 Liters 45 - 3.02 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.25 = vol x3 **0.75** Liters 0 + 0.005 X 55 + 0.475

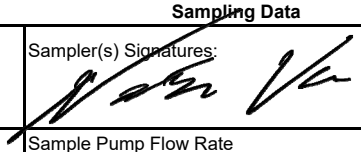
Initial Pump or Tubing Depth in Well (feet):	40	Final Pump or Tubing Depth in Well (feet):	40	Purging Initiated At:	11:22	Purging Ended At: 11:32
Total Vol. Purged (Liters):	3.5					

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:28	2.1	2.1	350	3.25	7.29	25.5	69413	4.28	19.8	-19.3	None
11:30	0.7	2.8	350	3.25	7.29	25.5	69303	4.30	19.4	-18.3	None
11:32	0.7	3.5	350	3.25	7.30	25.4	68934	4.30	17.6	-18.2	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:	
Sampling Initiated At:	11:34	Sampling Ended At:	11:38
Tubing Material Code:	Teflon		
Pump or Tubing Depth in Well (feet):	40	Sample Pump Flow Rate (mL per minute):	200
Duplicate:	No	Field Decontamination:	Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)				
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH	Intended Analysis and/or Method	Sampling Equipment Code
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0003	Sample ID:	AOSB-MW0003-040.0-20240118
Date:	1/18/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.81	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.81
Well Screen Interval Depth (ft bls):	35 to 45				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	35	Bottom Depth:	45		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.3285 Liters 45 - 2.81 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.25 = vol x3 **0.75** Liters 0 + 0.005 X 55 + 0.475

Initial Pump or Tubing Depth in Well (feet):	40	Final Pump or Tubing Depth in Well (feet):	40	Purging Initiated At:	9:22
Purging Ended At:	9:36	Total Vol. Purged (Liters):	2.8		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
9:32	2	2	200	3.01	6.86	24.3	64588	1.98	3.45	-1.3	None
9:34	0.4	2.4	200	3.01	6.86	24.4	64694	1.93	3.86	-4.6	None
9:36	0.4	2.8	200	3.01	6.85	24.4	64585	1.88	7.02	-3.4	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 9:38	Sampling Ended At: 9:42
Natalie Volk /Tetra Tech		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 7/18/1900	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0004	Sample ID:	AOSB-MW0004-025.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.10	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.1
Well Screen Interval Depth (ft bls):	20 to 30				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	20	Bottom Depth:	30		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.185 Liters 30 - 2.1 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.025 = vol x3 **0.675** Liters + 0.005 X 40 + 0.475

Initial Pump or Tubing Depth in Well (feet):	25	Final Pump or Tubing Depth in Well (feet):	25	Purging Initiated At:	11:19
Purging Ended At:	11:35	Total Vol. Purged (Liters):	3		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:30	2.2	2.2	200	2.30	6.56	23.4	56063	0.51	15.3	-4.7	None
11:32	0.4	2.6	200	2.30	6.56	23.3	56118	0.48	9.98	-7.7	None
11:34	0.4	3	200	2.39	6.56	23.4	56156	0.46	9.11	-11.4	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 11:35	Sampling Ended At: 11:40
Natalie Volk /Tetra Tech		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)				
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH	Intended Analysis and/or Method	Sampling Equipment Code
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID: High conductivity, near brackish water

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0005	Sample ID:	AOSB-MW0005-040.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.90	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.9
Well Screen Interval Depth (ft bls):	35 to 45				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	35	Bottom Depth:	45		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.315 Liters 45 - 2.9 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.025 = vol x3 **0.675** Liters + 0.005 X 40 + 0.475

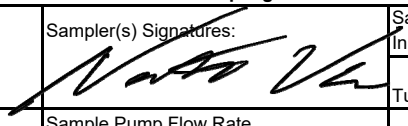
Initial Pump or Tubing Depth in Well (feet):	40	Final Pump or Tubing Depth in Well (feet):	40	Purging Initiated At:	11:48
Purging Ended At:	12:02	Total Vol. Purged (Liters):	2.8		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:58	2	2	200	3.11	6.73	23.4	60355	0.08	9.78	-65.4	None
12:00	0.4	2.4	200	3.11	6.73	23.5	60470	0.08	13.3	-66.0	None
12:02	0.4	2.8	200	3.11	6.73	23.5	60488	0.08	13.5	-67.0	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:	
Sampling Initiated At:	12:04	Sampling Ended At:	12:08
Tubing Material Code:	Teflon		
Pump or Tubing Depth in Well (feet):	40	Sample Pump Flow Rate (mL per minute):	200
Duplicate:	No	Field Decontamination:	Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0006	Sample ID:	AOSB-MW0006-025.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.35	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.35
Well Screen Interval Depth (ft bls):	20 to 30				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	20	Bottom Depth:	30		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.1475 Liters 30 - 2.35 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.025 = vol x3 **0.675** Liters 0 + 0.005 X 40 + 0.475

Initial Pump or Tubing Depth in Well (feet):	25	Final Pump or Tubing Depth in Well (feet):	25	Purging Initiated At:	13:14	Purging Ended At: 13:31
Total Vol. Purged (Liters):	3.4					

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
13:27	2.6	2.6	200	2.41	6.73	23.1	57992	0.04	0.75	-197.0	None
13:29	0.4	3	200	2.41	6.73	23.1	57834	0.03	0.93	-199.3	None
13:31	0.4	3.4	200	2.41	6.73	22.9	57502	0.03	1.13	-202.3	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 13:33	Sampling Ended At: 13:38
Natalie Volk /Tetra Tech		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0007	Sample ID:	AOSB-MW0007-040.0-20240118
Date:	1/18/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.02	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	3.02
Well Screen Interval Depth (ft bls):	35 to 45				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	35	Bottom Depth:	45		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.297 Liters 45 - 3.02 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.25 = vol x3 **0.75** Liters 0 + 0.005 X 55 + 0.475

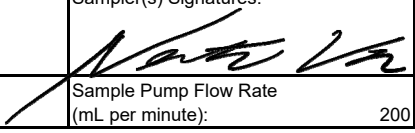
Initial Pump or Tubing Depth in Well (feet):	40	Final Pump or Tubing Depth in Well (feet):	40	Purging Initiated At:	10:20	Purging Ended At: 10:33
Total Vol. Purged (Liters):	2.6					

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
10:29	1.8	1.8	200	3.21	6.80	25.5	65338	0.80	6.16	-36.5	None
10:31	0.4	2.2	200	3.21	6.79	25.5	65259	0.77	4.74	-40.4	None
10:33	0.4	2.6	200	3.21	6.79	25.5	65173	0.75	4.44	-41.3	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:	
Sampling Initiated At:	10:35	Sampling Ended At:	10:40
Tubing Material Code:	Teflon		
Pump or Tubing Depth in Well (feet):	40	Sample Pump Flow Rate (mL per minute):	200
Duplicate:	No	Field Decontamination:	Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0008	Sample ID:	AOSB-MW0008-025.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.94	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.94
Well Screen Interval Depth (ft bls):	20 to 30				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	20	Bottom Depth:	30		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.059 Liters 30 - 2.94 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.025 = vol x3 **0.675** Liters 0 + 0.005 X 40 + 0.475

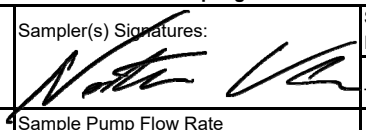
Initial Pump or Tubing Depth in Well (feet):	25	Final Pump or Tubing Depth in Well (feet):	25	Purging Initiated At:	12:43
Purging Ended At:	12:58	Total Vol. Purged (Liters):	3		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
12:54	2.2	2.2	200	3.05	6.56	23.9	60942	0.04	12.1	-116.8	None
12:56	0.4	2.6	200	3.05	6.56	23.8	60904	0.04	7.71	-117.2	None
12:58	0.4	3	200	3.05	6.56	24.9	61051	0.04	9.84	-117.8	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:	
Sampling Initiated At:	13:00	Sampling Ended At:	13:05
Tubing Material Code:	HDPE		
Pump or Tubing Depth in Well (feet):	25	Sample Pump Flow Rate (mL per minute):	200
Duplicate:	No	Field Decontamination:	Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0009	Sample ID:	AOSB-MW0009-040.0-20240118
Date:	1/18/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	3.01	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	3.01	Well Screen Interval Depth (ft bls):	35 to 45
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP	Top Depth: 35	Bottom Depth: 45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.2985 Liters 45 - 3.01 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.25 = vol x3 **0.75** Liters 0 + 0.005 X 55 + 0.475

Initial Pump or Tubing Depth in Well (feet):	40	Final Pump or Tubing Depth in Well (feet):	40	Purging Initiated At:	9:50	Purging Ended At:	10:06	Total Vol. Purged (Liters):	3.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
10:02	2.4	2.4	200	3.14	6.82	24.8	57799	0.96	4.89	-44.5	None
10:04	0.4	2.8	200	3.14	6.81	24.8	57700	0.91	14	-45.4	None
10:06	0.4	3.2	200	3.14	6.81	24.8	57642	0.92	8.02	-44.3	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Natalie Volk /Tetra Tech	Sampler(s) Signatures:		Sampling Initiated At: 10:08	Sampling Ended At: 10:12
				Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet):	40	Sample Pump Flow Rate (mL per minute):	200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0010	Sample ID:	AOSB-MW0010-015.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	2.75	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	2.75
Well Screen Interval Depth (ft bls):	10 to 20				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	10	Bottom Depth:	20		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

2.5875 Liters 20 - 2.75 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.875 = vol x3 **0.625** Liters 0 + 0.005 X 30 + 0.475

Initial Pump or Tubing Depth in Well (feet):	15	Final Pump or Tubing Depth in Well (feet):	15	Purging Initiated At:	12:11	Purging Ended At:	12:26	Total Vol. Purged (Liters):	3.2		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
12:23	2.4	2.4	200	2.86	6.77	23.6	38600	0.73	5.7	-26.1	None
12:25	0.4	2.8	200	2.86	6.76	23.6	38842	0.79	6.7	-24.2	None
12:27	0.4	3.2	200	2.86	6.76	23.5	38854	0.81	6	-22.0	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 12:29	Sampling Ended At: 12:32
Natalie Volk /Tetra Tech		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 15	Sample Pump Flow Rate (mL per minute): 200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc. FDEP Groundwater Sampling Sheet

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	MW0011	Sample ID:	AOSB-MW0011-015.0-20240117
Date:	1/17/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	1.88	Casing Height (ft als)	NA	Static Depth to Water (ft bls) = DTW -Casing Height:	1.88
Well Screen Interval Depth (ft bls):	10 to 20				
Well Diameter (in)	1	Tubing Diameter (in)	0.19	Purge Pump Type or Bailer:	APP
Top Depth:	10	Bottom Depth:	20		

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

2.718 Liters 20 - 1.88 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.875 = vol x3 **0.625** Liters 0 + 0.005 X 30 + 0.475

Initial Pump or Tubing Depth in Well (feet):	15	Final Pump or Tubing Depth in Well (feet):	15	Purging Initiated At:	10:55
Purging Ended At:	11:09	Total Vol. Purged (Liters):	2.8		

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
11:05	2	2	200	1.95	6.81	23.4	31472	0.42	8.49	24.8	None
11:07	0.4	2.4	200	1.95	6.82	23.5	31792	0.42	5.91	9.7	None
11:09	0.4	2.8	200	1.95	6.83	23.5	31984	0.42	3.97	2.1	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; **1"** = 0.15; **2"** = 0.61; **3"** = 1.40; **4"** = 2.46; **5"** = 3.86; **6"** = 5.57; **12"** = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): **1/8"** = 0.002; **3/16"** = 0.005; **1/4"** = 0.0098; **5/16"** = 0.015; **3/8"** = 0.023; **1/2"** = 0.038; **5/8"** = 0.09

Sampling Data

Sampled by (Print) / Affiliation	Sampler(s) Signatures:	Sampling Initiated At: 11:10	Sampling Ended At: 11:15
Natalie Volk /Tetra Tech		Tubing Material Code: HDPE	
Pump or Tubing Depth in Well (feet): 15	Sample Pump Flow Rate (mL per minute): 200	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl/4°	-	<2	8260D-(MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	4°	-	See Above	8260D-(MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID: Conductivity high -well located near brackish water source

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging Equipment Codes: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: 39A Operations Support Building (AOSB) **Project No.:** 112G09237

Location: Kennedy Space Center (KSC), FL **Personnel:**

Weather Conditions: **Measuring Device:**

Tidally Influenced: **Yes ____ No __X__** **Remarks:**

Well or Piezometer Number	Date	Time	Water Level Indicator Reading (feet)*	Screened Interval (feet)*	Elevation of Reference Point (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
AOSB-MW0001	01/17/24	1025	2.95	20-30		NA		
AOSB-MW0002	01/17/24	1026	3.19	35-45		NA		
AOSB-MW0003	01/17/24	1023	2.91	35-45		NA		
AOSB-MW0004	01/17/24	1016	2.05	20-30		NA		
AOSB-MW0005	01/17/24	1018	2.87	35-45		NA		
AOSB-MW0006	01/17/24	1013	2.25	20-30		NA		
AOSB-MW0007	01/17/24	1027	3.17	35-45		NA		
AOSB-MW0008	01/17/24	1021	2.89	20-30		NA		
AOSB-MW0009	01/17/24	1012	3.17	35-45		NA		
AOSB-MW0010	01/17/24	1019	2.66	10-20		NA		
AOSB-MW0011	01/17/24	1015	1.88	10-20		NA		

TETRA TECH

INSTRUMENT CALIBRATION LOGSHEET

PROJECT NAME : KSC-AOSB

SITE NAME: LC39A Operations Support Building (AOSB)

PROJECT NO.: 112G09237

INSTRUMENT 1 : YSI ProQuatro SN# Head-21D101770/Cable-PQ01

INSTRUMENT 2: Geotech Turbidimeter SN# 23054681

Other/Rental:

Date of Calibration (mm/dd/yr)	Person Performing Calibration (Name)		pH (S.U.) 7	pH (S.U.) 4	pH (S.U.) 10	Cond. (µS/cm)	D.O. (%)	D.O. mg/L	Temp. ºC	ORP (mV)	Salinity (%)	Turbidity (0) (NTUs)	Turbidity (20) (NTUs)	Calibration Standard Type	Calibration Standard Value	Calibration Standard Lot # / Expiration Date	Remarks
01/17/2024	NAV	*Pre*	*7.09*	*4.04*	10.07	1388	100.7	10.55	13.3	231	-	0.21	21.1	pH	4	*Lot # C0923A*	
		Post														*Exp. Date 03/09/2025*	
01/18/2024	NAV	*Pre*	*7.08*	*4.13*	9.99	1463	95	7.45	29.7	214.5	-	0.34	20.2	pH	7	*Lot # C0623D*	
		Post														*Exp. Date 03/06/2025*	
		Pre												pH	10	*Lot # B2123A*	
		Post														*Exp. Date 08/21/2024*	
		Pre												Cond. (µS/cm)	1413	*Lot # 8199*	
		Post														*Exp. Date 10/01/2027*	
		Pre												ORP mV	223	*Lot # 21K100461*	
		Post														*Exp. Date*	
		Pre												Turbidity	0	*Lot #*	
		Post														*Exp. Date*	
		Pre												Turbidity	20	*Lot #*	
		Post														*Exp. Date*	
		Pre															
		Post															
		Pre															
		Post															
		Pre															
		Post															

Additional Comments:	

FDEP Acceptance criteria: DO +/- 0.3 mg/L, SPC +/- 5% , ORP +/- 10mV, pH +/- 0.2 SU, NTU (0.1-10) +/- 10%, (11-40) +/- 8%, (41-100) +/- 6.5%, (>100) +/- 5%

PDate: 1/17/24 **Weather:** cool, sunny, windy

Personnel: Natalie Volk, Engineer

Health and Safety: stinging insects

PPE: Level D **Objective:** performance monitoring gw sampling

Equipment: YSI Pro Quatro Geopump II Geotech turbidimeter

Field Notes:

0800 on site, calibrate and load equipment

0900 on site

Rocket on pad. Launch at 5 pm today. Press setting up cameras

0910 begin opening wells – trouble locating MW0007, metal detector used and well located after some time

1010 begin collecting DTW measurements

1040 finish collecting DTW measurements – begin groundwater sampling

1055 begin purge MW0011

1110 Collect sample ASOB-MW0011-015.0-20240117 8260D MOD NASA ASOB Custom list

1119 Begin purge MW0004

1135 Collect sample ASOB-MW0004-025.0-20240117 8260D MOD NASA ASOB Custom list

1148 begin purge MW0005

1204 Collect sample ASOB-MW0005-040.0-20240117 8260D MOD NASA ASOB Custom list

1211 Begin purge MW0010

1229 Collect sample ASOB-MW0010-015.0-20240117 8260D MOD NASA ASOB Custom list

1243 begin purge MW0008

1300 Collect sample ASOB-MW0008-025.0-20240117 8260D MOD NASA ASOB Custom list

1314 begin purge MW0006

1333 Collect sample ASOB-MW0006-025.0-20240117 8260D MOD NASA ASOB Custom list

1340 end groundwater sampling for day – cooler drop off / critical time for launch. Road to be closed soon

1350 Secure and exit site

Date: 1/18/24 **Weather:** cool, sunny

Personnel: Natalie Volk, Engineer

Health and Safety: stinging insects

PPE: Level D **Objective:** performance monitoring gw sampling

Equipment: YSI Pro Quatro Geopump II Geotech turbidimeter

Field Notes:

0800 on base, calibrate and grab equipment

0850 on site, begin groundwater sampling

Rocket still on pad, checked launch schedule- rescheduled for today

0922 begin purge MW0003

0938 Collect sample ASOB-MW0003-040.0-20240118 8260D MOD NASA ASOB Custom list

0950 begin purge MW0009

1008 Collect sample ASOB-MW0009-040.0-20240118 8260D MOD NASA ASOB Custom list

1020 begin purge MW0007

1035 Collect sample AOSB-MW0007-040.0-20240118 8260D MOD NASA ASOB Custom list

1054 Begin purge MW0001

1110 Collect sample AOSB-MW0001-025.0-20240118 8260D MOD NASA ASOB Custom list

1122 Begin purge MW0002

1130 space X security comes by- pad being locked down for launch told to evacuate soon

1134 Collect sample AOSB-MW0002-040.0-20240118 8260D MOD NASA ASOB Custom list

1149 end groundwater sampling

1145 off site – police locking down pad for launch



Tetra Tech, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: 39A Operations Support Building (AOSB) **Project No.:** 112G09237
Location: Kennedy Space Center (KSC), FL **Personnel:** N. Volk
Weather Conditions: Hot, humid, sunny, mosquitos **Measuring Device:** PFAS free WL
Tidally Influenced: Yes ____ No __X__ **Remarks:**

Well or Piezometer Number	Date	Time	Water Level Indicator Reading (feet)*	Screened Interval (feet)*	Elevation of Reference Point (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
AOSB-MW0001	07/24/24	1047	3.29	20-30		NA		
AOSB-MW0002	07/24/24	1049	3.31	35-45		NA		
AOSB-MW0003	07/24/24	1028	3.06	35-45		NA		
AOSB-MW0004	07/24/24	1020	2.43	20-30		NA		
AOSB-MW0005	07/24/24	1214	3.00	35-45		NA		
AOSB-MW0006	07/24/24	1016	2.65	20-30		NA		
AOSB-MW0007	07/24/24	1030	3.31	35-45		NA		
AOSB-MW0008	07/24/24	1038	3.22	20-30		NA		
AOSB-MW0009	07/24/24	1012	3.25	35-45		NA		
AOSB-MW0010	07/24/24	1014	2.95	10-20		NA		
AOSB-MW0011	07/24/24	1019	1.90	10-20		NA		

* All measurements to the nearest 0.01 foot

TETRA TECH

INSTRUMENT CALIBRATION LOGSHEET

PROJECT NAME : NASA - KSC
SITE NAME: AOSB/CCF
PROJECT NO.: 112G09237

INSTRUMENT 1 : YSI-01 SN# Head-21D101766/Cable-PQ02
INSTRUMENT 2: Turb-GT-01 SN# 23054681
Other/Rental:

Date of Calibration (mm/dd/yr)	Person Performing Calibration (Name)		pH (S.U.) 7	4	10	Cond. (µS/cm)	D.O. (%)	mg/L	Temp. °C	ORP (mV)	Salinity (%)	Turbidity (0) (NTUs)	Turbidity (20) (NTUs)	Calibration Standard Type	Calibration Standard Value	Calibration Standard Lot # / Expiration Date	Remarks
07/24/2024	NAV	*Pre*	*7.07*	*4.01*	9.99	1411	102.7	8.23	26.4	213.7	-	0.05	19.7	pH	4	*Lot # C0923A*	
		Post														*Exp. Date 03/09/2025*	
07/25/2024	NAV	*Pre*	*7.15*	*4.15*	10.05	1424	101.4	8.24	25.9	215.6	-	0.47	20.9	pH	7	*Lot # C0623D*	
		Post														*Exp. Date 03/06/2025*	
		Pre												pH	10	*Lot # B2123A*	
		Post														*Exp. Date 08/21/2024*	
		Pre												Cond. (µS/cm)	1413	*Lot # 8554*	
		Post														*Exp. Date 01/01/2028*	
		Pre												ORP mV	223	*Lot # 22C100504*	
		Post														*Exp. Date 03/24/2027*	
		Pre												Turbidity	0	*Lot # 5210000*	
		Post														*Exp. Date 7/25*	
		Pre												Turbidity	20	*Lot # 5210000*	
		Post														*Exp. Date 7/25*	
		Pre															
		Post															
		Pre															
		Post															
		Pre															
		Post															

Additional Comments:

FDEP Acceptance criteria: DO +/- 0.3 mg/L, SPC +/- 5% , ORP +/- 10mV, pH +/- 0.2 SU, NTU (0.1-10) +/- 10%, (11-40) +/- 8%, (41-100) +/- 6.5%, (>100) +/- 5%

Attachment A. Daily PFAS Sampling Checklist

Date: 7/24/2024

Site Name: AOSB

Weather (*temperature/precipitation*): hot, humid

Please check all boxes that apply and describe any exceptions in the notes section below along with QA/QC methods used to assess potential sample cross-contamination as a result.

Field Clothing and PPE:

- ☑ No water- or stain-resistant clothing (e.g., GORE-TEX®)
- ☑ During collection of water and sediment samples, no water- or stain-resistant boots OR water- or stain-resistant boots covered by PFAS-free over-boots
- ☑ Field boots (or over-boots) are made of polyurethane, PVC, rubber, or untreated leather
- ☑ Waders or rain gear are made of polyurethane, PVC, vinyl, wax-coated or rubber
- ☑ Clothing has not been recently laundered with a fabric softener
- ☑ No coated HDPE suits (e.g., coated Tyvek® suits)
- ☑ Field crew has not used cosmetics, moisturizers, or other related products today
- ☑ Field crew has not used sunscreen or insect repellants today, other than products approved as PFAS-free

Field Equipment:

- ☑ Sample containers and equipment in direct contact with the sample are made of HDPE, polypropylene, silicone, acetate or stainless steel, not LDPE or glass
- ☑ Sample caps are made of HDPE or polypropylene and are not lined with Teflon™
- ☑ No materials containing Teflon™, Viton™, or fluoropolymers
- ☑ No materials containing LDPE in direct contact with the sample (e.g., LDPE tubing, Ziploc® bags)
- ☑ No plastic clipboards, binders, or spiral hard cover notebooks
- ☑ No waterproof field books
- ☑ No waterproof or felt pens or markers (e.g., certain Sharpie® products)
- ☑ No chemical (blue) ice, unless it is contained in a sealed bag
- ☑ No aluminum foil
- ☑ No sticky notes (e.g., certain Post-It® products)

Decontamination:

- ☑ Reusable field equipment decontaminated prior to reuse
- ☑ "PFAS-free" water is on-site for decontamination of field equipment
- ☑ Alconox®, Liquinox® or Luminox® used as decontamination detergent

Food and Drink:

- [x] No food or drink on-site, except within staging area
- [x] Food in staging area is contained in HDPE or stainless steel container

Notes:

Field Team Leader Name (Print): Natalie Valk

Field Team Leader Signature: [signature]

Date/Time: 7/24/2024

Project Number:112G09237 **Project Name:** ASOB

Date: 7/24/2024 **Weather:** hot, clear, sunny

Personnel: Natalie Volk (NAV), Engineer

Health and Safety: heat stress, stinging insects, near active launch pad

PPE: Level D (PFAS compliant) **Objective:** performance monitoring

Equipment: YSI Pro Quatro Geotech Turbidimeter Geopump II

Field Notes:

0830 NAV on base, gather supplies/calibrate equipment

0915 NAV on site, begin opening wells and collecting water levels

1218 begin purge MW0005

1235 Collect sample AOSB-MW0005-040.0-20240724 VOCs 8260D MOD AOSB

1246 Begin purge MW0010

1312 Collect sample AOSB-MW0010-015.0-20240724 VOC 8260D & PFAS 537

1330 collect field blank AOSB-FB-20240724-01 PFAS 537

1335 Begin purge MW0003

1359 Collect sample AOSB-MW0003-040.0-20240724 VOC 8260D

1412 Begin purge MW0008

1435 Collect sample AOSB-MW0008-025.0-20240724 VOC 8260D

1450 Begin purge MW0009

1510 Collect sample AOSB-MW0009-040.0-20240724 VOC 8260D

1530 Begin purge MW0006

1547 Collect sample AOSB-MW0006-025.0-20240724 VOC 8260D

1613 Begin purge MW0004

1630 Collect sample AOSB-MW0004-025.0-20240724 VOC 8260D

1644 begin purge MW0011

1702 Collect sample & PFAS duplicate AOSB-MW0011-015.0-20240724 VOC 8260D & PFAS 537

0000 Collect duplicate AOSB-FD-20240724-01 PFAS 537

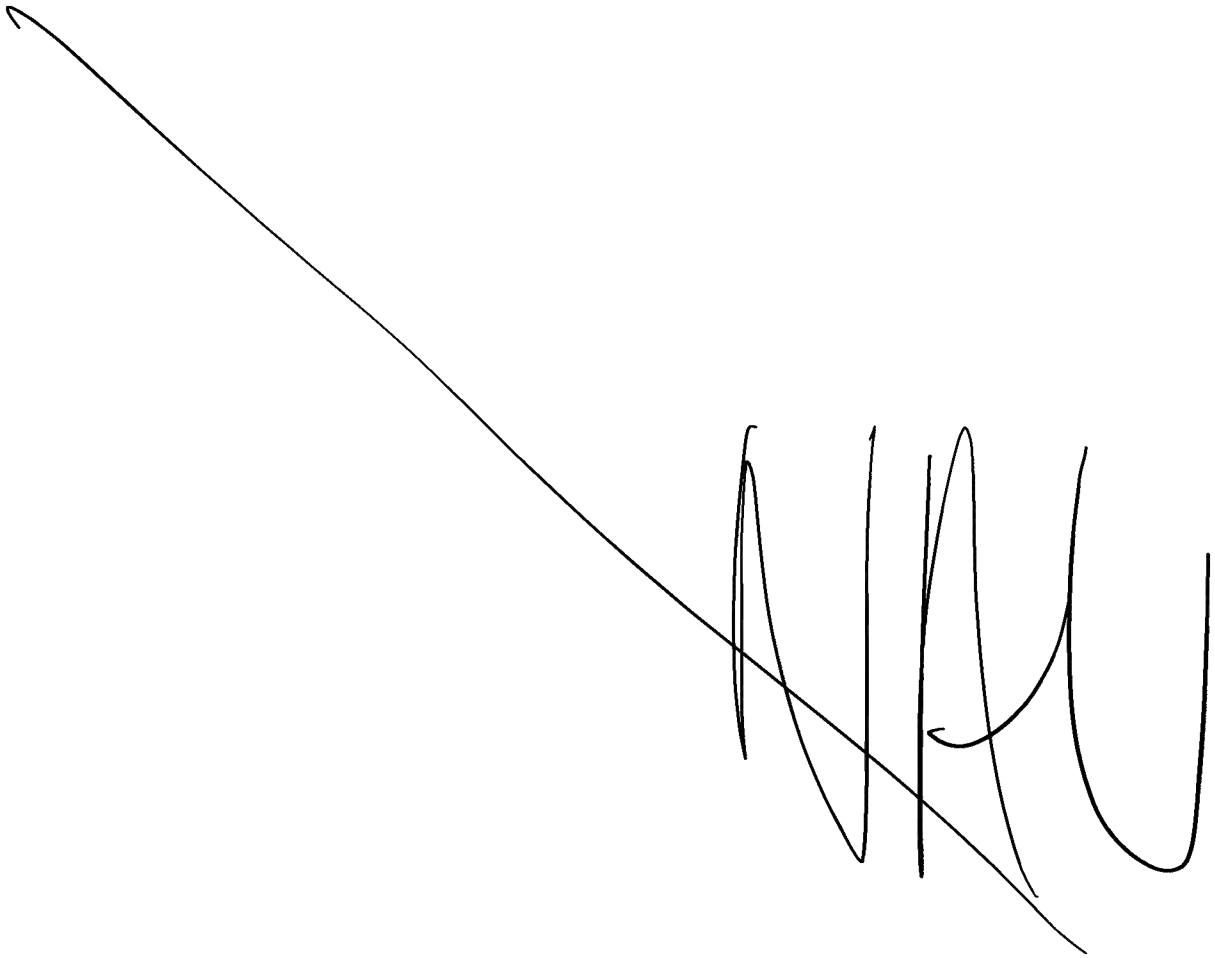
1725 collect equipment blank off of water level meter AOSB-EB-20240724-01 PFAS 537

1740 begin purge MW0007

1800 Collect sample AOSB-MW0007-040.0-20240724 VOC 8260D

1805 finish groundwater sampling for day, clean and secure site

1820 off site for day



Date: 7/25/2024 **Weather:** hot, clear, sunny

Personnel: Natalie Volk (NAV), Engineer

Health and Safety: heat stress, stinging insects, near active launch pad

PPE: Level D (PFAS compliant) **Objective:** performance monitoring

Equipment: YSI Pro Quatro Geotech Turbidimeter Geopump II

Field Notes:

0820 NAV on base, gather supplies and calibrate equipment, PFAS checklist

0845 NAV on site

0854 Begin purge MW0002

0912 Collect sample AOSB-MW0002-040.0-20240725 VOC 8260D

0922 Begin purge MW0001

1003 Collect sample

On QA/QC several samples had bubbles formed where no bubbles were seen before. Bubbles settled out overnight. Reject samples with bubbles too large and begin resample

1022 Begin purge MW0009

1037 Collect sample AOSB-MW0009-040.0-20240725 VOC 8260D

1045 Offsite to get more sample bottles for resampling

1145 On-site, resume groundwater sampling

1152 Begin purge MW0008

1205 collect sample AOSB-MW0008-025.0-20240725 VOC 8260D

1223 Begin purge MW0007

1240 Collect sample AOSB-MW0007-040.0-20240725 VOC 8260D

1258 Begin purge MW0004

1315 collect sample AOSB-MW0004-025.0-20240725 VOC 8260D

1352 Begin purge MW0005

1405 collect sample AOSB-MW0005-040.0-20240725 VOC 8260D

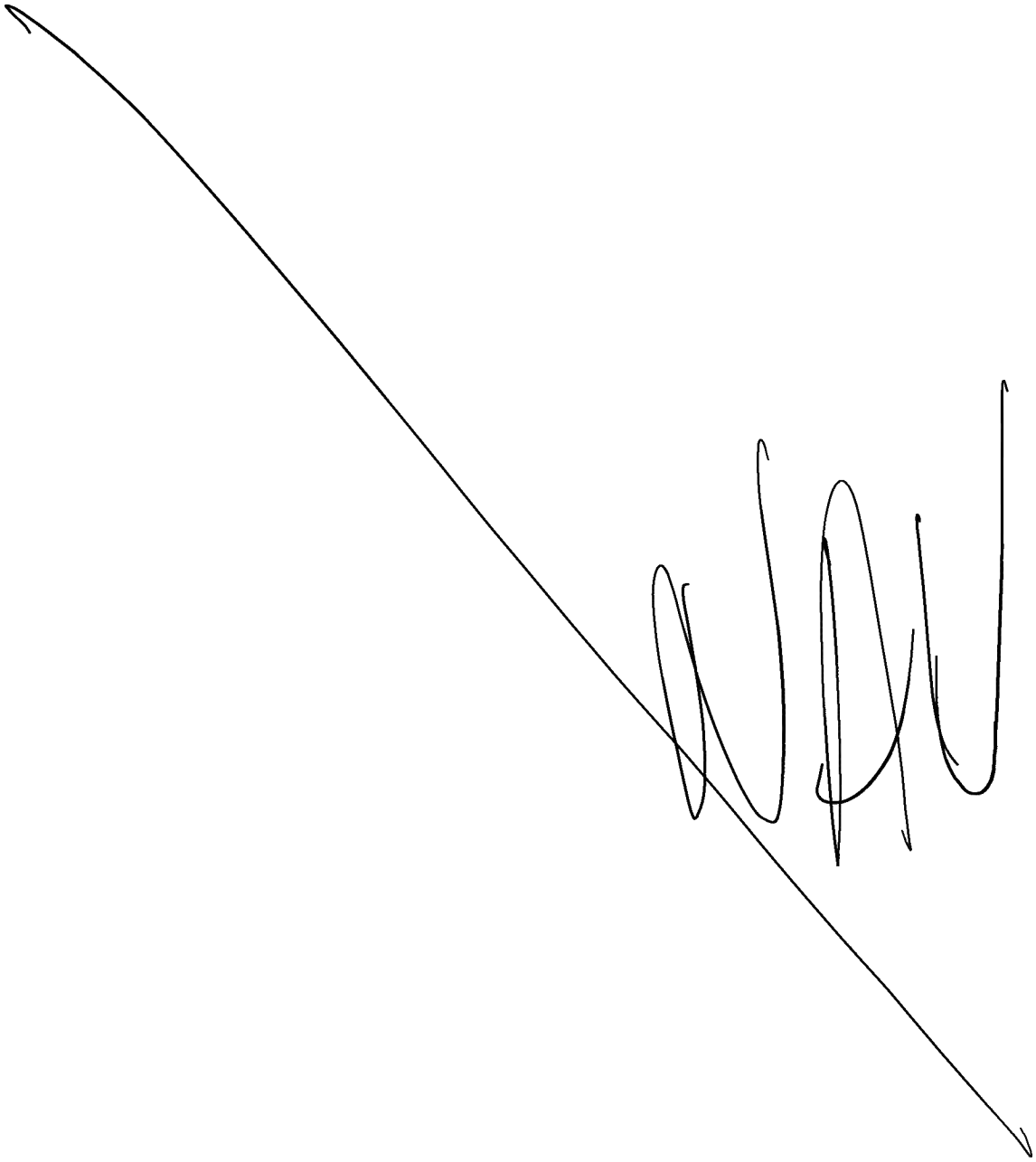
1412 Begin purge MW0010

1428 collect sample AOSB-MW0010-015.0-20240725 VOC 8260D

1432 end groundwater sampling. Clean and secure site

1447 NAV off site

1530 meet with courier for sample drop off



Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0001	Sample ID:	AOSB-MW0001-025.0-20240725
		Date:	7/25/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.00	NA	3	20 to 30

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	20	30

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.05 Liters 30 - 3 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.95 = vol x3 **0.65** Liters + 0.005 X 35 + 0.475

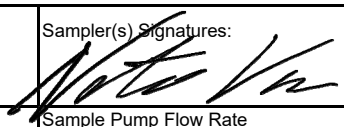
Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
25	25	9:22	10:01	8.1

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
9:37	4.5	4.5	300	3.35	6.80	27.5	68935	0.55	56.1	-12.0	None
9:57	3	7.5	150	3.35	6.77	27.8	69377	0.26	12	-14.7	None
9:59	0.3	7.8	150	3.35	6.79	27.9	69380	0.26	10.2	-15.3	None
10:01	0.3	8.1	150	3.35	6.79	27.8	69557	0.26	9.71	-15.2	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		10:03	10:10
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0002	Sample ID:	AOSB-MW0002-040.0-20240725
Date:	7/25/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.17	NA	3.17	35 to 45

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	35	45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.2745 Liters 45 - 3.17 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.13 = vol x3 **0.71** Liters + 0.005 X 47 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
40	40	8:54	9:11	4.25

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
9:07	3.25	3.25	250	3.30	7.33	27.1	69298	0.36	4.49	10.4	None
9:09	0.5	3.75	250	3.30	7.33	27.0	69152	0.37	4.4	7.2	None
9:11	0.5	4.25	250	3.30	7.34	27.0	68751	0.39	7.36	4.9	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		9:12	9:16
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0003	Sample ID:	AOSB-MW0003-040.0-20240724
Date:	7/24/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.79	NA	2.79	35 to 45

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	35	45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.3315 Liters 45 - 2.79 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.19 = vol x3 **0.73** Liters + 0.005 X 51 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
40	40	13:35	13:57	5.5

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
13:51	4	4	250	3.05	6.91	27.5	68036	0.12	4.25	-31.1	None
13:54	0.75	4.75	250	3.05	6.91	27.5	67901	0.12	2.23	-30.9	None
13:57	0.75	5.5	250	3.05	6.91	27.5	67740	0.12	2.4	-30.5	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		13:59	14:03
		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida

Location ID:	AOSB-MW0004	Sample ID:	AOSB-MW0004-025.0-20240725	Date:	7/25/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.38	NA	2.38	20 to 30

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	20	30

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.143 Liters 30 - 2.38 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.89 = vol x3 **0.63** Liters + 0.005 X 31 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
25	25	12:58	13:12	4.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
13:08	3	3	300	2.57	6.78	26.7	64977	0.29	17.5	-5.1	None
13:10	0.6	3.6	300	2.57	6.78	26.6	63487	0.24	13.8	-5.1	None
13:12	0.6	4.2	300	2.58	6.79	26.6	63230	0.22	17	-5.2	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		13:15	13:20
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0005	Sample ID:	AOSB-MW0005-040.0-20240725
Date:	7/25/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.00	NA	3	35 to 45

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	35	45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.3 Liters 45 - 3 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.19 = vol x3 **0.73** Liters + 0.005 X 51 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
40	40	13:52	14:04	3.6

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
14:00	2.4	2.4	300	3.56	6.88	26.9	67499	0.08	6.32	-33.0	None
14:02	0.6	3	300	3.56	6.84	26.9	67395	0.54	2.61	-30.5	None
14:04	0.6	3.6	300	3.56	6.84	26.9	67250	0.26	9.01	-33.5	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		14:05	14:10
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida

Location ID:	AOSB-MW0006	Sample ID:	AOSB-MW0006-025.0-20240724	Date:	7/24/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.65	NA	2.65	20 to 30

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	20	30

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.1025 Liters 30 - 2.65 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.89 = vol x3 **0.63** Liters + 0.005 X 31 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
25	25	15:30	15:46	3.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
15:42	2.4	2.4	200	2.75	6.79	27.1	65036	0.08	0.02	-142.9	None
15:44	0.4	2.8	200	2.75	6.79	27.1	64874	0.06	0.02	-1423.9	None
15:46	0.4	3.2	200	2.75	6.80	27.0	64857	0.05	0.02	-144.5	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		15:47	15:51
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0007	Sample ID:	AOSB-MW0007-040.0-20240725
Date:	7/25/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.19	NA	3.19	35 to 45

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	35	45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.2715 Liters 45 - 3.19 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.19 = vol x3 **0.73** Liters + 0.005 X 51 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
40	40	12:23	12:38	4.5

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
12:34	3.3	3.3	300	3.43	7.01	27.2	66504	0.18	10.5	-15.5	None
12:36	0.6	3.9	300	3.43	7.01	27.3	66550	0.20	13	-15.6	None
12:38	0.6	4.5	300	3.43	7.02	27.2	66422	0.20	7.08	-16.6	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		12:40	12:45
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida

Location ID:	AOSB-MW0008	Sample ID:	AOSB-MW0008-025.0-20240725	Date:	7/25/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.03	NA	3.03	20 to 30

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	20	30

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

4.0455 Liters 30 - 3.03 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.905 = vol x3 **0.635** Liters + 0.005 X 32 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
25	25	11:52	12:04	3.6

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
12:00	2.4	2.4	300	3.28	6.63	26.8	67387	0.04	11	-80.7	None
12:02	0.6	3	300	3.28	6.64	26.7	67175	0.05	11.1	-81.3	None
12:04	0.6	3.6	300	3.28	6.64	26.7	67257	0.06	11	-81.8	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sample(s) Signature:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		12:05	12:10
		Tubing Material Code:	Teflon
Pump or Tubing Depth in Well (feet): 25	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0009	Sample ID:	AOSB-MW0009-040.0-20240725
Date:	7/25/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
3.16	NA	3.16	35 to 45

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	35	45

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

6.276 Liters 45 - 3.16 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

2.175 = vol x3 **0.725** Liters + 0.005 X 50 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
40	40	10:22	10:36	3.5

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
10:32	2.5	2.5	250	3.43	6.89	27.4	60571	0.21	1.62	-15.4	None
10:34	0.5	3	250	3.43	6.84	27.3	60554	0.20	2.49	-16.2	None
10:36	0.5	3.5	250	3.43	6.84	27.3	60540	0.18	2.16	-16.4	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		10:37	10:42
		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 40	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP

Remarks or QA/QC ID:

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida

Location ID:	AOSB-MW0010	Sample ID:	AOSB-MW0010-015.0-20240725	Date:	7/25/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.90	NA	2.9	10 to 20

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	10	20

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

2.565 Liters 20 - 2.9 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.74 = vol x3 **0.58** Liters + 0.005 X 21 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
15	15	12:46	13:10	4.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
13:04	3.6	3.6	200	3.00	6.99	28.8	49700	0.15	4.26	-27.4	None
13:06	0.4	4	200	3.00	7.00	28.5	49688	0.13	4.5	-27.9	None
13:08	0.4	4.4	200	3.00	6.99	28.3	49565	0.11	4.45	-28.1	None
13:10	0.4	4.8	200	3.00	7.00	28.3	49505	0.09	4.51	-26.6	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		13:12	13:20
		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 15	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP
1	2	HDPE	250 mL	None	-	see above	PFAS	APP

Remarks or QA/QC ID: MS/MSD for PFAS collected here

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida
Location ID:	AOSB-MW0010	Sample ID:	AOSB-MW0010-015.0-20240725
Date:	7/25/2024		

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.90	NA	2.9	10 to 20

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	10	20

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

2.565 Liters 20 - 2.9 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.74 = vol x3 **0.58** Liters + 0.005 X 21 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
15	15	14:12	14:26	4.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
14:22	3	3	300	3.24	7.03	27.4	48919	0.08	2.91	-21.0	None
14:24	0.6	3.6	300	3.24	7.02	27.4	48954	0.05	1.09	-22.7	None
14:26	0.6	4.2	300	3.24	7.04	27.5	48932	0.04	3.28	-23.4	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		14:28	14:32
		Tubing Material Code:	HDPE
Pump or Tubing Depth in Well (feet): 15	Sample Pump Flow Rate (mL per minute): 100	Duplicate: No	Field Decontamination: Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP
1	2	HDPE	250 mL	None	-	see above	PFAS	APP

Remarks or QA/QC ID: only VOC collected. Previous collection rejected for bubble formation

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Site Name:	LC39A Operations Support Building (AOSB)	Site Location:	Kennedy Space Center, Florida

Location ID:	AOSB-MW0011	Sample ID:	AOSB-MW0011-015.0-20240724	Date:	7/24/2024

Sample depth (ddd.d) = [bottom of screen (feet bls) - top depth] x 0.5-bottom of screen (feet bls)

PURGING DATA

Static Depth to Water (ft bls)	Casing Height (ft als)	Static Depth to Water (ft bls) = DTW -Casing Height:	Well Screen Interval Depth (ft bls):
2.17	NA	2.17	10 to 20

Well Diameter (in)	Tubing Diameter (in)	Purge Pump Type or Bailer:	Top Depth:	Bottom Depth:
1	0.19	PP	10	20

Well Volume Purge: 1 Well Volume = (Total Well Depth - Static Depth to Water) X Well Capacity

2.6745 Liters 20 - 2.17 X 0.15

Equipment Volume Purge: 1 Equipment Vol. = Pump volume + (Tubing Capacity X Tubing Length) + Flow Cell Volume

1.77 = vol x3 **0.59** Liters + 0.005 X 23 + 0.475

Initial Pump or Tubing Depth in Well (feet):	Final Pump or Tubing Depth in Well (feet):	Purging Initiated At:	Purging Ended At:	Total Vol. Purged (Liters):
15	15	16:44	17:00	3.2

Time	Volume Purged (Liters)	Cumul. Volume Purged (Liters)	Purge Rate (mlpm)	Depth to Water (feet)	pH (standard units)	Temp (°C)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	ORP (mV)	Color (describe)
16:56	2.4	2.4	200	2.21	7.11	28.2	39511	0.05	3.97	-31.3	None
16:58	0.4	2.8	200	2.21	7.12	28.1	39432	0.05	3.69	-31.1	None
17:00	0.4	3.2	200	2.21	7.13	28.1	39377	0.05	3.04	-31.0	None

Well Capacity (Liters Pet Foot): 0.75" = 0.076; 1" = 0.15; 2" = 0.61; 3" = 1.40; 4" = 2.46; 5" = 3.86; 6" = 5.57; 12" = 22.26

Tubing Inside Dia. Capacity (Liters/ft.): 1/8" = 0.002; 3/16" = 0.005; 1/4" = 0.0098; 5/16" = 0.015; 3/8" = 0.023; 1/2" = 0.038; 5/8" = 0.09

Sampling Data

Sampled by (Print) / Affiliation:	Sampler(s) Signatures:	Sampling Initiated At:	Sampling Ended At:
Natalie Volk /Tetra Tech		17:02	17:07
		Tubing Material Code:	HDPE

Pump or Tubing Depth in Well (feet):	Sample Pump Flow Rate (mL per minute):	Duplicate:	Field Decontamination:
15	100	Yes	Yes

Field Filtered: No Filter Size (µm): NA Filtration Equipment Type: NA

Sample Container Specification				Sample Preservation (including Wet Ice)			Intended Analysis and/or Method	Sampling Equipment Code
Sample ID Code	# Containers	Material Code	Volume	Preservative Used (Including Wet Ice)	Total Volume Added in Field (mL)	Final pH		
1	2	CG	40 mL	HCl	-	<2	8260D (MOD) NASA AOSB Custom List	APP
1	2	CG	40 mL	None	-	see above	8260D (MOD) NASA AOSB Custom List	APP
1	2	HDPE	250 mL	None	-	see above	PFAS	APP

Remarks or QA/QC ID: Field duplicate for PFAS collected here and an equipment blank off the water level meter

Stabilization Criteria: pH: + 0.2 units Temperature: + 0.2 oC Specific Conductance: + 5% Dissolved Oxygen: all readings < 20% saturation (see Table FS 2200-2); optionally, + 0.2 mg/L or + 10% (whichever is greater) Turbidity: all readings < 20 NTU; optionally + 5 NTU or + 10% (whichever is greater)

Material Codes: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

Sampling /Purging APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump

Equipment Codes: RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)