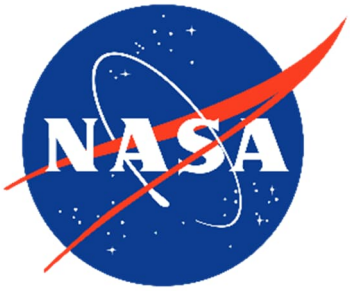
IN SITU CHEMICAL REDUCTION INTERIM MEASURES WORK PLAN
HOT SPOT 3
MOBILE LAUNCHER PLATFORM REHABILITATION SITES / VEHICLE ASSEMBLY BUILDING AREA (SWMU 056)
KENNEDY SPACE CENTER, FLORIDA

Prepared for:



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

A-E Contract 80KSC019D0010
Task Order 80KSC019F0075

July 2025
Revision 1

Prepared by:
AECOM Technical Services, Inc.
390 North Orange Avenue, Suite 750
Orlando, Florida 32801
407-843-6552

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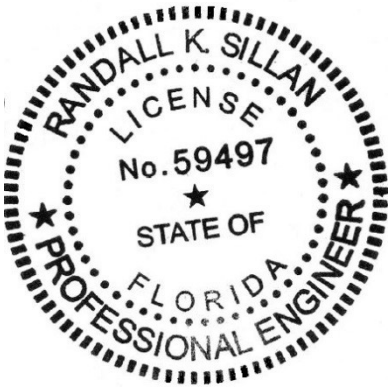
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407-843-6552

In accordance with the provisions of Florida Statutes, Chapter 471, this Interim Measures Work Plan for Hot Spot 3, located at the Kennedy Space Center Mobile Launcher Platform Rehabilitation Sites/Vehicle Assembly Building Area located in Merritt Island, Florida, has been prepared under the direct supervision of a Professional Engineer registered in the State of Florida. This document and the work described herein comply with standard professional practices and the 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. This work was performed in accordance with generally accepted professional engineering practices pursuant to Chapter 471 of the Florida Statutes. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of the National Aeronautics and Space Administration and the Florida Department of Environmental Protection. AECOM makes no other warranty, either expressed or implied and is not responsible for the interpretation by others of these data.



This item has been digitally signed and sealed by:

August 6, 2025

Randall K. Sillan, P.E. Date
Principal Engineer
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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

3-D	three-dimensional
10xNADC	10 times the Natural Attenuation Default Concentration
µg/L	micrograms per liter
ADP	Advance Data Package
AECOM	AECOM Technical Services, Inc.
bls	below land surface
BOSS	Base Operations Support Services
CCR	Construction Completion Report
1,1-DCE	1,1-dichloroethene
cDCE	cis-1,2-dichloroethene
cm^2	square centimeters
CMD	Corrective Measures Design
CMI	Corrective Measures Implementation
CVOC	chlorinated volatile organic compound
Dhc	Dehalococcoides
DPT	direct push technology
EE	Engineering Evaluation
ERD	enhanced reductive dichlorination
EVS	Earth Volumetric Studio
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
Geosyntec	Geosyntec Consultants, Inc.
gpm	gallons per minute
HCP	High Concentration Plume
IDW	investigation derived waste
IM	Interim Measures
IMWP	Interim Measures Work Plan
IP	injection point
ISCR	in situ chemical reduction

KSC	John F. Kennedy Space Center
KSCRT	KSC Remediation Team
mg/L	milligrams per liter
MLP	Mobile Launcher Platform
MLP/VAB	Mobile Launcher Platform Rehabilitation Sites/Vehicle Assembly Building Area
NADC	Natural Attenuation Default Concentration
NAM	natural attenuation monitoring
NASA	National Aeronautics and Space Administration
psi	pounds per square inch
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
Rehab	Rehabilitation
RFI	RCRA Facility Investigation
RPM	Remediation Project Manager
SDS	Safety Data Sheet
SPCC	Spill Prevention, Control, and Countermeasure
STS	Space Transportation System
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
TCE	trichloroethene
tDCE	trans-1,2-dichloroethene
TDS	total dissolved solids
TOC	total organic carbon
UIC	underground injection control
USEPA	U.S. Environmental Protection Agency
VAB	Vehicle Assembly Building
VABRA	Vehicle Assembly Building Reassessment Area
VC	vinyl chloride
ZOD	zone of discharge
ZVI	zero valent iron

EXECUTIVE SUMMARY

This document presents the design details of an In Situ Chemical Reduction (ISCR) Interim Measures Work Plan for Hot Spot 3 within Mobile Launcher Platform Rehabilitation Sites/Vehicle Assembly Building Area, Solid Waste Management Unit (SWMU) 056 (SWMU 056), located at the John F. Kennedy Space Center, Florida. The interim measures (IM) treatment zone encompasses an area identified as the High Concentration Plume (HCP), which is defined as the area with chlorinated volatile organic compound (CVOC) groundwater concentrations greater than their respective Natural Attenuation Default Concentration (NADC). The objective of the IM is to remove CVOC mass within the treatment area to levels that facilitate a transition to natural attenuation monitoring.

The IM design consists of the selected ISCR amendment, Provect-IR, which is a mixture of solid reagents in a single product that promotes enhanced reductive dechlorination and ISCR. Provect-IR includes natural anti-methanogenic compounds; multiple hydrophilic, nutrient-rich organic carbon sources; zero valent iron; chemical oxygen scavengers; and vitamin and mineral sources. The proposed treatment area for this IM encompasses less than 1 acre and includes four vertical treatment intervals to reach the NADC plumes that vary per CVOC and depth: 4 to 10 feet below land surface (bls), 10 to 18 feet bls, 42 to 52 feet bls, and 54 to 58 feet bls. The amendment will be distributed through 15 temporary injection points (IP01 through IP15) using dosing rates ranging from 0.4% to 0.6% of soil mass within the treatment interval and a 20% slurry strength. Dosage rates and slurry strength are based on groundwater geochemistry, soil characteristics, and contaminant concentrations.

To aid in the evaluation of the ISCR IM performance, up to fourteen performance monitoring wells will be installed following injections and sampled quarterly for the first year and semiannually thereafter. CVOC parameters will be sampled until concentrations reduce to below their NADC. Underground Injection Control (UIC) parameters will be sampled until concentrations decrease to background levels or to levels that meet respective groundwater standards. Prior to injections, background UIC parameters will be collected from one upgradient monitoring well belonging to the low concentration plume monitoring well network. Sampling frequency will be evaluated annually and modified as needed.

The path forward for the ISCR IM implementation includes preparing the IM Implementation Work Plan, ISCR injections, monitoring well installation, performance monitoring, and reporting.

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1. INTRODUCTION

1.1 OVERVIEW

The National Aeronautics and Space Administration (NASA), through its Environmental Assurance Branch, is managing cleanup of four sites in the Mobile Launcher Platform Rehabilitation Sites/Vehicle Assembly Building (MLP/VAB) Area of John F. Kennedy Space Center (KSC), Florida. The MLP/VAB Area has been designated Solid Waste Management Unit (SWMU) 056 (SWMU 056) under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program.

AECOM Technical Services, Inc. (AECOM) has prepared this Interim Measures Work Plan (IMWP), Revision 1, for NASA under Contract 80KSC019D0010, Task Order 80KSC019F0075. An Advance Data Package (ADP) presenting site characterization data and the proposed bioremediation approach received KSC Remediation Team (KSCRT) approval in September 2021 in preparation for developing an IMWP (Decision Item 2109-D35). The meeting minutes are included in **Appendix A**. Revisions to this document address Florida Department of Environmental Protection (FDEP) comments provided in **Appendix B**.

1.2 SITE LOCATION

The MLP/VAB Area is located within KSC on the east-central Atlantic Coast of Florida in the northern portion of Merritt Island, between the Indian River and Banana River Lagoons in Brevard County (**Figure 1-1**). The MLP/VAB Area is located within KSC in Sections 7, 8, 17, and 18 of Township 22 South, Range 37 East, as shown on the Orsino, Florida Quadrangle map (United States Geological Survey 1976) (**Figure 1-2**).

The MLP/VAB facilities were originally built to support the Apollo/Saturn V vehicle assembly and were later modified (1975) to support Space Transportation System (STS) shuttle missions. The MLP area was used to repair post launch corrosion and/or blast damage on the launch platforms prior to reuse. The VAB was used to stack and prepare the space vehicles prior to launch (NASA 2018a). The MLP area was originally comprised of three platforms, also known as three rehabilitation (rehab) sites: East Rehab Site, Central (or Center) Rehab Site, and Western (or West) Rehab Site. The central platform was removed in 1991 and replaced with storage facilities and office trailers for local operations, the western platform was removed in 2021, and the remaining areas are currently construction sites. **Figure 1-3** and **Figure 1-4** are excerpts from the RCRA Facility Investigation (RFI) (NASA 2000), illustrating the location of the MLP area in respect to the surrounding facilities on a 1995 aerial and the layout of the MLP Rehab Sites, respectively. **Section 2** details the identification and history of Hot Spot 3 (**Figure 1-1**), an area adjacent to the former Western Rehab Site (or western MLP structure) located partially beneath and south of the former western MLP structure and adjacent to the crawler tracks, which is the focus of this IMWP.

1.3 PURPOSE

This IMWP presents current site characteristics and remediation strategy for a second injection event at Hot Spot 3, supplementary to the May 2016 Hot Spot 3 Bioremediation IMWP (NASA 2016a). The purpose of these injections is to treat the chlorinated volatile organic compound (CVOC) high concentration plume (HCP) in groundwater near the former western MLP structure. The HCP is defined by the volume of contaminant concentrations that are greater than their respective Natural Attenuation Default Concentration (NADC). The remediation approach is in situ chemical reduction (ISCR) within an updated treatment area and modified treatment intervals based on recent characterization data. The Interim Measure (IM) treatment area is approximately 5,000 square feet and extends vertically from 4 to 58 feet below land surface (bls). Exact treatment intervals vary throughout the plume footprint and are discussed in detail in **Section 5**.

1.4 INTERIM MEASURES OBJECTIVE

The objective of the IMWP is to implement ISCR to treat CVOC concentrations within the treatment area to below NADC levels and thereby transition the sampling program to natural attenuation monitoring (NAM).

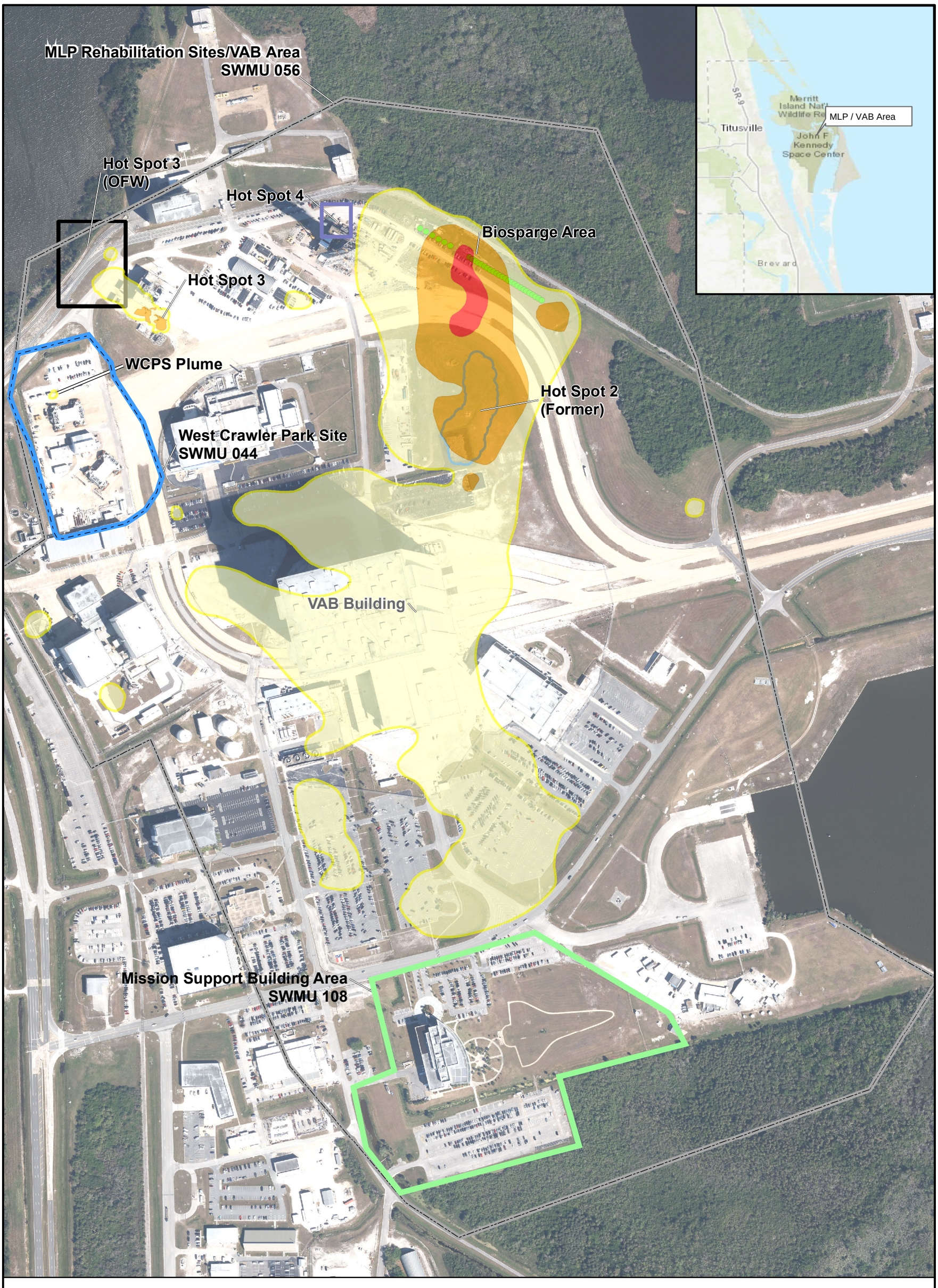
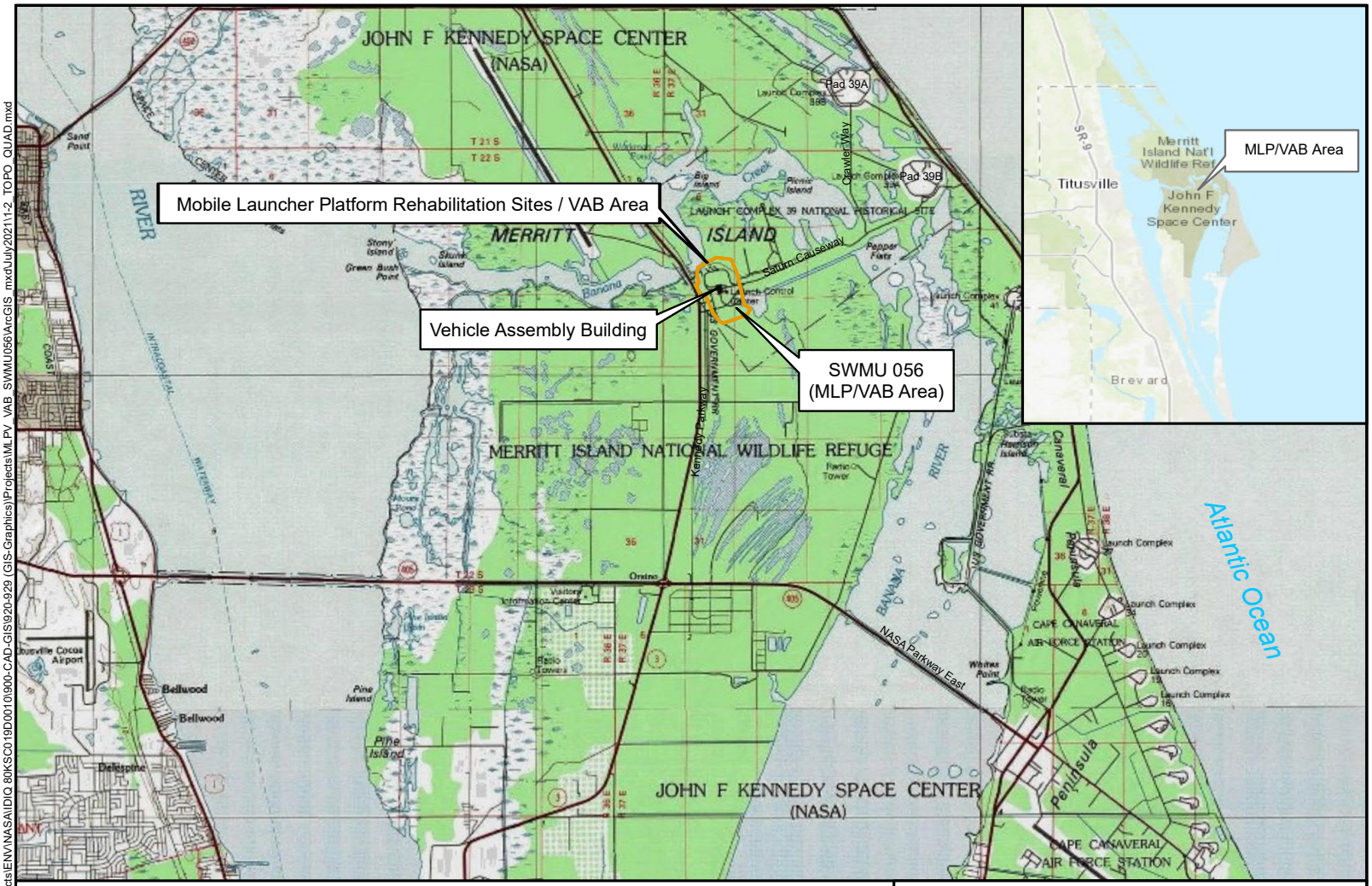


FIGURE 1-1
Site Location Map

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida



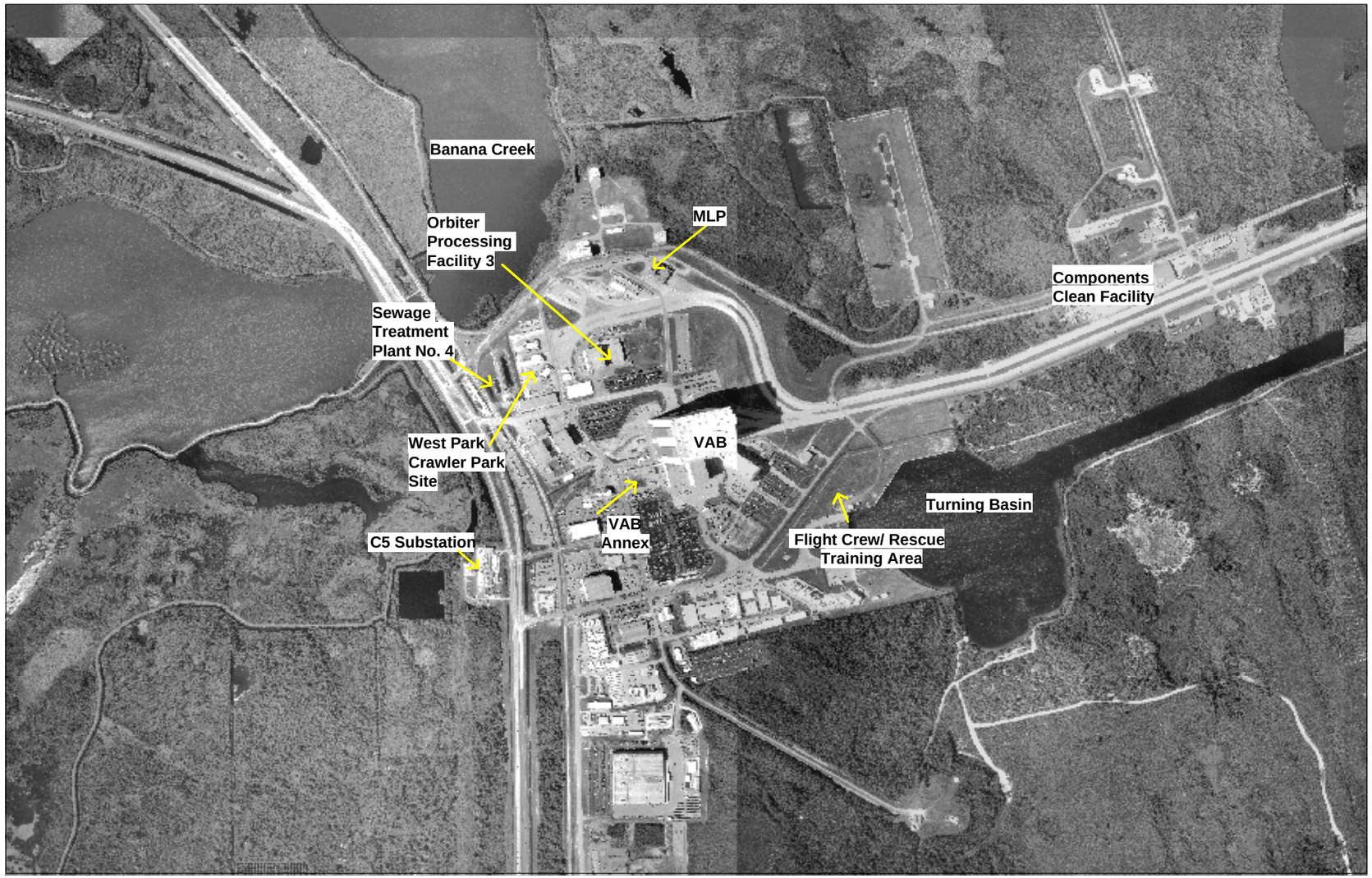
Notes:
1. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building (MLP/VAB).
2. Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

N

0 10,000 20,000
Feet

FIGURE 1-2
Topographic Quadrangle Map

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida



KSC-JJ-4642
MLP RFI - SECTION I

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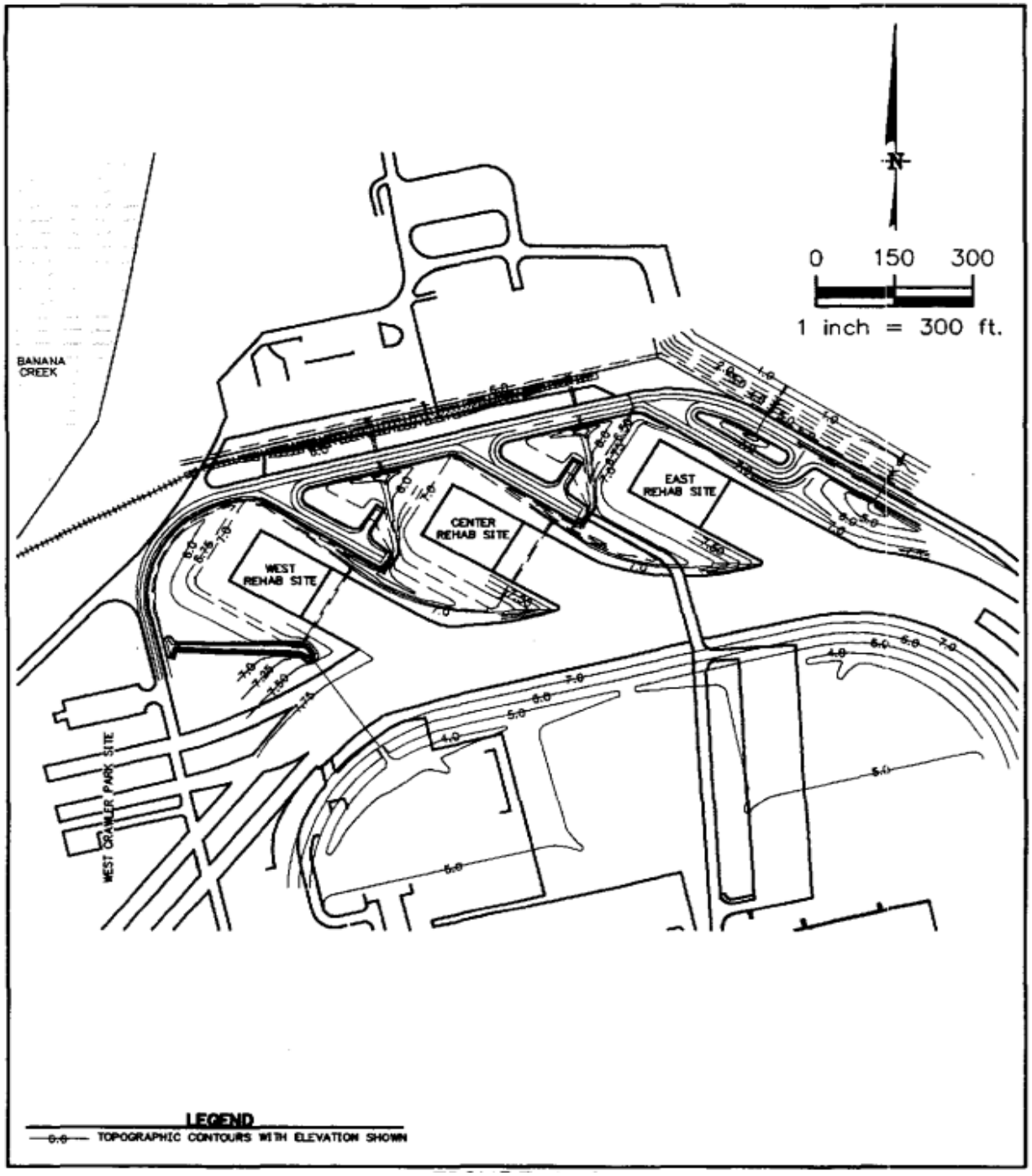
Approximate Scale
1 Inch =800 Feet

Notes: Aerial Photo taken March 1995
MLP - Mobile launcher platform
VAB - Vehicle assembly building

Source: NASA. 2000. Mobile Launcher Platform Rehabilitation Sites, SWMU No. 056, RCRA Facility Investigation Report, John F. Kennedy Space Center, Florida (Revision 2). Prepared by Geosyntec Consultants Inc., Boca Raton, Florida.

Figure 1-3
Facilities in the Vicinity of the MLP Area

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida



Source: Figure 1-2; NASA. 2000. Mobile Launch Platform Rehabilitation Sites, SWMU No. 056, RCRA Facility Investigation Report, John F. Kennedy Space Center, Florida (Revision 2). Prepared by Geosyntec Consultants Inc., Boca Raton, Florida.

Notes:
1. MLP/VAB Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU) 056

Figure 1-4
Layout of the MLP Rehab Site

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

2. SITE CONDITIONS

2.1 BACKGROUND

During the RFI and pre-Corrective Measures Design (CMD) activities, CVOC groundwater impacts encompassing a SWMU-wide area of approximately 115 acres were delineated (NASA 2000, 2003) in the MLP/VAB Area (SWMU 056). In addition, a trichloroethene (TCE) source area was identified (within the CVOC impacted area) beneath the parking lot northeast of the VAB, which was associated with an anecdotal TCE spill (approximately 4,000 gallons) that occurred in 1966. A CMD presented a multicomponent remedial strategy developed for the source area and the 115-acre CVOC plume (NASA 2004).

Additional assessments that occurred at the site included a reassessment of the VAB area that was commissioned by Ground Systems Development & Operations following the completion of the STS Program. The reassessment activities were performed throughout the VAB Reassessment Area (VABRA) from 2012 through 2014. These activities evaluated the absence or presence of groundwater and soil impacts associated with electrical equipment (NASA 2015a). Through the various site investigations, four hot spot areas were identified (Hot Spots 1 through Hot Spot 4).

The area adjacent to the former western MLP structure with the presence of a CVOC HCP was identified as Hot Spot 3 (**Figure 1-1**). Specifically, groundwater impacts associated with Hot Spot 3 included a TCE source zone (TCE greater than 11,000 micrograms per liter [µg/L]), a CVOC HCP, and a CVOC low concentration plume ([LCP], CVOCs greater than the FDEP Groundwater Cleanup Target Levels [GCTLs]). The activities in this area followed the KSCRT multi-step engineering evaluation (EE) process, and details are provided in the following documents:

- Site Characterization EE ADP (formerly referred to as Step 1 EE) (NASA 2015b),
- Remedial Alternative Evaluation EE ADP (formerly referred to as Step 2 EE) (NASA 2016b),
- Hot Spot 3 Bioremediation IMWP (NASA 2016a),
- Hot Spot 3 Bioremediation Implementation Work Plan (NASA 2017),
- Hot Spot 3 Bioremediation Construction Completion Report (CCR) (NASA 2018a), and
- Hot Spot 3 Bioremediation IM Annual Report (NASA 2018b).

The TCE source area and HCP were treated from July through August 2017 with the injection of a diluted solution of SRS-SD (a slow release, small droplet, neutral pH emulsified vegetable oil [soybean oil] from TerraSystems, Inc.) and microbial culture (KB-1) into the subsurface at 29 injection locations to predetermined varied depth intervals. **Figure 2-1** is an excerpt from the Hot Spot 3 Bioremediation CCR (NASA 2018a) illustrating the 2017 IM injection locations. A low-pressure injection (average pressure of 76 pounds per square inch [psi]) was utilized for the high permeability zone (approximately 4 to 52 feet bls). A high-pressure injection (average pressure

of 175 psi) was utilized for the low permeability zone (approximately 52 to 57 feet bls). Approximately 174,300 gallons of SRS-SD solution, 4,250 gallons of anaerobic chase water, and 43 liters of KB-1 were injected during bioremediation activities. Following injection activities, nine performance monitoring wells (MLPV-IW0065 through MLPV-IW0073) were installed via direct push technology (DPT) in August 2017. The baseline bioremediation performance monitoring sampling event was performed in August 2017 (post monitoring well installation) and included the collection of groundwater samples from the nine newly installed wells and monitoring well VABRA-MW0002. Samples were analyzed for CVOCs, and select samples were analyzed for dissolved gases, sulfate, sulfide, total organic carbon (TOC), Dehalococcoides (Dhc), reductive dehalogenase genes, and Underground Injection Control (UIC) constituents (NASA 2018a).

The baseline sampling results were compared to the 2018 and 2019 performance monitoring results to evaluate bioremediation progress. Compared to baseline data, there was an approximately 80% to 100% reduction in dissolved CVOCs (based on TCE equivalent concentrations) in the shallow treatment area and an approximately 94% to 96% reduction in dissolved CVOCs in the deep treatment area. Results for TOC generally indicated that the injection activities were successful at obtaining the designed 8-foot radius of influence, except for the areas around performance monitoring wells MLPV-IW0066, MLPV-IW0069, and MLPV-IW0073. UIC sampling results were below their screening criteria, except for total dissolved solids (TDS). However, the TDS concentrations within the treatment area were consistent with those results outside of the treatment area, which suggests there were no adverse impacts to site groundwater from the injection activities (NASA 2018a, 2019).

Two additional performance monitoring wells were installed in the shallow treatment area (MLPV-IW0074) and deep treatment area (MLPV-IW0075) in September 2018 for monitoring downgradient impacts of potential plume collapse from bioremediation IM (NASA 2019). September 2018 sampling results indicated no detections in MLPV-IW0074 and vinyl chloride (VC) detection above its GCTL (1 microgram per liter [µg/L]) at 95 µg/L in MLPV-IW0075 (NASA 2018a). These wells were sampled again in February 2019, and results were similar; no detections in MLPV-IW0074 and VC detection above the NADC (100 µg/L) at 110 µg/L in MLPV-IW0075 (NASA 2019).

DPT groundwater sampling was conducted in March 2019 to evaluate post-bioremediation IM conditions approximately 1.5 years post injection. Evaluation of the March 2019 DPT results concluded implementation of the bioremediation IM reduced the CVOC groundwater impacts. The TCE source zone area (TCE concentrations greater than 11,000 µg/L) reduced from 0.023 acre to 0.0007 acre (no TCE source zone present from 41 to 55 feet bls); the area with CVOC concentrations greater than 10xNADC was reduced from 0.09 acre to 0.02 acre (approximately 80% reduction); and the area with CVOC concentrations greater than the NADC was reduced from 0.19 acre to 0.10 acre (approximately 50% reduction) (outside treatment area). **Figure 2-2** is an excerpt from the 2018 Corrective Measures Implementation (CMI) and IM

Annual Report (NASA 2019) and illustrates the reduction of the CVOC plumes from 2017 to 2019.

Due to the access restrictions around the former MLP structure imposed from a commercial leasing partner in 2019, all Hot Spot 3 IM area monitoring wells (VABRA-MW0001 through VABRA-MW0005 and VABRA-IW0065 through VABRA-IW0075) were abandoned in April 2019 (NASA 2019). Following the reinstatement of site access in March 2021, a DPT performance monitoring event was performed in March and April 2021 to evaluate current conditions and determine whether additional substrate is required to promote continued dissolved plume degradation.

In March and April 2021, a total of 188 DPT groundwater samples from 62 locations (MLPV-DPT0644 through MLPV-DPT0702 and MLPV-DPT0709 through MLPV-DPT0711) were completed. DPT groundwater sampling locations are presented on **Figure 2-3**. Groundwater samples were submitted for laboratory analysis for select CVOCs (tetrachloroethene, TCE, cis-1,2-dichloroethene [cDCE], trans-1,2-dichloroethene [tDCE], 1,1-dichloroethene [1,1-DCE], and VC) by U.S. Environmental Protection Agency (USEPA) Method 5030 by a mobile laboratory. Additionally, 43 groundwater samples were submitted to a fixed laboratory and analyzed for sulfate, sulfide, and TOC by USEPA Method 9060a, and dissolved gasses ethane, ethene, and methane by laboratory method RSK-175. This data were presented in the 2021 CMI and IM Annual Status Report (NASA 2022) and are presented in **Table 2-1** and **Table 2-2**.

Details of the April 2021 DPT sampling were presented at the September 2021 KSCRT, and team consensus was reached to proceed with the IMWP to implement ISCR (Decision Item 2109-D35). A copy of the MLP/VAB Hot Spot 3 ADP from September 2021 includes CVOC plume maps per interval and details regarding geochemical parameters and is provided in **Appendix C.**

To support the understanding of CVOC distribution in groundwater, Earth Volumetric Studio (EVS) was used to visualize the DPT data by using geostatistical analysis to interpolate the 2021 DPT concentration data to a three-dimensional (3-D) grid. Horizontal slices through the 3-D model were used to evaluate the distribution of CVOCs at different depths in groundwater and are provided in **Appendix D**. The 3-D model was used to identify potential injection intervals and the DPT locations and data used to estimate the distribution of CVOCs in groundwater greater than NADCs. The iso-concentration contours that define the NADC plumes, along with the DPT locations and data in the potential injection intervals, are provided in **Appendix E**.

DPT activities are detailed in **Section 3** Based on 2021 DPT analytical results, this IMWP for supplemental injections to promote ISCR of CVOCs was developed.

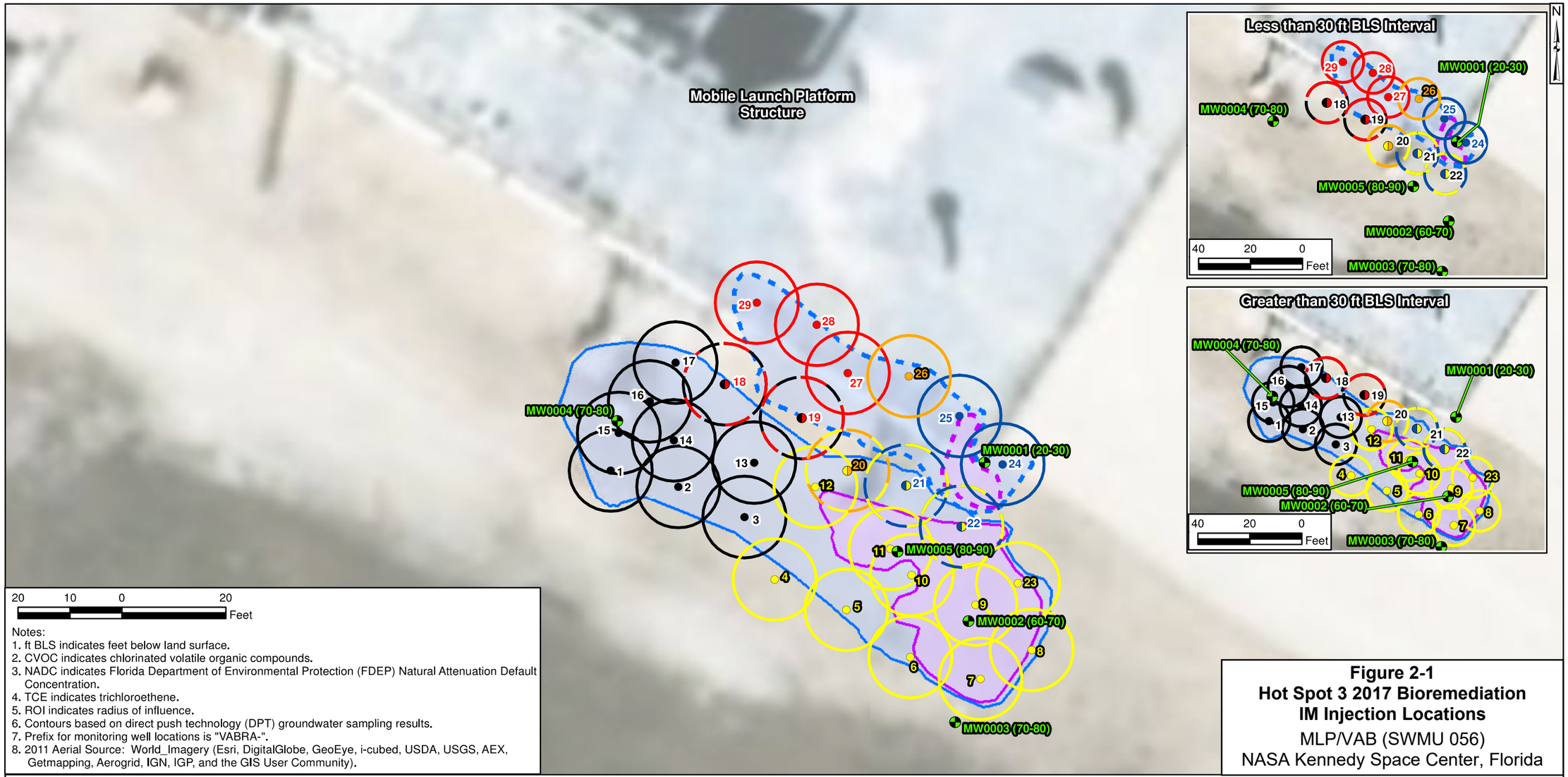
2.2 LITHOLOGY

Based on a review of historical soil cores, lithology for Hot Spot 3 has been revised from the generalized lithology reported in the Hot Spot 3 Bioremediation IMWP (NASA 2016a). Eight

historical borings (MLPV-IW4I, MLP-SB3, MLPV-IW13I, SB-1466, SB-1473, SB-2001, SB-2002, and SB-2003) were used to provide an east-west cross section to a total depth of 70 feet bls and is presented on **Figure 2-4**. The east side of Hot Spot 3 is primarily well sorted fine to medium sand with shells, with an increased silt content toward the west. Clayey soil is predominant around 60 feet bls. Geotechnical testing completed in 2015 indicated the permeability of the clayey sand/sandy clay from 47 to 61 feet bls was between 10^{-9} square centimeters (cm^2) and 10^{-11} cm^2 (NASA 2016c). The lithological data combined with calculated permeability indicate that the layer between 52 to 60 feet bls consists of low permeability.

2.3 HYDROGEOLOGY

Groundwater zones for the Hot Spot 3 area have been generally defined as follows: (1) shallow groundwater less than 28 feet bls; (2) intermediate groundwater from 28 to 40 feet bls; and (3) deep groundwater greater than 40 feet bls. Annual groundwater elevations are collected as part of the site-wide MLP/VAB area monitoring well sampling. The most recent sampling event during DPT evaluations was performed in March 2024, and shallow and intermediate groundwater elevation data are presented on **Figure 2-5** and **Figure 2-6**, respectively. Groundwater flow in the Hot Spot 3 area is generally to the north and northwest, which is consistent with historical data.



Notes:
1. ft BLS indicates feet below land surface.
2. CVOC indicates chlorinated volatile organic compounds.
3. NADC indicates Florida Department of Environmental Protection (FDEP) Natural Attenuation Default Concentration.
4. TCE indicates trichloroethene.
5. ROI indicates radius of influence.
6. Contours based on direct push technology (DPT) groundwater sampling results.
7. Prefix for monitoring well locations is "VABRA-".
8. 2011 Aerial Source: World_Imagery (Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community).

Legend

- Monitoring Well Location
- June 2017 Overall TCE 1% Solubility Contour (dashed contours are 6 to 16 ft BLS interval and solid contours are 41 to 55 ft BLS interval)
- June 2017 Overall CVOC 10xNADC Contour (dashed contours are 6 to 26 ft BLS interval and solid contours are 41 to 55 ft BLS interval)
- Injection Location with estimated 8 ft ROI for 4 to 28 ft BLS (Total = 2)
- Injection Location with estimated 8 ft ROI for 10 to 28 ft BLS (Total = 1)
- Injection Location with estimated 8 ft ROI for 39 to 57 ft BLS (Total = 10)
  Low pressure injection from 39 to 51 ft BLS
  High pressure injection from 51 to 57 ft BLS
- Injection Location with estimated 8 ft ROI for 4 to 28 and 39 to 57 ft BLS (Total = 2)
  Low pressure injection from 4 to 28 and 39 to 51 ft BLS
  High pressure injection from 51 to 57 ft BLS
- Injection Location with estimated 8 ft ROI for 16 to 24 ft BLS (Total = 3)
- Injection Location with estimated 8 ft ROI for 44 to 52 ft BLS (Total = 8)
- Injection Location with estimated 8 ft ROI for 10 to 28 and 39 to 57 ft BLS (Total = 1)
- Injection Location with estimated 8 ft ROI for 16 to 24 and 44 to 52 ft BLS (Total = 2)

Figure 2-1
Hot Spot 3 2017 Bioremediation IM Injection Locations
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Excerpt from MLP/VAB Area, SWMU No. 056, Hot Spot 3 Bioremediation Construction Completion Report (Revision 0). Prepared by Geosyntec Consultants Inc., Titusville, Florida. February 2018.

Path: (Titusville-01\Data\)T:\0GIS\FR0579\MXDs\201711\InjectionLayout_finalAUG2017_noDPTs.mxd 16 February 2018 MAH

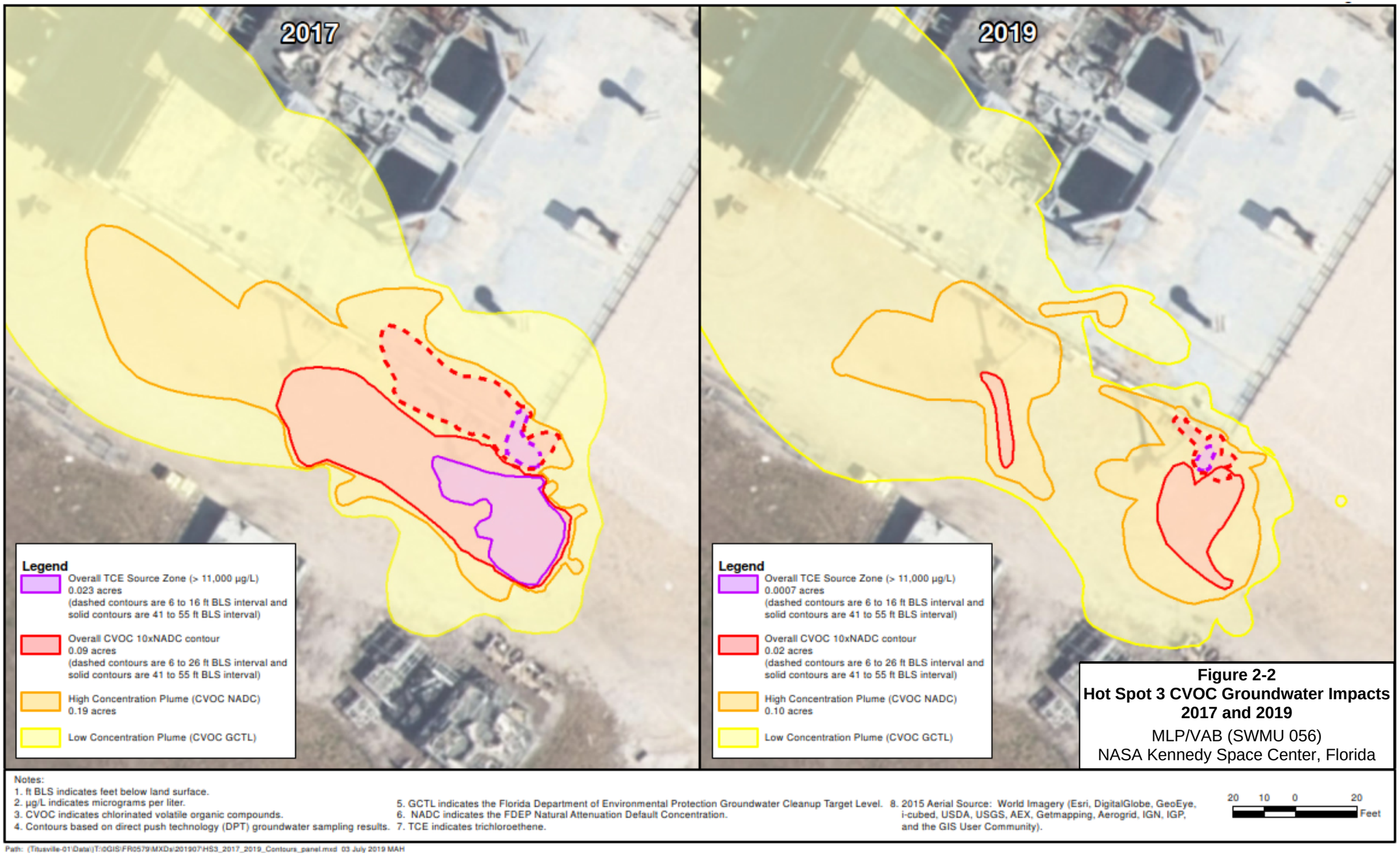
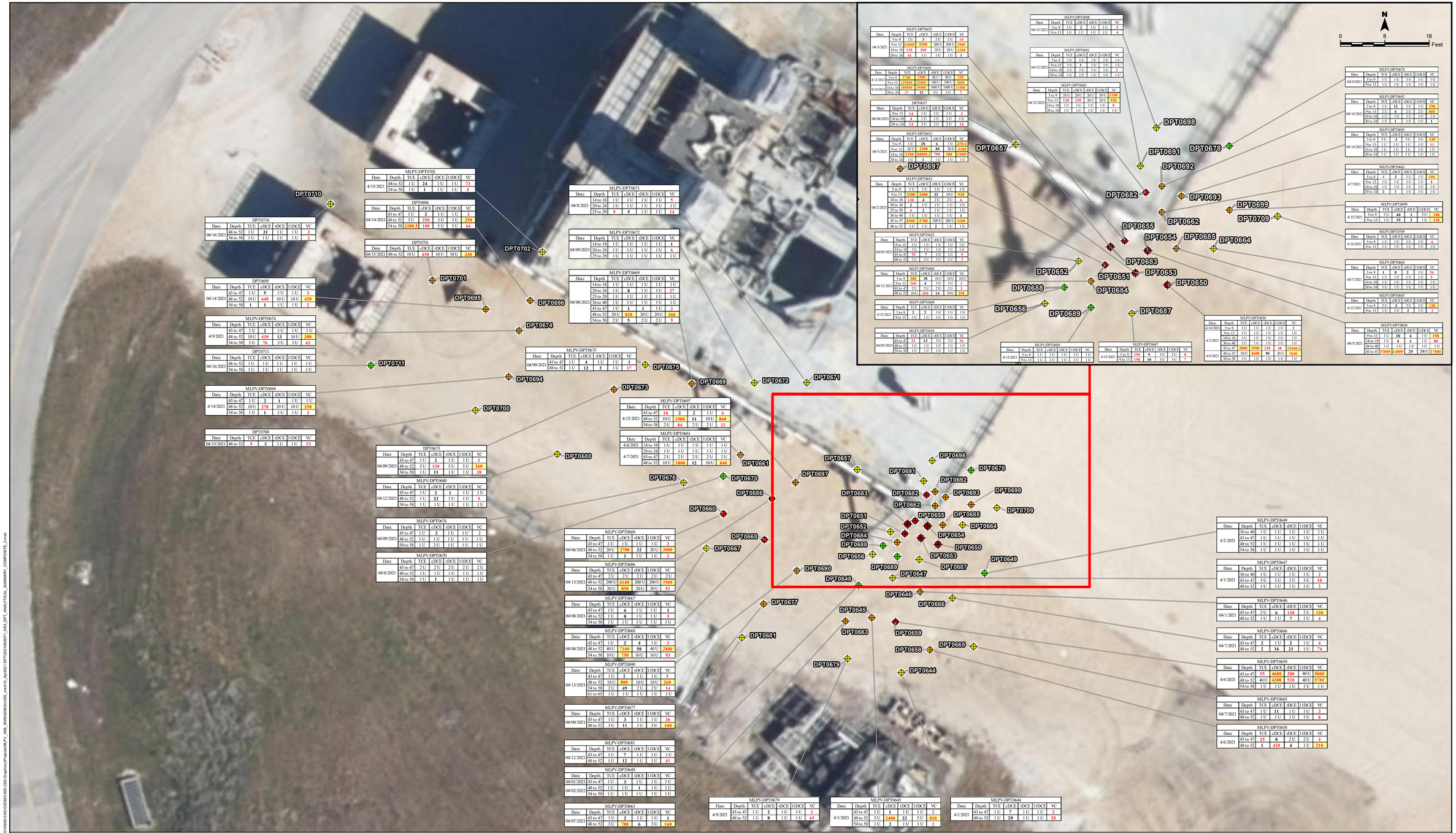


Figure 2-2
Hot Spot 3 CVOC Groundwater Impacts 2017 and 2019
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Excerpt from MLP/VAB Area, SWMU No. 056, Hot Spot 3 Bioremediation Construction Completion Report (Revision 0). Prepared by Geosyntec Consultants Inc., Titusville, Florida. February 2018.



MLPV-DPT0702

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	48 to 52	1 U	**24**	1 U	1 U	**73**
	54 to 58	1 U	**1**	1 U	1 U	**4**

DPT0696

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/ 14/ 2021	43 to 47	1 U	**2**	1 U	1 U	**2**
	48 to 52	3 U	**250**	3 U	3 U	**250**
	54 to 58	**1300 J**	**100**	5 U	5 U	**66**

DPT0710

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/ 2021	48 to 52	1 U	**31**	1 U	1 U	**3**
	54 to 58	1 U	1 U	1 U	1 U	**2**

DPT0701

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	10 U	**450**	10 U	10 U	**320**

DPT0695

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	43 to 47	1 U	**5**	1 U	1 U	**3**
	48 to 52	10 U	**640**	10 U	10 U	**420**
	54 to 58	1	**1**	1 U	1 U	**2**

MLPV-DPT0674

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	**2**	1 U	1 U	**1**
	48 to 52	10 U	**430**	**13**	10 U	**380**
	54 to 58	3 U	**76**	3 U	3 U	**63**

DPT0711

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/ 2021	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0694

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	43 to 47	1 U	**2**		**1**	1 U
	48 to 52	10 U	**270**		10 U	**350**
	54 to 58	1 U	**1**	1 U	1 U	**3**

DPT0700

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	**5**	**3**	1 U	1 U	**15**

DPT0673

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**2**	1 U	1 U	**3**
	48 to 52	5 U	**130**	5 U	5 U	**160**
	54 to 58	1 U	**11**	1 U	1 U	**38**

MLPV-DPT0680

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	**2**	**1**	1 U	1 U
	48 to 52	1 U	**22**	1 U	1 U	**5**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0676

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**2**	1 U	1 U	**2**
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	2 U	1 U	1 U	1 U

MLPV-DPT0670

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	**1**	1 U	1 U	1 U

MLPV-DPT0671

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	14 to 18	1 U	1 U	1 U	1 U	**5**
	20 to 24	1 U	1 U	1 U	1 U	1 U
	25 to 29	**9**	**5**	1 U	1 U	**14**

MLPV-DPT0672

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	**6**
	25 to 29	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0669

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	**8**	1 U	1 U	**27**
	25 to 29	1 U	1 U	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	1 U	**1**	1 U	1 U	1 U
	48 to 52	20 U	**820**	20 U	20 U	**360**
	54 to 58	2 U	**5**	2 U	2 U	**9**

MLPV-DPT0675

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**4**	1 U	1 U	**1**
	48 to 52	1 U	**12**	**2**	1 U	**17**

MLPV-DPT0697

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	43 to 47	**10**	**2**	**2**	1 U	**6**
	48 to 52	10 U	**1500**	**11**	10 U	**860**
	54 to 58	2 U	**84**	2 U	2 U	**32**

MLPV-DPT0661

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U
4/7/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	10 U	**1800**	**12**	10 U	**840**

MLPV-DPT0660

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	43 to 47	1 U	1 U	1 U	1 U	**3**
	48 to 52	20 U	**2790**	**32**	20 U	**3400**
	54 to 58	1 U	**1**	1 U	1 U	**3**

MLPV-DPT0686

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	200 U	**4160**	200 U	200 U	**5900**
	54 to 58	20 U	**850**	20 U	20 U	**51**

MLPV-DPT0667

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	**6**	1 U	1 U	**1**
	48 to 52	1 U	**8**	1 U	1 U	**5**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0668

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	**2**		**4**	1 U
	48 to 52	40 U	**7200**	**50**	40 U	**2800**
	54 to 58	10 U	**750**	10 U	10 U	**93**

MLPV-DPT0690

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	1 U	**2**	1 U	1 U	**5**
	48 to 52	10 U	**800**	10 U	10 U	**260**
	54 to 58	2 U	**49**	2 U	2 U	**14**
	61 to 65	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0677

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**3**	1 U	1 U	**36**
	48 to 52	3 U	**11**	3 U	3 U	**160**

MLPV-DPT0681

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	**7**	1 U	1 U	1 U
	48 to 52	1 U	**12**	1 U	1 U	**41**

MLPV-DPT0648

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/01/2021	43 to 47	1 U	**3**	1 U	1 U	1 U
04/02/2022	48 to 52	1 U	1 U	**1**	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0663

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/07/2021	43 to 47	1 U	**2**	1 U	1 U	**1**
	48 to 52	3 U	**780**	**6**	3 U	**160**

MLPV-DPT0655

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	5 to 9	2 U	**3**	2 U	2 U	**14**
	9 to 13	**2160**	**8200**	200 U	200 U	**2900**
	14 to 18	**120**	**360**	20 U	20 U	**1200**
	20 to 24	**16**	1 U	1 U	1 U	**1**

MLPV-DPT0665

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/12/2021	5 to 9	**1760**	**2300**	40 U	40 U	**310**
	9 to 13	**27000**	**35000**	100 U	100 U	**1000**
4/14/2021	14 to 18	**40000**	**49000**	1000 U	1000 U	**11000**
	20 to 24	**37**	**22**	3 U	3 U	7

DPT0657

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	9 to 13	**14**	1 U	1 U	1 U	**3**
	14 to 18	**1**	1 U	1 U	1 U	1 U
	20 to 24	**1.4**	2 U	2 U	2 U	**1.1**

MLPV-DPT0653

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	5 to 9	1 U	**20**	**6**	1 U	**470 J**
	9 to 13	20 U	**2100**	**84**	20 U	**4300**
	14 to 18	**2100**	**48000 J**	**790**	**100**	**21000**
	20 to 24	1 U	**1**	1 U	1 U	1 U

MLPV-DPT0651

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/2/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	**1200**	**2600**	**33**	10 U	**810**
	14 to 18	**130**	**4**	2 U	2 U	**6**
	20 to 24	**2**	1 U	1 U	1 U	1 U
	25 to 29	**2**	**2**	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	**1**
	43 to 47	**4900**	**5700**	100 U	100 U	**5400**
	48 to 52	1 U	1 U	**2**	1 U	1 U

MLPV-DPT0652

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	9 to 13	1 U	1 U	1 U	1 U	1 U
	14 to 18	1 U	1 U	1 U	1 U	1 U
	43 to 47	**52**	**7**	2 U	2 U	**5**
	48 to 52	2 U	2 U	2 U	2 U	**3**

MLPV-DPT0684

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	5 to 9	**180**	**28**	10 U	10 U	10 U
	9 to 13	**360**	**4**	3 U	3 U	**3**
	43 to 47	2 U	2 U	2 U	2 U	**3**
	48 to 52	10 U	**360**	**14**	10 U	**250**

MLPV-DPT0688

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/13/2021	5 to 9	**2**	**2**	1 U	1 U	1 U
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0656

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	43 to 47	**21**	**12**	1 U	1 U	**16**
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0679

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	**2**	1 U	1 U	**3**
	48 to 52	1 U	**8**	1 U	1 U	**65**

MLPV-DPT0645

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	**1**	1 U	1 U	**2**
	48 to 52	5 U	**2400**	**22**	5 U	**810**
	54 to 58	1 U	**2**	1 U	1 U	**2**

MLPV-DPT0644

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	**1**	1 U	1 U	**3**
	48 to 52	1 U	**20**	1 U	1 U	**28**

MLPV-DPT0698

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	5 to 9	1 U	**2**	1 U	1 U	**9**
	9 to 13	1 U	1 U	1 U	1 U	**4**

MLPV-DPT0691

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	1 U	**1**	1 U	1 U	1 U
	14 to 18	1 U	1 U	1 U	1 U	**2**
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0692

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	5 to 9	20 U	20 U	20 U	**1100**	
	9 to 13	**120**	**150**	20 U	20 U	**920**
	14 to 18	1 U	1 U	1 U	1 U	
	20 to 24	1 U	1 U	1 U	1 U	

MLPV-DPT0687

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/13/2021	5 to 9	**150**	**9**	1 U	3 U	**8**
	9 to 13	**190**	**10**	1 U	3 U	**7**

MLPV-DPT0650

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/16/2021	5 to 9	1 U	1 U	1 U	1 U	**2**
	9 to 13	1 U	1 U	1 U	1 U	1 U
4/2/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	**3000**	**2900**	**220**	**48**	**15000 J**
4/6/2021	48 to 52	20 U	**4600**	**90**	20 U	**7600**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0678

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/9/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0692

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	5 to 9	1 U	**12**	1 U	1 U	**290**
	9 to 13	2 U	**6**	2 U	2 U	**440**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	**1**	1 U	1 U	**1**

MLPV-DPT0693

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	5 to 9	3 U	**3**	3 U	3 U	**130**
	9 to 13	1 U	1 U	1 U	1 U	**11**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0662

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/7/2021	5 to 9	**4**	**2**	1 U	1 U	**140**
	9 to 13	1 U	1 U	1 U	1 U	**1**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0699

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	5 to 9	2 U	**40**	**3**	2 U	**180**
	9 to 13	1 U	**19**	**2**	1 U	**130**

MLPV-DPT0709

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/16/2021	5 to 9	1 U	1 U	1 U	1 U	**6**
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0664

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	5 to 9	**8**	**2**	1 U	1 U	**54**
	9 to 13	1 U	1 U	1 U	1 U	**5**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0685

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/12/2021	5 to 9	1 U	**3**	2 U	1 U	**130**
	9 to 13	1 U	1 U	**2**	1 U	**2**

MLPV-DPT0654

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	9 to 13	1 U	**20**	**6**	1 U	**190**
	14 to 18	1 U	**4**	**1**	1 U	**68**
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	**5000 J**	**4000**	**29**	200 U	**7000**

MLPV-DPT0649

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	1 U	1 U	1 U	1 U	1 U
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0647

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	36 to 40	1 U	1 U	1 U	1 U	**2**
	43 to 47	3 U	3 U	3 U	3 U	**10**
	48 to 52	1 U	1 U	1 U	1 U	**2**

MLPV-DPT0646

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/1/2021	43 to 47	2 U	**6**	**130**	2 U	**130**
	48 to 52	1 U	1 U	**7**	1 U	**4**

MLPV-DPT0666

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	**2**	1 U	**2**	1 U	**4**
	48 to 52	**2**	**16**	**21**	1 U	**74**

MLPV-DPT0659

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	**55**	**4600**	**200**	40 U	**9000**
	48 to 52	40 U	**4300**	**520**	40 U	**9700**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0665

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	1 U	**11**	1 U	1 U	**3**
	48 to 52	1 U	1 U	1 U	1 U	**8**

MLPV-DPT0658

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	**25**	**8**	2 U	2 U	**4**
	48 to 52	**1**	**420**	**4**	1 U	**210**

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
1. Concentrations are in micrograms per liter (µg/L)
2. U = Indicates that the analyte was undetected
3. I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
4. Q = Results from run #2
5. **Bold** indicates a detected value
6. **Red bold font** indicates an exceedance of FDEP GCTLs
7. **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
8. ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
9. bls = below land surface
10. GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
11. NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
12. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area
13. SWMU = Solid Waste Management Unit
14. Aerial Source: FDOT 2018

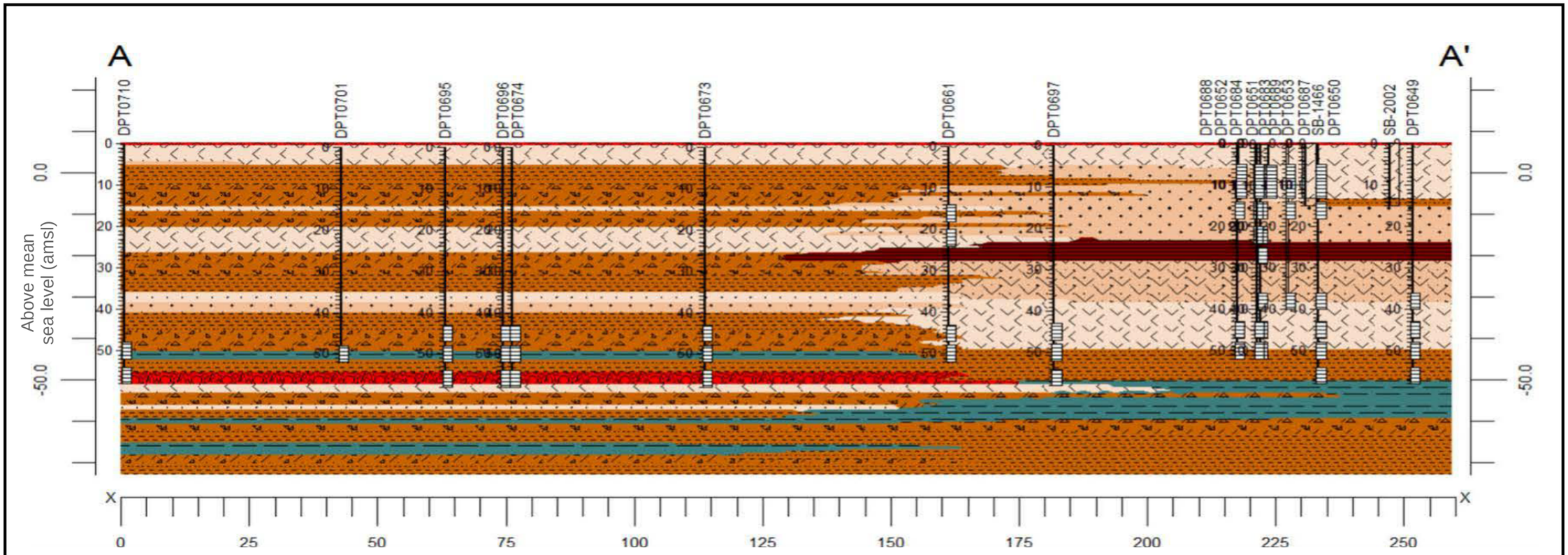
Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	**3**	**300**
cDCE	1,1-Dichloroethene	**70**	**700**
11DCE	cis-1,2-Dichloroethene	**7**	**70**
tDCE	trans-Dichloroethene	**100**	**1000**
VC	Vinyl Chloride	**1**	**100**

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 2-3
Hot Spot 3 DPT Sampling Locations
2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/10/2021
Document Path: P:\GIS\Projects\ENV\NASA\ENG\EKRD\CRTB\DO109\00-CAD-GIS\2021\2Q\GIS Graphics\Projects\MLPV_VAB_SWMU056\mxd\12_Apr2021 DPT\20210809\F1_HS3_DPT_ANALYTICAL_SUMMARY_COMPOSITE_3.mxd





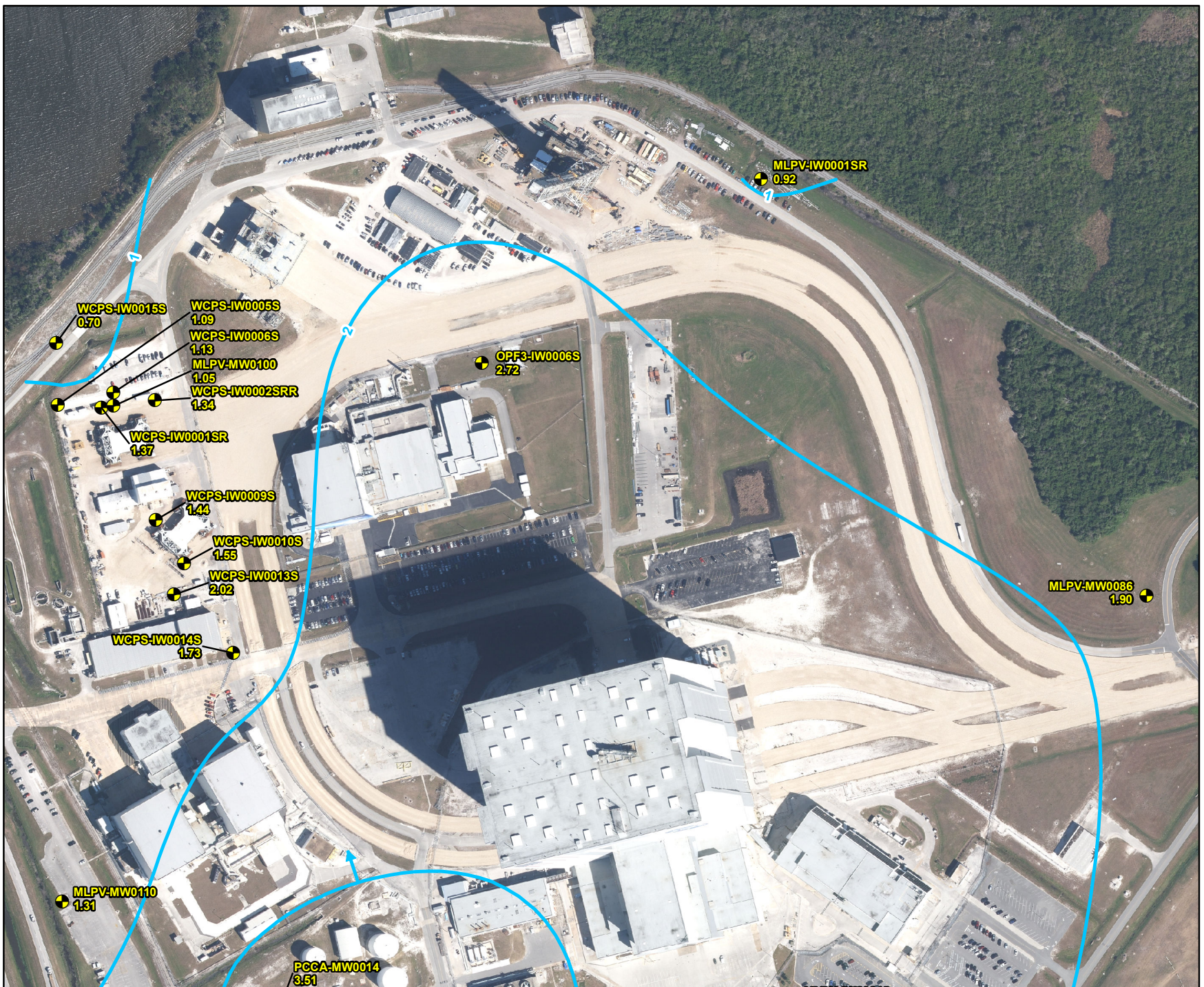
Lithology Index

- Fine Sand
- Fine Sand with Shells
- Gravelly Sand
- Medium Sand
- Medium Sand with Shells
- Sandy Clay
- Shell Hash
- Silty Clay
- Silty Sand
- Silty Sand with Shells

Notes:
1. DPT = Direct Push Technology
2. MLP/VAB Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB), Solid Waste Management Unit (SWMU) 056

FIGURE 2-4
Hot Spot 3
Lithologic Cross-section

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida



Legend

- Shallow Monitoring Well Location (Groundwater Elevation in ft bls, NAVD88 Feet)
- Groundwater Contour (NAVD88 Feet)
- Approximate Direction of Groundwater Flow

Notes:
1. bls = Below land surface.
2. ft = Feet.
3. NAVD88 = North American Vertical Datum of 1988.
4. ND = No Data.
5. MLP/VAB = Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area.
6. SWMU = Solid Waste Management Unit.
7. Results shown as ft bls.

N

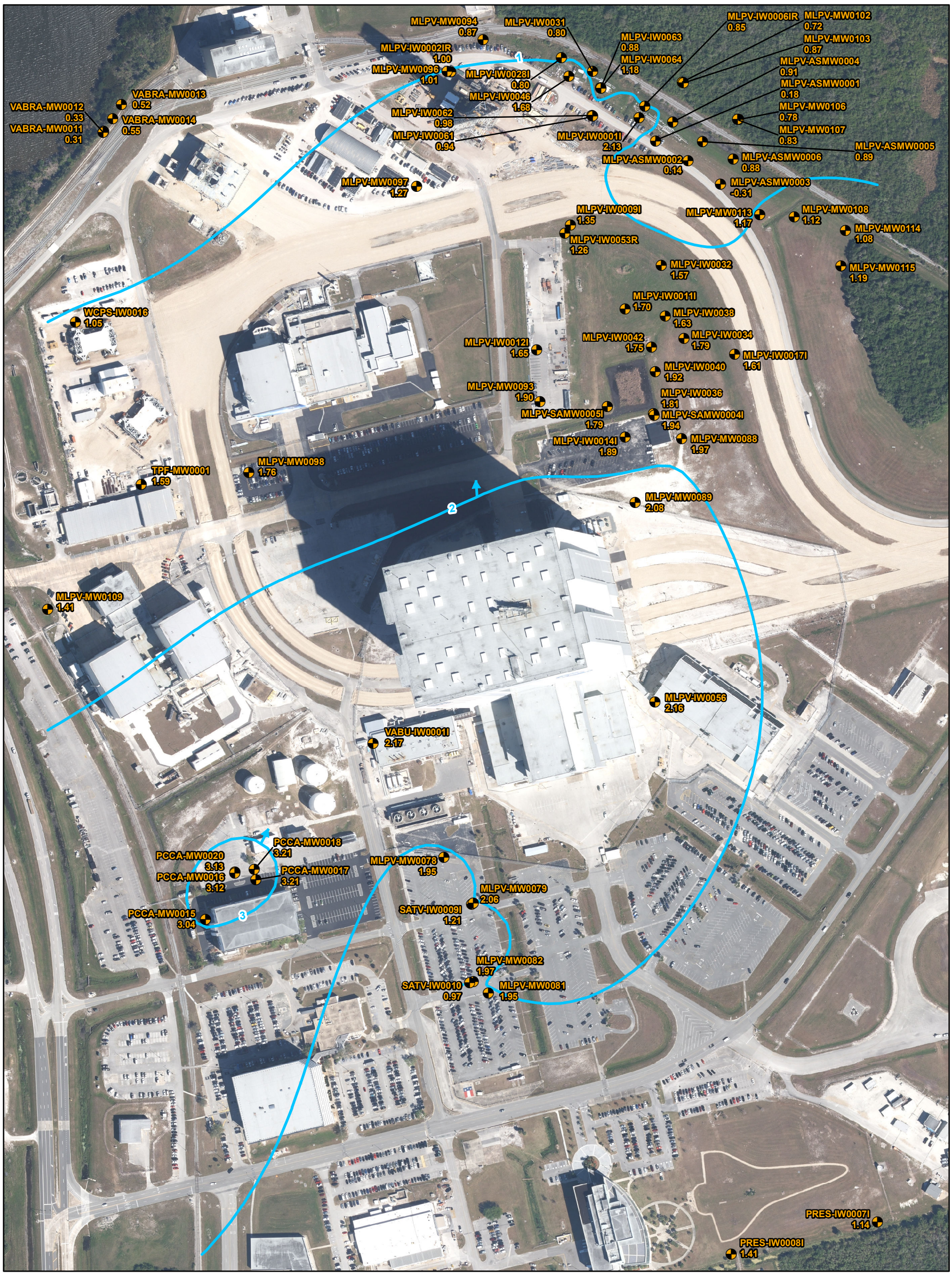
0 325 650 Feet

1 inch = 325 feet

FIGURE 2-5
Sit-Wide Groundwater Contour Map
Shallow Interval (2 to 25 ft bls)
March 11, 2024

MLPV/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Document Path: \\NADTC1VFP172\Data\Gisprojects\Projects\NASA\KSC\MLPV_VAB_SWMU056\ArcGIS_mxd_2023GroundwaterMaps\2024GroundwaterMaps\Groundwater_Elev_SZ_March2024.mxd



Legend

- Intermediate Monitoring Well Location (Groundwater Elevation in ft bls, NAVD88 Feet)
- Groundwater Contour (NAVD88 ft.)
- Approximate Direction of Groundwater Flow

Notes:
1. bls = Below land surface.
2. ft = Feet.
3. NAVD88 = North American Vertical Datum of 1988.
4. ND = No Data.
5. MLP/VAB = Mobile Launch Platform Rehabilitation Sites/Vehicle Assembly Building Area.
6. SWMU = Solid Waste Management Unit.
7. Results shown as ft bls.

N

0 300 600 Feet

1 inch = 300 feet

FIGURE 2-6
Site-Wide Groundwater Contour Map
Intermediate Interval (20 to 45 ft bls)
March 11, 2024

MLPV/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Document Path: \\NADTC1\VFP172\Data\Gisprojects\Projects\NASAIKSC\MLPV_VAB_SWMU056\ArcGIS_mxd_2023Groundwater\GroundwaterMaps\2024GroundwaterMaps\Groundwater_Elev_IZ_March2024.mxd

Table 2-1
2021 DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260					
Analyte			TETRACHLOROETHENE	TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	3	70	100	7	1
State of Florida NADCs (µg/L)			300	300	700	1000	70	100
Location ID	Sample Date	Sample Depth (feet bls)						
MLPV-DPT0644	4/1/2021	43 to 47	1 U	1 U	**7**	1 U	1 U	**3**
		48 to 52	1 U	1 U	**20**	1 U	1 U	**28**
MLPV-DPT0645	4/1/2021	43 to 47	1 U	1 U	**1**	1 U	1 U	**2**
		48 to 52	1 U	1 U	**2400**	**22**	1 U	**810**
		54 to 58	1 U	1 U	**2**	1 U	1 U	**2**
MLPV-DPT0646	4/1/2021	43 to 47	2 U	2 U	**6**	**130**	2 U	**130**
		48 to 52	1 U	1 U	1 U	**7**	1 U	**4**
MLPV-DPT0647	4/1/2021	36 to 40	1 U	1 U	1 U	1 U	1 U	**2**
		43 to 47	3 U	3 U	3 U	3 U	3 U	**10**
		48 to 52	1 U	1 U	1 U	1 U	1 U	**2**
MLPV-DPT0648	4/1/2021	43 to 47	1 U	1 U	**3**	1 U	1 U	1 U
	4/2/2021	48 to 52	1 U	1 U	1 U	**1**	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0649	4/2/2021	36 to 40	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	1 U	1 U	1 U	1 U	1 U	1 U
		48 to 52	1 U	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0650	4/14/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	**2**
	4/2/2021	9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	20 U	**3000**	**2900**	**220**	**48**	**15000 J**
		DUP	100 U	**2800**	**2600**	**200**	100 U	**15400**
	4/6/2021	48 to 52	20 U	20 U	**4600**	**90**	20 U	**7600**
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0651	4/2/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	1 U
		9 to 13	10 U	**2300**	**2600**	**33**	10 U	**910**
		14 to 18	2 U	**130**	**4**	2 U	2 U	**6**
		20 to 24	1 U	**2**	1 U	1 U	1 U	1 U
		25 to 29	1 U	**4**	**2**	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	1 U	**1**
		43 to 47	100 U	**8900**	**5700**	100 U	100 U	**5400**
		48 to 52	1 U	1 U	1 U	**2**	1 U	1 U
MLPV-DPT0652	4/5/2021	9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	2 U	**93**	**7**	2 U	2 U	**9**
		48 to 52	2 U	2 U	2 U	2 U	2 U	**3**
MLPV-DPT0653	4/5/2021	5 to 9	1 U	1 U	**20**	**6**	1 U	**470 J**
		DUP	2 U	2 U	**19**	**6**	2 U	**430**
		9 to 13	20 U	20 U	**2100**	**84**	20 U	**4200**
		14 to 18	100 U	**2100**	**88000 J**	**790**	**100**	**21000**
		36 to 40	1 U	1 U	**1**	1 U	1 U	1 U
MLPV-DPT0654	4/5/2021	9 to 13	1 U	1 U	**20**	**6**	1 U	**190**
		14 to 18	1 U	1 U	**4**	**1**	1 U	**88**
		36 to 40	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	200 U	**55000**	**14000**	**29**	200 U	**17000**
MLPV-DPT0655	4/5/2021	5 to 9	2 U	2 U	**3**	2 U	2 U	**14**
		9 to 13	200 U	**25000**	**5200**	**220**	200 U	**2900**
		14 to 18	20 U	**120**	**360**	20 U	20 U	**3200**
		20 to 24	1 U	**16**	1 U	1 U	1 U	**1**
MLPV-DPT0656	4/5/2021	43 to 47	3 U	**21**	**13**	3 U	3 U	**16**
		48 to 52	1 U	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0657	4/6/2021	9 to 13	1 U	**11**	1 U	1 U	1 U	**2**
		DUP	1 U	**14**	1 U	1 U	1 U	**3**
		14 to 18	1 U	**1**	1 U	1 U	1 U	1 U
		20 to 24	2 U	**14**	2 U	2 U	2 U	**14**

Table 2-1
2021 DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260					
Analyte			TETRACHLOROETHENE	TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	3	70	100	7	1
State of Florida NADCs (µg/L)			300	300	700	1000	70	100
Location ID	Sample Date	Sample Depth (feet bls)						
MLPV-DPT0658	4/6/2021	43 to 47	2 U	**25**	**8**	2 U	2 U	**4**
		48 to 52	1 U	**1**	**420**	**4**	1 U	**210**
MLPV-DPT0659	4/6/2021	43 to 47	40 U	**55**	**4600**	**200**	40 U	**9000**
		48 to 52	40 U	40 U	**4300**	**520**	40 U	**9700**
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0660	4/6/2021	43 to 47	1 U	1 U	1 U	**4**	1 U	**3**
		48 to 52	20 U	20 U	**2700**	**32**	20 U	**3000**
		54 to 58	1 U	1 U	**1**	1 U	1 U	**3**
MLPV-DPT0661	4/6/2021	14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
	4/7/2021	20 to 24	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	2 U	2 U	2 U	2 U	2 U	2 U
		48 to 52	10 U	10 U	**1600**	**12**	10 U	**770**
		DUP	10 U	10 U	**1800**	**13**	10 U	**840**
MLPV-DPT0662	4/7/2021	5 to 9	1 U	**4**	**2**	1 U	1 U	**140**
		9 to 13	1 U	1 U	1 U	1 U	1 U	**1**
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	**2**	**1**	1 U	1 U	1 U
MLPV-DPT0663	4/7/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**1**
		48 to 52	3 U	3 U	**780**	**6**	3 U	**160**
MLPV-DPT0664	4/7/2021	5 to 9	1 U	**1**	**8**	**2**	1 U	**54**
		9 to 13	1 U	1 U	1 U	1 U	1 U	**5**
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0665	4/7/2021	43 to 47	1 U	1 U	**11**	1 U	1 U	**3**
		48 to 52	1 U	1 U	1 U	1 U	1 U	**8**
MLPV-DPT0666	4/7/2021	43 to 47	1 U	**2**	1 U	**2**	1 U	**4**
		48 to 52	1 U	**2**	**16**	**21**	1 U	**74**
MLPV-DPT0667	4/8/2021	43 to 47	1 U	1 U	**6**	1 U	1 U	**1**
		48 to 52	1 U	1 U	**8**	1 U	1 U	**4**
		DUP	1 U	1 U	**8**	1 U	1 U	**5**
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0668	4/8/2021	43 to 47	1 U	1 U	**2**	**4**	1 U	**3**
		48 to 52	40 U	40 U	**7100**	**50**	40 U	**2800**
		54 to 58	10 U	10 U	**750**	10 U	10 U	**93**
MLPV-DPT0669	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	**8**	1 U	1 U	**27**
		25 to 29	1 U	1 U	1 U	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	1 U	1 U
		43 to 47	1 U	1 U	**1**	**1**	1 U	**3**
		48 to 52	20 U	20 U	**820**	20 U	20 U	**360**
		54 to 58	2 U	2 U	**5**	2 U	2 U	**9**
MLPV-DPT0670	4/8/2021	43 to 47	2 U	2 U	2 U	2 U	2 U	2 U
		48 to 52	1 U	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	**1**	1 U	1 U	1 U
MLPV-DPT0671	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	1 U	**5**
		20 to 24	1 U	1 U	1 U	1 U	1 U	1 U
		25 to 29	1 U	**9**	**5**	1 U	1 U	**14**
MLPV-DPT0672	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	1 U	**1**
	4/9/2021	20 to 24	1 U	1 U	1 U	1 U	1 U	**6**
		25 to 29	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0673	4/9/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**3**
		48 to 52	5 U	5 U	**130**	5 U	5 U	**160**
		DUP	5 U	5 U	**130**	5 U	5 U	**180**
		54 to 58	1 U	1 U	**11**	1 U	1 U	**38**
MLPV-DPT0674	4/9/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	1 U
		48 to 52	10 U	10 U	**430**	**13**	10 U	**380**
		54 to 58	3 U	3 U	**76**	3 U	3 U	**63**

Table 2-1
2021 DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260					
Analyte			TETRACHLOROETHENE	TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	3	70	100	7	1
State of Florida NADCs (µg/L)			300	300	700	1000	70	100
Location ID	Sample Date	Sample Depth (feet bls)						
MLPV-DPT0675	4/9/2021	43 to 47	1 U	1 U	**4**	1 U	1 U	**1**
		48 to 52	1 U	1 U	**12**	**2**	1 U	**17**
MLPV-DPT0676	4/9/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**2**
		48 to 52	1 U	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0677	4/9/2021	43 to 47	1 U	1 U	**3**	1 U	1 U	**36**
		48 to 52	3 U	3 U	**11**	3 U	3 U	**160**
MLPV-DPT0678	4/9/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0679	4/9/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**3**
		48 to 52	1 U	1 U	**8**	1 U	1 U	**65**
MLPV-DPT0680	4/12/2021	43 to 47	1 U	1 U	**2**	**1**	1 U	1 U
		DUP	1 U	1 U	**2**	1 U	1 U	1 U
		48 to 52	1 U	1 U	**22**	1 U	1 U	**5**
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0681	4/12/2021	43 to 47	1 U	1 U	**7**	1 U	1 U	1 U
		48 to 52	1 U	1 U	**12**	1 U	1 U	**41**
MLPV-DPT0682	4/12/2021	5 to 9	20 U	20 U	20 U	20 U	20 U	**1100**
		9 to 13	20 U	**120**	**150**	20 U	20 U	**920**
	4/14/2021	14 to 18	1 U	1 U	1 U	1 U	1 U	**8**
		20 to 24	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0683	4/12/2021	5 to 9	40 U	**5700**	**2300**	40 U	40 U	**310**
		9 to 13	100 U	**129000**	**25000**	100 U	100 U	**3000**
	4/14/2021	14 to 18	1000 U	**100000**	**49000**	1000 U	1000 U	**11000**
		20 to 24	3 U	**37**	**22**	3 U	3 U	**7**
MLPV-DPT0684	4/12/2021	5 to 9	10 U	**380**	**28**	10 U	10 U	10 U
		9 to 13	3 U	**260**	**4**	3 U	3 U	**3**
		43 to 47	2 U	2 U	2 U	2 U	2 U	**3**
		48 to 52	10 U	10 U	**360**	**14**	10 U	**250**
MLPV-DPT0685	4/12/2021	5 to 9	2 U	2 U	**3**	2 U	2 U	**130**
		9 to 13	1 U	1 U	1 U	**2**	1 U	**2**
MLPV-DPT0686	4/13/2021	43 to 47	2 U	2 U	2 U	2 U	2 U	2 U
		48 to 52	200 U	200 U	**8100**	200 U	200 U	**5900**
		DUP	100 U	100 U	**7700**	100 U	100 U	**5700**
		54 to 58	20 U	20 U	**850**	20 U	20 U	**51**
MLPV-DPT0687	4/13/2021	5 to 9	3 U	**250**	**9**	3 U	3 U	**8**
		9 to 13	3 U	**190**	**10**	3 U	3 U	**7**
MLPV-DPT0688	4/13/2021	5 to 9	1 U	**2**	**2**	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0689	4/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0690	4/13/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**5**
		48 to 52	10 U	10 U	**800**	10 U	10 U	**260**
		54 to 58	2 U	2 U	**49**	2 U	2 U	**14**
		61 to 65	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0691	4/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	1 U	**1**	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	1 U	**2**
		20 to 24	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0692	4/14/2021	5 to 9	1 U	1 U	**12**	1 U	1 U	**280 J**
		DUP	2 U	2 U	**11**	2 U	2 U	**290**
		9 to 13	2 U	2 U	**6**	2 U	2 U	**440**
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	**1**	1 U	1 U	**1**
MLPV-DPT0693	4/14/2021	5 to 9	3 U	3 U	**4**	3 U	3 U	**130**
		9 to 13	1 U	1 U	1 U	1 U	1 U	**11**
		14 to 18	1 U	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	1 U	1 U	1 U	1 U

Table 2-1
2021 DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260					
Analyte			TETRACHLOROETHENE	TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			**3**	**3**	**70**	**100**	**7**	**1**
State of Florida NADCs (µg/L)			**300**	**300**	**700**	**1000**	**70**	**100**
Location ID	**Sample Date**	**Sample Depth (feet bls)**						
MLPV-DPT0694	4/14/2021	43 to 47	1 U	1 U	**2**	**1**	1 U	1 U
		48 to 52	10 U	10 U	**270**	10 U	10 U	**350**
		54 to 58	1 U	1 U	**1**	1 U	1 U	**3**
MLPV-DPT0695	4/14/2021	43 to 47	1 U	1 U	**5**	1 U	1 U	**3**
		48 to 52	10 U	10 U	**640**	10 U	10 U	**420**
		54 to 58	1 U	**1**	**1**	1 U	1 U	**2**
MLPV-DPT0696	4/14/2021	43 to 47	1 U	1 U	**2**	1 U	1 U	**2**
		48 to 52	3 U	3 U	**250**	3 U	3 U	**250**
		54 to 58	5 U	**1300 J**	**100**	5 U	5 U	**66**
		DUP	10 U	**1300**	**95**	10 U	10 U	**59**
MLPV-DPT0697	4/15/2021	43 to 47	1 U	**10**	**2**	**2**	1 U	**6**
		48 to 52	10 U	10 U	**1500**	**11**	10 U	**860**
		54 to 58	1 U	1 U	**84**	1 U	1 U	**32**
MLPV-DPT0698	4/15/2021	5 to 9	1 U	1 U	**2**	1 U	1 U	**9**
		9 to 13	1 U	1 U	1 U	1 U	1 U	**4**
MLPV-DPT0699	4/15/2021	5 to 9	2 U	2 U	**40**	**3**	2 U	**180**
		9 to 13	1 U	1 U	**19**	**2**	1 U	**130**
MLPV-DPT0700	4/15/2021	48 to 52	1 U	**5**	**3**	1 U	1 U	**15**
MLPV-DPT0701	4/15/2021	48 to 52	10 U	10 U	**450**	10 U	10 U	**330**
MLPV-DPT0702	4/15/2021	48 to 52	1 U	1 U	**24**	1 U	1 U	**73**
		54 to 58	1 U	1 U	**1**	1 U	1 U	**4**
MLPV-DPT0709	4/16/2021	5 to 9	1 U	1 U	1 U	1 U	1 U	**6**
		9 to 13	1 U	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0710	4/16/2021	48 to 52	1 U	1 U	**31**	1 U	1 U	**3**
		54 to 58	1 U	1 U	1 U	1 U	1 U	**2**
MLPV-DPT0711	4/16/2021	48 to 52	1 U	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration.
Red font indicates an exceedance of FDEP GCTLs or Site Approved Target Levels for UIC sampling.
Yellow highlighted cell indicates an exceedance of FDEP NADCs.
Blank cells indicate the analyte was not analyzed for that specific well and date.
bls = below land surface
DPT = direct push technology .
DUP = duplicate
FDEP = Florida Department of Environmental Protection
GCTL = Groundwater Cleanup Target Level, Chapter 62-777 Florida Administrative Code, Table 1 (2005)
NADC = Natural Attenuation Default Concentration, Chapter 62-777 Florida Administrative Code, Table V (April 2005)
J = An estimated value
µg/L = micrograms per liter
U = The analyte was not detected
UIC = Underground Injection Control
"MLPV-" is the prefix used for identifying the site within the Remediation Information System database.

Table 2-2
2021 DPT Groundwater Analytical Results: Dissolved Gases, Sulfate, Sulfide, and Total Organic Carbon
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Category			General Chemistry			Dissolved Gases		
Analyte			SULFATE	SULFIDE	TOTAL ORGANIC CARBON	ETHANE	ETHENE	METHANE
State of Florida GCTLs (µg/L)			250000	-	-	-	-	-
State of Florida NADCs (µg/L)			2500000	-	-	-	-	-
Location ID	Sample Date	Depth (feet bls)						
MLPV-DPT0644	4/1/2021	43 to 47	**1200000**	**5100**	**19000**	5.10 U	5.10 U	**230**
		48 to 52	**490000**	**480 I**	**12000**	5.10 U	**23.5**	**5200**
MLPV-DPT0645	4/1/2021	48 to 52	**370000**	**1400**	**11000**	5.10 U	**1160**	**8590**
MLPV-DPT0646	4/1/2021	43 to 47	**570000**	**120000**	**31000**	5.10 U	**5490**	**10200**
MLPV-DPT0650	4/6/2021	43 to 47	**1100000**	**52000**	**130000**	**18.3**	**4740**	**5500**
		48 to 52	**440000**	**2700**	**16000**	5.10 U	**128**	**177**
MLPV-DPT0651	4/2/2021	9 to 11	**17000**	**800 I**	**22000**	**123**	**65.3**	**16400**
	4/7/2021	25 to 29	**8800**	**14000**	**15000**	5.10 U	5.10 U	**7330**
	4/2/2021	36 to 40	**73000**	**39000**	**150000**	5.10 U	**13.2**	**9200**
		43 to 47	**9800 I**	**78000**	**850000**	5.10 U	**409**	**7690**
		48 to 52	**3200 I**	**2100**	**28000**	5.10 U	5.10 U	**7120**
MLPV-DPT0653	4/5/2021	9 to 11	**1800 I**	450 U	**22000**	**648**	**791**	**7970 J**
MLPV-DPT0654	4/5/2021	9 to 11	**1900 I**	**2100**	**28000**	**100**	**16.0**	**10600**
		14 to 18	**1500 I**	**2400**	**19000**	5.10 U	5.10 U	**602**
		36 to 40	**18000**	**4300**	**12000**	5.10 U	5.10 U	**7490**
MLPV-DPT0655	4/5/2021	9 to 11	**2200 I**	**2400**	**16000**	**115**	**386**	**12300**
		14 to 18	**3400 I**	**3400**	**51000**	**451**	**620**	**9820**
		20 to 24	**15000**	**17000**	**7100**	5.10 U	5.10 U	**13400**
MLPV-DPT0656	4/5/2021	43 to 47	**7900 I**	**130000**	**370000 V**	**97.9**	**6060**	**6400**
		48 to 52	130 U	**2700**	**81000**	**13.9**	**26.9**	**6370**
		54 to 58	66 U	**1100**	**28000**	5.10 U	5.10 U	**10200**
MLPV-DPT0658	4/6/2021	43 to 47	**9900 I**	**54000**	**2800000**	**9.11**	**167**	**10100**
		48 to 52	**230000**	**1800**	**13000**	5.10 U	**11.5**	**8580**
MLPV-DPT0659	4/6/2021	43 to 47	**1100000**	**14000**	**23000**	5.10 U	**295**	**7680**
		48 to 52	**51000**	**16000**	**50000 V**	**11.4**	**12100**	**3680**
MLPV-DPT0660	4/6/2021	48 to 52	**340000**	**960 I**	**14000**	**17.4**	**592**	**6950**
MLPV-DPT0662	4/7/2021	5 to 9	**3700 I**	**920 I**	**11000**	**66.8**	**32.8**	**11100**
MLPV-DPT0663	4/7/2021	48 to 52	**360000**	**600 I**	**11000**	5.10 U	**266**	**2450**
MLPV-DPT0667	4/8/2021	48 to 52	**530000**	**1200**	**14000**	5.10 U	5.10 U	**200**
MLPV-DPT0668	4/8/2021	48 to 52	**320000**	**920 I**	**13000**	**46.0**	**848**	**7760**
MLPV-DPT0670	4/8/2021	48 to 52	130 U	**1200**	**26000**	5.10 U	5.10 U	**10400**
MLPV-DPT0671	4/8/2021	20 to 24	**25000**	**13000**	**7200**	**6.79**	5.10 U	**5950**
MLPV-DPT0672	4/9/2021	20 to 24	**24000**	**10000**	**9200**	**17.4**	5.10 U	**14200**
MLPV-DPT0683	4/12/2021	5 to 9	**11000**	450 U	**14000**	**75.1**	**25.1**	**4090**
MLPV-DPT0684	4/12/2021	5 to 9	**10000**	450 U	**2800**	5.10 U	5.10 U	**9150**
MLPV-DPT0685	4/12/2021	5 to 9	**2600 I**	450 U	**12000**	**198**	**34.2**	**9230**
MLPV-DPT0686	4/13/2021	48 to 52	**400000**	**1100**	**10000**	**13.3**	**1150**	**2250**
MLPV-DPT0687	4/13/2021	5 to 9	**84000**	**480 I**	**4400**	**7.33**	5.10 U	**7720**
		9 to 11	**10000**	**2900**	**7500**	**50.6**	**11.4**	**11200**
MLPV-DPT0688	4/13/2021	5 to 9	**7200**	450 U	**1500**	5.10 U	5.10 U	**88.8**
		9 to 11	**5800**	**2700**	**5500**	5.10 U	5.10 U	4.00 U
MLPV-DPT0691	4/13/2021	5 to 9	**10000**	**1400**	**43000**	5.10 U	5.10 U	**1820**
		9 to 11	**11000**	**2600**	**38000**	5.10 U	5.10 U	**1490**

Notes:
Bolded results indicate the presence of an analyte at the specified concentration.
Red font indicates an exceedance of FDEP GCTLs or Site Approved Target Levels for UIC sampling.
bls = below land surface
DPT = direct push technology .
FDEP = Florida Department of Environmental Protection
GCTL = Groundwater Cleanup Target Level, Chapter 62-777 Florida Administrative Code, Table 1 (2005)
ID = identification
NADC = Natural Attenuation Default Concentration, Chapter 62-777 Florida Administrative Code, Table V (April 2005)
I = Result is greater than or equal to the laboratory MDL but less than the PQL
J = An estimated value
MDL = Minimum Detection Limit
µg/L = micrograms per liter
PQL = Practical Quantitation Limit
U = The analyte was not detected
UIC = Underground Injection Control
V = Analyte was detected in both the sample and the associated method blank
"MLPV-" is the prefix used for identifying the site within the Remediation Information System database.

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3. SITE CHARACTERIZATION/PRE-INTERIM MEASURES ACTIVITIES

Pre-IM activities included supplemental DPT groundwater sampling to provide updated data to confirm and/or refine the ISCR design and to obtain pre-injection data in the following locations: (i) proposed performance monitoring well locations; (ii) proposed LCP monitoring well locations; (iii) proposed injection point locations; and (iv) locations to assist in the delineation of the existing HCP. Due to time constraints, priority was given to the proposed performance monitoring well locations and the proposed injection point locations.

3.1 SUPPLEMENTAL DPT SAMPLING

On June 24 through June 28, 2024, AECOM conducted oversight of Preferred Drilling Solutions (PDS), a Florida-licensed well driller, to collect grab groundwater samples. A total of 66 groundwater samples were collected from 26 locations during the sampling event. Four additional samples were collected on June 26, 2024, for a total of 70 samples, were collected from boreholes adjacent to locations (DPT0736 [48-52 feet bls], DPT0740 [43-47 feet bls], DPT0744 [43-47 feet bls], and DPT0751 [48-52 feet bls]) The purpose of these additional four samples was to analyze for VOC analyses not previously completed. However, the laboratory was able to perform the additional VOC analyses using unused sample volume from the original sample set collected, resulting in two data sets. Results from the resampled DPT locations indicated contaminant concentrations were not detected where there were previously GCTL or NADC exceedances. Therefore, samples between the original and resampled locations with the highest concentrations were used in the evaluation to ensure areas with known or potential contamination were included in the treatment area.

Groundwater samples were submitted to Eurofins Testing LLC for analysis under chain-of-custody protocol. Groundwater samples were analyzed for select CVOCs [TCE, cDCE, tDCE, 1,1-dichloroethene (1,1-DCE), and VC] by USEPA Method 8260D. Additionally, select groundwater samples corresponding with the proposed performance monitoring well locations were analyzed for injection performance monitoring (PM) and select geochemistry parameters for background concentrations prior to injections. The following parameters were analyzed: sulfide and total organic carbon (TOC) by USEPA Method 9060a; dissolved gasses ethane, ethene, and methane by USEPA method RSK-175; sulfate by USEPA Method 300; iron by USEPA Method 6010D; ammonia by USEPA Method 350.1; total dissolved solids (TDS) by USEPA Method 2540C; and total petroleum hydrocarbon by DEP method Florida Petroleum Residual Organic [FL-PRO]). Sodium and pH will be analyzed from the monitoring well network following installation.

Investigation derived waste (IDW) from field activities included purge and decontamination water which was containerized in one new 55-gallon (gal) closed-top drum. Contents were measured for potential of hydrogen (pH) and analyzed for CVOCs (USEPA Method 8260D), Nitrate (USEPA Method 300.0), total phosphorus (USEPA Method 345.6), and select PFAS (USEPA Method 537). The drum was stored at the Components Cleaning Facility (CCF) on a

NASA-provided covered spill pallet and secured with tie-down straps to be properly disposed of by NASA. Current (2024) DPT and historical DPT groundwater sampling locations are presented on **Figure 3-1**.

3.2 DPT SAMPLING RESULTS

The supplemental DPT groundwater analytical results for Hot Spot 3 CVOCs are summarized in **Table 3-1** and illustrated on **Figure 3-2**. The background parameters from the DPT groundwater sampling are summarized in **Table 3-2**. The field notes are provided in **Appendix F**. The groundwater sampling logs and equipment calibration records are provided in **Appendix G**. Laboratory analytical reports are provided in **Appendix H**. The Remediation Information System Completion Ticket is provided in **Appendix I**.

The June 2024 DPT analytical results are summarized below:

- Shallow Interval (4 to 18 feet bls): Analytical results within the shallow intervals (5 to 9 feet bls, 9 to 13 feet bls, and 14 to 18 feet bls) indicated the HCP extents remain limited to the southwestern area of the MLP structure and are overall consistent with the 2021 groundwater analytical results. The supplemental DPT groundwater analytical results for the shallow intervals are provided on **Figure 3-3**.
- Intermediate Interval (18 to 36 feet bls): Analytical results within the intermediate interval (18 to 36 feet bls) indicated no detections above NADCs, therefore no ISCR treatment is planned for this interval. Detections of VC above the GCTL was present downgradient of the HCP at DPT locations DPT0713 (5.8 µg/L) and DPT0714 (2.0 µg/L), where a monitoring well (MLPV-MW000I, screened 15 to 25 feet bls) is proposed for installation and sampling as part of the LCP monitoring well network. As noted previously, the LCP is defined by concentrations greater than GCTLs and below NADCs. The supplemental DPT groundwater analytical results for the 18 to 36 feet bls interval are shown on **Figure 3-4**.
- Deep Interval (43 to 58 feet bls): Analytical results within the deep intervals (43 to 47 feet bls, 48 to 52 feet bls, and 54 to 58 feet bls) indicated the HCP is overall consistent with the 2021 interpolation. The HCP extents remain isolated to an area southwest of the MLP structure in the 43-to-47-foot bls interval, and evidence of limited plume collapse is observed in the 48 to 52 feet bls interval. Additional NADC exceedances were detected in the 54 to 58 feet bls interval, therefore warranting an additional ISCR treatment interval. Supplemental DPT analytical results in the intervals greater than 42 feet bls are shown in **Figure 3-5**.

3.3 SUMMARY OF CURRENT HCP CONDITIONS

The DPT site evaluation at Hot Spot 3 includes data from both 2021 and 2024. Data indicates that the extents of the NADC plumes vary per CVOC and depth. 2021 CVOC plumes are defined below, followed by the impacts of the 2024 findings.

- Shallow interval (land surface to 28 feet bls):

  - TCE: The NADC plume is approximately 10 feet in diameter from 5 to 9 feet bls and 14 to 18 feet bls. From 9 to 13 feet bls, the NADC plume is larger (approximately 20 feet in diameter) and has the greatest concentration (129,000 µg/L in MLPV-DPT0683), which may be indicative of DNAPL presence. TCE concentrations from 20 to 24 feet bls (maximum of 37 µg/L) are less than its NADC.
  - cDCE: The NADC plume area with depth is similar to TCE with the larger area (approximately 20 feet in diameter) in the 9 to 13 feet bls interval. Although the NADC plume area is less in the 14 to 18 feet bls interval, this plume includes the greatest cDCE concentrations (49,000 and 88,000 µg/L in MLPV-DPT0683 and MLPV-DPT0653, respectively). cDCE concentrations from 20 to 24 feet bls (maximum of 22 µg/L) are less than its NADC.
  - VC: The NADC plume is larger than the other CVOC plumes in the shallow interval and determines the areal extent of the treatment area, which is approximately 20 feet by 30 feet. The maximum VC concentration (21,000 µg/L in MLPV-DPT0653) is in the 14 to 18 feet bls interval. VC concentrations from 20 to 24 feet bls (maximum of 27 µg/L in MLPV-DPT0697) are less than its NADC.

- Intermediate interval (between 28 and 39) contained no CVOC concentrations above NADCs. Since the IM objective is to treat the NADC plume, this was eliminated as a targeted treatment interval.

- Deep interval (greater than 40 feet bls):

  - TCE: The NADC plume is approximately 20 feet in diameter with a maximum concentration (55,000 µg/L in MLPV-DPT0654) in the 43 to 47 feet bls interval. TCE concentrations were less than its NADC from 48 to 58 feet bls except for one location (MLPV-DPT0696) from 54 to 58 feet bls where the TCE concentration was 1,300 µg/L. Note that MLPV-DPT0696 is located approximately 150 feet downgradient of the original source area.
  - cDCE: The NADC plume has multiple footprints from 43 to 58 feet bls. From 43 to 47 feet bls, two areas (20 feet and 10 feet diameter, respectively) are identified near the original source and an area approximately 30 feet south-southwest. The maximum cDCE concentration (14,000 µg/L in MLPV-DPT0654) is near the original source area from 43 to 47 feet bls. From 48 to 52 feet bls, the NADC plume expands downgradient to an area approximately 60 feet long by 40 feet wide. From 54 to 58 feet bls, the cDCE concentrations at MLPV-DPT0668 (750 µg/L) and MLPV-DPT0686 (850 µg/L) define a small NADC plume in the lower permeability silty sand.
  - VC: Similar to cDCE, the VC NADC plume has multiple footprints from 43 to 52 feet bls. From 43 to 47 feet bls, two areas (20 feet and 15 feet diameter, respectively) are identified near the original source and an area approximately 30 feet south-southwest. The maximum VC concentration (17,000 µg/L in MLPV-DPT0654) is near the original source area from 43 to 47 feet bls. From 48 to 52 feet bls, the two NADC plumes expand

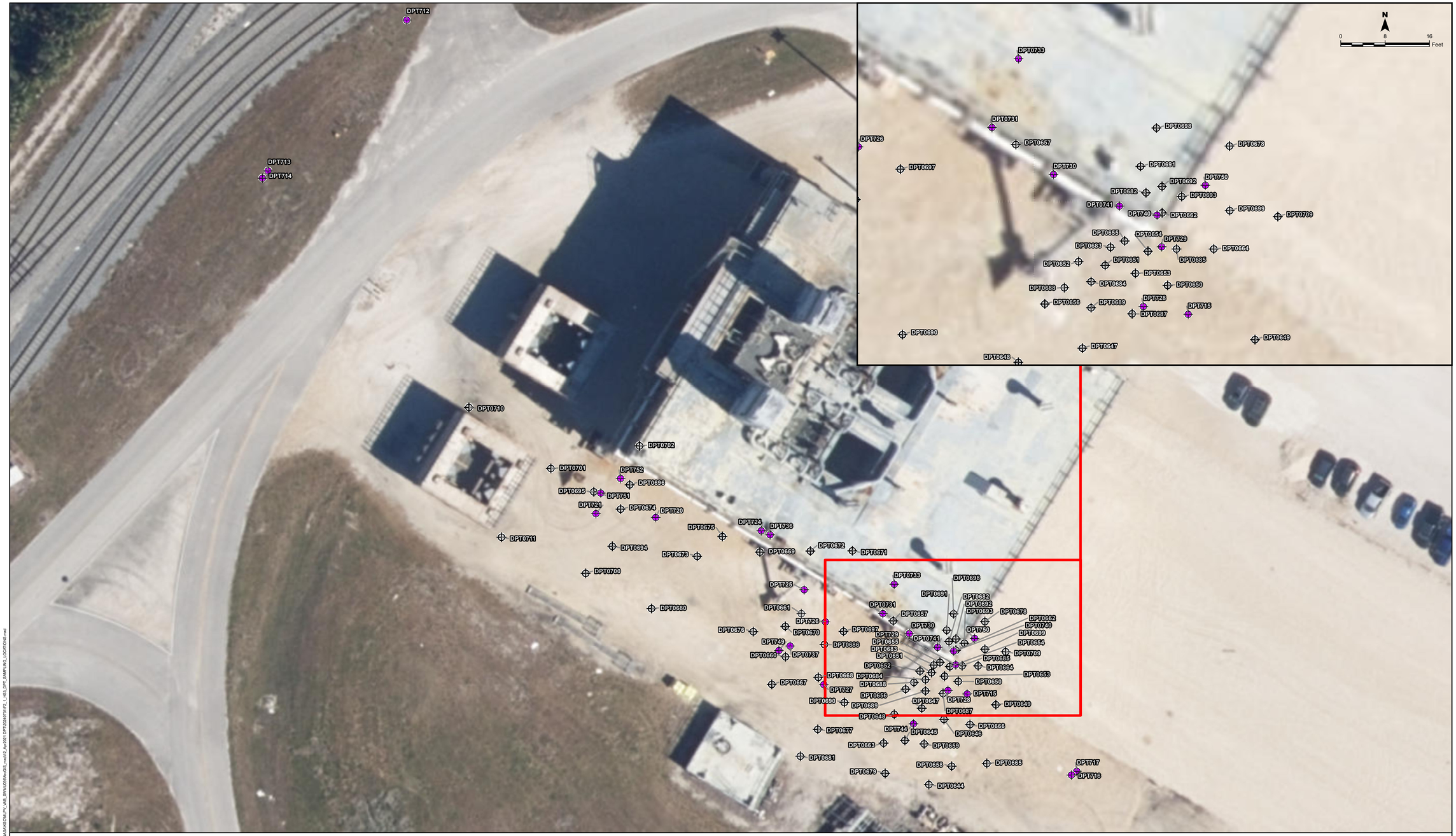
the VC footprint downgradient to areas approximately 75 feet long by 60 feet wide and 90 feet long by 35 feet wide. VC concentrations from 54 to 58 feet bls (maximum of 93 µg/L in MLPV-DPT0668) are less than its NADC.

Results for TOC, sulfate/sulfide and dissolved gases are indicative of geochemical and redox conditions during enhanced reductive dechlorination (ERD) of the CVOCs following the injection of the electron donor in 2017. Sulfate concentrations ranged up to 1,200 mg/L and were generally less in shallow groundwater (above 28 feet bls) and greater in deeper groundwater (below 38 feet bls). The sulfate concentrations are high and can promote biooxidation of the electron donor by sulfate reducing bacteria, which can limit the availability of an electron donor that supports ERD. Reduction of sulfate resulted in detection of sulfide that ranged up to 130 mg/L at the same depth (43 to 47 feet bls) as the greatest sulfate concentrations. Detection and accumulation of sulfide in groundwater may have inhibited ERD and indicates the limited presence of iron in the aquifer that typically removes sulfide from groundwater as an iron sulfide precipitate.

The average TOC concentration of 117 mg/L and a maximum concentration of 2,800 mg/L (MLPV-DPT0658) indicate that electron donor is still present to support ERD following the 2017 injection. However, TOC concentrations were less in shallow groundwater (average of 17 mg/L), where CVOC concentrations are greatest. The greatest TOC concentrations were measured in groundwater from 43 to 47 feet bls, which is also the same depth interval for high sulfate and sulfide.

Detection of ethene in groundwater shows ERD is completely degrading CVOCs. The greatest ethene concentrations (maximum of 12,100 µg/L in MLPV-DPT0659) were measured in samples from 43 to 47 and 48 to 52 feet bls, which is the same interval with greater TOC concentrations and sulfate/sulfide. Methane concentrations are high throughout the vertical interval of groundwater samples and the 2017 treatment interval, with an average of approximately 7 mg/L and a maximum of 16.4 mg/L (MLPV-DPT0651). The high methane concentrations indicate methanogenesis is very active and competing with ERD since methanogens consume the electron donor.

Based on DPT data summarized in **Section 3** from June 2024, the HCP was refined to a treatment area of approximately 4,500 square feet and extends vertically from 4 to 58 feet bls. Temporary ISCR injection point locations were reduced from 16 to 15 locations, with injections to be focused on six intervals: 4 to 14 feet bls, 4 to 18 feet bls, 42 to 52 feet bls, 48 to 52 feet bls, and 54 to 58 feet bls. For historical reference, **Figure 3-6** provides a comprehensive view of groundwater analytical results using abandoned monitoring wells and 2024 DPT results. **Figure 3-7** illustrates 2024 DPT analytical results only.



Legend

- Previous DPT sampling location
- 2024 DPT sampling location

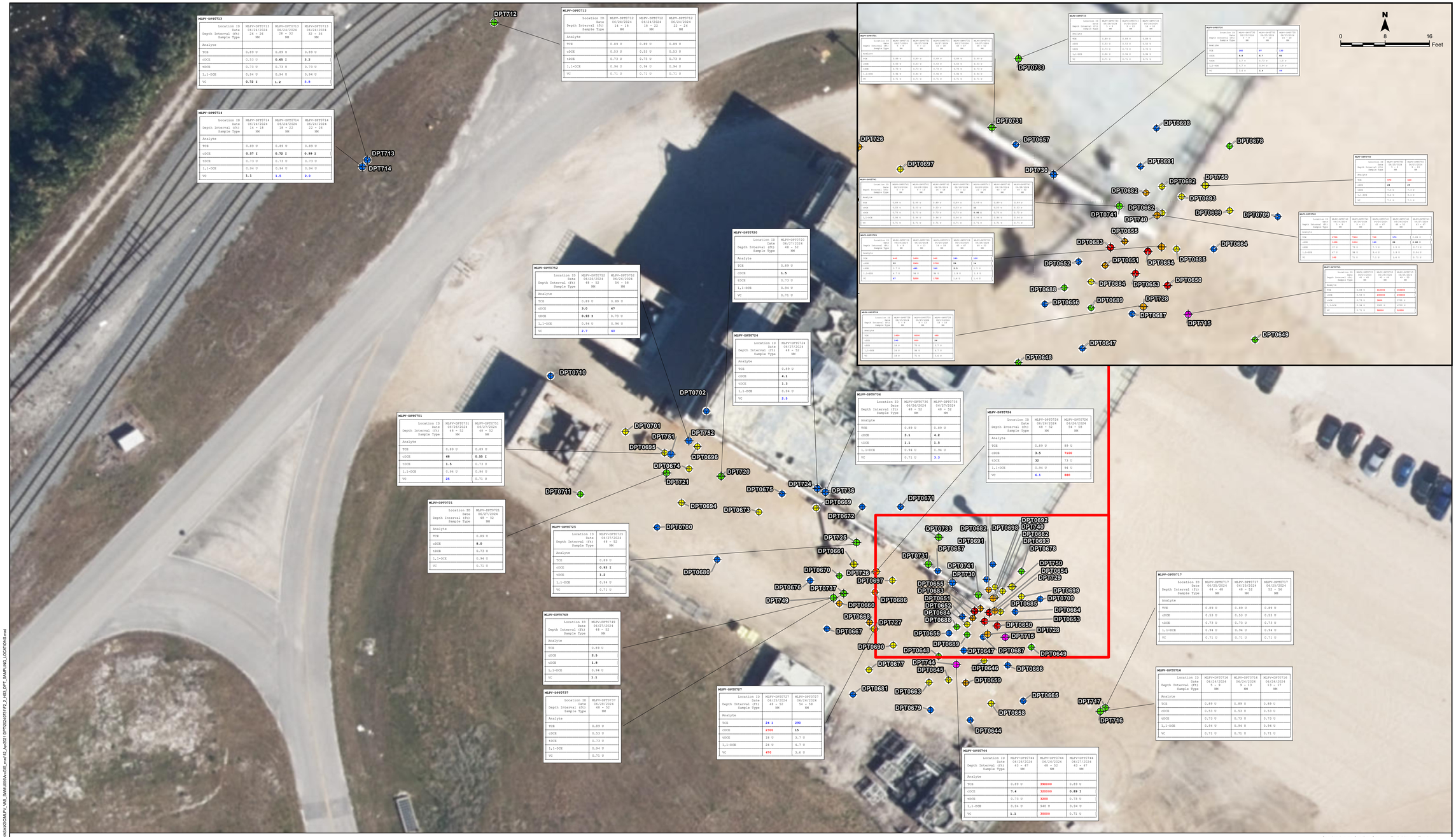
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 3-1
Hot Spot 3 2024 DPT Sampling Locations
June 2024

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/28/2024
Document Path: I:\NAD\TC\VFP\72\Data\Glenjake\Projects\NASA\KSC\MLP_VAB_SWMU056\ArcGIS_mxd\13_Apr2021\DPT\20240731FY2_1_HS3_DPT_SAMPLING_LOCATIONS.mxd

IMWP: Hot Spot 3
MLP/VAB (SWMU 056)
Revision: 1
July 2025



MLPV-DPT0713

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0713 06/24/2024 26 – 26 NM	MLPV-DPT0713 06/24/2024 28 – 32 NM	MLPV-DPT0713 06/24/2024 32 – 36 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	**0.65 I**	**3.2**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**0.72 I**	**1.2**	**5.8**

MLPV-DPT0714

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0714 06/24/2024 14 – 18 NM	MLPV-DPT0714 06/24/2024 18 – 22 NM	MLPV-DPT0714 06/24/2024 22 – 26 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	**0.57 I**	**0.72 I**	**0.99 I**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**1.1**	**1.5**	**2.0**

MLPV-DPT0712

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0712 06/24/2024 14 – 18 NM	MLPV-DPT0712 06/24/2024 18 – 22 NM	MLPV-DPT0712 06/24/2024 22 – 26 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0752

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0752 48 – 52 NM	MLPV-DPT0752 54 – 58 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.0**	**47**
tDCE	**0.93 I**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**2.7**	**40**

MLPV-DPT0720

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0720 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**1.5**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0724

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0724 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**4.1**
tDCE	**1.3**
1,1-DCE	0.94 U
VC	**2.5**

MLPV-DPT0751

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0751 06/26/2024 48 – 52 NM	MLPV-DPT0751 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**68**	**0.55 I**
tDCE	**1.5**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**25**	0.71 U

MLPV-DPT0721

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0721 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**8.0**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0723

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0723 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**0.93 I**
tDCE	**1.2**
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0749

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0749 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**1.1**

MLPV-DPT0737

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0737 06/28/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0727

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0727 06/25/2024 48 – 52 NM	MLPV-DPT0727 06/26/2024 54 – 58 NM
Analyte		
TCE	**24 I**	**290**
cDCE	**2300**	**15**
tDCE	18 U	**3.7 I**
1,1-DCE	24 U	**4.7 I**
VC	**470**	**3.6 I**

MLPV-DPT0736

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0736 06/26/2024 48 – 52 NM	MLPV-DPT0736 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.1**	**4.2**
tDCE	**1.1**	**1.5**
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	**3.3**

MLPV-DPT0726

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0726 06/26/2024 48 – 52 NM	MLPV-DPT0726 06/26/2024 54 – 58 NM
Analyte		
TCE	0.89 U	89 U
cDCE	**3.5**	**7100**
tDCE	**32**	73 U
1,1-DCE	0.94 U	94 U
VC	**6.1**	**980**

MLPV-DPT0744

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0744 06/26/2024 43 – 47 NM	MLPV-DPT0744 06/26/2024 48 – 52 NM	MLPV-DPT0744 06/27/2024 43 – 47 NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	**7.4**	**320000**	**0.89 I**
tDCE	0.73 U	**3200**	0.73 U
1,1-DCE	0.94 U	940 U	0.94 U
VC	**1.1**	**35000**	0.71 U

MLPV-DPT0717

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0717 06/24/2024 44 – 48 NM	MLPV-DPT0717 06/24/2024 48 – 52 NM	MLPV-DPT0717 06/24/2024 52 – 56 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0716

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0716 06/24/2024 9 – 9 NM	MLPV-DPT0716 06/24/2024 9 – 13 NM	MLPV-DPT0716 06/24/2024 13 – 17 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC concentration greater than 1000xNADC
- CVOC concentration greater than 10000xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** = a detected value
- **Blue font** = an exceedance of FDEP GCTLs
- **Red font** = an exceedance of FDEP NADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Management Unit 056)

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	Trans-1,2-Dichloroethene	100	1000
1,1-DCE	1,1-Dichloroethene	7	70
VC	Vinyl Chloride	1	100

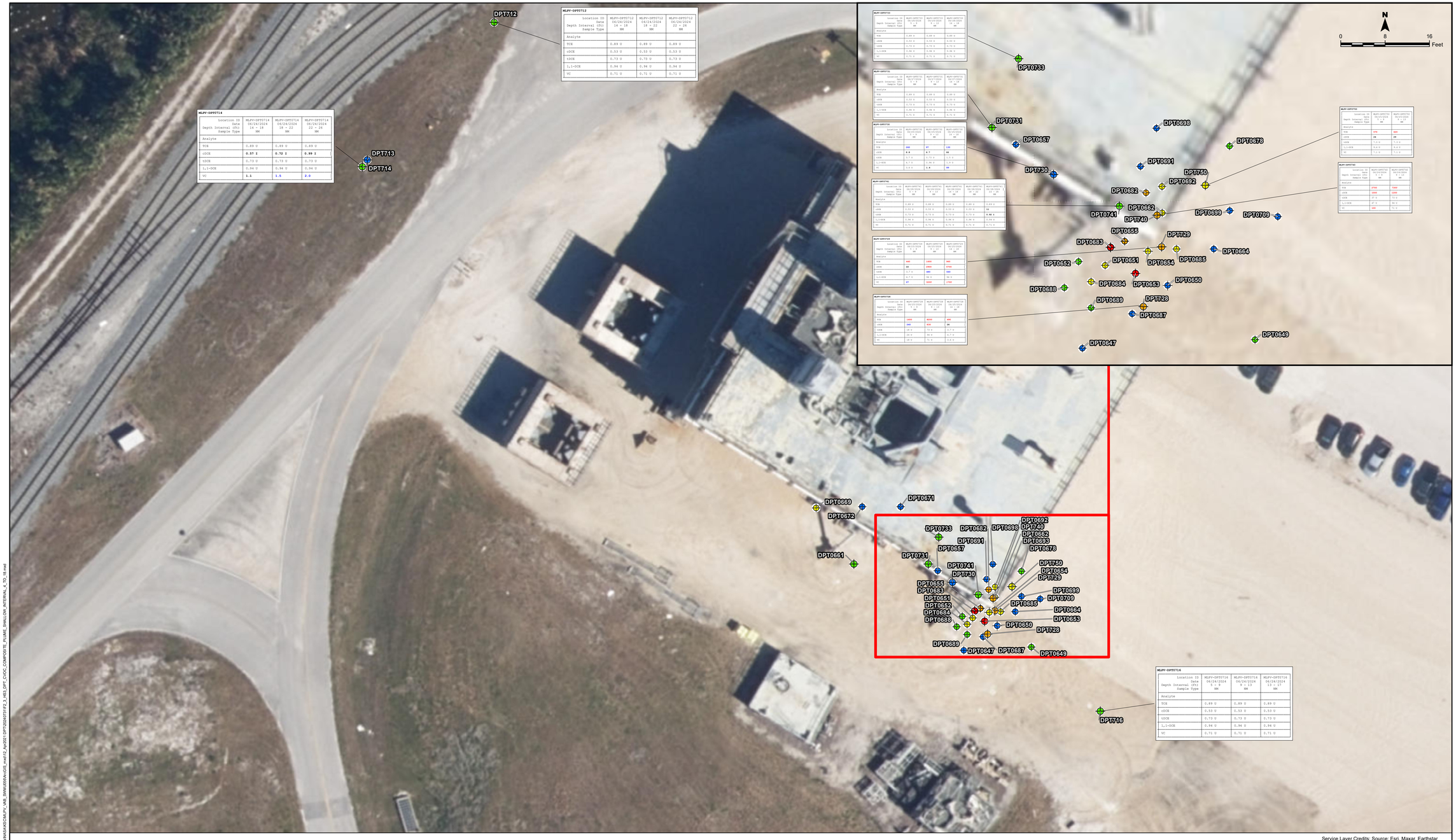
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N
0
15
30
Feet

FIGURE 3-2
Hot Spot 3 2024 DPT Composite CVOC
June 2024

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Exred: 8/29/2024
Document Path: I:\NADTC\VEP\172\Dwg\Dwg\aprx\Projects\NASA\KSC\MLP_VAB_B\WMU056\mxd\GIS_mxd\12_Apr2021 DPT2024DT31\F2_2_HS3_DPT_SAMPLING_LOCATIONS.mxd



MLPV-DPT0712

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0712 06/24/2024 14 - 18 NM	MLPV-DPT0712 06/24/2024 18 - 22 NM	MLPV-DPT0712 06/24/2024 22 - 26 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0714

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0714 06/24/2024 14 - 18 NM	MLPV-DPT0714 06/24/2024 18 - 22 NM	MLPV-DPT0714 06/24/2024 22 - 26 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	**0.57 I**	**0.72 I**	**0.99 I**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**1.1**	**1.5**	**2.0**

MLPV-DPT0716

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0716 06/24/2024 9 - 13 NM	MLPV-DPT0716 06/24/2024 9 - 13 NM	MLPV-DPT0716 06/24/2024 13 - 17 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

Legend

- DPT sampling location

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC concentration greater than 1000xNADC
- CVOC concentration greater than 10000xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** = a detected value
- **Blue font** = an exceedance of FDEP GCTLs
- **Red font** = an exceedance of FDEP NADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Managment Unit 056)

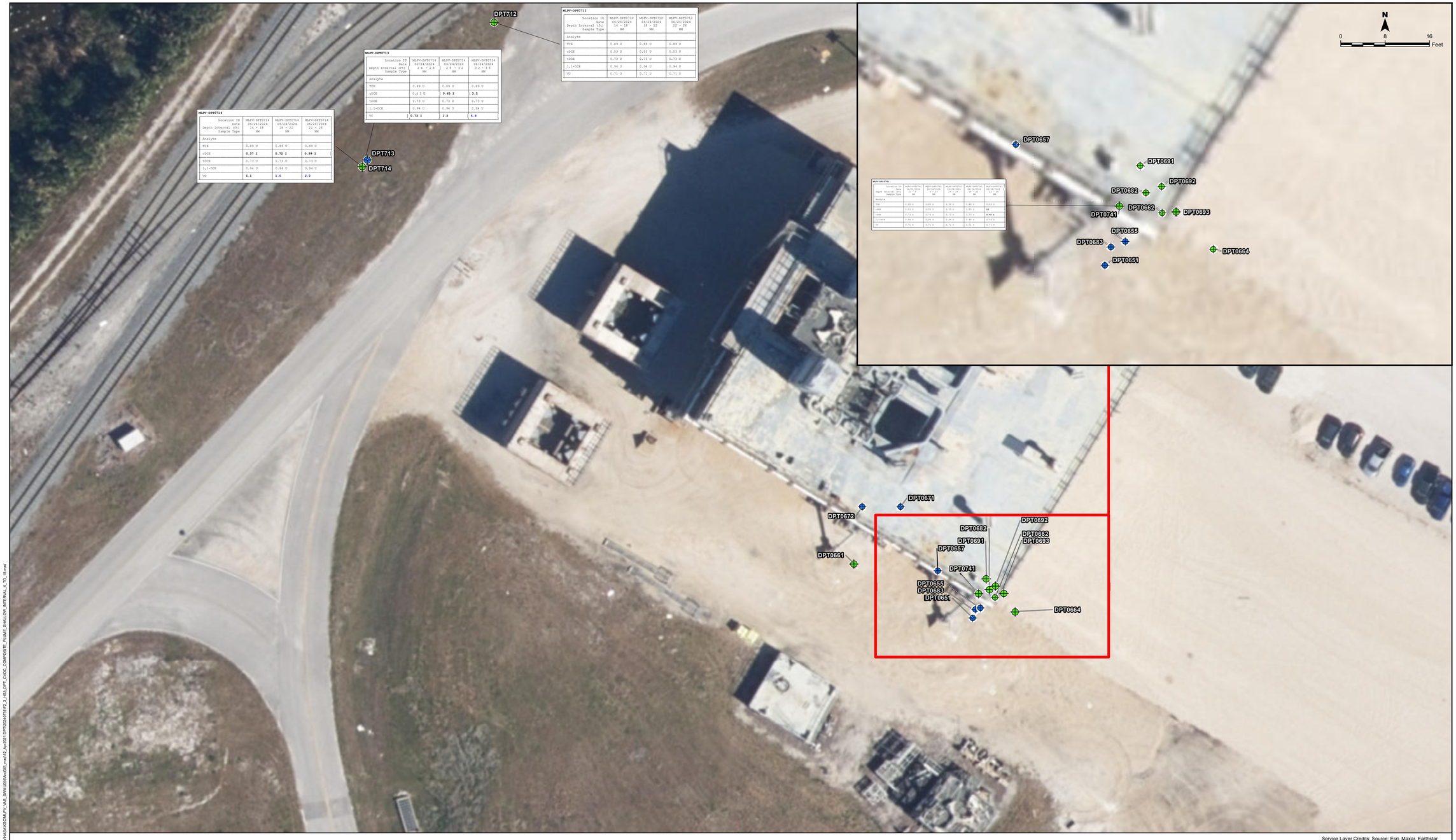
Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	Trans-1,2-Dichloroethene	100	1000
1,1-DCE	1,1-Dichloroethene	7	70
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 3-3
Hot Spot 3 2024 DPT CVOC Results
Shallow Interval: 4 to 18 Feet bls
June 2024

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 6/13/2024
Document Path: \\NASITCWFP12\Data\Gisprojects\Projects\NASA\SCMALPV_VAB_SWMU056\ArcGIS_mxd\12_Apr2021 DPT2006\8773\F2_3_HS3_DPT_CVOC_COMPOSITE_PLUME_SHALLOW_INTERVAL_4_TO_18.mxd



MLPV-DPT0712

Location ID	MLPV-DPT0712	MLPV-DPT0712	MLPV-DPT0712
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0713

Location ID	MLPV-DPT0713	MLPV-DPT0713	MLPV-DPT0713
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	24 - 28	28 - 32	32 - 36
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	**0.65 I**	**3.2**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**0.72 I**	**1.2**	**5.8**

MLPV-DPT0714

Location ID	MLPV-DPT0714	MLPV-DPT0714	MLPV-DPT0714
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	**0.57 I**	**0.72 I**	**0.99 I**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**1.1**	**1.5**	**2.0**

MLPV-DPT741

Location ID	MLPV-DPT741	MLPV-DPT741	MLPV-DPT741	MLPV-DPT741	MLPV-DPT741
Date	06/25/2024	06/25/2024	06/25/2024	06/25/2024	06/25/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26	26 - 30	30 - 34
Sample Type	NM	NM	NM	NM	NM
Analyte					
TCE	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U	**54**
tDCE	0.73 U	0.73 U	0.73 U	0.73 U	**6.6 I**
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U

Legend

- DPT sampling location

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC concentration greater than 1000xNADC
- CVOC concentration greater than 10000xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** = a detected value
- **Blue font** = an exceedance of FDEP GCTLs
- **Red font** = an exceedance of FDEP NADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Managment Unit 056)

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	Trans-1,2-Dichloroethene	100	1000
1,1-DCE	1,1-Dichloroethene	7	70
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 3-4
Hot Spot 3 2024 DPT CVOC Results
Intermediate Interval: 18 to 36 Feet bls
June 2024

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/13/2024
Document Path: \\NASITCWFP12\Data\Gaynes\Projects\NASA\SCMALPV_VAB_SWMU056\ArcGIS_mxd\12_Apr2021\DPT2024\8273\F2_3_HS3_DPT_CVOC_COMPOSITE_PLUME_SHALLOW_INTERVAL_4_TO_18.mxd



MLPV-DPT0751

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0751 06/26/2024 48 – 52 NM	MLPV-DPT0751 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**68**	**0.55 I**
tDCE	**1.5**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**25**	0.71 U

MLPV-DPT0752

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0752 06/26/2024 48 – 52 NM	MLPV-DPT0752 06/26/2024 54 – 58 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.9**	**47**
tDCE	**0.93 I**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**2.7**	**40**

MLPV-DPT0720

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0720 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**1.5**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0724

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0724 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**4.1**
tDCE	**1.3**
1,1-DCE	0.94 U
VC	**2.5**

MLPV-DPT0736

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0736 06/26/2024 48 – 52 NM	MLPV-DPT0736 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.1**	**4.2**
tDCE	**1.1**	**1.5**
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	**3.3**

MLPV-DPT0726

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0726 06/26/2024 48 – 52 NM	MLPV-DPT0726 06/26/2024 54 – 58 NM
Analyte		
TCE	0.89 U	89 U
cDCE	**3.5**	**7100**
tDCE	**32**	73 U
1,1-DCE	0.94 U	94 U
VC	**6.1**	**980**

MLPV-DPT0721

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0721 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**8.0**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0725

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0725 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**0.93 I**
tDCE	**1.2**
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0749

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0749 06/27/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-DPT0737

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0737 06/28/2024 48 – 52 NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0727

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0727 06/25/2024 48 – 52 NM	MLPV-DPT0727 06/26/2024 54 – 58 NM
Analyte		
TCE	**24 I**	**290**
cDCE	**2300**	**15**
tDCE	18 U	**3.7 U**
1,1-DCE	24 U	**4.7 U**
VC	**470**	**3.6 U**

MLPV-DPT0744

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0744 06/26/2024 43 – 47 NM	MLPV-DPT0744 06/26/2024 48 – 52 NM	MLPV-DPT0744 06/27/2024 43 – 47 NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	**7.4**	**320000**	**0.89 I**
tDCE	0.73 U	**3200**	0.73 U
1,1-DCE	0.94 U	940 U	0.94 U
VC	**1.1**	**35000**	0.71 U

MLPV-DPT0717

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0717 06/26/2024 44 – 48 NM	MLPV-DPT0717 06/26/2024 48 – 52 NM	MLPV-DPT0717 06/27/2024 52 – 56 NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0731

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0731 06/26/2024 48 – 52 NM	MLPV-DPT0731 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	0.53 U	0.53 U
tDCE	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	0.71 U

MLPV-DPT0741

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0741 06/26/2024 48 – 52 NM	MLPV-DPT0741 06/27/2024 48 – 52 NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	0.53 U	0.53 U
tDCE	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	0.71 U

MLPV-DPT0729

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0729 06/26/2024 48 – 52 NM	MLPV-DPT0729 06/27/2024 48 – 52 NM
Analyte		
TCE	**180**	**160**
cDCE	**24**	**14**
tDCE	**4.5**	3.7 U
1,1-DCE	1.9 U	1.9 U
VC	1.4 U	1.4 U

MLPV-DPT0740

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0740 06/26/2024 48 – 52 NM	MLPV-DPT0740 06/27/2024 48 – 52 NM	MLPV-DPT0740 06/27/2024 52 – 56 NM
Analyte			
TCE	**720**	**170**	0.89 U
cDCE	**180**	**49**	**0.80 I**
tDCE	5.3 I	1.5 U	0.73 U
1,1-DCE	9.8 I	1.9 U	0.94 U
VC	7.1 U	1.4 U	0.71 U

MLPV-DPT0713

Location ID / Date / Depth Interval (ft) / Sample Type	MLPV-DPT0713 06/25/2024 48 – 52 NM	MLPV-DPT0713 06/25/2024 52 – 56 NM	MLPV-DPT0713 06/26/2024 48 – 52 NM
Analyte			
TCE	0.89 U	**410000**	**290000**
cDCE	0.53 U	**240000**	**200000**
tDCE	0.73 U	**3800**	3700 U
1,1-DCE	0.94 U	1900 U	1900 U
VC	0.71 U	**56000**	**50000**

Legend

- DPT sampling location

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC concentration greater than 1000xNADC
- CVOC concentration greater than 10000xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** = a detected value
- **Blue font** = an exceedance of FDEP GCTLs
- **Red font** = an exceedance of FDEP NADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Management Unit 056)

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	Trans-1,2-Dichloroethene	100	1000
1,1-DCE	1,1-Dichloroethene	7	70
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 3-5
Hot Spot 3 2024 DPT CVOC Results
Deep Interval: Greater than 42 Feet bls
June 2024

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Exported: 9/3/2024
Document Path: I:\NADTC\VIP17\2Draft\Geo\jacks\Projects\NASA\KSC\MLPV_VAB_BWM\d056\ArcGIS_mxd\12_Apr2021 DPT\2024\07\3\F2_4_HS3_DPT_CVOC_COMPOSITE_PLUME_DEEP_INTERVAL_GREATER_THAN_42.mxd

MLPV-GWS713

Location ID	MLPV-GWS713	MLPV-GWS713	MLPV-GWS713
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 16	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	**0.65 I**	**3.2**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**0.72 I**	**1.2**	**5.8**

MLPV-GWS714

Location ID	MLPV-GWS714	MLPV-GWS714	MLPV-GWS714
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 16	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	**0.57 I**	**0.72 I**	**0.99 I**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**1.1**	**1.5**	**2.0**

MLPV-GWS712

Location ID	MLPV-GWS712	MLPV-GWS712	MLPV-GWS712
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 16	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS751

Location ID	MLPV-GWS751	MLPV-GWS751
Date	06/26/2024	06/27/2024
Depth Interval (ft)	48 - 52	48 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**68**	**0.55 I**
tDCE	**1.5**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**25**	0.71 U

MLPV-GWS752

Location ID	MLPV-GWS752	MLPV-GWS752
Date	06/24/2024	06/24/2024
Depth Interval (ft)	14 - 16	16 - 18
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.0**	**47**
tDCE	**0.93 I**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**2.9**	**40**

MLPV-GWS720

Location ID	MLPV-GWS720
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**1.5**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS721

Location ID	MLPV-GWS721
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**8.0**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS724

Location ID	MLPV-GWS724
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**4.1**
tDCE	**1.3**
1,1-DCE	0.94 U
VC	**2.5**

MLPV-IW0075

Location ID	MLPV-IW0075
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**53**
TRANS-1,2-DICHLOROETHENE	**1.2 I**
VINYL CHLORIDE	**110**

MLPV-GWS725

Location ID	MLPV-GWS725
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.93 I**
tDCE	**1.2**
1,1-DCE	0.94 U
VC	0.71 U

MLPV-IW0065

Location ID	MLPV-IW0065
Date	09/04/2018
Screen Interval	45.0 - 55.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**110**
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	**140**

MLPV-IW0066

Location ID	MLPV-IW0066
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**210**
TRANS-1,2-DICHLOROETHENE	**1.4 I**
VINYL CHLORIDE	**210**

MLPV-GWS726

Location ID	MLPV-GWS726	MLPV-GWS726
Date	06/24/2024	06/24/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	0.89 U	89 U
cDCE	**3.5**	**7100**
tDCE	**32**	73 U
1,1-DCE	0.94 U	94 U
VC	**6.1**	**980**

VABRA-MW0004

Location ID	VABRA-MW0004
Date	02/05/2014
Screen Interval	70.0 - 80.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.3 U
CIS-1,2-DICHLOROETHENE	0.33 U
TRANS-1,2-DICHLOROETHENE	0.34 U
VINYL CHLORIDE	0.33 U

MLPV-GWS737

Location ID	MLPV-GWS737
Date	06/28/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS743

Location ID	MLPV-GWS743
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-GWS727

Location ID	MLPV-GWS727	MLPV-GWS727
Date	06/25/2024	06/28/2024
Depth Interval (ft)	54 - 58	58 - 62
Sample Type	NM	NM
Analyte		
TCE	**24 I**	**290**
cDCE	**2300**	**15**
tDCE	18 U	3.7 U
1,1-DCE	24 U	4.7 U
VC	**470**	3.6 U

MLPV-GWS744

Location ID	MLPV-GWS744	MLPV-GWS744	MLPV-GWS744
Date	06/26/2024	06/26/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	43 - 47
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	**7.4**	**320000**	**0.89 I**
tDCE	0.73 U	**9200**	0.73 U
1,1-DCE	0.94 U	941 U	0.94 U
VC	**1.5**	**35000**	0.71 U

MLPV-GWS734

Location ID	MLPV-GWS734	MLPV-GWS734
Date	06/26/2024	06/27/2024
Depth Interval (ft)	48 - 52	48 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.1**	**4.2**
tDCE	**1.1**	**1.5**
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	**3.3**

MLPV-GWS715

Location ID	MLPV-GWS715	MLPV-GWS715	MLPV-GWS715
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**400000**	**300000**
cDCE	0.53 U	**230000**	**240000**
tDCE	0.73 U	**3800**	**3700**
1,1-DCE	0.94 U	1900 U	4700 U
VC	0.71 U	**58000**	**52000**

MLPV-GWS716

Location ID	MLPV-GWS716	MLPV-GWS716	MLPV-GWS716
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS733

Location ID	MLPV-GWS733	MLPV-GWS733	MLPV-GWS733
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS732

Location ID	MLPV-GWS732	MLPV-GWS732	MLPV-GWS732	MLPV-GWS732
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-GWS730

Location ID	MLPV-GWS730	MLPV-GWS730	MLPV-GWS730
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	**280**	**97**	**130**
cDCE	**8.8**	**6.7**	**62**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	**1.4**	**46**

MLPV-GWS735

Location ID	MLPV-GWS735	MLPV-GWS735	MLPV-GWS735	MLPV-GWS735
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-GWS740

Location ID	MLPV-GWS740	MLPV-GWS740	MLPV-GWS740	MLPV-GWS740
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57	58 - 62
Sample Type	NM	NM	NM	NM
Analyte				
TCE	**2700**	**7300**	**520**	**170**
cDCE	**1600**	**1200**	**180**	**28**
tDCE	37 U	74 U	3.8 U	3.7 U
1,1-DCE	47 U	94 U	4.8 U	4.7 U
VC	**390**	71 U	3.6 U	3.6 U

MLPV-GWS741

Location ID	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21	21 - 25	25 - 27	29 - 33
Sample Type	NM	NM	NM	NM	NM	NM	NM
Analyte							
TCE	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U	**31**	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U	**0.90 I**	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-GWS750

Location ID	MLPV-GWS750
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	**970**
cDCE	**24**
tDCE	7.3 U
1,1-DCE	9.4 U
VC	7.1 U

MLPV-GWS738

Location ID	MLPV-GWS738	MLPV-GWS738	MLPV-GWS738	MLPV-GWS738	MLPV-GWS738
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57	58 - 62	63 - 67
Sample Type	NM	NM	NM	NM	NM
Analyte					
TCE	**440**	**1800**	**960**	**180**	**130**
cDCE	**22**	**2900**	**3700**	**29**	**14**
tDCE	3.7 U	**480**	**360**	**2.5**	3.5 U
1,1-DCE	4.7 U	94 U	94 U	4.8 U	4.6 U
VC	**97**	**5200**	**1700**	3.6 U	3.4 U

MLPV-GWS739

Location ID	MLPV-GWS739	MLPV-GWS739	MLPV-GWS739	MLPV-GWS739	MLPV-GWS739
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57	58 - 62	63 - 67
Sample Type	NM	NM	NM	NM	NM
Analyte					
TCE	**1400**	**6400**	**490**		
cDCE	**180**	**820**	**36**		
tDCE	18 U	72 U	3.7 U		
1,1-DCE	24 U	94 U	4.7 U		
VC	18 U	71 U	3.6 U		

MLPV-GWS717

Location ID	MLPV-GWS717	MLPV-GWS717	MLPV-GWS717
Date	06/25/2024	06/25/2024	06/25/2024
Depth Interval (ft)	48 - 52	52 - 54	54 - 58
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-IW0073

Location ID	MLPV-IW0073
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	**1300**
CIS-1,2-DICHLOROETHENE	**58000**
TRANS-1,2-DICHLOROETHENE	390 U
VINYL CHLORIDE	**11000**

VABRA-MW0005

Location ID	VABRA-MW0005
Date	02/05/2014
Screen Interval	65.0 - 80.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.3 U
CIS-1,2-DICHLOROETHENE	**0.74 I**
TRANS-1,2-DICHLOROETHENE	0.34 U
VINYL CHLORIDE	0.33 U

MLPV-IW0068

Location ID	MLPV-IW0068
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	**770**
CIS-1,2-DICHLOROETHENE	**1600**
TRANS-1,2-DICHLOROETHENE	**96**
VINYL CHLORIDE	**1600**

MLPV-IW0067

Location ID	MLPV-IW0067
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**53**
TRANS-1,2-DICHLOROETHENE	**4.6**
VINYL CHLORIDE	**190**

MLPV-IW0071

Location ID	MLPV-IW0071
Date	02/19/2019
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	**140**
CIS-1,2-DICHLOROETHENE	**250**
TRANS-1,2-DICHLOROETHENE	**130**
VINYL CHLORIDE	**1400**

VABRA-MW0003

Location ID	VABRA-MW0003
Date	02/05/2014
Screen Interval	70.0 - 80.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.3 U
CIS-1,2-DICHLOROETHENE	0.33 U
TRANS-1,2-DICHLOROETHENE	0.34 U
VINYL CHLORIDE	0.33 U

VABRA-MW0002

Location ID	VABRA-MW0002
Date	02/07/2014
Screen Interval	65.0 - 80.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**1.2**
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	**0.50 I**

MLPV-IW0069

Location ID	MLPV-IW0069
Date	09/04/2018
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	**1.9 I**
CIS-1,2-DICHLOROETHENE	**150**
TRANS-1,2-DICHLOROETHENE	**45**
VINYL CHLORIDE	**580**

MLPV-IW0070

Location ID	MLPV-IW0070
Date	09/07/2018
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-GWS719

Location ID	MLPV-GWS719
Date	06/25/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS722

Location ID	MLPV-GWS722
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.55 I**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS723

Location ID	MLPV-GWS723
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.53 I**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-IW0074

Location ID	MLPV-IW0074
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0072

Location ID	MLPV-IW0072
Date	09/04/2018
Screen Interval	45.0 - 50.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0076

Location ID	MLPV-IW0076
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0077

Location ID	MLPV-IW0077
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0078

Location ID	MLPV-IW0078
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0079

Location ID	MLPV-IW0079
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0080

Location ID	MLPV-IW0080
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	0.32 U
TRANS-1,2-DICHLOROETHENE	0.39 U
VINYL CHLORIDE	0.26 U

MLPV-IW0081

Location ID	MLPV-IW0081
Date	02/19/2019
Screen Interval	58.0 - 63.0
Sample Type	NM
Analyte	
TRICHLOROETHENE	0.41 U
CIS-1,2-DICHLOROETHENE	**84.2**
TRANS-1,2-DICHLOROETHENE	**2.6**
VINYL CHLORIDE	**15.9**

MLPV-GWS718

Location ID	MLPV-GWS718
Date	06/25/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS745

Location ID	MLPV-GWS745
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-GWS746

Location ID	MLPV-GWS746
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.55 I**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS747

Location ID	MLPV-GWS747
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.53 I**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-GWS749

Location ID	MLPV-GWS749
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-GWS750

Location ID	MLPV-GWS750
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	**970**
cDCE	**24**
tDCE	7.3 U
1,1-DCE	9.4 U
VC	7.1 U

MLPV-GWS717

Location ID	MLPV-GWS717	MLPV-GWS717	MLPV-GWS717
Date	06/25/2024	06/25/2024	06/25/2024
Depth Interval (ft)	48 - 52	52 - 54	54 - 58
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS744

Location ID	MLPV-GWS744	MLPV-GWS744	MLPV-GWS744
Date	06/26/2024	06/26/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	43 - 47
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	**7.4**	**320000**	**0.89 I**
tDCE	0.73 U	**9200**	0.73 U
1,1-DCE	0.94 U	941 U	0.94 U
VC	**1.5**	**35000**	0.71 U

MLPV-GWS734

Location ID	MLPV-GWS734	MLPV-GWS734
Date	06/26/2024	06/27/2024
Depth Interval (ft)	48 - 52	48 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.1**	**4.2**
tDCE	**1.1**	**1.5**
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	**3.3**

MLPV-GWS715

Location ID	MLPV-GWS715	MLPV-GWS715	MLPV-GWS715
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**400000**	**300000**
cDCE	0.53 U	**230000**	**240000**
tDCE	0.73 U	**3800**	**3700**
1,1-DCE	0.94 U	1900 U	4700 U
VC	0.71 U	**58000**	**52000**

MLPV-GWS716

Location ID	MLPV-GWS716	MLPV-GWS716	MLPV-GWS716
Date	06/24/2024	06/24/2024	06/24/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS733

Location ID	MLPV-GWS733	MLPV-GWS733	MLPV-GWS733
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-GWS732

Location ID	MLPV-GWS732	MLPV-GWS732	MLPV-GWS732	MLPV-GWS732
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-GWS730

Location ID	MLPV-GWS730	MLPV-GWS730	MLPV-GWS730
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	**280**	**97**	**130**
cDCE	**8.8**	**6.7**	**62**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	**1.4**	**46**

MLPV-GWS735

Location ID	MLPV-GWS735	MLPV-GWS735	MLPV-GWS735	MLPV-GWS735
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-GWS740

Location ID	MLPV-GWS740	MLPV-GWS740	MLPV-GWS740	MLPV-GWS740
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	53 - 57	58 - 62
Sample Type	NM	NM	NM	NM
Analyte				
TCE	**2700**	**7300**	**520**	**170**
cDCE	**1600**	**1200**	**180**	**28**
tDCE	37 U	74 U	3.8 U	3.7 U
1,1-DCE	47 U	94 U	4.8 U	4.7 U
VC	**390**	71 U	3.6 U	3.6 U

MLPV-GWS741

Location ID	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741	MLPV-GWS741
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	5 - 9	9 - 13	13 - 17	17 - 21	21 - 25	25 - 27	29 - 33
Sample Type	NM	NM	NM	NM	NM	NM	NM
Analyte							
TCE	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U	**31**	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U	**0.

MLPV-DPT0712

Location ID	MLPV-DPT0712	MLPV-DPT0712	MLPV-DPT0712
Date	06/26/2024	06/26/2024	06/26/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0713

Location ID	MLPV-DPT0713	MLPV-DPT0713	MLPV-DPT0713
Date	06/26/2024	06/26/2024	06/26/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	**0.65 I**	**3.2**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	**1.2**	**5.8**

MLPV-DPT0714

Location ID	MLPV-DPT0714	MLPV-DPT0714	MLPV-DPT0714
Date	06/26/2024	06/26/2024	06/26/2024
Depth Interval (ft)	14 - 18	18 - 22	22 - 26
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	**0.57 I**	**0.72 I**	**0.99 I**
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	**1.1**	**1.5**	**2.0**

MLPV-DPT0751

Location ID	MLPV-DPT0751	MLPV-DPT0751
Date	06/26/2024	06/27/2024
Depth Interval (ft)	48 - 52	48 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**68**	**0.55 I**
tDCE	**1.5**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**25**	0.71 U

MLPV-DPT0752

Location ID	MLPV-DPT0752	MLPV-DPT0752
Date	06/26/2024	06/26/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.0**	**47**
tDCE	**0.93 I**	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	**2.7**	**40**

MLPV-DPT0720

Location ID	MLPV-DPT0720
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**1.5**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0721

Location ID	MLPV-DPT0721
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**8.0**
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0724

Location ID	MLPV-DPT0724
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**4.1**
tDCE	**1.3**
1,1-DCE	0.94 U
VC	**2.5**

MLPV-DPT0725

Location ID	MLPV-DPT0725
Date	06/27/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**0.93 I**
tDCE	**1.2**
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0734

Location ID	MLPV-DPT0734	MLPV-DPT0734
Date	06/26/2024	06/27/2024
Depth Interval (ft)	48 - 52	48 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.1**	**4.2**
tDCE	**1.5**	**1.5**
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	**3.3**

MLPV-DPT0724

Location ID	MLPV-DPT0724	MLPV-DPT0724
Date	06/26/2024	06/26/2024
Depth Interval (ft)	43 - 47	47 - 52
Sample Type	NM	NM
Analyte		
TCE	0.89 U	0.89 U
cDCE	**3.4**	**2.2**
tDCE	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U
VC	0.71 U	0.71 U

MLPV-DPT0737

Location ID	MLPV-DPT0737
Date	06/26/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0749

Location ID	MLPV-DPT0749
Date	06/26/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-DPT0727

Location ID	MLPV-DPT0727	MLPV-DPT0727
Date	06/26/2024	06/26/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	**24 I**	**290**
cDCE	**2300**	**15**
tDCE	18 U	3.7 U
1,1-DCE	24 U	4.7 U
VC	**470**	3.6 U

MLPV-DPT0744

Location ID	MLPV-DPT0744	MLPV-DPT0744	MLPV-DPT0744
Date	06/26/2024	06/26/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	43 - 47
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	0.53 U	**92000**	**0.89 I**
tDCE	0.73 U	**3200**	0.73 U
1,1-DCE	0.94 U	940 U	0.94 U
VC	**4.1**	**8860**	0.71 U

MLPV-DPT0714

Location ID	MLPV-DPT0714	MLPV-DPT0714	MLPV-DPT0714
Date	06/26/2024	06/26/2024	06/26/2024
Depth Interval (ft)	0 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0717

Location ID	MLPV-DPT0717	MLPV-DPT0717	MLPV-DPT0717
Date	06/25/2024	06/25/2024	06/25/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0726

Location ID	MLPV-DPT0726	MLPV-DPT0726
Date	06/26/2024	06/26/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	0.89 U	89 U
cDCE	**3.5**	**7100**
tDCE	**30**	73 U
1,1-DCE	0.94 U	94 U
VC	**4.1**	**880**

MLPV-DPT0733

Location ID	MLPV-DPT0733	MLPV-DPT0733	MLPV-DPT0733	MLPV-DPT0733
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-DPT0731

Location ID	MLPV-DPT0731	MLPV-DPT0731	MLPV-DPT0731	MLPV-DPT0731
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16
Sample Type	NM	NM	NM	NM
Analyte				
TCE	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-DPT0732

Location ID	MLPV-DPT0732	MLPV-DPT0732	MLPV-DPT0732	MLPV-DPT0732
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16
Sample Type	NM	NM	NM	NM
Analyte				
TCE	**280**	**97**	**130**	
cDCE	**8.8**	**4.7**	**66**	
tDCE	0.73 U	0.73 U	0.73 U	
1,1-DCE	0.94 U	0.94 U	0.94 U	
VC	0.71 U	**1.4**	**46**	

MLPV-DPT0740

Location ID	MLPV-DPT0740	MLPV-DPT0740	MLPV-DPT0740	MLPV-DPT0740
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16
Sample Type	NM	NM	NM	NM
Analyte				
TCE	**2700**	**7300**	**520**	**170**
cDCE	**1600**	**1200**	**180**	**26**
tDCE	37 U	74 U	7.3 U	3.7 U
1,1-DCE	47 U	94 U	9.4 U	4.7 U
VC	**190**	71 U	7.1 U	3.6 U

MLPV-DPT0741

Location ID	MLPV-DPT0741	MLPV-DPT0741	MLPV-DPT0741	MLPV-DPT0741	MLPV-DPT0741	MLPV-DPT0741	MLPV-DPT0741
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24	24 - 28
Sample Type	NM	NM	NM	NM	NM	NM	NM
Analyte							
TCE	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U	**31**	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	**0.90 I**	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-DPT0742

Location ID	MLPV-DPT0742	MLPV-DPT0742	MLPV-DPT0742	MLPV-DPT0742	MLPV-DPT0742	MLPV-DPT0742	MLPV-DPT0742
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24	24 - 28
Sample Type	NM	NM	NM	NM	NM	NM	NM
Analyte							
TCE	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U

MLPV-DPT0729

Location ID	MLPV-DPT0729	MLPV-DPT0729	MLPV-DPT0729	MLPV-DPT0729	MLPV-DPT0729	MLPV-DPT0729
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
Sample Type	NM	NM	NM	NM	NM	NM
Analyte						
TCE	**440**	**1400**	**980**	**180**	**130**	
cDCE	**25**	**2800**	**5700**	**29**	**14**	
tDCE	3.7 U	**480**	**580**	**2.5**	1.5 U	
1,1-DCE	4.7 U	94 U	94 U	1.9 U	1.9 U	
VC	**97**	**5200**	**1700**	1.4 U	1.4 U	

MLPV-DPT0728

Location ID	MLPV-DPT0728	MLPV-DPT0728	MLPV-DPT0728	MLPV-DPT0728	MLPV-DPT0728
Date	06/27/2024	06/27/2024	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20
Sample Type	NM	NM	NM	NM	NM
Analyte					
TCE	**1400**	**6400**	**490**		
cDCE	**380**	**830**	**26**		
tDCE	18 U	73 U	3.7 U		
1,1-DCE	24 U	94 U	4.7 U		
VC	18 U	71 U	3.6 U		

MLPV-DPT0713

Location ID	MLPV-DPT0713	MLPV-DPT0713	MLPV-DPT0713
Date	06/27/2024	06/27/2024	06/27/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**410000**	**89000**
cDCE	0.53 U	**230000**	**24000**
tDCE	0.73 U	**3800**	730 U
1,1-DCE	0.94 U	1900 U	470 U
VC	0.71 U	**58000**	**5200**

MLPV-DPT0704

Location ID	MLPV-DPT0704	MLPV-DPT0704
Date	06/26/2024	06/26/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	**3.5**	**7100**
cDCE	**30**	73 U
tDCE	0.94 U	94 U
1,1-DCE	**4.1**	**880**
VC		

MLPV-DPT0737

Location ID	MLPV-DPT0737
Date	06/26/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	0.53 U
tDCE	0.73 U
1,1-DCE	0.94 U
VC	0.71 U

MLPV-DPT0749

Location ID	MLPV-DPT0749
Date	06/26/2024
Depth Interval (ft)	48 - 52
Sample Type	NM
Analyte	
TCE	0.89 U
cDCE	**2.5**
tDCE	**1.8**
1,1-DCE	0.94 U
VC	**3.1**

MLPV-DPT0727

Location ID	MLPV-DPT0727	MLPV-DPT0727
Date	06/26/2024	06/26/2024
Depth Interval (ft)	48 - 52	54 - 58
Sample Type	NM	NM
Analyte		
TCE	**24 I**	**290**
cDCE	**2300**	**15**
tDCE	18 U	3.7 U
1,1-DCE	24 U	4.7 U
VC	**470**	3.6 U

MLPV-DPT0744

Location ID	MLPV-DPT0744	MLPV-DPT0744	MLPV-DPT0744
Date	06/26/2024	06/26/2024	06/27/2024
Depth Interval (ft)	43 - 47	48 - 52	43 - 47
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	**390000**	0.89 U
cDCE	**7.4**	**92000**	**0.89 I**
tDCE	0.73 U	**3200**	0.73 U
1,1-DCE	0.94 U	940 U	0.94 U
VC	**4.1**	**8860**	0.71 U

MLPV-DPT0714

Location ID	MLPV-DPT0714	MLPV-DPT0714	MLPV-DPT0714
Date	06/26/2024	06/26/2024	06/26/2024
Depth Interval (ft)	0 - 9	9 - 13	13 - 17
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

MLPV-DPT0717

Location ID	MLPV-DPT0717	MLPV-DPT0717	MLPV-DPT0717
Date	06/25/2024	06/25/2024	06/25/2024
Depth Interval (ft)	0 - 4	4 - 8	8 - 12
Sample Type	NM	NM	NM
Analyte			
TCE	0.89 U	0.89 U	0.89 U
cDCE	0.53 U	0.53 U	0.53 U
tDCE	0.73 U	0.73 U	0.73 U
1,1-DCE	0.94 U	0.94 U	0.94 U
VC	0.71 U	0.71 U	0.71 U

DPT712 DPT713 DPT714 DPT733 DPT731 DPT732 DPT730 DPT726 DPT0731 DPT730 DPT0741 DPT740 DPT729 DPT728 DPT713 DPT751 DPT721 DPT752 DPT720 DPT724 DPT736 DPT725 DPT0733 DPT0731 DPT726 DPT730 DPT0741 DPT740 DPT729 DPT728 DPT715 DPT0737 DPT749 DPT727 DPT744 DPT717 DPT718

Legend

Direct Push Technology (DPT) Sampling Locations

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC concentration greater than 1000xNADC
- CVOC concentration greater than 10000xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** = a detected value
- **Blue font** = an exceedance of FDEP GCTLs
- **Red font** = an exceedance of FDEP NADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Management Unit 056)
- Low Concentration Plume Monitoring Well
- Performance Monitoring Well

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	Trans-1,2-Dichloroethene	100	1000
1,1-DCE	1,1-Dichloroethene	7	70
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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0 10 20 Feet

FIGURE 3-7
Hot Spot 3
2024 DPT Analytical Results

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Table 3-1
2024 DPT Groundwater CVOC Analytical Results
Mobile Launch Platform (MLP) Rehabilitation Sites/Vehicle Assembly Building (VAB) Area, SWMU 056: Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	70	100	7	1
State of Florida NADCs (µg/L)			300	700	1000	70	100
Location ID	Sample Date	Sample Depth (feet bls)					
MLPV-DPT0712	6/24/2024	14 to 18	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		18 to 22	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		22 to 26	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0713	6/24/2024	24 to 28	0.89 U	0.53 U	0.73 U	0.94 U	**0.72 I**
		28 to 32	0.89 U	**0.65 I**	0.73 U	0.94 U	**1.2**
		32 to 36	0.89 U	**3.2**	0.73 U	0.94 U	**5.8**
MLPV-DPT0714	6/24/2024	14 to 18	0.89 U	**0.57 I**	0.73 U	0.94 U	**1.1**
		18 to 22	0.89 U	**0.72 I**	0.73 U	0.94 U	**1.5**
		22 to 26	0.89 U	**0.99 I**	0.73 U	0.94 U	**2.0**
MLPV-DPT0715	6/25/2024	41 to 45	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		45 to 49	**610000**	**230000**	**3800**	**1900 U**	**58000**
		49 to 53	**350000**	**290000**	**3700 U**	**4700 U**	**52000**
MLPV-DPT0716	6/24/2024	5 to 9	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		9 to 13	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		13 to 17	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0717	6/25/2024	44 to 48	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		48 to 52	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		52 to 56	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0720	6/27/2024	48 to 52	0.89 U	**1.5**	0.73 U	0.94 U	0.71 U
MLPV-DPT0721	6/27/2024	48 to 52	0.89 U	**8.0**	0.73 U	0.94 U	0.71 U
MLPV-DPT0724	6/27/2024	48 to 52	0.89 U	**4.1**	**1.3**	0.94 U	**2.5**
MLPV-DPT0725	6/27/2024	48 to 52	0.89 U	**0.93 I**	**1.2**	0.94 U	0.71 U
MLPV-DPT0726	6/26/2024	48 to 52	0.89 U	**3.5**	**32**	0.94 U	**6.1**
		54 to 58	**89 U**	**7100**	**73**	**94 U**	**880**
MLPV-DPT0727	6/25/2024	48 to 52	**24 I**	**2300**	18 U	**24 U**	**470**
	6/26/2024	54 to 58	**290**	**15**	3.7 U	4.7 U	**3.6 U**
MLPV-DPT0728	6/25/2024	5 to 9	**1600**	**240**	18 U	**24 U**	**18 U**
		9 to 13	**8200**	**830**	**73 U**	**94 U**	**71 U**
		14 to 18	**490**	**26**	3.7 U	4.7 U	3.6 U
MLPV-DPT0729	6/25/2024	5 to 9	**440**	**22**	3.7 U	4.7 U	**67**
		9 to 13	**1600**	**2900**	**480**	**94 U**	**5200**
		14 to 18	**960**	**5700**	**560**	**94 U**	**1700**
		43 to 47	**180**	**29**	**2.5**	1.9 U	1.4 U
		48 to 52	**150**	**14**	1.5 U	1.9 U	1.4 U
MLPV-DPT0730	6/25/2024	5 to 9	**260**	**8.8**	3.7 U	4.7 U	**3.6 U**
		9 to 13	**97**	**6.7**	0.73 U	0.94 U	**1.4**
		14 to 18	**130**	**66**	1.5 U	1.9 U	**89**
MLPV-DPT0731	6/27/2024	5 to 9	0.89 U	**0.89 I**	0.73 U	0.94 U	0.71 U
		9 to 13	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		14 to 18	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		43 to 47	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		48 to 52	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0733	6/28/2024	5 to 9	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		9 to 13	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		14 to 18	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0736	6/26/2024	48 to 52	0.89 U	**3.1**	**1.1**	0.94 U	0.71 U
	6/27/2024[a]	48 to 52	0.89 U	**4.2**	**1.5**	0.94 U	**3.3**
MLPV-DPT0737	6/28/2024	48 to 52	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0740	6/26/2024	5 to 9	**2700**	**1000**	37 U	**47 U**	**100**
		9 to 13	**7300**	**1200**	73 U	**94 U**	**71 U**
		43 to 47	**720**	**180**	7.3 U	**9.4 U**	**7.1 U**
	6/27/2024[a]	43 to 47	0.89 U	0.80 I	0.73 U	0.94 U	0.71 U
	6/26/2024	48 to 52	**170**	**28**	1.5 U	1.9 U	1.4 U

Table 3-1
2024 DPT Groundwater CVOC Analytical Results
Mobile Launch Platform (MLP) Rehabilitation Sites/Vehicle Assembly Building (VAB) Area, SWMU 056: Hot Spot 3

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			**3**	**70**	**100**	**7**	**1**
State of Florida NADCs (µg/L)			**300**	**700**	**1000**	**70**	**100**
Location ID	**Sample Date**	**Sample Depth (feet bls)**					
MLPV-DPT0741	6/28/2024	5 to 9	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		9 to 13	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		14 to 18	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		18 to 22	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		22 to 26	0.89 U	**11**	**0.92 I**	0.94 U	0.71 U
		43 to 47	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
		48 to 52	0.89 U	0.53 U	0.73 U	0.94 U	0.71 U
MLPV-DPT0744	6/26/2024	43 to 47	0.89 U	**7.4**	0.73 U	0.94 U	**1.1**
	6/27/2024[a]	43 to 47	0.89 U	0.89 I	0.73 U	0.94 U	0.71 U
	6/26/2024	48 to 52	**390000**	**320000**	**3200**	**940 U**	**35000**
MLPV-DPT0749	6/27/2024	48 to 52	0.89 U	**2.5**	**1.8**	0.94 U	**1.1**
MLPV-DPT0750	6/25/2024	5 to 9	**570**	**24**	7.3 U	9.4 U	**7.1 U**
		9 to 13	**620**	**29**	7.3 U	9.4 U	**7.1 U**
MLPV-DPT0751	6/26/2024	48 to 52	0.89U	**68**	**1.5**	0.94 U	**25**
	6/27/2024[a]	48 to 52	0.89 U	0.55 I	0.73 U	0.94 U	0.71 U
MLPV-DPT0752	6/26/2024	48 to 52	0.89 U	**3.0**	**0.93 I**	0.94 U	**2.7**
		54 to 58	0.89 U	**47**	0.73 U	0.94 U	**40**

Notes:

[a] Resampled on 6/27/2028 from boreholes adjacent to DPT0736, DPT0740, DPT0744, DPT0751 to collect VOC analysis not previously collected; however, the laboratory was able to perform VOC analysis using unused sample volume from the original sample set. This resulted in two data sets. The highest concentration of the two results was used for evaluations.

µg/L = Micrograms per liter
CVOC = Chlorinated volatile organic compound
DPT = Direct Push Technology
feet bls = feet below land surface
GCTL = Groundwater Cleanup Target Level, Chapter 62-777 Florida Administrative Code, Table 1 (2005)
I = The analytical result was greater than or equal to the method detection limit, but less than the practical quantitation limit
NADCs = Natural Attenuation Default Concentration, Chapter 62-777 Florida Administrative Code, Table V (April 2005)
SWMU = Solid Waste Management Unit
U = The analyte was not detected
Bolded results indicate the presence of an analyte at the specified concentration
Red font indicates an exceedance of DEP GCTLs or Site Approved Target Levels for UIC Sampling
Yellow Highlighted cell indicates an exceedance of DEP NADCs

IMWP: Hot Spot 3
MLP/VAB (SWMU 056)
Revision: 1
July 2025

Table 3-2

Hot Spot 3 DPT Groundwater Analytical Results: Dissolved Gases, Sulfate, Sulfide, andTotal Organic Carbon
Mobile Launch Platform (MLP) Rehabilitation Sites/Vehicle Assembly Building (VAB) Area, SWMU 056

Category			RSK 175 Dissolved Gases			FL-PRO	EPA 300	6010 D	General Chemistry			
Analyte			Methane	Ethane	Ethene	TRPH	Sulfate	Iron	TDS	Sulfide	TOC	Amoonia
State of Florida GCTLs (µg/L)			-	-	-	5000	250000	300	500000	-	-	2800
State of Florida NADCs (µg/L)			-	-	-	50000	2500000	3000	5000000	-	-	28000
Location ID	Sample Date	Sample Depth (feet bls)										
MLPV-DPT0736	6/26/2024	48 to 52	**6400**	**2**	**0.92 IV**	340 U	**1500000**	**11000**	**20000000**	**20000**	20000 U	**3300**
MLPV-DPT0737	6/28/2024	48 to 52	**5600**	**18**	0.55 U	340 U	**460000**	**48000**	**9800000**	**39000**	**15000 I**	**2700**
MLPV-DPT0740	6/26/2024	43 to 47	**4300**	**4.5**	**1.5 V**	340 U	**120000**	**72000**	**1700000**	**10000**	20000 U	**1400**
MLPV-DPT0741	6/28/2024	9 to 13	**65**	**0.62 I**	0.55 U	340 U	**1900**	**75000**	**300000**	800 U	**5400**	**620**
MLPV-DPT0744	6/26/2024	43 to 47	**4900**	**2.0**	**1.5 V**	340 U	**690000**	**36000**	**13000000**	**76000**	20000 U	**150**
MLPV-DPT0751	6/26/2024	43 to 47	**690**	**5.2**	**11 V**	340 U	**510000**	**18000**	**13000000**	**3100**	20000 U	**4300**

Notes:
µg/L = Micrograms per liter
DPT = Direct Push Technology
feet bls = feet below land surface
GCTL = Groundwater Cleanup Target Level, Chapter 62-777 Florida Administrative Code, Table 1 (2005)
I = The analytical result was greater than or equal to the method detection limit, but less than the practical quantitation limit
NADCs = Natural Attenuation Default Concentration, Chapter 62-777 Florida Administrative Code, Table V (April 2005)
SWMU = Solid Waste Management Unit
U = The analyte was not detected
V = The analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.
Bolded results indicate the presence of an analyte at the specified concentration
Red font indicates an exceedance of FDEP GCTLs or Site Approved Target Levels for UIC Sampling
Yellow Highlighted **cell** indicates an exceedance of FDEP NADCs

4. PERMITTING REQUIREMENTS AND SITE PREPARATION

The following sections identify the necessary permitting requirements and site preparations for implementation of ISCR IM at Hot Spot 3.

4.1 PERMITTING

IM activities at Hot Spot 3 will be conducted under NASA's RCRA permit for KSC. Site-specific permits will be required for the implementation of the IM utilizing the selected ISCR technology. A general listing and description of applicable site-specific permitting activities follows:

- Completion and submittal of a Site Plan and adherence to any actions required by the comments attached to the approved Site Plan;
- Completion and submittal of an Environmental Checklist and adherence to any actions required by the Record of Environmental Consideration following the submittal of the Environmental Checklist;
- Completion and submittal of dig permits for all ground penetrating work and adherence to any comments attached to the approved dig permit;
- Completion of utility locates by both the KSC Utility Locate office through Base Operations Support Services (BOSS) and Florida's Sunshine 811 following approval of a dig permit and before beginning ground penetration activities;
- A National Pollutant Discharge Elimination System storm water general permit and Stormwater Pollution Prevention Plan (SWPPP) is not required for the land disturbance activities (direct push injections) since activities are in an area less than 1 acre;
- Completion and submittal of a UIC permit request (**Appendix J**) to FDEP in the form of a UIC Notification Memorandum for the injection of Provect-IR into the subsurface and adherence to any requirements in the final permit issued;
- Completion and submittal of the permit application to Brevard County and St. Johns River Water Management District by the licensed water well contractor for any monitoring wells installed at the site.

Planned IM activities will not impact protected and/or threatened and endangered species; therefore, a biological survey will not be required. No air emissions will be generated with the ISCR technology; therefore, no notification or permitting is required.

4.2 SPILL PREVENTION, CONTROL, AND COUNTERMEASURES

Although a Spill Prevention, Control, and Countermeasure (SPCC) Plan is not required, SPCC will be practiced during implementation of the IM. The IM will include temporary storage of the remediation amendment that is a non-hazardous dry powder. The amendment will be stored in 50-pound individually wrapped easy-open bags stacked on 4 foot by 4 foot wooden pallets, each holding 40 bags. Fifteen pallets will be delivered, and each pallet will be wrapped in plastic to prevent water intrusion. Bags will be opened as-needed and the dry powder amendment will be

mixed with water immediately prior to injection into the subsurface. The mixing of the dry powder with water to make slurries is contained within a trailer-mounted mixing system that will be staged in temporary secondary containment to capture potential spills. Investigation-derived waste (IDW) from well installation, development and purging will be contained in new 55-gallon drums staged on NASA-provided covered spill pallets as secondary containment. IDW will also include decontamination water from cleaning of direct push equipment used for monitoring well installation and ISCR amendment injections.

4.3 DILUTION WATER

A total of up to 15,000 gallons of water are anticipated for use to create slurries with the remediation product that will be delivered in situ using direct push techniques. The maximum daily water use during the ISCR injections is anticipated to be less than 2,000 gallons. Water will be obtained from a KSC-approved fire hydrant near the site or an alternate water source. Hydrant use must be requested and approved by the NASA remediation project manager and KSC BOSS prior to using for site operations.

5. ISCR DESIGN

In 2017, an electron donor and microbial culture were injected to promote ERD of the CVOCs through biostimulation and bioaugmentation. During ERD, sequential removal of chlorine atoms occurred as microbes used the CVOC as the electron acceptor while bio-oxidizing the electron donor during halorespiration. Thus, the presence of appropriate microbial communities along with anaerobic conditions and availability of electron donor are critical for long-term reduction of CVOCs.

ISCR can include promotion of ERD with an electron donor but typically focuses on addition of zero-valent iron (ZVI) to promote highly reducing conditions in groundwater and the abiotic processes known as beta elimination and hydrogenolysis to completely degrade chlorinated ethenes. Beta elimination and hydrogenolysis occur through direct contact of chlorinated ethenes with ZVI to remove chloride atoms and produce ferrous iron (Fe^{2+}). In the absence of dissolved oxygen (anaerobic conditions), ZVI is oxidized in water to ferrous iron and electrons (H_2). When sulfide is produced from the reduction of sulfate, the ferrous iron and sulfide will precipitate as iron sulfide, which can also degrade chlorinated ethenes via beta elimination. In general, ZVI can support ISCR of chlorinated ethenes in groundwater for many years and typically lasts longer than an electron donor-only amendment after one injection event.

5.1 AMENDMENT SELECTION AND DOSING

The selected ISCR amendment is Provect-IR, which is a mixture of solid reagents in a single product that promotes ERD and ISCR. Provect-IR includes natural anti-methanogenic compounds; multiple hydrophilic, nutrient-rich organic carbon sources; ZVI; chemical oxygen scavengers; and vitamin and mineral sources. The Safety Data Sheet (SDS) and Technical Data Sheet for Provect-IR are provided in **Appendix K**. The organic components (fibrous land-based plants and marine plants) are nutrient rich, hydrophilic compounds with high surface area that provides ideal support for growth of bacteria in the groundwater environment. Initially, indigenous bacteria grow on the organic amendment and consume dissolved oxygen, thereby reducing the redox potential in groundwater. In addition, the bacteria ferment the organic carbon and release a variety of volatile fatty acids (acetic, propionic, butyric), which diffuse from the site of fermentation into the groundwater plume and serve as electron donors for other bacteria, including dehalogenators and halorespiring species. The ZVI particles provide substantial reactive surface area that stimulates direct abiotic dechlorination and an additional drop in the redox potential of the groundwater.

The proposed Provect-IR amendment (Provect-IR) contains 60% ZVI on a weight basis. Proposed average dosing rates of Provect-IR to the subsurface varies with the treatment depth and ranges from 0.4% to 0.6% of soil mass within the targeted treatment area and depth interval. From 4 to 10 feet bls, the proposed mass dosing rate of 0.4% is lower based on experience in sandy soil to limit amendment surfacing at the required injection pressures. In addition, the recommended slurry strength for this injection depth interval is lower at 15% to minimize

injection pressures. At this dosing rate and slurry strength, the estimated radius of Provect-IR distribution is 7.5 feet, and the recommended spacing between injection points is 10 feet. Assuming the bulk density of the sandy soil is approximately 100 pounds per cubic foot, the estimated mass injection rate is 71 pounds of Provect-IR per foot of injection interval.

From 10 to 18 feet bls, more overburden allows higher injection pressures, dosing rate (0.5%), and slurry strength (20%) to treat the greatest CVOC concentrations at the site. At this dosing rate and slurry strength, the estimated radius of Provect-IR distribution is 10 feet in sandy soil. The estimated mass injection rate is 157 pounds of Provect-IR per foot of injection interval from 10 to 18 feet bls. For the deep treatment interval from 42 to 58 feet bls, the highest dosing rate of 0.6% and a slurry strength of 20% are estimated to create a radius of distribution of 15 feet. The estimated mass injection rate is 424 pounds of Provect-IR per foot of injection interval from 42 to 52 feet bls.

Slurry preparation information is provided in the *Provect-IR® Handling and Application Guidelines* (**Appendix L**) and specifies that 34 and 24 gallons of water per 50-pound bag of Provect-IR are required to create 15% and 20% slurries, respectively. Based on the variable estimated mass injection rates and slurry strengths, the estimated required water varies from 48 to 204 gallons per foot of injection interval. The dosing rates, estimated distribution radii, mass injection rates, and estimated water needed to make the slurries are summarized in **Table 5-1**.

Table 5-1. Slurry and Dosing Details

Injection Interval (feet bls)	Provect-IR Dosing Rate (% of soil mass)	Estimated Radius of Provect-IR Distribution (feet)	Provect-IR Mass Injection Rate (pounds/feet)	Recommended Slurry Strength (% by weight)	Water Injection Rate (gal/feet)
4 to 10 Fine sand and medium sand with shells	0.4	7.5	71	15	48
10 to 18 Fine sand	0.5	10	157	20	75
42 to 58 East side medium sand with shells, silty sand towards west	0.6	15	424	20	204

5.2 INJECTION LOCATIONS AND DEPTH

The areal extents of the treatment areas are planned to cover the estimated extents of the CVOC plumes as defined by CVOC concentrations greater than their NADC, as summarized in **Section 3.3**. At most depth intervals, the VC plume where concentrations exceed 100 µg/L has the largest areal extent and determines the proposed treatment area, which varies with depth. Using the estimated radii of Provect-IR distribution for the various depth intervals, injection point locations were selected to create the treatment areas for each depth interval by overlapping the estimated distribution for Provect-IR. Although the estimated Provect-IR distribution

increases with depth for the shallow interval, the injection point locations did not change and increased the overlap of the estimated distribution with depth. Fifteen injection points are proposed to create the treatment areas. Six injection points (IP01 to IP06) are designated for the treatment areas from 4 to 18 feet bls, and nine injection points (IP07 to IP15) are designated for the treatment areas from 42 to 58 feet bls. Where feasible, injection points were positioned near DPT locations where groundwater samples had the greatest CVOC concentrations. The State Plane coordinates of the injection points, along with injection intervals, Provect-IR injection rates, and total mass, and required water to create slurries, are presented in **Table 5-2**.Injection point locations and their ROI relative to the NADC plume are illustrated on **Figure 5-1**.

Injection point locations and their estimated radii of Provect-IR distribution relative to the treatment area (NADC plume) for the shallow groundwater interval (4 to 18 feet bls) are limited to the southwestern corner of the platform and are shown on **Figure 5-2** (5 to 9 feet bls), **Figure 5-3** (9 to 13 feet bls), and **Figure 5-4** (14 to 18 feet bls). Injection points (IP01 through IP04) are planned to target the 4 to 14 feet bls interval and injection points (IP05 and IP06) are targeted to be injected into the 4 to 18 feet bls interval. The number of injection points decreases to two (IP05 and IP06) from 14 to 18 feet bls as the treatment area decreases and the radius of distribution increases from 7.5 to 10 feet. A total of 7,571 pounds of Provect-IR will be applied to this interval.

Injection point locations and their estimated radii of Provect-IR distribution relative to the treatment area (NADC plume) for the deep interval 42 to 58 feet bls are shown on **Figure 5-5** (42 to 52 feet bls) and **Figure 5-6** (48 to 52 feet bls). Two injection point locations (IP07 and IP08) will target the NADC plumes in the 42 to 52 feet bls interval and are located at the southwest corner of the platform. Interpolation of TCE and VC distributions from 43 to 47 feet bls indicates that NADC plumes may extend beyond the radius of Provect-IR distribution northwest of IP07. However, a review of the DPT data trends west of IP07 indicates that the NADC plumes are likely smaller and contained within the treatment area for IP07. This significant decrease in CVOC concentrations with distance was also observed in the shallow groundwater near IP07 and IP08. IP08 is located near MLPV-DPT0659, which had concentrations of cDCE and VC greater than NADCs, to treat the estimated extents of the NADC plumes in an area south of the suspected source location. Six injection points (IP09 to IP14) will target the NADC plumes in the 48 to 52 feet bls interval. The locations of IP13 and IP14 are designed to treat VC above NADCs within the estimated areas of Provect-IR distribution and downgradient groundwater. Thus, IP13 and IP14 are expected to create a treatment transect that supports reduction of the downgradient VC concentrations. A total of 18,661 pounds of Provect-IR will be applied to the 48 to 52 foot interval. Two injection point locations (IP11 and IP15) will target the 54 to 58 feet bls interval as shown on **Figure 5-7**. Injection point IP11 was designed to treat cDCE within the estimated radius of treatment distribution and downgradient groundwater, as indicated by analytical results in DPT0668, DPT0686, and DPT0726. Injection point IP15 was designed to treat TCE within the area of Provect-IR distribution, as indicated by

analytical results in DPT0696. A total of 3,393 pounds of Provect-IR will be applied to this interval.

5.3 APPLICATION

Based on a total quantity of 29,625 pounds of Provect-IR, the Provect-IR is expected to be packaged and shipped as a dry powder stored in 50-pound individually wrapped easy-open bags stacked on 4 foot by 4 foot wooden pallets, each holding 40 bags. Fifteen pallets will be delivered that can be safely unloaded and moved with a forklift, and each pallet will be wrapped in plastic to prevent water intrusion. Provect-IR is non-hazardous and is safely handled using standard personal protective equipment (PPE) (safety glasses, steel-toed boots, and gloves), which may include dust masks when mixing with water to make the injection slurries.

The Provect-IR will be mixed with clean water from a KSC-approved water source (hydrant) to create the aqueous slurries for the various injection intervals as specified in **Section 5.1**. Based on field conditions, an experienced injection contractor may modify the slurry mixture to make lighter or heavier mixtures to increase or decrease injection volumes and distribution. A typical setup includes mixture of the Provect-IR in a trailer-mounted solids hopper into which the bags of dry powder Provect-IR are emptied. The slurry is fed to a high-capacity ChemGrout mixing system with a piston pump, fittings, meters, valves, and hoses capable of injecting the slurry at 30 gallons per minute (gpm) and 1,500 psi. Provect-IR slurries are typically injected at pressures of 100 to 200 psi but may require higher pressures to initiate the injection. Pressures over 500 psi and injection capacity of 10 gpm may be used for deeper injections.

Temporary injection points will be precleared based on site knowledge and experience from previous DPT groundwater sampling events. **Figure 5-8** illustrates approximate locations of subsurface obstructions. Preclearance to 5 feet bls with hand augers is not feasible for the shallow injection interval (top at 4 feet bls). At each injection point, the contractor will use a size-appropriate DPT rig to advance a 1.75-inch diameter pressure activated jetting tool to the top injection interval. Using a top-down injection approach, the specified slurry volume will be injected while recording flowrate and pressure for the injection interval (typically 4 feet). The injection approach may be modified in the field to bottom-up if field observations and injection contractor experience with Provect-IR slurries indicate a bottom-up approach would provide similar distribution with less potential for slurry daylighting, especially for the shallow injection interval.

After the depth-specific slurry volume is injected, the injection tooling will be moved (typically 4 feet) to the next injection interval, and the process repeated to provide even distribution of slurry over the target treatment interval. Once the injection point is completed, a small volume of water (15 gallons) will be used to clear slurry out of the rods and injection tool, and the rods will be removed from the boring. The portion of the boring that remains open after removal of the rods and injection tooling (typically the portion above the water table) will be filled with cement

grout. Note that the volume of slurry and water to be injected at each boring is minimal; thus, the volume of groundwater displaced will be minimal.

The contractor is expected to have multiple injection tools and may deploy injection tooling and rods at multiple locations to allow alternating injection of the slurry at locations sufficiently distanced to prevent short-circuiting of the slurry. Between use at injection points, the rods and injection tooling will be cleaned in a temporary containment pad or containment area integrated into the injection equipment trailer. The mass of Provect-IR and volume of slurry injected into each injection interval, and injection point will be recorded. In addition, injection pressures and flowrates will be recorded along with other observations that may include slurry surfacing. If slurry surfacing occurs, slurry strength, injection pressure, injection flowrate, and injection depth may be modified to minimize surfacing through potential pathways such as abandoned monitoring wells.

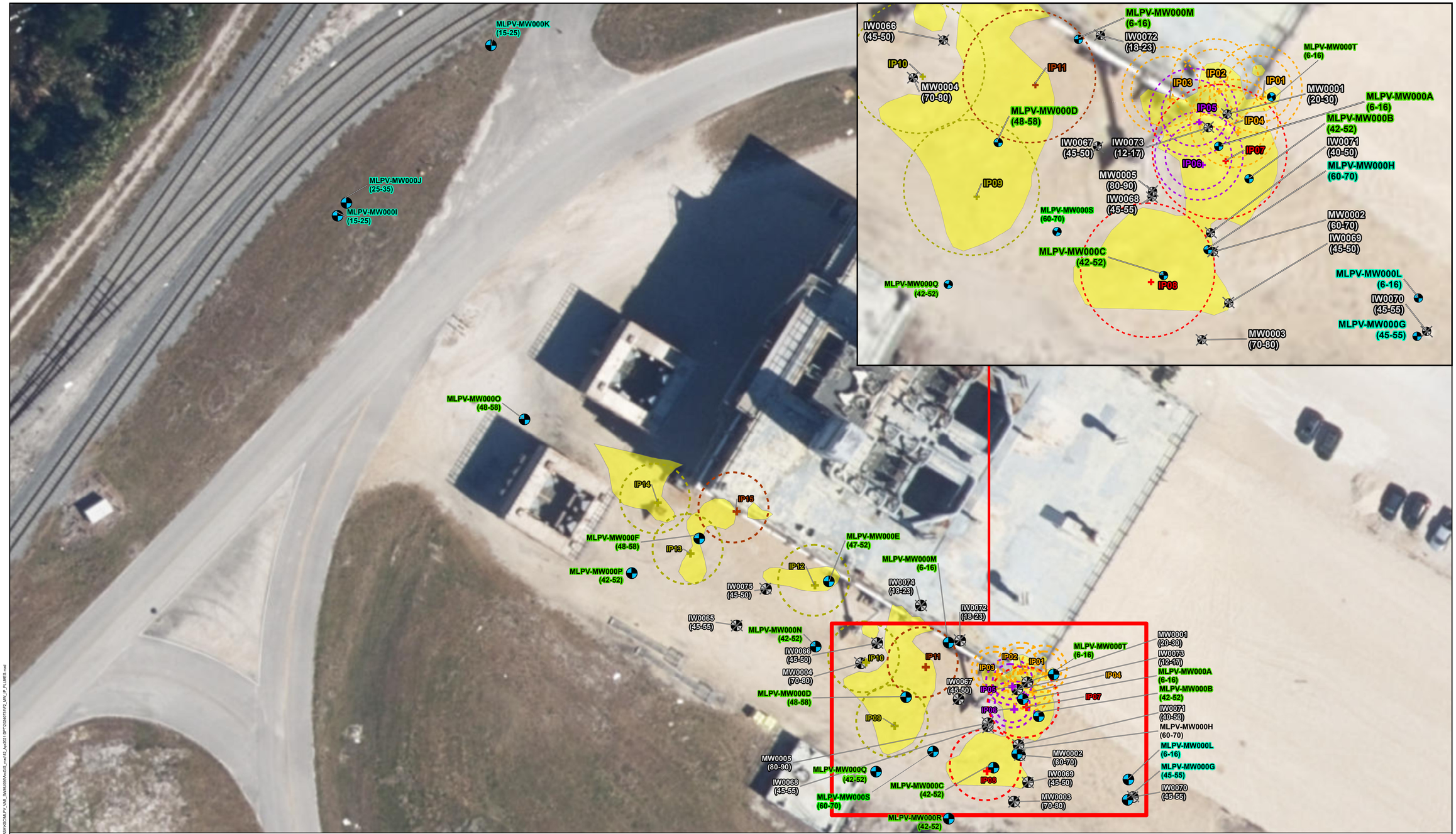
Groundwater monitoring wells will be installed after the Provect-IR injections are completed. Thus, groundwater monitoring wells will not be present in the vicinity of the treatment area to monitor groundwater elevations and Provect-IR distribution during the injections.

5.4 WASTE MANAGEMENT

Types of waste expected to be generated during the performance of the IM include soil from monitoring well installation, monitoring well development and purge water, decontamination fluids from cleaning injection and well installation tooling, PPE, wood pallets, plastic wrap, and empty bags. Based on historical site activities and types of contaminants present, none of these IDW materials are expected to present a significant risk to human health or the environment when properly managed.

IDW generated during field activities (e.g., soil, decontamination water, purge water) will be placed in approved 55-gallon drums and stored on NASA-provided covered spill pallets secured with cargo straps. When a drum is 80% full, a sample will be collected, sent to an analytical laboratory for waste characterization analysis, and the results will be provided to the NASA Remediation Project Manager (RPM). Approximate IDW quantities, pH levels (and adjustment), and spill pallet and drum IDs will be documented on an IDW Log that is provided to the NASA RPM following each field activity. Solid waste that is non-hazardous, such as miscellaneous trash, construction debris, and cleaned PPE, will be disposed of in on-site trash receptacles (e.g., dumpsters).

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Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- IP Location (42 to 52 feet bls)
- IP Location (48 to 52 feet bls)
- IP Location (54 to 58 feet bls)
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 14 feet
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 18 feet
- Approximate IP ROI (15 feet, 42 to 52 feet bls)
- Approximate IP ROI (15 feet, 48 to 52 feet bls)
- Approximate IP ROI (15 feet, 54 to 58 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of Composite High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. Low Concentration Plume Monitoring Well
9. Performance Monitoring Well

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

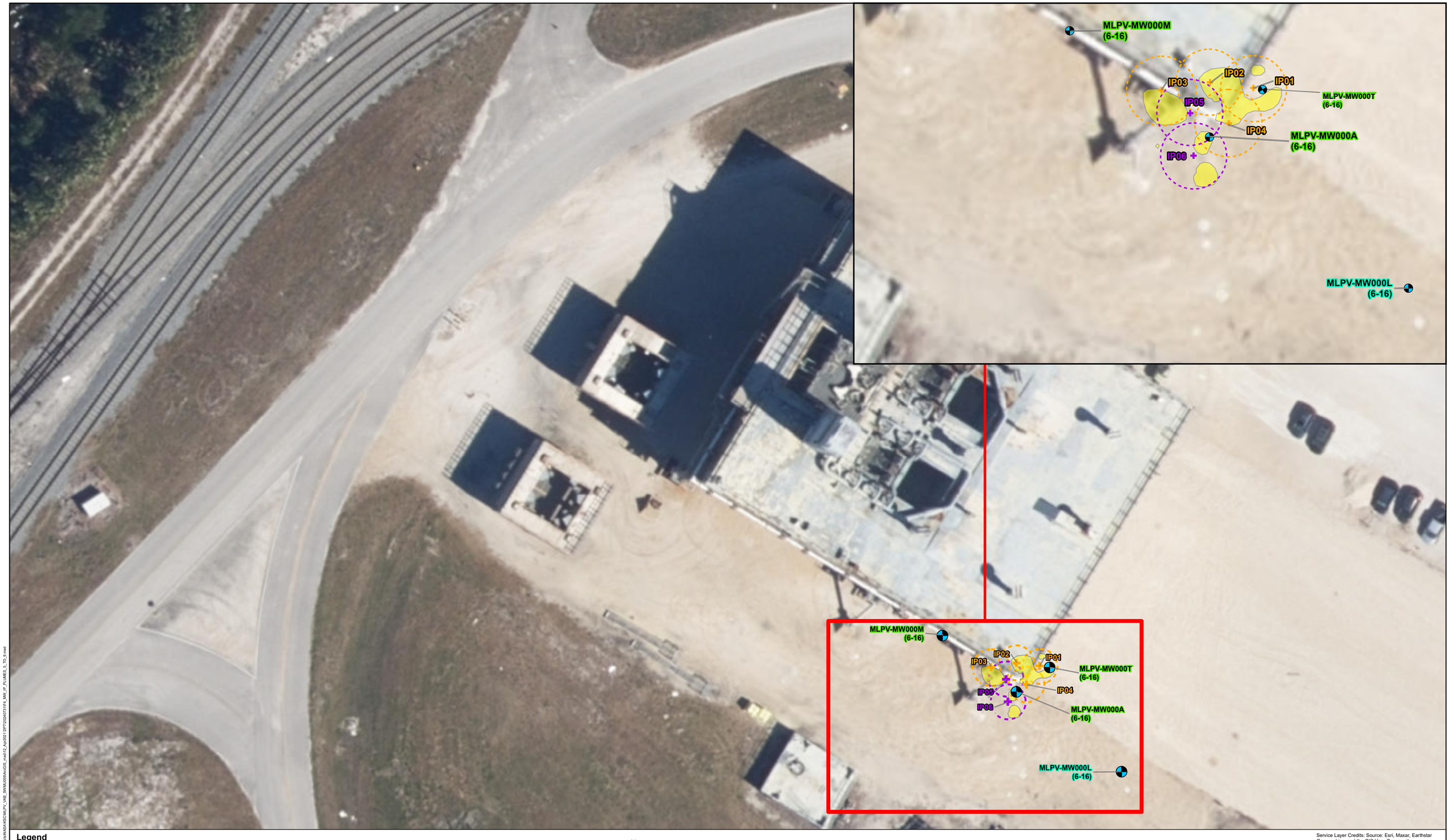
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FIGURE 5-1
Hot Spot 3 Injection Points and Monitoring Wells with Plumes

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Document Path: \\NADTC\VPT\72\Data\Graphics\Projects\NASA\KSC\MLPV_VAB_SWMU056\ArcGIS_mxd\12_Arc2021DPT30\MXD73\FF2_MW_IP_PLUMES.mxd



Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- Approximate IP ROI (7.5 feet, 4 to 14 feet bls)
- Approximate IP ROI (7.5 feet, 4 to 18 feet bls)
- Proposed Monitoring Well Location
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. Low Concentration Plume Monitoring Well
9. Performance Monitoring Well

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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FIGURE 5-2
Hot Spot 3 Injection Points and Monitoring Wells Composite Plume 5 to 9 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- Approximate IP ROI (10 feet, 4 to 14 feet bls)
- Approximate IP ROI (10 feet, 4 to 18 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. Low Concentration Plume Monitoring Well
9. Performance Monitoring Well

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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0 10 20 Feet

FIGURE 5-3
Hot Spot 3 Injection Points and Monitoring Wells Composite Plume 9 to 13 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Document Path: I:\NAD71\CVP\171\2Data\Geo\arcdata\Projects\NASA\KSC\MLP_VAB_SWMU056\ArcGIS_mxd\12_Apr2021\DPT\20240731F4_MW_IP_PLUMES_9_TO_13.mxd



Legend

- IP Location (4 to 18 feet bls)
- Approximate IP ROI (10 feet, 4 to18 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. **Low Concentration Plume Monitoring Well**
9. **Performance Monitoring Well**

N

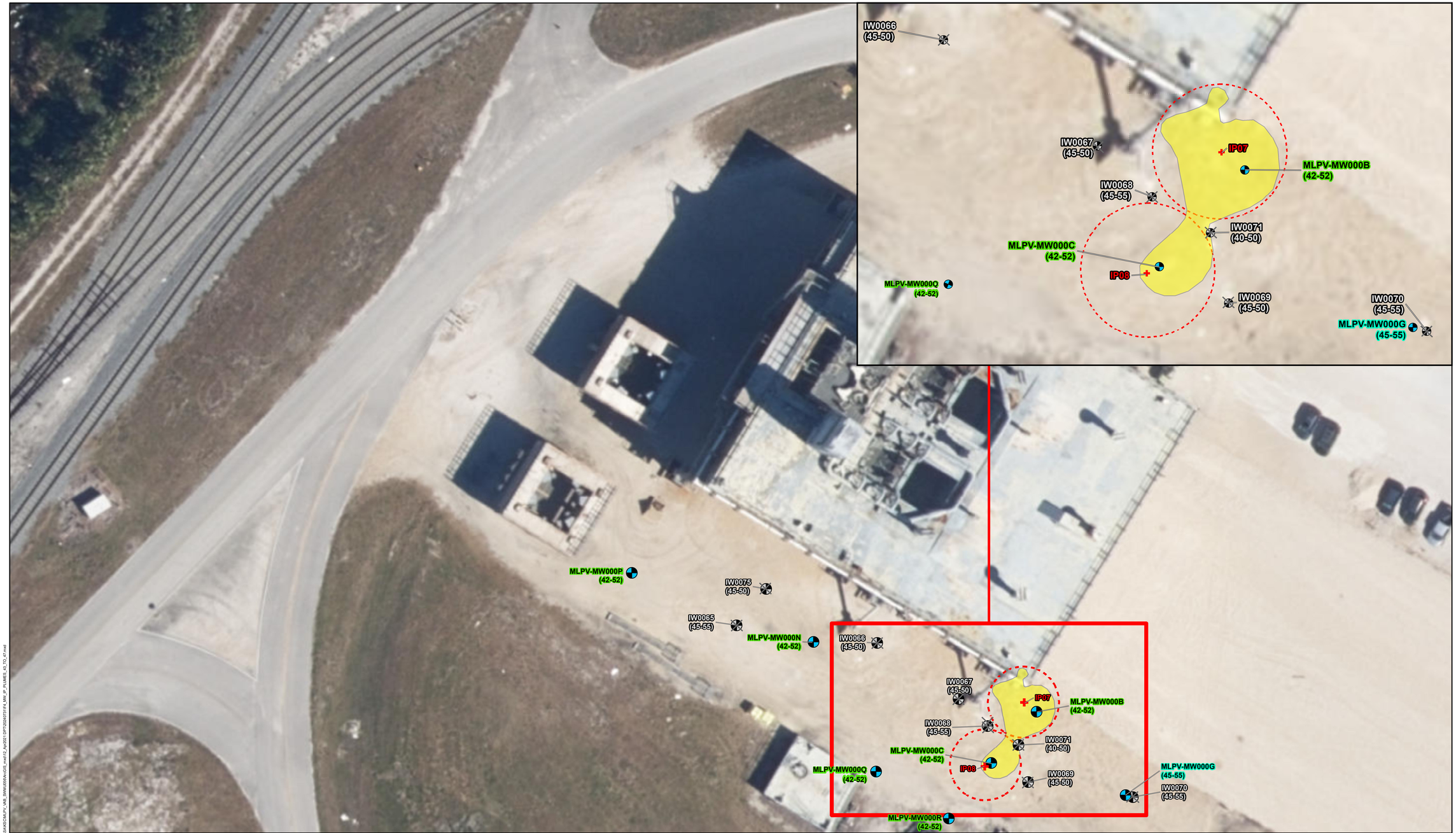
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Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 5-4
Hot Spot 3 Injection Points and Monitoring Wells
Composite Plume 14 to 18 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- IP Location (42 to 52 feet bls)
- Approximate IP ROI (15 feet, 42 to 52 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform
   Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. **Low Concentration Plume Monitoring Well**
9. **Performance Monitoring Well**

N

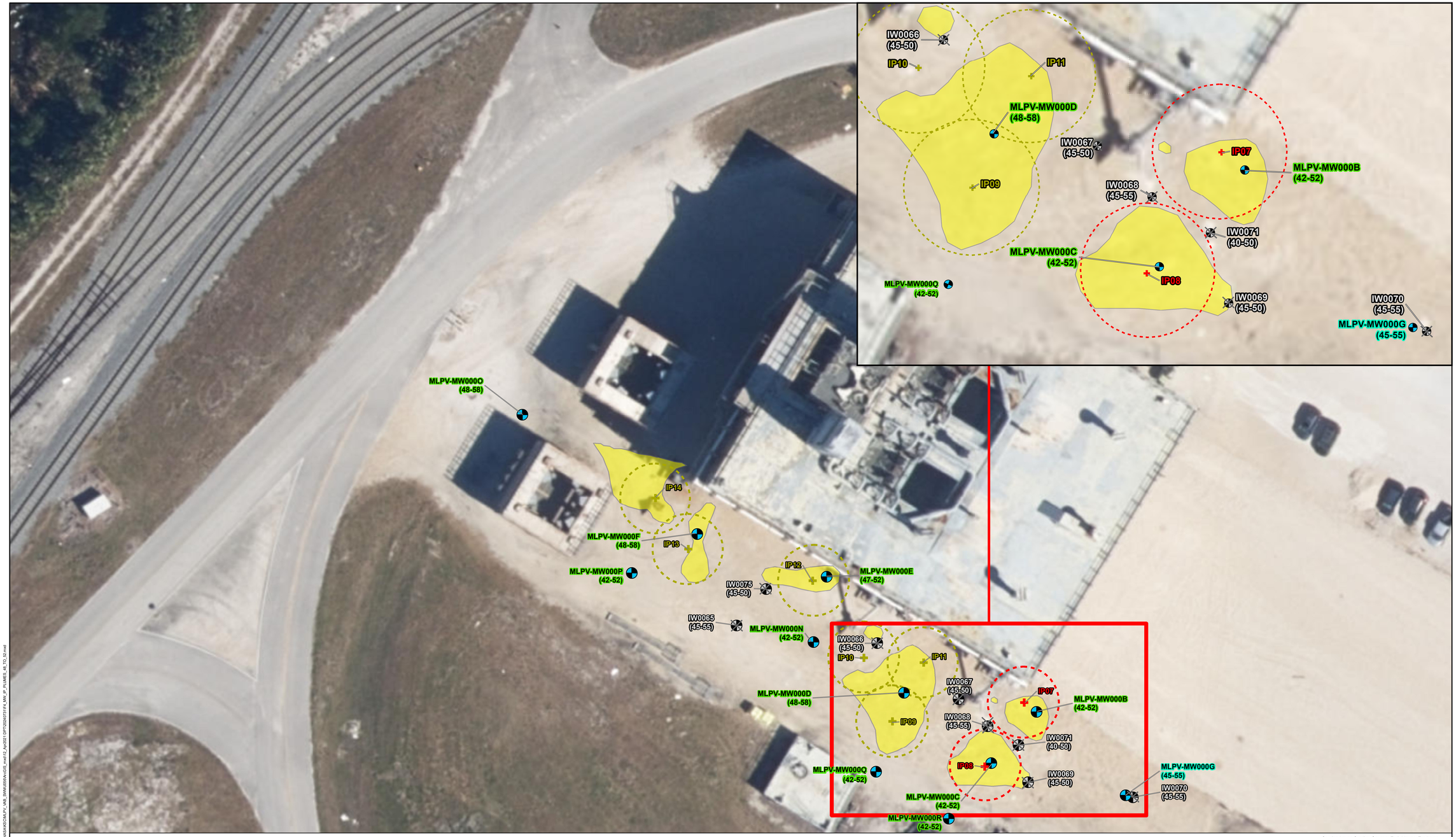
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Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 5-5
Hot Spot 3 Injection Points and Monitoring Wells
Composite Plume 43 to 47 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- IP Location (42 to 52 feet bls)
- IP Location (48 to 52 feet bls)
- Approximate IP ROI (15 feet, 42 to 52 feet bls)
- Approximate IP ROI (15 feet, 48 to 52 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. Low Concentration Plume Monitoring Well
9. Performance Monitoring Well

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N

0 10 20 Feet

FIGURE 5-6
Hot Spot 3 Injection Points and Monitoring Wells Composite Plume 48 to 52 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Document Path: I:\NAS\TO\1\FF172\Data\Graphics\Projects\NASA\SC\MLPV_MLB_SWMU056\ArcGIS_mxd\12_Act\2012DPT30045701F4_MW_IP_PLUMES_48_TO_52.mxd



Legend

- IP Location (54 to 58 feet bls)
- Approximate IP ROI (15 feet, 54 to 58 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Extent of High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform
   Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. **Low Concentration Plume Monitoring Well**
9. **Performance Monitoring Well**

N

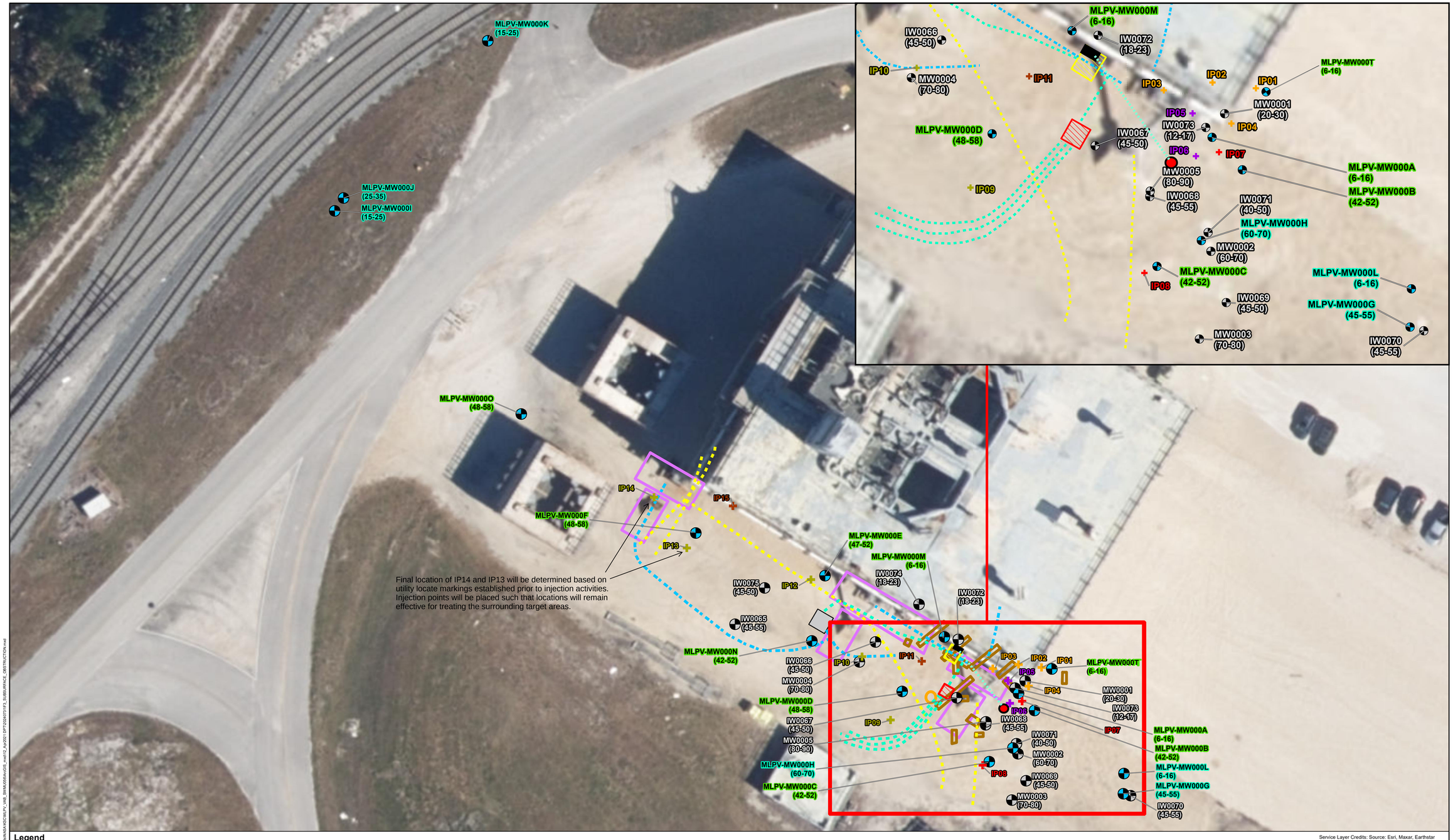
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Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 5-7
Hot Spot 3 Injection Points and Monitoring Wells
Composite Plume 54 to 58 Feet bls

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- IP Location (42 to 52 feet bls)
- IP Location (48 to 52 feet bls)
- IP Location (54 to 58 feet bls)
- Proposed Monitoring Well Location
- Abandoned Monitoring Well
- Approximate Unknown Line (1 to 3 bls)
- Approximate Ground Line (1 to 3 bls)
- Underground Utilities Approximate
- Suspected Buried Debris (1 to 3 bls)
- Suspected Foundation Extents (1 to 2 bls)
- Approximate Location of Area Obstructions Observed During DPT Groundwater Sampling Activities
- Guard Shack
- Transformer
- Disconnect Panel
- Cathodic Protection System Junction Box
- Vertical Anode Bank (0 to 60 feet bls)

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
4. SWMU = Solid Waste Management Unit (SWMU 056)
5. MW = Monitoring Well
6. Low Concentration Plume Monitoring Well
7. Performance Monitoring Well

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N

0 10 20 Feet

FIGURE 5-8
Hot Spot 3 Subsurface Obstructions

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 9/13/2024
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Table 5-2
Injection Point Coordinates and Injection Details
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Injection Point ID	Easting (feet)	Northing (feet)	Injection Top Depth (feet bls)	Injection Bottom Depth (feet bls)	Injection Interval Length (feet)	Provect-IR Mass Injection Rate (lb/feet)	Water Injection Rate (gal/feet)	Provect-IR Mass (lb)	Estimated Mix Water (gal)
IP01	767211.4	1547246.0	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP02	767201.6	1547247.3	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP03	767190.6	1547245.5	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP04	767205.9	1547238.1	4	10	6	71	48	424	288
			10	14	4	157	48	628	192
IP05	767197.1	1547240.4	4	10	6	71	48	424	288
			10	18	8	157	75	1,257	603
IP06	767197.9	1547230.7	4	10	6	71	48	424	288
			10	18	8	157	75	1,257	603
IP07	767203.1	1547231.6	42	52	10	424	204	4,241	2,036
IP08	767186.3	1547204.3	42	52	10	424	204	4,241	2,036
IP09	767147.0	1547223.6	48	52	4	424	204	1,696	814
IP10	767134.8	1547250.6	48	52	4	424	204	1,696	814
IP11	767160.2	1547248.7	48	52	4	424	204	1,696	814
			54	58	4	424	204	1,696	814
IP12	767113.0	1547283.5	48	52	4	424	204	1,696	814
IP13	767060.0	1547297.0	48	52	4	424	204	1,696	814
IP14	767046.0	1547318.7	48	52	4	424	204	1,696	814
IP15	767079.6	1547315.0	54	58	4	424	204	1,696	814
							Total	29,625	14,620

Notes:
bls = below land surface
gal = gallons
ID = identification
IP = injection point
lb = pounds
Provect-IR = selected amendment
Easting and Northing coordinates based on United States Plane, North American Datum of 1983, Florida East, feet (NAD83)

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6. PERFORMANCE MONITORING

Due to the nature and characteristics of plume displacement during ISCR injections, monitoring well installation will take place after injections are performed. Volume displacement during proposed ISCR injections is negligible compared to the volume of water in the surrounding area. Assuming a porosity of 0.35, the estimated groundwater displacement at the radius of distribution ranges between 5 and 10 inches for the different depth intervals. Injection pressures during ISCR injections are temporary and dissipate rapidly in sandy lithology. During ISCR injections, pressure dissipation occurs rapidly in the lateral and vertical directions with no lasting changes to hydraulic gradients. Thus, plume migration is not a concern for the proposed single-event ISCR injections. However, it is possible for hydraulic fracturing to create preferential pathways outside of intended radii. Installing monitoring wells after injection activities eliminates the potential for monitoring wells to become conduits for the injectate.

Since monitoring wells will be installed after injections, baseline groundwater sampling will be collected from one upgradient LCP monitoring well (either MW000G, MW000H, or MW000L) to establish background UIC parameters. If Center operations permit, the upgradient monitoring will be installed prior to injections. Up to four additional monitoring wells associated with the LCP may be also installed as a separate effort from this IM, however data from these wells could provide additional coverage for this area if additional monitoring wells are needed in the future for evaluating performance of the IM. The four aforementioned LCP monitoring wells will be installed under a separate monitoring effort; therefore, locations are not illustrated or tabulated in this Work Plan.

6.1 PROPOSED MONITORING WELL INSTALLATION

Up to fourteen performance monitoring wells are proposed for installation to evaluate performance of the IM. One monitoring well (MW000T) located on the southeastern side of the MLP area is proposed to function as a northern monitoring point for IP01 at 6 to 16 feet bls. Since this proposed monitoring well location is located on the road that the Crawler Transporter uses, installation may not be feasible due to the heavy loads that would damage the monitoring well. If a monitoring well cannot be installed in this area, groundwater samples using direct push technology will be collected, focusing the resampling efforts at prior DPT locations DPT750 and DPT768 (**Figure 3-3**); however, this effort may be delayed if funding is not available. Six monitoring wells are proposed for monitoring the LCP and will also provide groundwater quality data upgradient, below the treatment area (below 60 feet bls), and downgradient of the IM treatment area. **Table 6-1** summarizes the rationale for the depth and location of each proposed monitoring well.

Monitoring wells will be installed following completion of injection activities to prevent preferential pathways during amendment application. Monitoring wells will be installed using DPT at screen depth intervals corresponding with treatment intervals. Each monitoring well will

be constructed of 1-inch diameter, Schedule 40 PVC riser, and 0.010-inch slotted prepacked screen.

Figure 5-1 through **Figure 5-8**, and **Figure 6-1** show the proposed monitoring well locations, which are temporarily identified as MLPV-MW000A through MLPV-MW000T. At the time of installation, the monitoring well names will be revised to follow site naming conventions and appropriate sequence number. **Figure 6-2** illustrates the typical monitoring well construction details.

6.2 SAMPLING PLANS

Post-injection performance and UIC monitoring will be performed as summarized below and outlined in **Table 6-2** and **Table 6-3**.

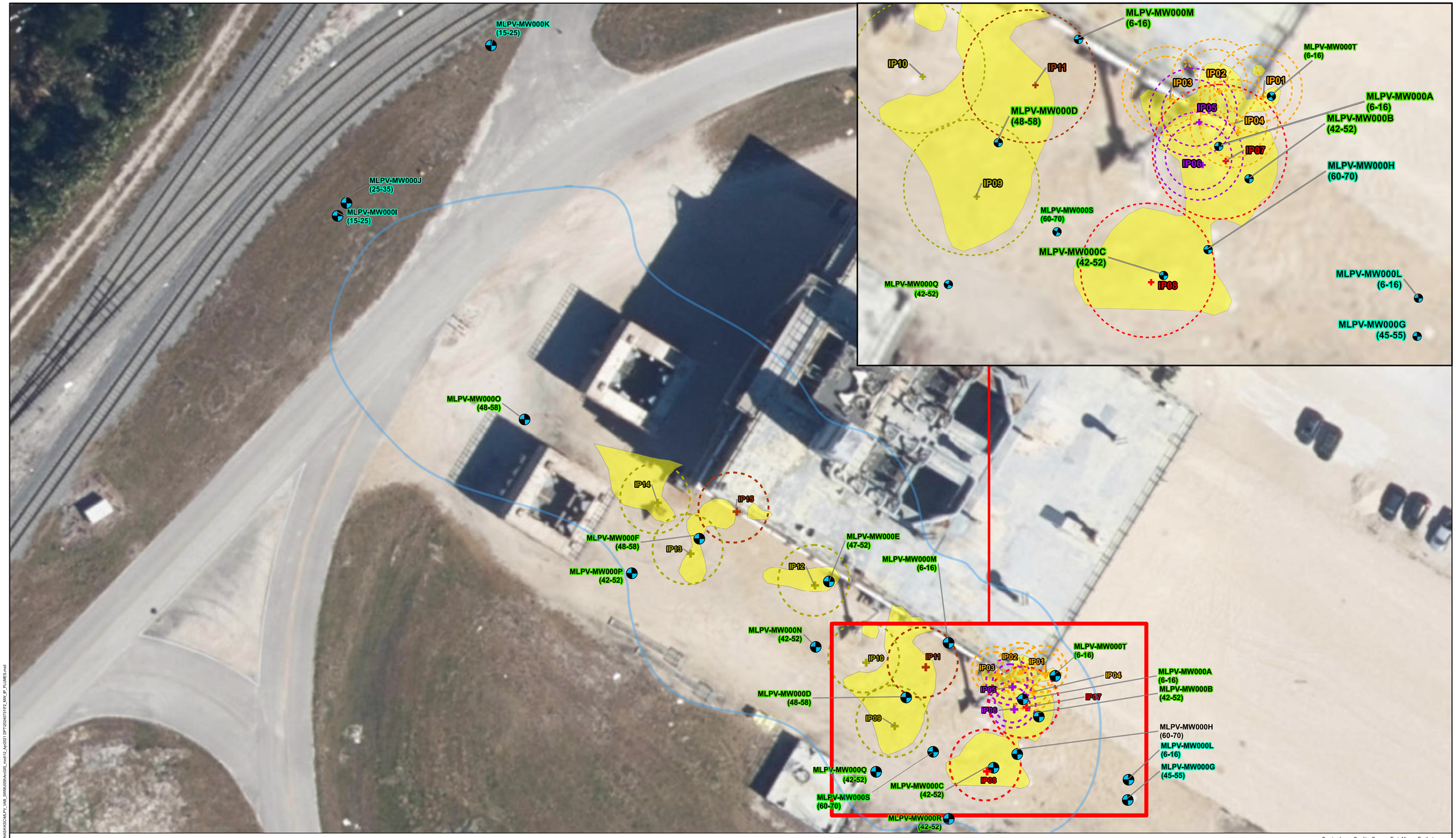
- CVOCs (TCE, cDCE, tDCE, 1,1,-DCE, and VC), ethene, and ethane will be monitored to evaluate progress of biologically mediated reductive dichlorination.
- Methane will be monitored to evaluate the redox conditions of the aquifer and methanogen activity.
- Sulfate and sulfide will be monitored to evaluate the environmental conditions for Dhc and possible influence of sulfate reducing bacteria. As sulfate reduction occurs, sulfide concentrations increase or are precipitated by dissolved iron, when available, as iron sulfides.
- TOC, initially low at this site, will be monitored to evaluate distribution and concentration of electron donors available for dechlorinating organisms.
- UIC parameters will be monitored per the FDEP Provect-IR Acceptance Letter to evaluate changes to water quality in a temporary zone of discharge (ZOD) that includes the treatment area. Monitoring requirements for the ZOD are iron, manganese, and total recoverable petroleum hydrocarbons (TRPH). Parameters not specifically ZOD parameters, but required by the FDEP acceptance letter during baseline sampling and annually include arsenic, fluoride, sodium, sulfate, and also TRPH. The Innovative Technology Acceptance Letter is provided in **Appendix M**.
- Groundwater parameters of temperature, conductivity, pH, turbidity, dissolved oxygen (DO), and oxidative reduction potential (ORP) will be recorded while sampling.

At the performance monitoring wells, per Chapter 62-780.700(3)(g)2., Florida Administrative Code, CVOC parameters will be sampled quarterly for the first year and semiannually thereafter, until concentrations reduce to background levels or below their NADCs. At the LCP monitoring wells, CVOC parameters will be sampled biennially until concentrations reduce to below their GCTLs. At the performance monitoring wells, UIC parameters will be sampled until concentrations decrease to background levels or to levels that meet respective groundwater standards. At the LCP monitoring wells, UIC parameters will be sampled at three locations (MLPV-MW000G, MLPV-MW000H, and MLPV-MW000L) to obtain background UIC data outside of the IM treatment area. UIC parameters will be sampled at the same frequency as the

performance monitoring wells, in accordance with the Innovative Technology Acceptance Letter. Sampling frequency will be evaluated annually and modified as needed.

Two years after IM activities, DPT groundwater sampling is proposed in and around the treatment area to assess the plume behavior and overall ISCR performance. An evaluation of analytical results will determine the need and frequency of additional performance DPT groundwater sampling, as the treatment lifecycle is generally five to ten years.

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Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- IP Location (42 to 52 feet bls)
- IP Location (48 to 52 feet bls)
- IP Location (54 to 58 feet bls)
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 14 feet
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 18 feet
- Approximate IP ROI (15 feet, 42 to 52 feet bls)
- Approximate IP ROI (15 feet, 48 to 52 feet bls)
- Approximate IP ROI (15 feet, 54 to 58 feet bls)
- Proposed Monitoring Well Location
- Approximate Extent of Composite High Concentration Plume
- Low Concentration Plume Boundary

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. **Low Concentration Plume Monitoring Well**
9. **Performance Monitoring Well**

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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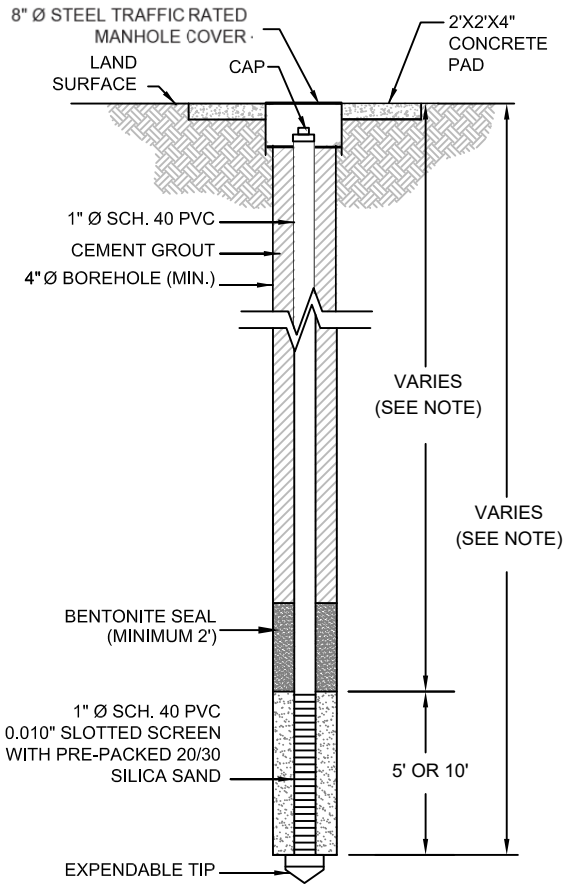
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FIGURE 6-1

Proposed Monitoring Well Layout

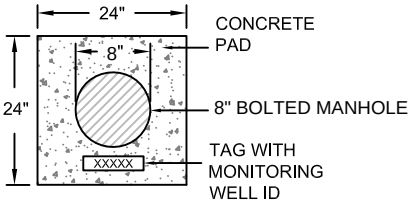
Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 9/1/2024
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SONIC MONITORING WELL DETAIL

NOT TO SCALE



MONITORING WELL PLAN VIEW

NOT TO SCALE

Note:
1. PVC = Polyvinyl Chloride
2. SCH = Schedule
3. " = Inches
4. ' = Feet
5. Ø = Diameter
6. See Table 6-2 for monitoring well depths and screen intervals
7. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area
8. SWMU = Solid Waste Management Unit

Figure 6-2
Typical Monitoring Well Construction

MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Table 6-1
Monitoring Well Coordinates and Construction Details
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Temporary Monitoring Well ID	Proposed[a] Monitoring Well ID	Monitoring Well Network	Easting (meters)	Northing (meters)	Screen Interval (feet bls)	Rationale for Monitoring Well Location
MW000A	MW0116	Performance Monitoring	233843.6914	471597.454	6 to 16	Upgradient boundary of the shallow NADC plume; located within the estimated treatment ROD intersect of injections points IP04 (4 to 14), IP05 (4 to 18), and IP06 (4 to 18)
MW000B	MW0117		233845.6931	471595.0596	42 to 52	Upgradient of injection IP07 (42 to 52); located within the estimated treatment ROD
MW000C	MW0118		233839.6978	471589.2704	42 to 52	Adjacent to injection point IP08 (42 to 52); located within the estimated treatment ROD
MW000D	MW0119		233828.3481	471598.3945	48 to 58	Located within the estimated treatment ROD intersect of injections points IP09 (48 to 52) and IP11 (54 to 58) and upgradient of injection point IP10 (48 to 52)
MW000E	MW0120		233818.3075	471613.4563	47 to 52	Adjacent to injection point IP12 (48 to 52); located within the estimated treatment ROD
MW000F	MW0121		233801.4968	471619.0145	48 to 58	Within downgradient NADC plume and adjacent to injection point IP13 (48 to 52); Also located at the approximate boundary of the estimated treatment ROD intersect of injection points IP13 and IP15 (54 to 58).
MW000G	MW0125	Low Concentration Plume Monitoring	233857.2818	471584.6446	45 to 55	Replacement of abandoned monitoring well MLPV-IW0070, located upgradient of the LCP (per analytical results from DPT0717)
MW000H	MW0126		233842.8365	471589.9475	60 to 70	Replacement of abandoned monitoring well MLPV-MW0002, and monitoring conditions below the treatment area.
MW000I	MW0127		233754.5252	471660.9255	15 to 25	Located in the north-westernmost part of the defined LCP (per analytical results from DPT0714) in the 15 to 25 feet bls interval; Approximately 100 feet upgradient from the existing OFW monitoring wells and downgradient of the NADC plume
MW000J	MW0128		233755.686	471662.5838	25 to 35	Located in the north-westernmost part of the defined LCP (per analytical results from DPT0713) in the 25 to 35 feet bls interval; Approximately 100 feet upgradient from the existing OFW monitoring wells and downgradient of the NADC plume
MW000K	MW0129		233774.449	471683.0465	15 to 25	Located in the north-easternmost part of the defined LCP (per analytical results from DPT0712) in the 15 to 25 feet bls interval; Approximately 100 feet upgradient from the existing OFW monitoring wells and downgradient of the NADC plume
MW000L	MW0130		233857.6142	471587.1905	6 to 16	Monitor upgradient of the defined LCP in the shallow interval (per analytical results from DPT0716 at 5 to 17 feet bls)
MW000M	MW0122	Performance Monitoring	233833.8539	471605.4881	6 to 16	Downgradient of the shallow NADC plume; placed to monitor potential migration from injection activities
MW000N	MW0123		233816.5997	471604.9768	42 to 52	Downgradient of the NADC plume in the 43 to 47 feet bls interval and between two isolated NADC plumes in the 48 to 52 feet bls interval; placed to monitor potential migration from injection activities (downgradient of MW000D).
MW000O	MW0124		233778.807	471634.4937	48 to 58	Downgradient (northwest) of MW000F and the NADC plumes in the 48 to 52 feet bls interval and the 54 to 58 feet bls interval; placed to monitor potential migration from injection activities
MW000P	MW0125		233792.7049	471614.3392	42 to 52	Monitor sidegradient groundwater quality and potential for off-site migration
MW000Q	MW0126		233824.5345	471588.3703	42 to 52	Monitor sidegradient groundwater quality and potential for off-site migration
MW000R	MW0127		233834.0065	471582.1261	42 to 52	Monitor sidegradient groundwater quality and potential for off-site migration
MW000S	MW0128		233831.8898	471590.8573	54 to 64	Below the treatment area
MW000T	MW0129		233849.2994	471604.1924	6 to 16	Northern monitoring point for IP01. Located on the Crawler Transporter road and may not be feasible due to the heavy loads that would damage the well. Alternatively, DPT groundwater samples will be collected focusing at prior DPT locations DPT750 and DPT768

Notes:
[a]Monitoring well numeration can be impacted by unforseen circumstances during installation. Final ID assingments will be documented upon installation.
bls = below land surface
DPT = Direct Push Technology
ID = identification
LCP = Low Concentration Plume
NADC = Natural Attenuation Default Criteria
OFW = Outstanding Florida Waters
ROD = radius of distribution
All monitoring wells to be constructed of 1-inch Schedule 40 polyvinyl chloride riser and 0.010-inch slotted prepacked screens
Easting and Northing coordinates based on United States Plane, North American Datum of 1983, Florida East, meters (NAD83)
Monitoring well IDs have the prefix "MLPV-" for identifying the site within the Remediation Information System database.

Table 6-2
Performance and UIC Monitoring Plan
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

		Performance Monitoring				UIC (Other Parameters)					UIC (ZOD)		
Temporary Monitoring Well ID	**Screen Interval (feet bls)**	**CVOCs: TCE, cDCE, tDCE, 1,1,-DCE, and VC (8260B)**	**Methane, Ethene, Ethane (RSK-175)**	**Sulfide (SM4500-S)**	**TOC (SW846 9060A)**	**Arsenic (6010)**	**Fluoride (300.0)**	**Sodium (200.7)**	**Sulfate (300.0)**	**TRPH (FL-PRO)**	**Iron (6010)**	**Manganese (6010)**	**TRPH (FL-PRO)**
MLPV-MW000A	6 to 16	Quarterly for the first year and semiannually thereafter until below their NADC	Quarterly for the first year and semiannually thereafter until reach background levels or to levels that meet respective groundwater standards			Annually following remedial injections to monitor adherence with Chapter 62-528, F.A.C. (Also includes TRPH, which is already required to be sampled quarterly for the first year and semi-annually thereafter.)					Quarterly for the first year and semiannually thereafter until reach background levels or to levels that meet respective groundwater standards		
MLPV-MW000B	42 to 52												
MLPV-MW000C	42 to 52												
MLPV-MW000D	48 to 58												
MLPV-MW000E	47 to 52												
MLPV-MW000F	48 to 58												
MLPV-MW000M	6 to 16												
MLPV-MW000N	42 to 52												
MLPV-MW000O	48 to 58												
MLPV-MW000P	42 to 52												
MLPV-MW000Q	42 to 52												
MLPV-MW000R	42 to 52												
MLPV-MW000S	54 to 64												
MLPV-MW000T	6 to 16												

Notes:
1,1,-DCE = 1,1-dichloroethene
bls = below land surface
cDCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
Due to the nature of this remediation technology, performance monitoring wells will be installed after injections; therefore baseline sampling will not be conducted.
F.A.C. = Florida Administrative Code
FL-PRO = Florida Petroleum Range Organics
ID = identification
MW = monitoring well
NADC = Natural Attenuation Default Criteria, listed in Chapter 62-777, F.A.C.
TCE = trichloroethylene
tDCE = trans-1,2-dichloroethene
TOC = total organic carbon
TRPH = total recoverable petroleum hydrocarbons
UIC = underground injection control
VC = vinyl chloride
ZOD = Zone of Discharge
Due to the nature of this remediation technology, performance monitoring wells will be installed after injections; therefore baseline sampling will not be conducted.
"MLPV-" is the prefix used for identifying the site within the Remediation Information System database.
Sampling frequency will be evaluated annually.
"Other Parameters" indicate parameters that are not specifically ZOD parameters but are required by the FDEP acceptance letter during baseline sampling and annually.

Table 6-3
Low Concentration Plume Monitoring Plan
Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

<table>
<tr><th></th><th></th><th>Low Concentration Plume Monitoring</th><th colspan="5">UIC (Other Parameters)</th><th colspan="3">UIC (ZOD)</th></tr>
<tr><th>Temporary Monitoring Well ID</th><th>Screen Interval (feet bls)</th><th>CVOCs: TCE, cDCE, tDCE, 1,1,-DCE, and VC (8260B)</th><th>Arsenic (6010)</th><th>Fluoride (300.0)</th><th>Sodium (200.7)</th><th>Sulfate (300.0)</th><th>TRPH (FL-PRO)</th><th>Iron (6010)</th><th>Manganese (6010)</th><th>TRPH (FL-PRO)</th></tr>
<tr><td>MLPV-MW000G</td><td>45 to 55</td><td rowspan="6">Biennially
until below their GCTL</td><td colspan="5" rowspan="2">Annually following remedial injections to monitor adherence with Chapter 62-528, F.A.C. (Also includes TRPH, which is already required to be sampled quarterly for the first year and semi-annually thereafter.)</td><td colspan="3" rowspan="2">Quarterly for the first year and semiannually thereafter to collect baseline data set and provide background for UIC parameters.</td></tr>
<tr><td>MLPV-MW000H</td><td>60 to 70</td></tr>
<tr><td>MLPV-MW000I</td><td>15 to 25</td><td colspan="5" rowspan="3">Not analyzed</td><td colspan="3" rowspan="3"></td></tr>
<tr><td>MLPV-MW000J</td><td>25 to 35</td></tr>
<tr><td>MLPV-MW000K</td><td>15 to 25</td></tr>
<tr><td>MLPV-MW000L</td><td>6 to 16</td><td colspan="5">Annually following remedial injections to monitor adherence with Chapter 62-528, F.A.C.(Also includes TRPH, which is already required to be sampled quarterly for the first year and semi-annually thereafter)</td><td colspan="3">Quarterly for the first year and semiannually thereafter for background for UIC parameters.</td></tr>
</table>

Notes:
1,1,-DCE = 1,1-dichloroethene
bls = below land surface
cDCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
F.A.C. = Florida Administrative Code
FL-PRO = Florida Petroleum Range Organics
ID = identification
MW = monitoring well
GCTL = Groundwater Cleanup Target Levels, listed in Chapter 62-777, F.A.C., Table 1
TCE = trichloroethylene
tDCE = trans-1,2-dichloroethene
TRPH = total recoverable petroleum hydrocarbons
UIC = underground injection control
VC = vinyl chloride
ZOD = Zone of Discharge

Due to the nature of this remediation technology, monitoring wells will be installed after injections; therefore baseline sampling will not be conducted.
"MLPV-" is the prefix used for identifying the site within the Remediation Information System database.
Sampling frequency will be evaluated annually.
"Other Parameters" indicate parameters that are not specifically ZOD parameters but are required by the FDEP acceptance letter during baseline sampling and annually.

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7. REPORTING

Injection activities will be documented in the first annual Performance Monitoring Report for the Host Spot 3 ISCR IM. The report will include final injection locations and volumes, monitoring well installation, sampling results from the first event of performance monitoring, and any other items required by the KSCRT EE Process, Revision 4 (or latest version available at the time of preparation). The ISCR IM activities will also be presented to the KSCRT as a CCR ADP.

The Annual performance monitoring report for the Hot Spot 3 ISCR IM will document semiannual performance monitoring activities, results, recommendations, conclusions, and any other items required by the KSCRT EE Process, Revision 4 (or latest version available at the time of preparation). The Annual Performance Monitoring Report for Hot Spot 3 will be signed/sealed by the Florida licensed professional engineer in charge of the project. Performance monitoring activities will be presented to the KSCRT as an Annual Performance Monitoring ADP.

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8. SCHEDULE AND COST

The approximate timeline for primary tasks associated with the ISCR IM is as estimated below:

- 50 working days for Implementation Work Plan preparation, Health and Safety Plan updates, procurement of subcontractors, site plan submittal and approval, dig permit submittal and approval, utility locate, and any additional permitting;
- 2 working days for mobilization and setup;
- 10 working days for injection activities;
- 10 working days for monitoring well installation and survey (including monitoring wells installed by others); and
- 75 working days for preparation of CCR and presentation of the CCR ADP to the KSCRT (depending on KSCRT schedule).

The general timeline identified may include overlap of elements identified above to reduce the implementation timeline, as appropriate.

8.1 CLEANUP TIMEFRAME

ISCR is an in situ treatment technology that does not require ongoing operation and maintenance. The treatment timeframe for this IM is estimated as the time duration when emplaced Provect-IR is maintaining conditions for ISCR of CVOCs until groundwater treatment objectives are achieved. The emplaced Provect-IR is expected to maintain ISCR of CVOCs for five to ten years.

8.2 COSTING

The capital cost for the ISCR IM, including monitoring well installation, semiannual monitoring well sampling, one biennial DPT performance monitoring sampling event to assess ISCR performance and reporting, are provided in **Table 8-1**. While significant reduction occurs within the first two years, the remediation lifecycle is anticipated to last five to ten years. The estimated capital cost for the IM with five years of monitoring is approximately $764,850.

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Table 8-1. Estimated Costs to Implement ISCR IMWP

Item	Description	Quantity	Unit	Unit Cost	Total Cost	Estimate Basis
Capital Costs						
Site Preparation						
Site Preparation and Mobilization	Miscellaneous site preparation	1	EACH	$ 4,500	$ 4,500	Engineering Estimate
GPR Survey	Ground penetrating radar (GPR) survey of site	1	EACH	$ 1,500	$ 1,500	Engineering Estimate
Injection Point Locations and GPR Survey Oversight	Mark injection point locations and oversight of GPR survey to clear/revise injection point locations	1	EACH	$ 1,600	$ 1,600	Engineering Estimate
				Subtotal	$ 7,600	
ISCR Injection						
Provect-IR ISCR Amendment	Purchase ~15 Super Sacks of IR amendment	29,625	LB	$ 2.40	$ 71,100	Provectus email 10/2022
Shipping - ISCR Amendment	Shipping for IR amendment	1	EACH	$ 15,000	$ 15,000	Engineering Estimate
Mobilization/Demobilization	Mob/demob of ISCR injection equipment plus setup and breakdown	1	EACH	$ 8,000	$ 8,000	Estimate from Cascade quote (9/2022), TX site
Injection Services	Inject IR per work plan at 16 injection points, contractor labor, and injection equipment	10	DAY	$ 4,150	$ 41,500	Estimate from Cascade quote (9/2022), TX site
Per Diem	Per diem for injection services contractor	11	DAY	$ 650	$ 7,150	Estimate from Cascade quote (9/2022), TX site
Fork Lift Rental	Forklift for unloading Super Sacks and staging for mixing	10	DAY	$ 250	$ 2,500	Estimate from Cascade quote (9/2022), TX site
Reporting and HASP - Injection Contractor		1	EACH	$ 1,500	$ 1,500	Estimate from Cascade quote (9/2022), TX site
Remediation Management/Oversight	Oversight and management of ISCR injection implementation	12	DAY	$ 2,000	$ 24,000	Engineering Estimate
				Subtotal	$ 170,750	
Post ISCR Injection						
DPT groundwater sampling to confirm MW locations	Using fixed laboratory, estimated 3 to 4 days for twelve proposed well locations	4	DAY	$ 4,500	$ 18,000	
Monitoring Well Installation - DPT	Installation, development, and surveying of twelve monitoring wells using DPT (includes installation, surveying, and oversight), estimated 10 days	10	DAY	$ 4,700	$ 47,000	Engineering Estimate, Environmental Drilling Services Estimate (10/2022)
Initial Groundwater Sampling	Collection and analysis of groundwater samples from fifteen newly installed monitoring wells for select CVOCs (TCE, cDCE, tDCE, 1,1,-DCE, and VC); methane, ethene, ethane, sulfide, TOC, ammonia, iron, TDS, TRPH, sodium, and sulfate.	1	EACH	$ 10,500	$ 10,500	Engineering Estimate
				Subtotal	$ 75,500	
Engineering Design, Management, and Reporting Costs						
Project Engineering/Management Support	Project coordination, health and safety, meetings, telephone conferences, progress reports, administrative support, permits	120	HOUR	$ 150	$ 18,000	Engineering Estimate
Implementation Work Plan	Implementation Work Plan per NASA Engineering Evaluation process	1	EACH	$ 30,000	$ 30,000	Engineering Estimate
Advance Data Package (ADP)	ADP preparation and presentation of CCR	1	EACH	$ 15,000	$ 15,000	Engineering Estimate
				Subtotal	$ 63,000	
				Total Capital Cost	**$ 316,850**	
Post-Implementation Costs						
Quarterly Performance and LCP Monitoring and UIC Sampling for one year	Collection and analysis of groundwater samples from fourteen newly installed Performance Monitoring wells for select CVOCs (TCE, cDCE, tDCE, 1,1,-DCE, and VC); methane, ethene, ethane, sulfide, TOC, ammonia, iron, TDS, TRPH, sodium, and sulfate, and three low concentration plume monitoring wells for UIC parameters.	4	EVENT	$ 11,500	$ 46,000	Engineering Estimate
Semiannual Performance and LCP Monitoring and UIC Sampling after Year 2 through Year 5	Collection and analysis of groundwater samples from fourteen newly installed Performance Monitoring wells for select CVOCs (TCE, cDCE, tDCE, 1,1,-DCE, and VC); methane, ethene, ethane, sulfide, TOC, ammonia, iron, TDS, TRPH, sodium, and sulfate, and three low concentration plume monitoring wells for UIC parameters.	8	EVENT	$ 11,500	$ 92,000	
Biennial Performance Monitoring DPT groundwater sampling	Sampling to assess performance of ISCR, 2 years after injections.	1	EVENT	$ 60,000	$ 60,000	Previous DPT Event Expense
Reporting (Annual Report)/Data Evaluation	Document results of implementation and semi-annual performance monitoring (Annual Interim Measures Report)	1	EACH	$ 35,000	$ 35,000	Engineering Estimate
ADP	ADP preparation and presentation of results of implementation (Annual Interim Measures Report)	1	EACH	$ 15,000	$ 15,000	Engineering Estimate
				Subtotal	$ 248,000	
				Total Post-Implementation Annual Cost	**$ 96,000**	
				Total Post-Implementation Biennial Cost	**$ 133,000**	
				Total Remediation Cost (Capital and 3 Years of Monitoring)	**$ 618,850**	
				Total Remediation Cost (Capital and 5 Years of Monitoring)	**$ 764,850**	

Notes:
1-1-DCE = 1,1-dichloroethene
ADP = Advance Data Package
CCR = Construction Completion Report
cDCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
DPT = direct push technology
GPR = Ground Penetrating Radar
HASP = Health and Safety Plan
IMWP = Interim Measures Work Plan
ISCR = in situ chemical reduction
LB = pound
NASA = National Aeronautics and Space Administration
TCE = trichloroethene
tDCE = trans-1,2-dichloroethene
TDS = total dissolved solids
TOC = total organic carbon
TRPH = total recoverable petroleum hydrocarbons
TX = Texas
UIC = underground injection control
VC = vinyl chloride

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APPENDIX A

KSCRT MEETING MINUTES: SEPTEMBER 2021

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Revision 2 Meeting Minutes for the KSCRT Meeting - September 15, 16, and 17 , 2021

Attendees:

1. Bruce Moore/FDEP
2. Jennifer Farrell/FDEP
3. Mike Deliz/NASA
4. Ryan O'Meara/NASA
5. Deda Johansen/NASA
6. Anne Chrest/NASA
7. Natasha Darre/NASA
8. Dinh Vo/NASA
9. Michelle Moore/NEMCON
10. Mark Speranza/Tetra Tech
11. Mark Jonnet/Tetra Tech
12. Jennifer Buel/Tetra Tech
13. Alex Murphy/Tetra Tech
14. Chris Neumann/Tetra Tech
15. James Lloyd/Tetra Tech
16. Sarah Damphousse/Tetra Tech
17. Chris Pike/Tetra Tech
18. Debbie Wilson/Tetra Tech
19. Jennifer Joyal/AECOM
20. Linnea King Clark/AECOM
21. Josh Lerch/AECOM
22. Brittany Follett/AECOM
23. Randy Sillan/AECOM
24. Matthew Zenker/AECOM
25. Chad Lee/AECOM
26. Richard Smith/HGL
27. Scott Starr/HGL
28. Howard Fowler/HGL
29. Brad Mitchell/HGL
30. Cady Carol/HGL

2109-M01 Team

Meeting Minutes and Miscellaneous Items

Team consensus was reached that Revision 0 of the meeting minutes and action/decision items for the June 2021 Team meeting will become final. Team members acknowledged and did not object to the fact that these meeting minutes may become public as part of a final report at a later date **(2109-D01).**

Open action items were reviewed by the Team. The following action item was closed out:

Review of Site Status and Deliverables, December 2020: Mike will summarize the look ahead and send a detailed version to Florida Department of Environmental Protection (FDEP) that will provide site histories, what NASA has completed, and where their path forward (including plume maps). FDEP inquired if they could also obtain a copy of the slides being presented today. NASA confirmed they would provide the slides via large file transfer.

Look ahead and maps have been provided to FDEP by NASA **(Closed 2012-A03).**

Area South of K7-0516 and Eastern Component Cleaning Facility Solid Waste Management Unit (SWMU) #030, Interim Measure, Operation, Maintenance, & Monitoring, and Performance Monitoring and Interim Groundwater Monitoring, April 2021: FDEP requested that the sampling plans for 2021 be documented in a

letter since there will not be a report submitted this year for this site. NASA stated they would put a memo together and provide the work plan for the next year of monitoring.

FDEP referenced the April 2021 advance data package (ADP) in their review letters dated May 11, 2021 (for Component Cleaning Facility [CCF], SWMU #030) and May 12, 2021 (for 516S, SWMU #100). Both letters state additional groundwater assessment activities will be conducted in 2021. This work has been delayed and will now occur in early 2022. The proposed sampling plans were presented in the April 2021 ADP. Revisions to the CCF East sampling plan will be presented at the September Team meeting. This meets the intent of this action item **(Closed 2104-A02).**

NASA Remediation Program Updates, June 2021: FDEP received a request from Florida Today requesting documents associated with PFAS on KSC. NASA stated they will provide the Oculus document/report names to FDEP to assist with the inquiry.

NASA assisted FDEP with this inquiry **(Closed 2106-A03).**

Results: Decision Items: 2109-D01

2109-M02 Bruce Moore /FDEP

FDEP Program Update, September 2021

Goal: The objective is to summarize any changes at FDEP and provide pertinent news since the last Kennedy Space Center (KSC) Remediation Team (KSCRT) meeting.

Discussion: Bruce Moore provided a quick update on the program.

New hire Andrew Franz joined the team recently and Roger Durham and Nadine Brooks were promoted within the organization. FDEP is also recruiting for Other Personal Services for land use control (LUC) entries. There are ongoing concerns with balancing workload with new hires and upcoming retirements.

Due to workload, FDEP is beginning to use outside contractors to assist with Per- and Polyfluoroalkyl Substances (PFAS) and other investigations. These contractors are not reviewing any information with regards to KSC PFAS at this time.

On September 8th FDEP hosted a RCRA Program update for Federal Facilities. Its focus was permit modifications, including public notice upon approval of certain decision documents. FDEP inquired if there was any feedback on this presentation from NASA? NASA commented that they do have some points to discuss, and the NASA Remediation Program Manager has questions about what will trigger notice requirements, in particular. FDEP stated they would like to get feedback early on, and acknowledged that public noticing has the potential to slow down the current process. FDEP observed there may be room to incorporate remedies into the permit modifications and if we do that, individual project noticing may not be required.

NASA shared that, as part of the executive branch, NASA personnel and contractors are subject to the executive order requiring Federal employees and contractors to be vaccinated against COVID-19. More guidance coming on this. All NASA contractors are expected to comply with this mandate.

2109-M03 Jennifer Joyal/AECOM

Wilson Corners (SWMU 001) High Concentration Plume Site Characterization and Revised AS System Layout, September 2021

Goal: The objective is to provide a summary of direct push technology groundwater sampling work performed from October 2020 through May 2021, and propose modifications to the approved Interim Measure Work Plan.

Discussion: The ADP provided a brief background and overview for the site. The direct push technology (DPT) sampling was conducted to verify the extent of the chlorinated volatile organic compound (CVOC) high concentration plume (HCP) prior to installing the air sparge (AS) system at the site per the 2019 design. Locations and intervals chosen were based on the objective of refining the HCP treatment area. Delineation prioritized data from 2020 and 2021, followed by historical DPT data from 2015 to 2017. Trichloroethene (TCE), its breakdown products, and Freon 113 are being examined in this briefing.

DAY 3

2109-M10 – Randy Sillan/AECOM

Mobile Launch Platform Rehabilitation (MLP) Sites and VAB Area Hot Spot #3 (SWMU 056), September 2021

Goal: The goal is to present 2021 direct push technology (DPT) groundwater sampling results from the Hot Spot 3 area and gain Team concurrence of the path forward. Field efforts summarized in the ADP include sampling for chlorinated volatile organic compound (CVOC) analysis. The objective of the ADP is to present current site conditions that support additional interim measures.

Discussion: Taking advantage of a lull in construction activities at the MLP, 188 DPT groundwater samples were collected at 62 locations and analyzed for CVOCs to evaluate current site conditions. A subset of samples was also analyzed for parameters useful in evaluating bioremediation. CVOC results confirm that the 2017 emulsified vegetable oil injections and bioaugmentation interim measure (IM) has decreased CVOC mass and shrunken the plume footprint. A small area with elevated trichloroethene (TCE) concentrations indicate a source is likely still present. The geochemical parameters indicate that aquifer conditions may be limiting enhanced reductive dechlorination. The recommended path forward is to utilize in situ chemical reduction (ISCR) by emplacing a product that enhances biotic and abiotic reduction of CVOCs for a long period (5 or more years), and maintains optimal conditions by limiting methanogenesis and managing sulfate reduction and sulfide accumulation. Preparation of an IM Work Plan is the next step.

FDEP requested clarification regarding the footprint and depths of the 2017 IM and conceptual treatment area for additional treatment. AECOM stated that concentrations above NADC are in similar locations now as prior to the 2017 IM, but the CVOC concentrations are lower compared to 2017. Since the groundwater flow is toward an Outstanding Florida Water, FDEP asked if a consideration had been given to expanding the existing air sparge system, which might be more quickly implemented since there is an infrastructure in place. NASA described the difficulties with accessibility and construction in the adjacent crawlerway and the highly compacted ground around the MLP. FDEP noted that the underground injection

control component of the proposed ISCR IM may require public notice.

The Team reached consensus to proceed with an IM Work Plan to implement ISCR to treat key CVOCs (TCE, cis-1,2-dichloroethene [cDCE], and VC) exceeding their respective NADC (TCE greater than 300 ug/L, cDCE greater than 700 ug/L, and VC greater than 100 ug/L) **(2109-D35).**

Results: Decision Item 2109-D35

2109-M11 Jennifer Joyal/AECOM

KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021

As a general note, NASA stated that the confirmation sampling that was performed or is planned at these AOPCs is for purposes of determining the presence or absence of PFAS. If there are detections, then the location will move into site assessment (SA) and at that time the extents of the PFAS will be determined. If media were not sampled prior, the SA is where that would get picked up.

Center-wide surface water sampling was conducted within the Industrial Area and other regional areas. The regional results will be presented at a future meeting.

AOPC 1 is the former Fire and Rescue Building at the Shuttle Landing Facility (SLF). It was used for emergency vehicle parking during landings, former fire pump testing, and former aqueous film-forming foam (AFFF) storage according to interviews. Phase III CS will include groundwater and soil sampling at this location. FDEP requested that a surface water sample be collected from the ditch by the AOPC on the east side of the landing strip. NASA inquired if a sample should also be collected for the swale north of Sharkey Road? FDEP concurred. The Phase III sampling results will be presented to the Team.

AOPC 2 is the former Contractor Support Building #7 north of the VAB area. According to interviews, this location was a former storage area for AFFF materials. A groundwater sample collected from this area during the Phase I CS revealed PFOA and PFOS

September 2021 Decision Items Rev 2		
Decision No.	**Minutes Reference**	**Decision**
2109-D16	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #106, Fire Station #3 Area (formerly known as Fire Station #6; includes PRL #237 LOC 4).
2109-D17	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with SA activities for LOC 5 under SWMU #115, VAB North Area (includes PRL #237 LOC 5, AOPC 3, AOPC 4, and AOPC 10).
2109-D18	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** After the surface water sampling discussion for LOC 7, Team consensus was reached to collect one surface water sample at LOC 6 from the former percolation pond.
2109-D19	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to collect one surface water sample from the former percolation pond at LOC 7.
2109-D20	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #111, LC39 Observation Support Building Area (includes PRL #237 LOC 9).
2109-D21	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).
2109-D22	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities for LOC 14 under SWMU #119, Morpheus Test Area (included PRL #237 LOC 14 North).
2109-D23	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to add two surface water sampling locations. One sample location will be north of the former facility, and the other sample will be collected from the eastern swale along the SLF Runway.
2109-D24	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #114, Fire Station #2 and Towway Area (includes PRL #237 LOC 2 and LOC 12).
2109-D25	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with LOC 17 site assessment activities under SWMU #055, Contractors Road Heavy Equipment Area.

September 2021 Decision Items Rev 2		
Decision No.	**Minutes Reference**	**Decision**
2109-D26	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities under SWMU #116, Fire Station #1 Area (formerly known as Fire Station #4; includes PRL #237 LOC 19); site assessment activities are under contract.
2109-D27	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** The Team reached consensus to proceed with site assessment activities under SWMU #117, Sewage Treatment Plant #1 and Sludge Disposal Area (includes PRL #237 LOC 20 and PFAS impacts at SWMU #067 [POL Area, M6-0894]).
2109-D28	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached for no further action for LOC 22.
2109-D29	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus reached to proceed with site assessment activities under SWMU #099, Visitors Center Maintenance Area.
2109-D30	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #120, Former Treatment Plant #11 and Percolation Pond.
2109-D31	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached for no further action for LOC 26 with further surface water assessment proceeding as part of LOC 31.
2109-D32	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #118, KARS Park II Area (2109-D33).
2109-D33	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021:** Team consensus was reached to proceed with site assessment activities under SWMU #014, Base Support Building (includes PRL #237 AOPC 12 and LOC 32).
2109-D34	2109-M09	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PRL 237) Locations of Concern, September 2021**: Team consensus was reached to proceed with site assessment activities under SWMU #003, Ransom Road Landfill.
2109-D35	2109-M10	**Mobile Launch Platform Rehabilitation (MLP) Sites and VAB Area Hot Spot #3 (SWMU 056), September 2021:** The Team reached consensus to proceed with an IM Work Plan to implement ISCR to treat key CVOCs (TCE, cDCE, and VC) exceeding their respective NADC (TCE greater than 300 ug/L, cDCE greater than 700 ug/L, and VC greater than 100 ug/L).
2109-D36	2109-M11	**KSC Center-Wide Per- and Polyfluoroalkyl Substances (PFAS) Investigation, Areas of Potential Concern (AOPC), September 2021:** Team consensus reached to proceed with site assessment activities at AOPC 2 based upon the Phase I CS results. A SWMU name and number will be assigned.

APPENDIX B

FDEP COMMENT LETTERS

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FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

Memorandum

TO: Touraj Touran, Environmental Consultant
Federal Programs Section, Waste Cleanup Program, DWM

THROUGH: Michael J. Bland, Professional Geologist II
District Support Program, DWM

FROM: Elena Compton, Professional Engineer III
District Support Program, DWM

SUBJECT: **Submittal of the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3,** dated December 2023
Mobil Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (SWMU 056)
Kennedy Space Center
Merritt Island, Florida
Site ID: DOD_18_3072

DATE: June 20, 2024

The District and Business Support Program (DBSP) has reviewed the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3, dated December 2023 (signed January 19, 2024), submitted by AECOM Technical Services, Inc., for the subject site. The following comments are provided to assist Federal Facilities staff with their review of this submittal and should not be inferred to be an approval of the subject document.

The document presented a remediation strategy (injections of Provet-IR) for reduction of the chlorinated volatile organic compound (CVOC) at Hot Spot 3. The proposed injections are supplementary to the May 2016 Hot Spot 3 Bioremediation treatment by using an electron donor and bacteria (KB-1). The treatment area is approximately 5,000 square feet and extends vertically from 4 to 52 feet below land surface (bls).

Per Figure 6-1 “Hot Spot 3 Proposed Monitoring Well Locations, a total of 16 injection points are proposed, grouped into 3-4 areas in close proximity to each other: IP01 – IP04 are screened from 4 to 14 feet bls, IP05 and IP06 are screed from 4 to 18 feet bls, IP07

and IP08 are screened from 42 to 52 ft bls, and IP09 – IP16 are screened from 48 to 52 feet bls.

Comments:

1. The Innovative Technology (IT) acceptance letter for Provect-IR was issued on June 14, 2014 – not requiring updates of analytical data submittal until June 14, 2024. It exceeds the 10-year time frame, requiring the technology's re-evaluation for potential impurities and composition prior to the remediation activities approval and injections. In the case of Provect-IR, and any other addend without prior evaluation for compliance with the Underground Injection Control (UIC) requirements, the following needs to be submitted:

   a. The injectant(s) composition must be disclosed with all ingredients summed up to 100%. Please note (note #1): if the products are proprietary, only the FDEP employees have the authority to inquire about it. The information must be handled and stored accordingly. If you would like the FDEP (Tallahassee) office to review it, please provide it via secure mail to Elena Compton, 2600 Blair Stone Road, MS 3540, Tallahassee, Florida 32399-2400.

   b. Additionally, analysis of the formulation (or <u>each component</u> of it) needs to be completed for aluminum, arsenic, antimony, barium, beryllium, cadmium, cobalt, chromium, copper, iron, lead, nickel, manganese, mercury, selenium, silver, sodium, strontium, thallium, vanadium, uranium, zinc, chloride, fluoride, ammonia, nitrate, nitrite, and sulfate (suppliers may already have this information on file).

      The analysis can be done on the <u>prediluted</u> to <u>prior to the injections</u> concentrations formulations.

   c. Due to the potentially low solubility of the remediation formulation, please conduct the Synthetic Precipitation Leaching Procedure (SPLP) analyses, reported in micrograms per liter, for aluminum, arsenic, antimony, barium, beryllium, cadmium, cobalt, chromium, copper, iron, lead, nickel, manganese, mercury, selenium, silver, sodium, strontium, thallium, vanadium, uranium, zinc, chloride, fluoride, nitrate, nitrite, and sulfate.

   d. Please note (note #2): if the analytical results are below the reportable laboratory values, the detection limits for these chemical elements may not exceed the corresponding Florida regulatory requirements to be meaningful.

   e. Please also note (note #3): the laboratory shall be certified under the National Environmental Laboratory Accreditation Program (NELAP) by the Florida Department of Health for chemical elements to be analyzed in the specific matrix by utilizing the selected analytical method.

f. The list of NELAP certified laboratories (analytes/ method/ matrix) is listed at https://fldeploc.dep.state.fl.us/aams/loc_search.asp.

g. Please provide the suppliers of calcium hydroxide oxide Safety Data Sheet (SDS).

2. Please include in your figure the locations of the previously abandoned monitoring wells. Please also submit at least one figure with the latest groundwater analytical results associated with all abandoned in 2021 monitoring wells overlayed by the most recent direct push technology (DPT) analytical data.

3. In addition to the proposed source monitoring wells (MLPV-MW000A, MLPV-MW000B, MLPV-MW000C, MLPV-MW000D, MLPV-MW000E, and MLPV-MW000F), monitoring for potential off-site migration due to the gradient and displacement effects also must be conducted. Therefore, the following monitoring wells with screened intervals from 6 to 16 feet and 42 to 52 feet bls–(they could be nested wells) need to be installed at the following approximate locations:

   a. About 30 - 40 feet southeast of MLPV-MW000B,
   b. About 30 – 40 feet south of MLPV-MW000C,
   c. About 30 feet west – northwest (downgradient) of MLPV-MW000A,
   d. About 30 feet northwest of MLPV-MW000D (downgradient from MLPV-MW000D),
   e. About 30-40 feet northwest of MLPV-MW000E (downgradient of MLPV-MW000E),
   f. Approximately 50 feet southwest of MLPV-MW000D,
   g. About 50 feet southwest of MLPV-MW000F, and
   h. About 60 feet northwest of MLPV-MW000F (down gradient of MLPV-MW000F).

4. All wells will be required to be sampled for a baseline and quarterly monitoring and analyzed for the contaminants of concern and the UIC required parameters that will be established in the IT acceptance letter (see comment number 1).

If you have any questions, please contact Elena Compton at Elena.Compton@floridadep.gov or (850)-245-8911.

FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

August 1, 2024

Natasha Darre
Remediation Project Manager
Environmental Assurance Branch
National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899-0001

Re: In-Situ Chemical Reduction (ISCR) Interim Measure (IM) Work Plan, Hot Spot 3, Mobile Launcher Platform (MLP) Rehabilitation Sites/Vehicle Assembly Building (VAB) Area, Solid Waste Management Unit (SWMU) #056, Kennedy Space Center (KSC), Florida.
Site ID: DOD_18_3072

Dear Ms. Darre:

The Federal Programs Section (FPS) of the Florida Department of Environmental Protection (DEP) has reviewed the subject documents dated January 19, 2024. FPS has the following question and comment:

1. **Section 4.3 (Page 4-2):** Please provide the criteria or the definition of "approved KSC fire hydrant or an alternate water source"?
2. **Section 6.2 (Page 6-2):** The document states that "At the performance monitoring wells, CVOC parameters will be sampled semiannually until concentrations reduce to below their NADCs." Per Chapter 62-780.700(3)(g)2., Florida Administrative Code (F.A.C.), for cleanups expected to last greater than two years, wells shall be sampled quarterly for the first year, and semiannually thereafter. For cleanups expected to last less than two years, wells shall be sampled quarterly. Please revise the proposed sampling plan to satisfy this requirement.
3. **Post Injection:** Please describe the fate of the injection wells post injection. Are there any plans to plug and abandon the wells post injection?
4. **Recommend additional monitoring wells:** Based on the direction of groundwater flow and the position of current proposed monitoring wells, FPS recommends the addition of monitoring wells around the perimeter of the plume-

specifically, west/northwest of MW000E, MW000D, and MW000F to assess plume stability and potential migration because of injection.

Additionally, FPS requested District Business Support (DSP) to review the subject document. DSP's technical review and comments are attached to this memo. Please also address those comments in your response to this letter.

Thank you for the opportunity to review the subject proposal. If you have any questions regarding this letter, please contact me at 850-245-8946 or Touraj.Touran@FloridaDEP.gov.

Sincerely,

Touraj Touran

Touraj (TJ) Touran
Remedial Project Manager
Federal Programs Section
Waste Cleanup Program

JF

Attachment: ISCR Interim Measures Work Plan Hot Spot 3 District Support Program Technical Review

ec: FPS Submittals, FPS.Submittals@FloridaDEP.Gov
Anne Chrest, Anne.M.Chrest@NASA.Gov

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

Memorandum

TO: Touraj Touran, Environmental Consultant
Federal Programs Section, Waste Cleanup Program, DWM

THROUGH: Michael J. Bland, Professional Geologist II
District Support Program, DWM

FROM: Elena Compton, Professional Engineer III
District Support Program, DWM

SUBJECT: **Response to the FDEP Comments for the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3,** dated September 20, 2024
Mobil Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (SWMU 056)
Kennedy Space Center
Merritt Island, Florida
Site ID: DOD_18_3072

DATE: November 15, 2024

The District and Business Support Program (DBSP) has reviewed the Response to the FDEP Comments for the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3, dated September 20, 2024, submitted by AECOM Technical Services, Inc., for the subject site. The following comments are provided to assist Federal Facilities staff with their review of this submittal and should not be inferred to be an approval of the subject document.

The document presented a remediation strategy (injections of Provet-IR) for reduction of the chlorinated volatile organic compounds (CVOCs) at Hot Spot 3. The proposed injections are supplementary to the May 2016 Hot Spot 3 Bioremediation treatment by using an electron donor and bacteria (KB-1). The treatment area is approximately 5,000 square feet and extends vertically from 4 to 52 feet below land surface (bls).

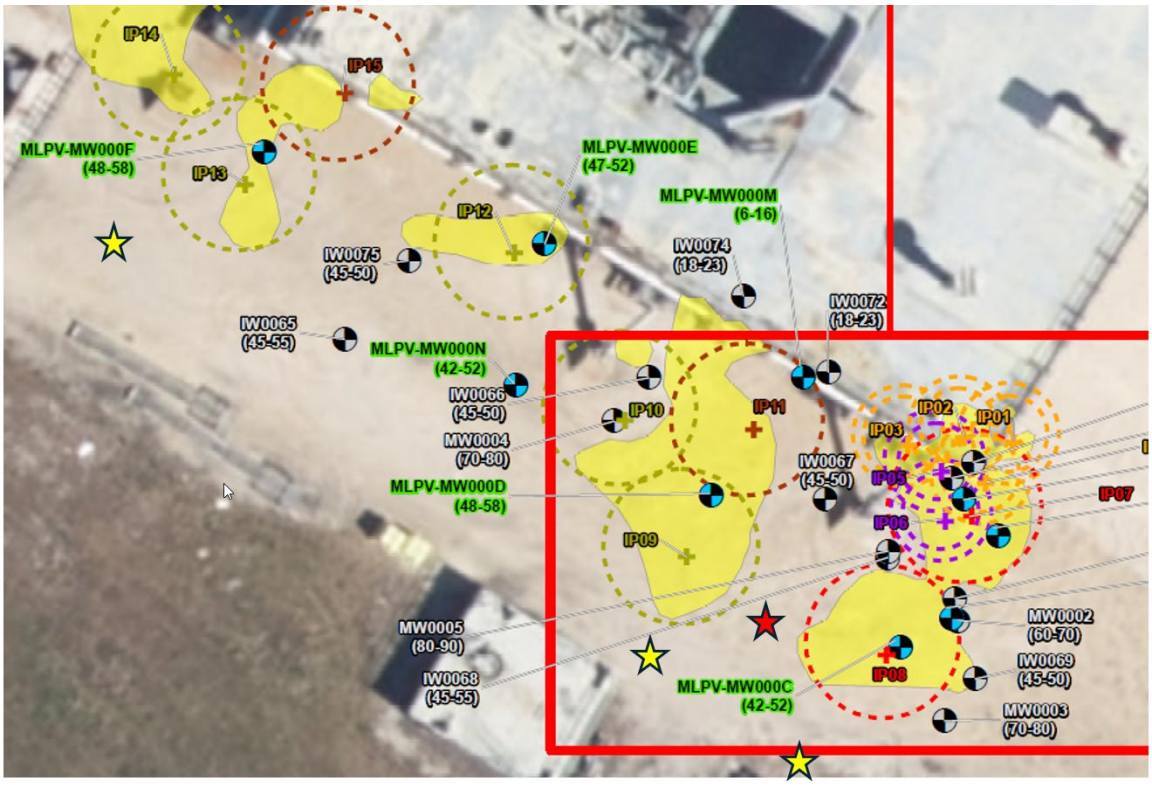
Per Figure 6-1 “Hot Spot 3 Proposed Monitoring Well Locations, a total of 16 injection points are proposed, grouped into 3-4 areas in close proximity to each other: IP01 – IP04 are screened from 4 to 14 feet bls, IP05 and IP06 are screed from 4 to 18 feet bls, IP07

and IP08 are screened from 42 to 52 ft bls, and IP09 – IP16 are screened from 48 to 52 feet bls.

Comments:
Most of the June 20, 2024, comments were satisfactorily addressed. Below are the follow-up comments:

1. The applicant for the Innovative Technology (IT) Provect-IR is in the process of submitting required analytical data. When the acceptance letter is issued, it will be posted at https://floridadep.gov/waste/district-business-support/content/accepted-technologies.

2. In addition to the proposed source monitoring wells, monitoring for potential off-site migration due to the gradient and displacement effects also must be conducted. Therefore, three (3) monitoring wells with screened intervals 42 to 52 feet bls should be installed at the locations indicated with three yellow stars and one (1) monitoring well with screened intervals 54 – 64 feet bls should be installed at the location marked with one red star in the figure below:



3. All wells will be required to be sampled for a baseline and quarterly monitoring and analyzed for the contaminants of concern and the UIC required parameters that will be established in the IT acceptance letter (see comment number 1).

If you have any questions, please contact Elena Compton at Elena.Compton@floridadep.gov or (850)-245-8911.

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Alexis A. Lambert
Secretary

Memorandum

TO: Touraj Touran, Environmental Consultant
Federal Programs Section, Waste Cleanup Program, DWM

THROUGH: Michael J. Bland, Professional Geologist II
District Support Program, DWM

FROM: Elena Compton, Professional Engineer III
District Support Program, DWM

SUBJECT: **Response to the FDEP Comments for the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3,** dated April 25, 2025
Mobil Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (SWMU 056)
Kennedy Space Center
Merritt Island, Brevard County
FDEP Site ID#: DOD_18_3072

DATE: May 29, 2025

The District and Business Support Program (DBSP) has reviewed the Response to the FDEP Comments for the In Situ Chemical Reduction (ISCR) Interim Measures Work Plan Hot Spot 3, dated April 25, 2025, submitted by AECOM Technical Services, Inc., for the subject site. The following comments are provided to assist Federal Programs Section staff with their review of this submittal and should not be inferred to be an approval of the subject document.

The document presented a remediation strategy (injections of Provet-IR) for reduction of the chlorinated volatile organic compounds (CVOCs) at Hot Spot 3. The proposed injections are supplementary to the May 2016 Hot Spot 3 Bioremediation treatment by using an electron donor and bacteria (KB-1). The treatment area is approximately 5,000 square feet and extends vertically from 4 to 52 feet below land surface (bls).

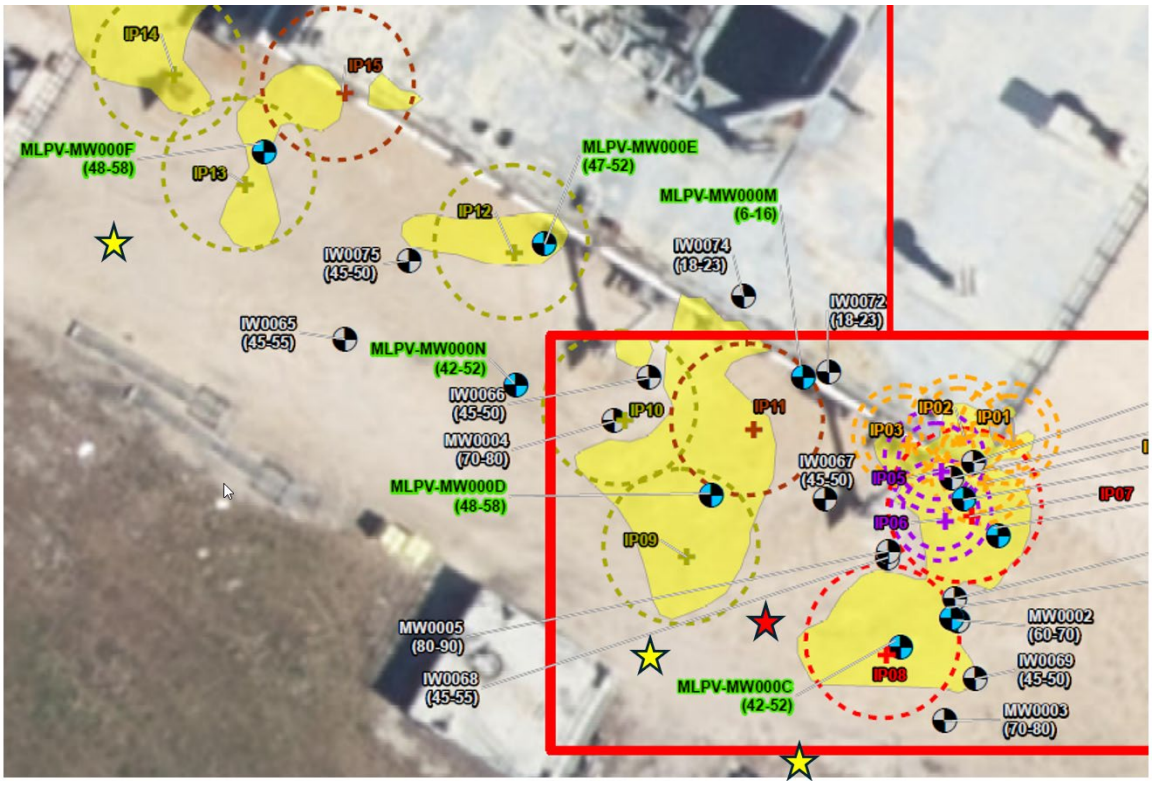
Per Figure 6-1 “Hot Spot 3 Proposed Monitoring Well Locations, a total of 16 injection points are proposed, grouped into 3-4 areas in close proximity to each other: IP01 – IP04 are screened from 4 to 14 feet bls, IP05 and IP06 are screed from 4 to 18 feet bls, IP07

and IP08 are screened from 42 to 52 ft bls, and IP09 – IP16 are screened from 48 to 52 feet bls.

Comments:

1. In order to be in compliance with the Underground Injection Control (UIC) requirement, please address Comment 2 (initially outlined in the November 15th, 2024 review letter). Namely:

   In addition to the proposed source monitoring wells, monitoring for potential off-site migration due to the gradient and displacement effects must also be conducted. Therefore, three (3) monitoring wells with screened intervals 42 to 52 feet bls should be installed at the locations indicated with three yellow stars and one (1) monitoring well with a screened interval of 54 – 64 feet bls should be installed at the location marked with one red star in the figure below:



2. Please note: The Innovative Technology (IT) Provect-IR is posted at https://publicfiles.dep.state.fl.us/DWM/DBS/innov_tech/DWM/04302025.pdf. Please include required monitoring parameters in the baseline, quarterly, and annual monitoring, as prescribed in the referenced IT acceptance letter.

3. Please also update the UIC Memorandum, reflecting newly required UIC monitoring paraments.

If you have any questions, please contact Elena Compton at Elena.Compton@floridadep.gov or (850)-245-8911.

APPENDIX C

HOT SPOT 3 PERFORMANCE MONITORING ADP DATED SEPTEMBER 17, 2021

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AECOM
150 North Orange Avenue, Suite 200
Orlando, Florida 32801
www.aecom.com

September 17, 2021

Ms. Anne Chrest
Remediation Project Manager
National Aeronautics and Space Administration
Mail Code SI-E2
Building K6-1547 (Logistics Facility)
John F. Kennedy Space Center
Kennedy Space Center, FL 32899-0001

Subject: **Mobile Launch Platform (MLP) Rehabilitation Sites and the Vehicle Assembly Building (VAB) Area, (Solid Waste Management Unit [SWMU] 056), Hot Spot 3 (HS3) Performance Monitoring Advanced Data Package (ADP)**
September 2021 Kennedy Space Center Remediation Team (KSCRT) Meeting

Reference: **Indefinite Delivery Indefinite Quantity (IDIQ) Contract 80KSC019D0010**

Dear Ms. Chrest:

AECOM Technical Services, Inc. (AECOM) is pleased to provide Kennedy Space Center (KSC), National Aeronautics and Space Administration (NASA), with the ADP for the MLP/VAB Area (SWMU 056). The purpose of the ADP is to present direct push technology (DPT) groundwater sampling activities performed at the Hot Spot 3 area in March and April 2021.

Field efforts summarized in the ADP include 188 DPT groundwater samples collected at 62 locations for chlorinated volatile organic compound (CVOC) analysis. The objective of the ADP is to present current site conditions that support additional interim measures.

In summary, remediation progress from former Emulsified Vegetable Oil injections has decreased CVOC mass and plume footprint. Elevated concentrations in select areas indicate a source is likely still present, however geochemical parameters indicate limiting enhanced reductive dichlorination conditions. AECOM recommends creating optimal conditions for long-term CVOCs degradation that treats plumes and mass flux from the source with in situ chemical reduction (ISCR) by (i) emplacing a product that enhances biotic and abiotic reduction of CVOCs for a long period (5 or more years), and (ii) maintains optimal conditions by limiting methanogenesis and managing sulfate reduction and sulfide accumulation. The following consensus statement will be presented to the KSCRT: Proceed with an IMWP to implement ISCR to treat key CVOCs (TCE, cDCE, and VC) exceeding their respective NADC (TCE greater than 300 ug/L, cDCE greater than 700 ug/L, and VC greater than 100 ug/L).

Should you require additional information, please contact Linnea King Clark at linnea.king@aecom.com or via phone at 407.456.1535.

Sincerely,

AECOM Technical Services, Inc.

Linnea King Clark
Task Order Manager

Jennifer Joyal, PE
Program Manager

Enclosure

Cc: FDEP
Richard Smith, HGL
Mark Speranza, Tetra Tech

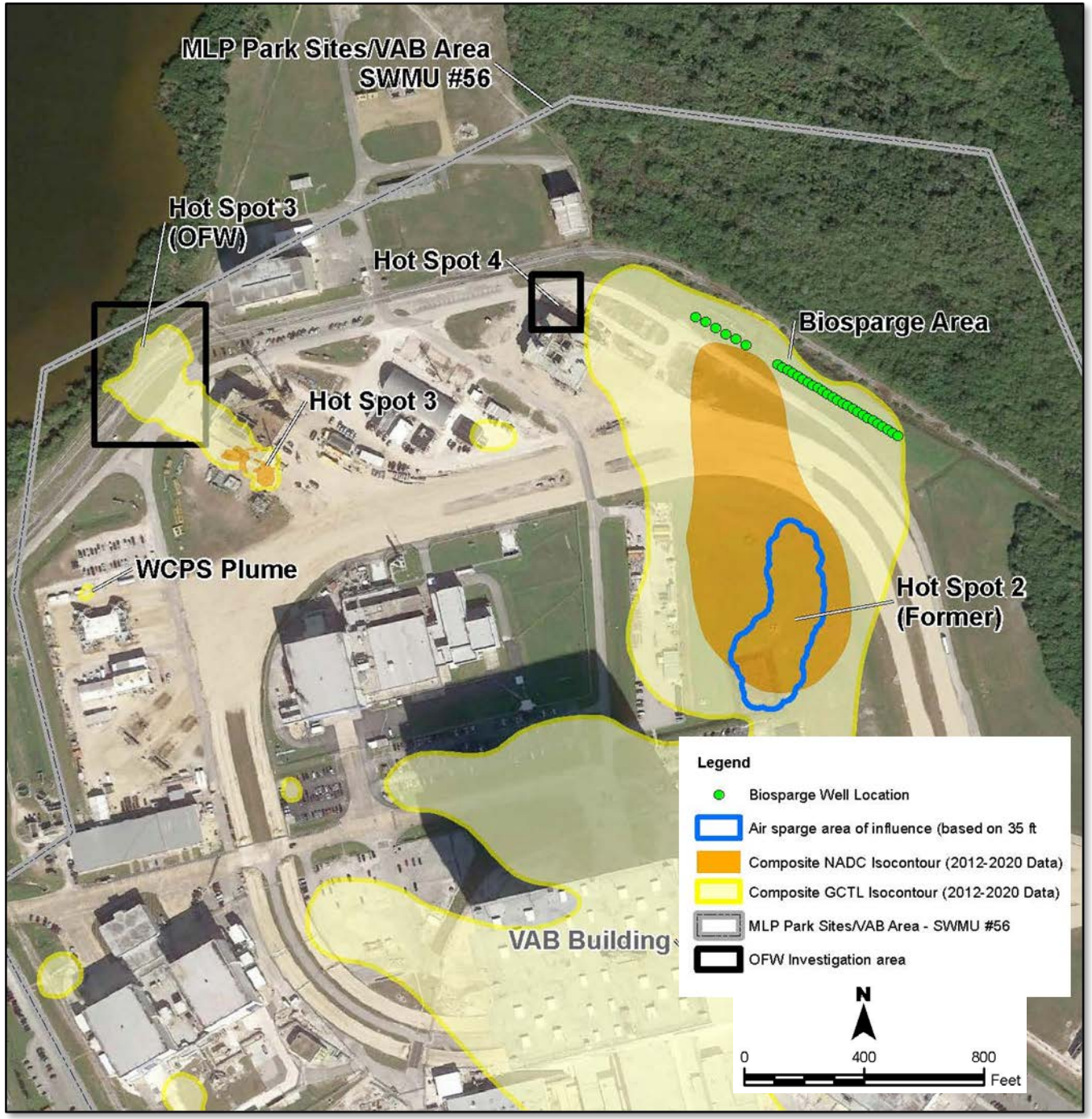

NASA

Outline

- Brief Hot Spot 3 (HS3) Background
- 2021 DPT Groundwater Sampling and Results
- Conclusion
- Team Consensus



Facing Southeast



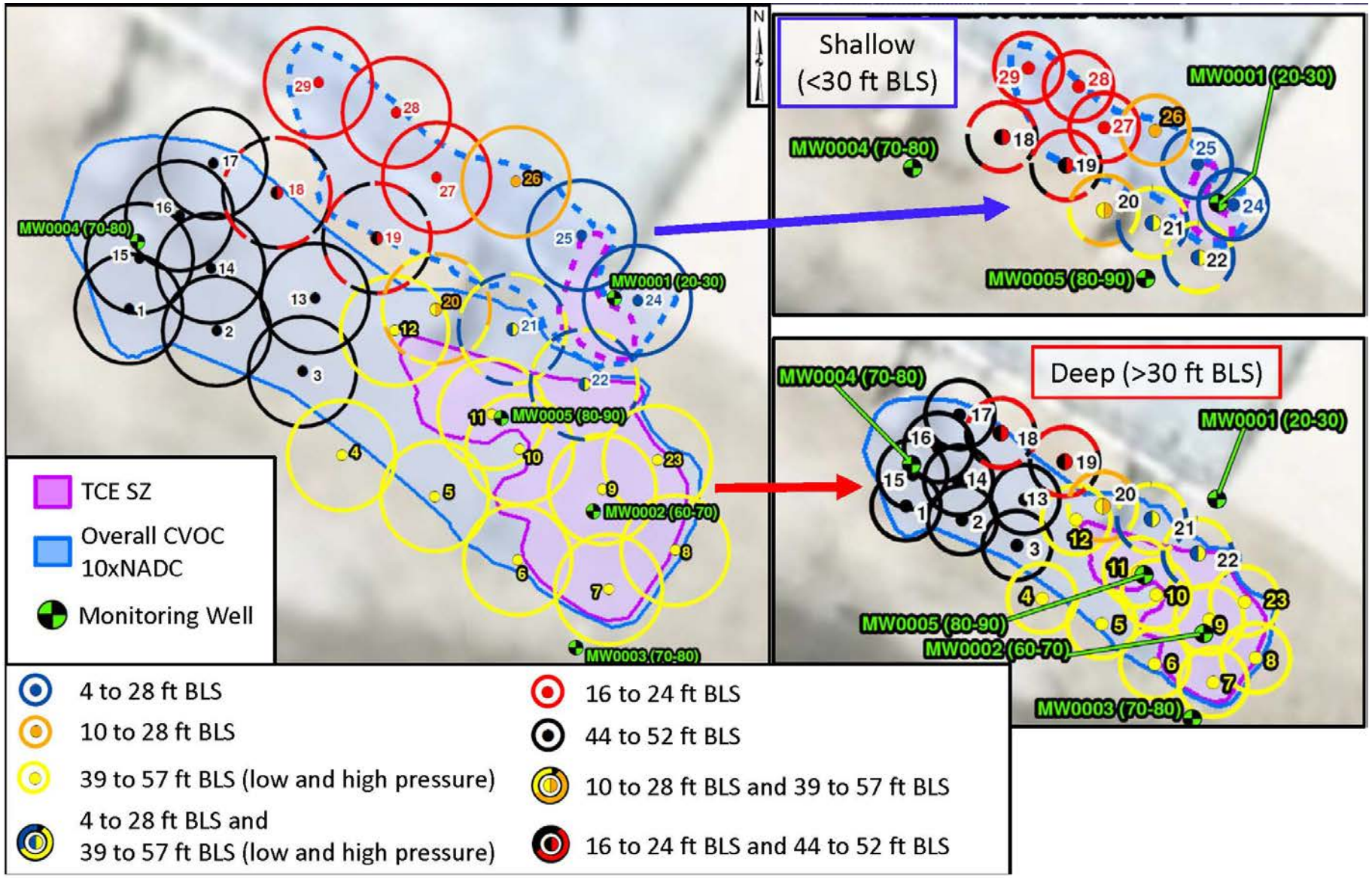
Brief HS3 Background

- **2012 - 2014** – VAB Reassessment identified chlorinated volatile organic compounds (CVOCs) greater than 10 times the Natural Attenuation Default Concentrations (10xNADCs)
- **2015** – Site characterization delineated CVOCs (Groundwater Cleanup Target Levels [GCTL], NADC, 10xNADC])
- **2016** – Remedial Alternative Evaluation selected bioremediation (CVOCs >10xNADCs)
- **2016 - 2017** – Interim Measures Work Plan (IMWP) and Implementation WP
  - Baseline direct-push technology (DPT) groundwater sampling
  - Monitoring well (MW) installation
  - Biostimulation (SRS-SD) and bioaugmentation (KB-1)
- **2017 (Jul/Aug)** – IM Implementation
  - 29 DPT injection locations
  - 174,300 gallons of emulsified vegetable oil (EVO) solution and 43 liters of KB-1
  - 9 MWs installed after injections

SRS-SD Formulation

Ingredient	Percent	Description
Food Grade U.S. Grown Soybean Oil	60%	Locally sourced soybean oil.
Food Grade Soluble Substrate	5.5%	Rapidly biodegradable soluble substrate
Proprietary Food Grade Nutrients	<1%	Proprietary organic and inorganic nutrients such as yeast extract, nitrogen and phosphorus.
Proprietary Food Grade Emulsifiers, Preservatives and other Organics	7.5%	Proprietary nonionic emulsifier and other organics
Vitamin B_{12}	<1%	250 µg/L of Vitamin B_{12}

Brief HS3 Background – 2017 Bioremediation IM



Brief HS3 Background

- **2018 (Feb & Aug)** – IM performance based on MW samples
  - 80 to 99% decrease of CVOCs based on concentrations at MWs
  - Distribution of total organic carbon (TOC) indicated design radius of influence (ROI) of 8 ft was achieved
- **2018 (Sept)** – 2 MWs added at downgradient edge
- **2019 (Feb/Mar)** – IM performance monitoring (MWs and DPT), 18 months
  - DPT – 87 groundwater samples from 19 locations
  - ~80 to 100% mass reduction in shallow intervals (~94% reduction in deep)
  - Minimal change from month 12 and conditions in some areas favored continued bioremediation
- **2019 (Apr)** – Area leased to commercial partner restricting access
  - MWs were abandoned in lease area
- **2020** – Lease was terminated and site access reinstated
- **2021 (Mar/Apr)** – DPT groundwater sampling to evaluate current site conditions

2021 DPT Groundwater Sampling

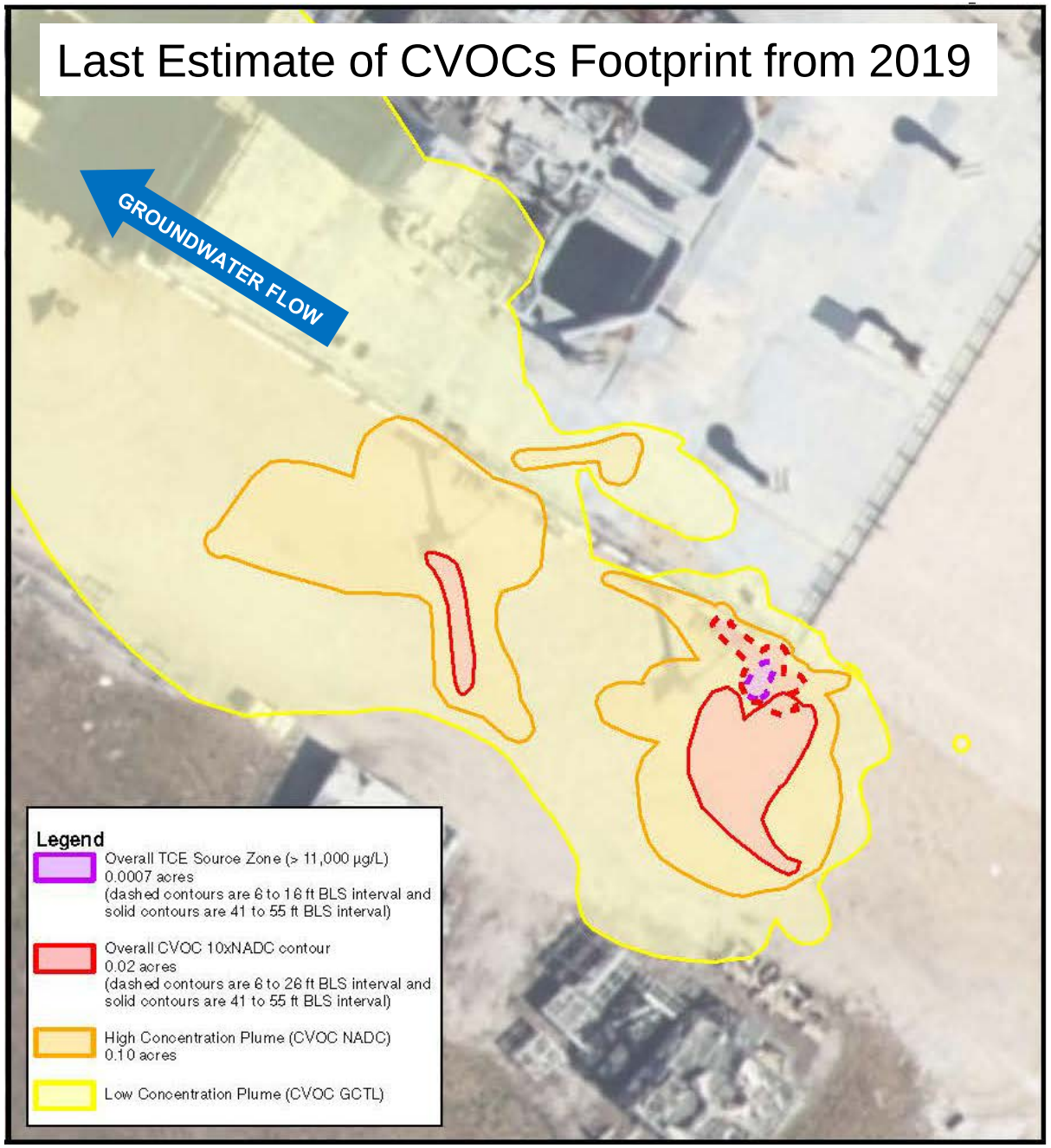
Objective – Evaluate current site conditions in the previously treated area and the need for bioremediation interim measures

Plan

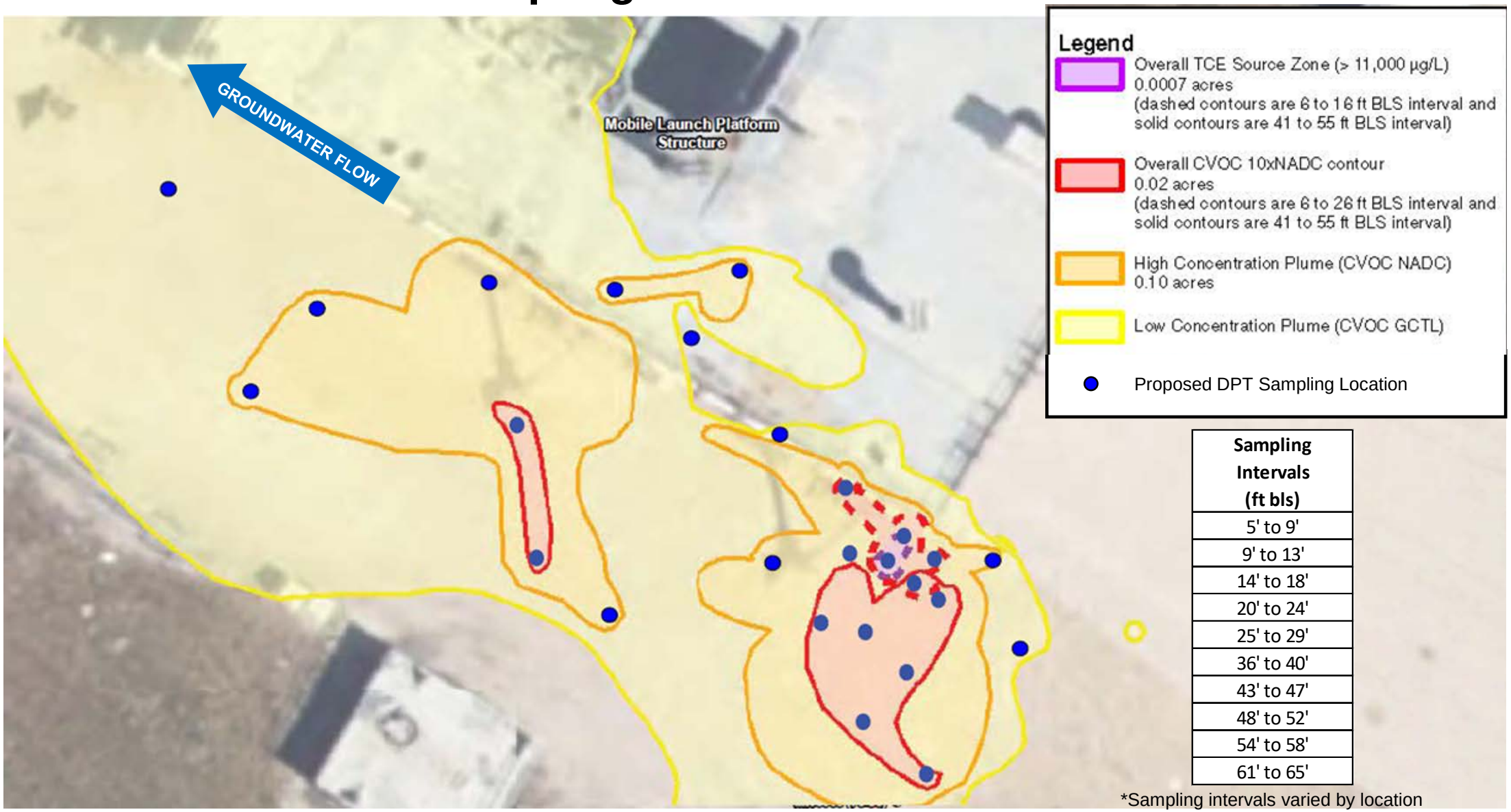
- Collect samples at locations with existing data (2019 DPT and MWs)
- Up to 26 DPT locations and 50 samples
- Modify based on mobile lab results

Actual

- April 1 - 16, 2021 (12 days)
- 188 samples from 62 locations (CVOCs)
- 43 samples analyzed for sulfate (SO_4^{2-}), sulfide (S^{2-}), TOC, ethane, ethene, and methane



2021 DPT Groundwater Sampling Plan

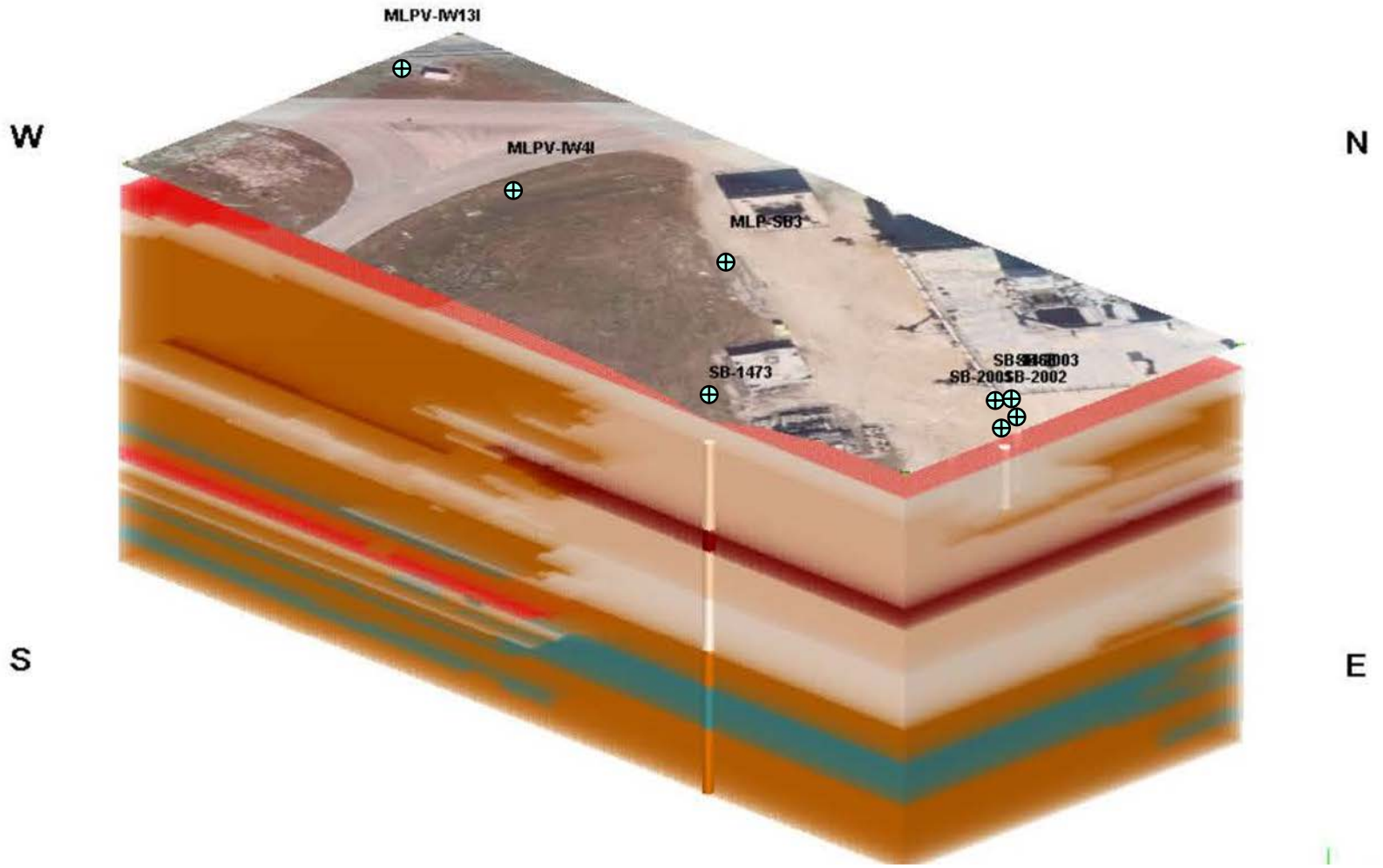


Sampling Intervals (ft bls)
5' to 9'
9' to 13'
14' to 18'
20' to 24'
25' to 29'
36' to 40'
43' to 47'
48' to 52'
54' to 58'
61' to 65'

*Sampling intervals varied by location

Lithology

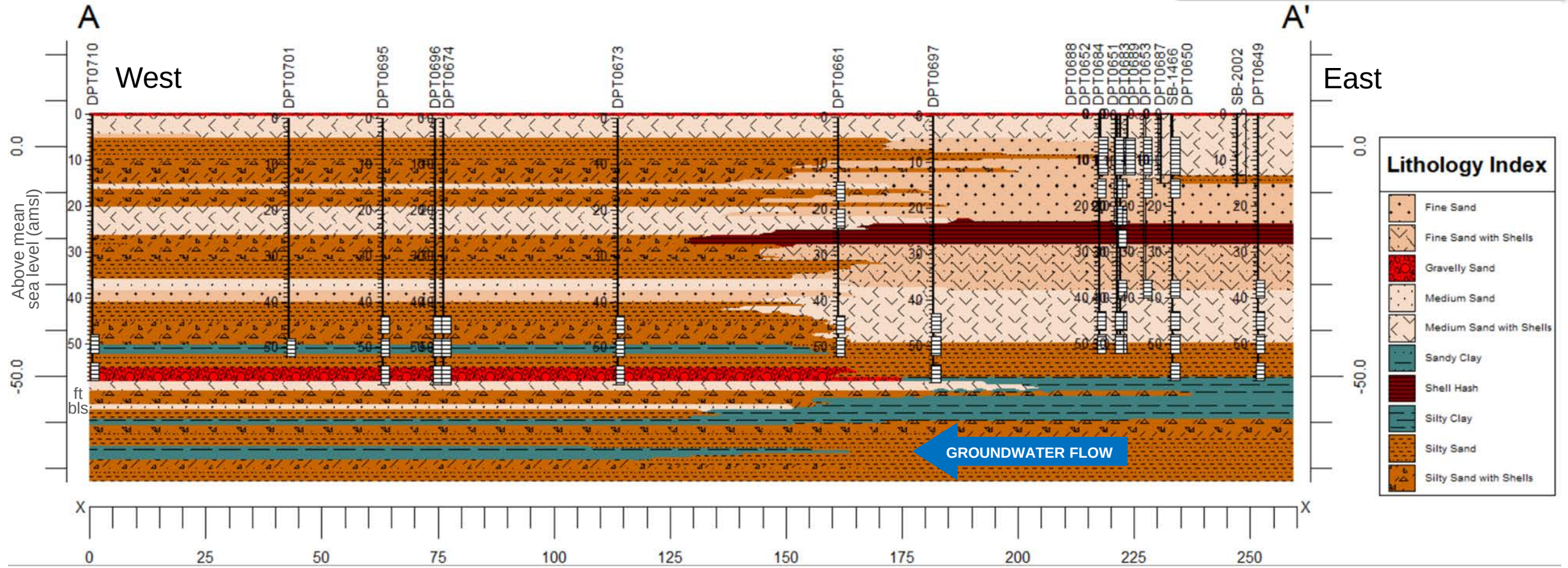
- The site lithology model was revised
  - 3D lithology model created from geologic descriptions in 8 historical borings: MLPV-IW4I, MLP-SB3, MLPV-IW13I, SB-1466, SB-1473, SB-2001, SB-2002, and SB-2003
  - 2D profiles created from slices through the 3D model



Lithology – Cross Section A-A’

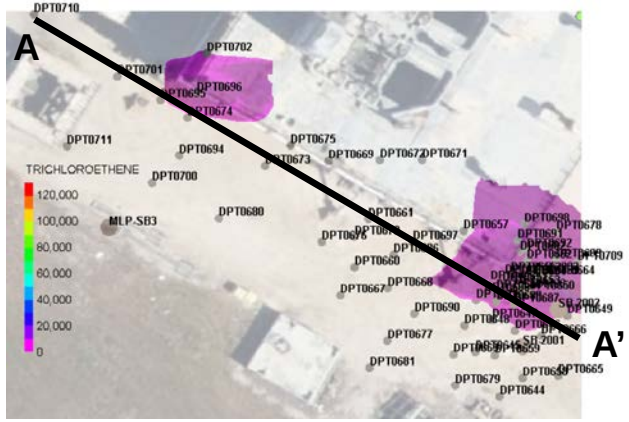
- East side is primarily well sorted fine to medium sand with shells
- Towards west, the silt content increases
- Clayey soil becomes more common at 60 ft bls

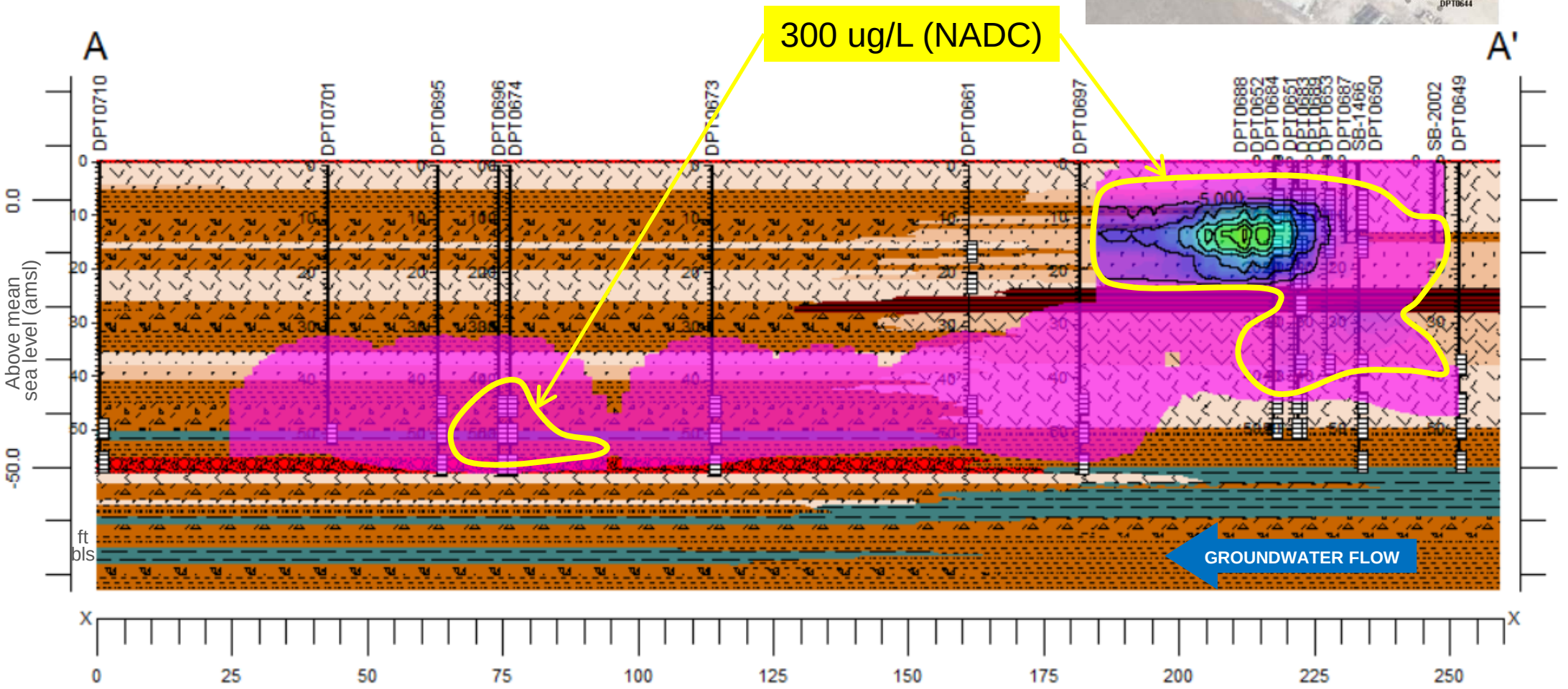




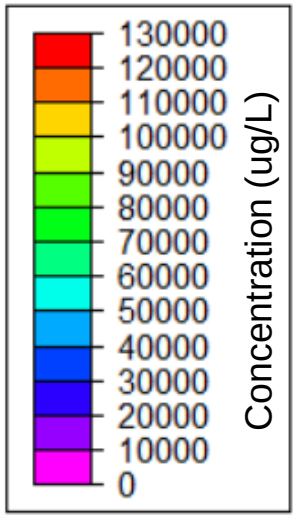
DPT Assessment Results – TCE (>3 ug/L)

- 11 samples >300 micrograms per liter (ug/L)
- Max=129,000 ug/L at DPT0683 between 9 – 13 ft bls





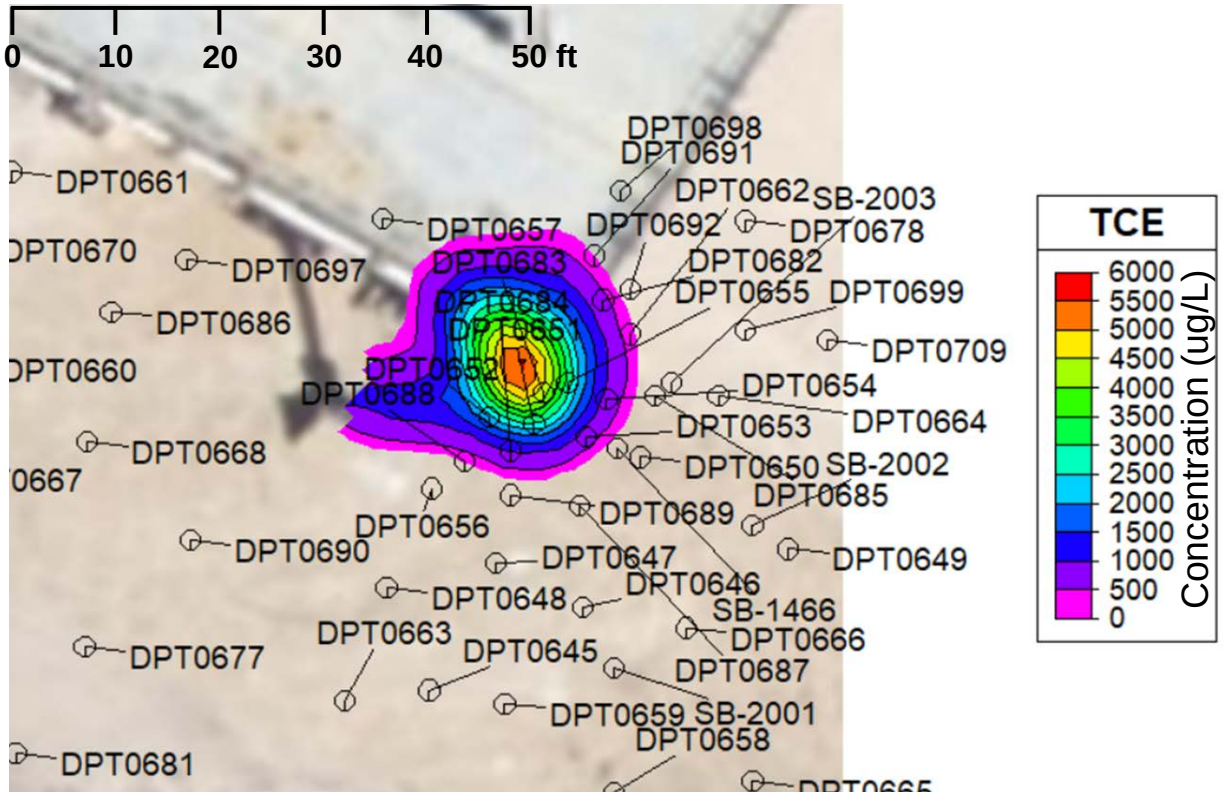




Note: Reporting Limits are included in the interpolated plume extents for all 3D models

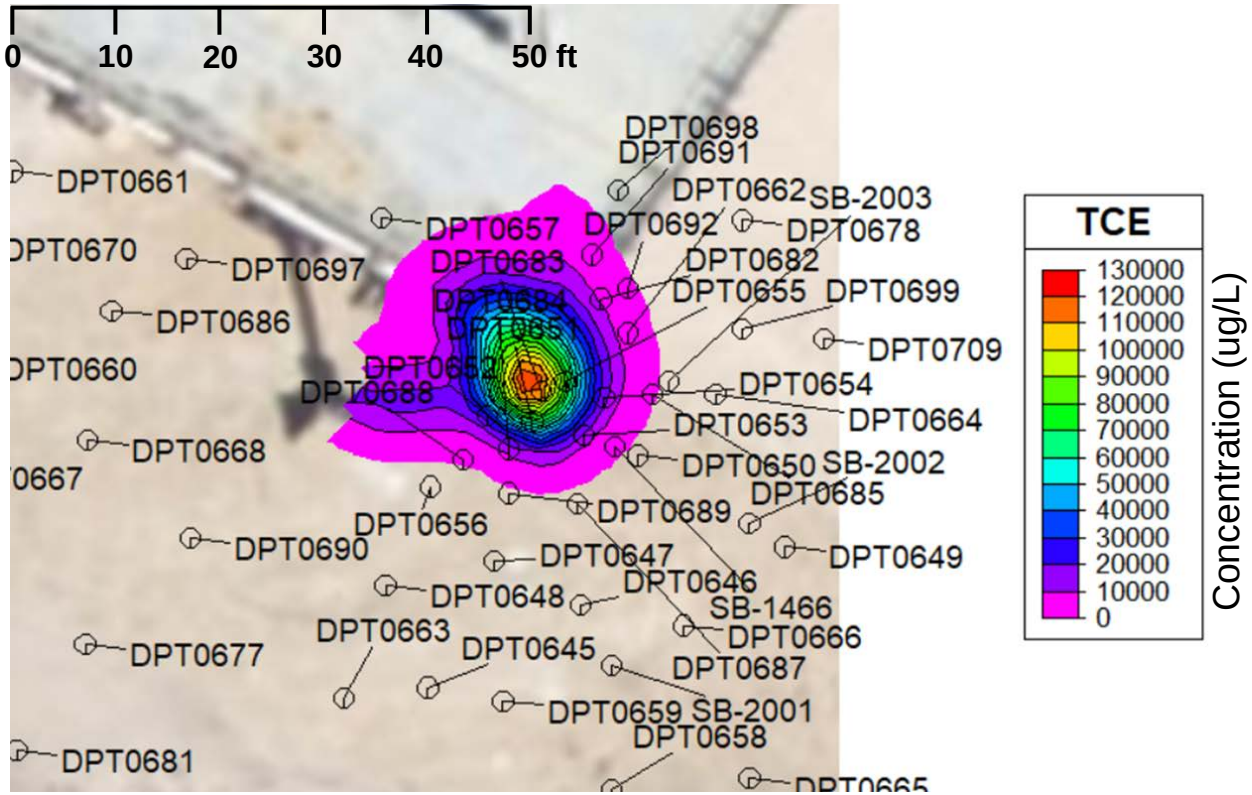
DPT Assessment Results – TCE (>300 ug/L) Plan View

7 ft bls (0 ft amsl)



(fine sand and silty sand)

11 ft bls (-4 ft amsl)

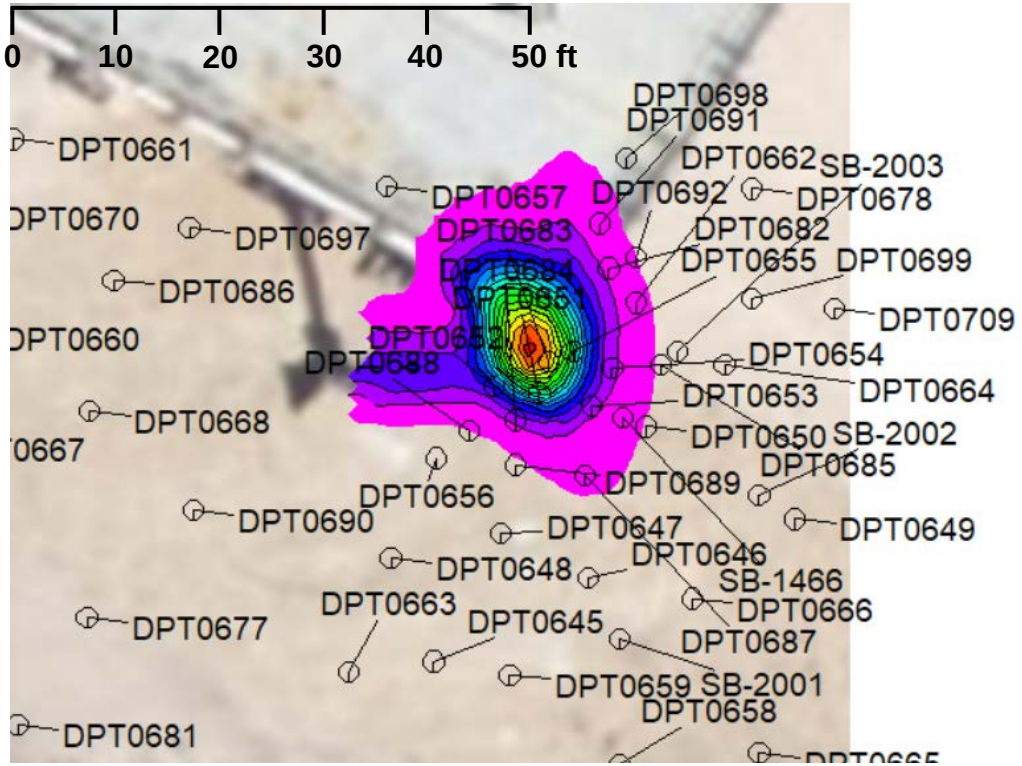


(fine sand and silty sand)

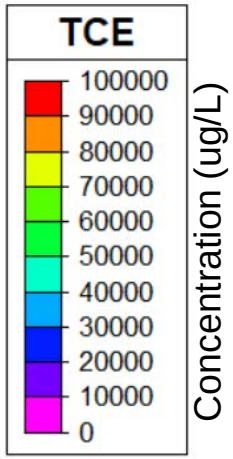
Note: Plan views of plumes are 2D slices through the 3D model of the CVOC concentrations

DPT Assessment Results – TCE (>300 ug/L) Plan View

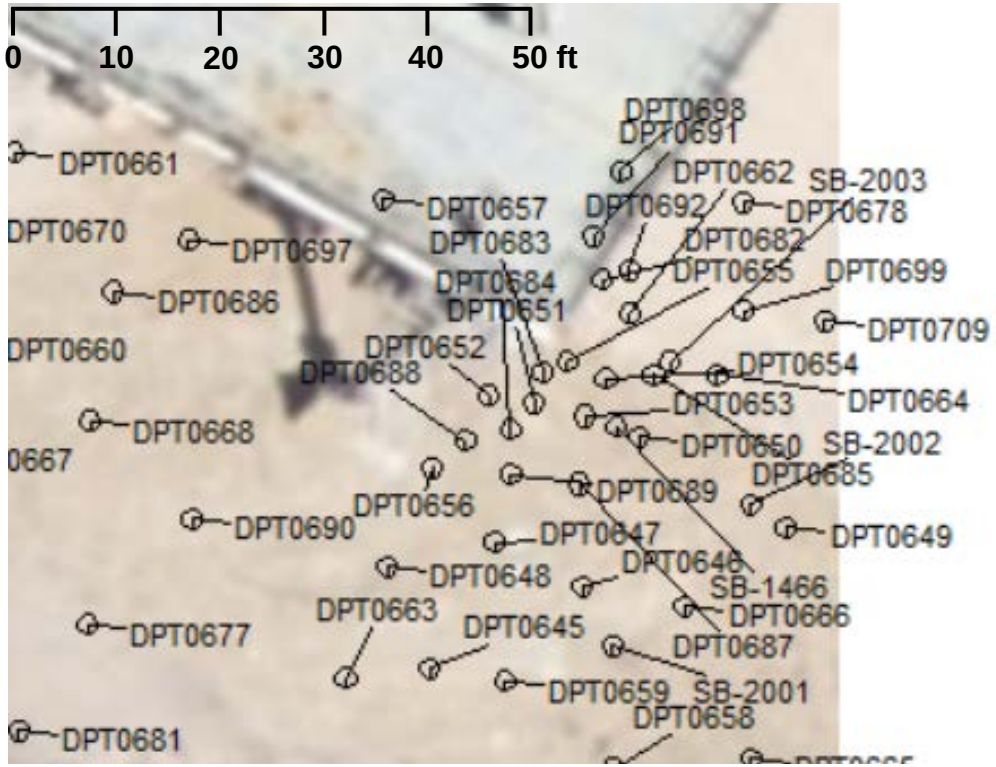
16 ft bls (-9 ft amsl)



(fine sand and silty sand)



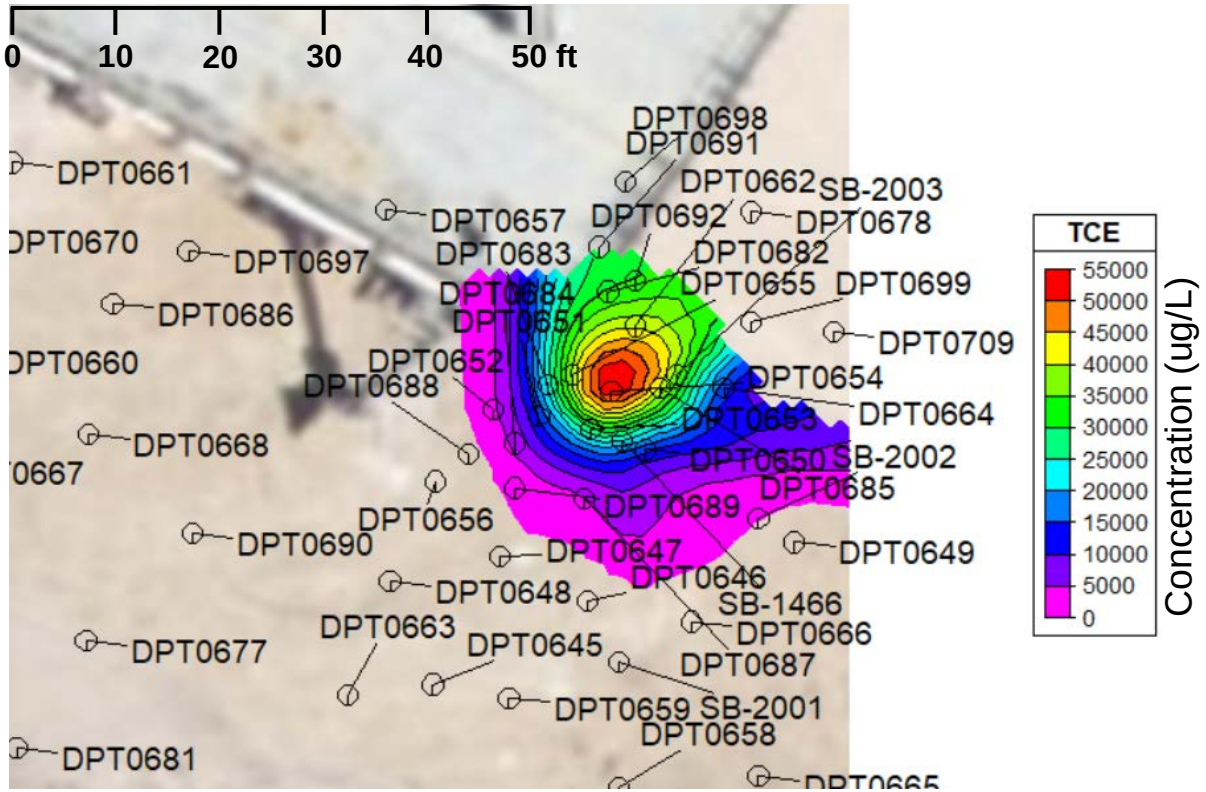
22 to 38 ft bls (-15 to -31 ft amsl)



(fine sand, shell hash, fine sand with shells)

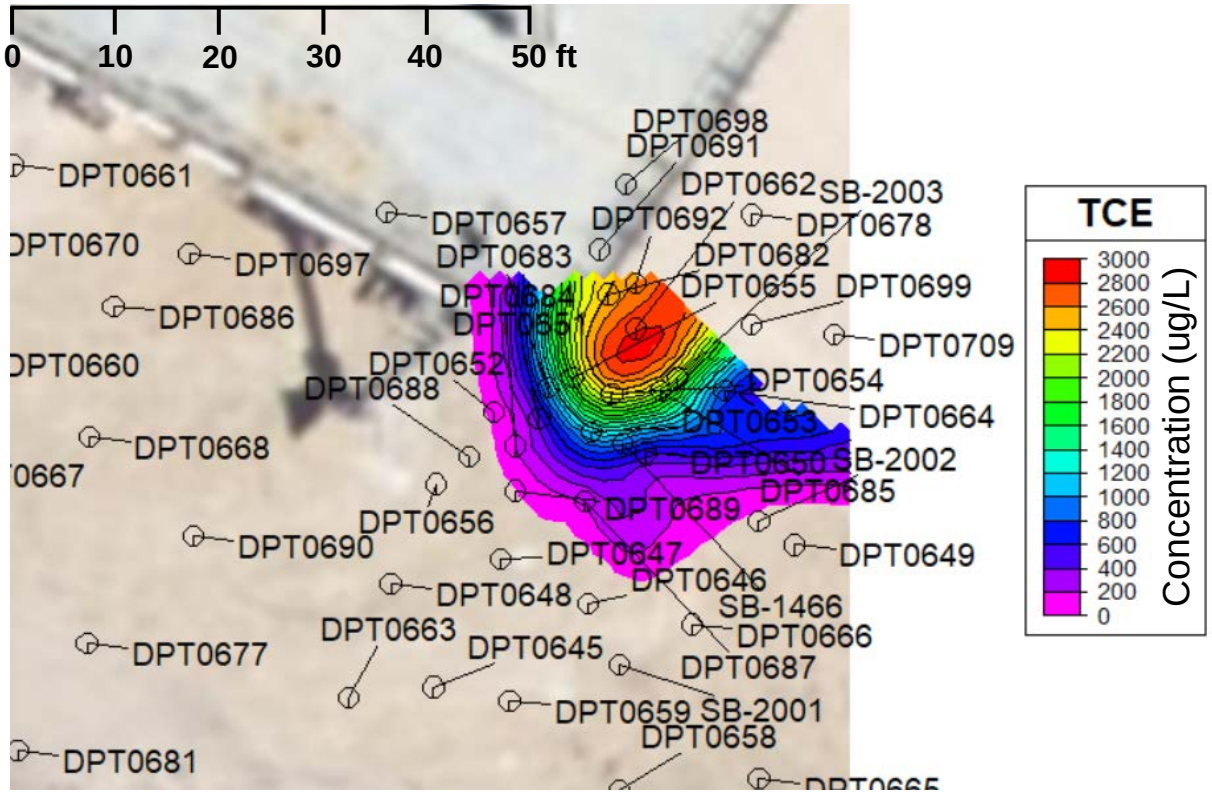
DPT Assessment Results – TCE (>300 ug/L) Plan View

45 ft bls (-38 ft amsl)



(medium sand with shells)

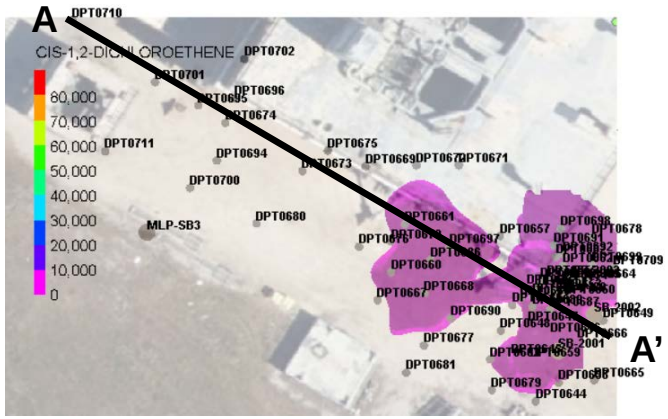
50 ft bls (-43 ft amsl)

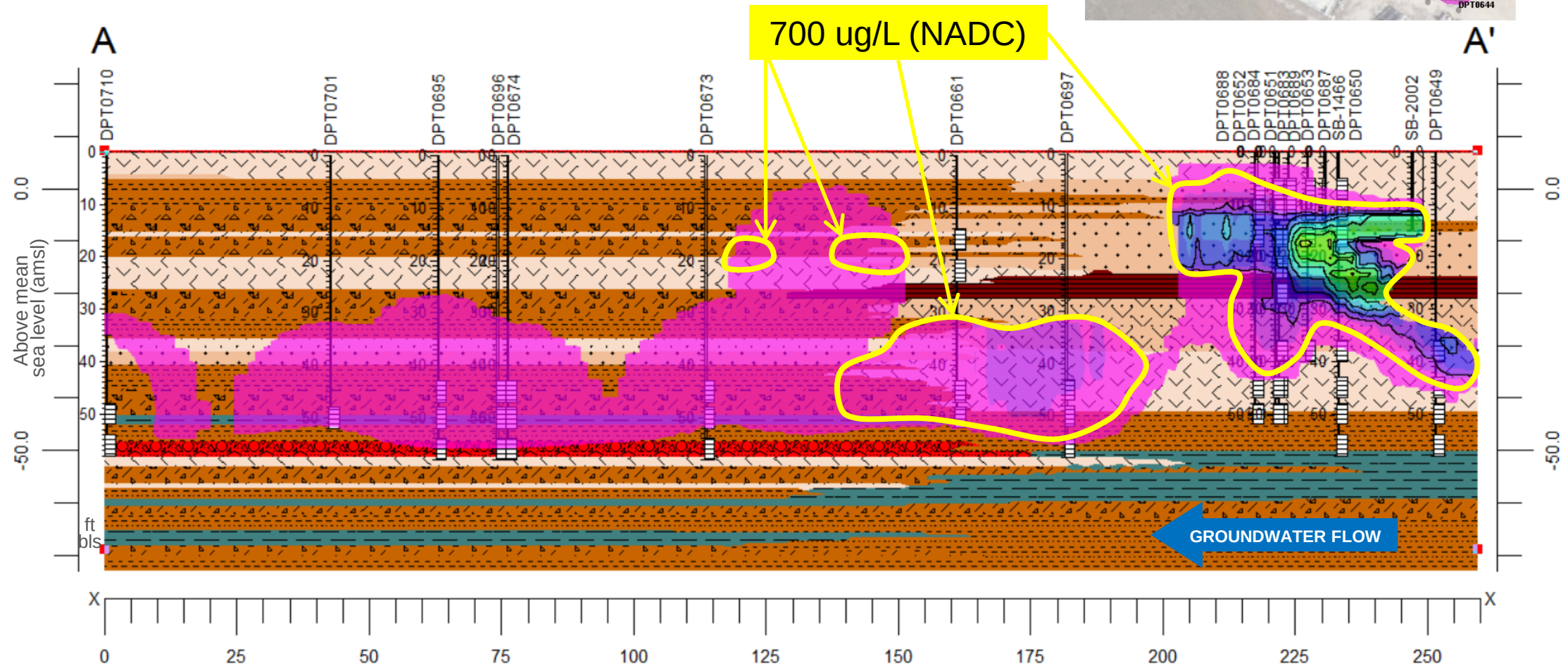


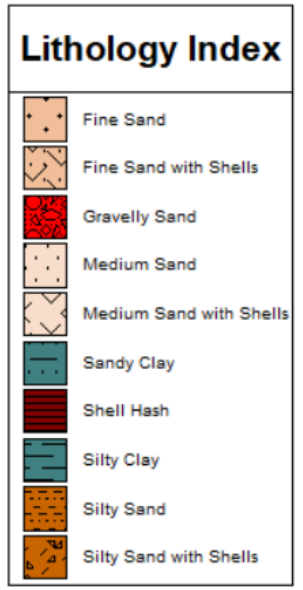
(silty sand)

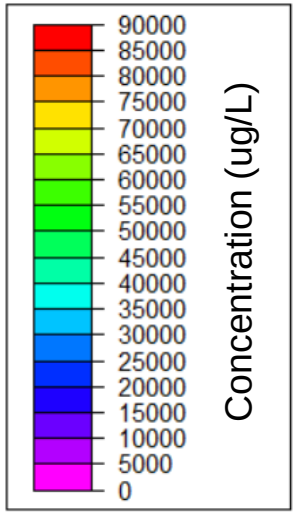
DPT Assessment Results – cDCE (>70 ug/L)

- 24 samples >700 ug/L
- Max=88,000 ug/L at DPT0653 between 14-18 ft bls



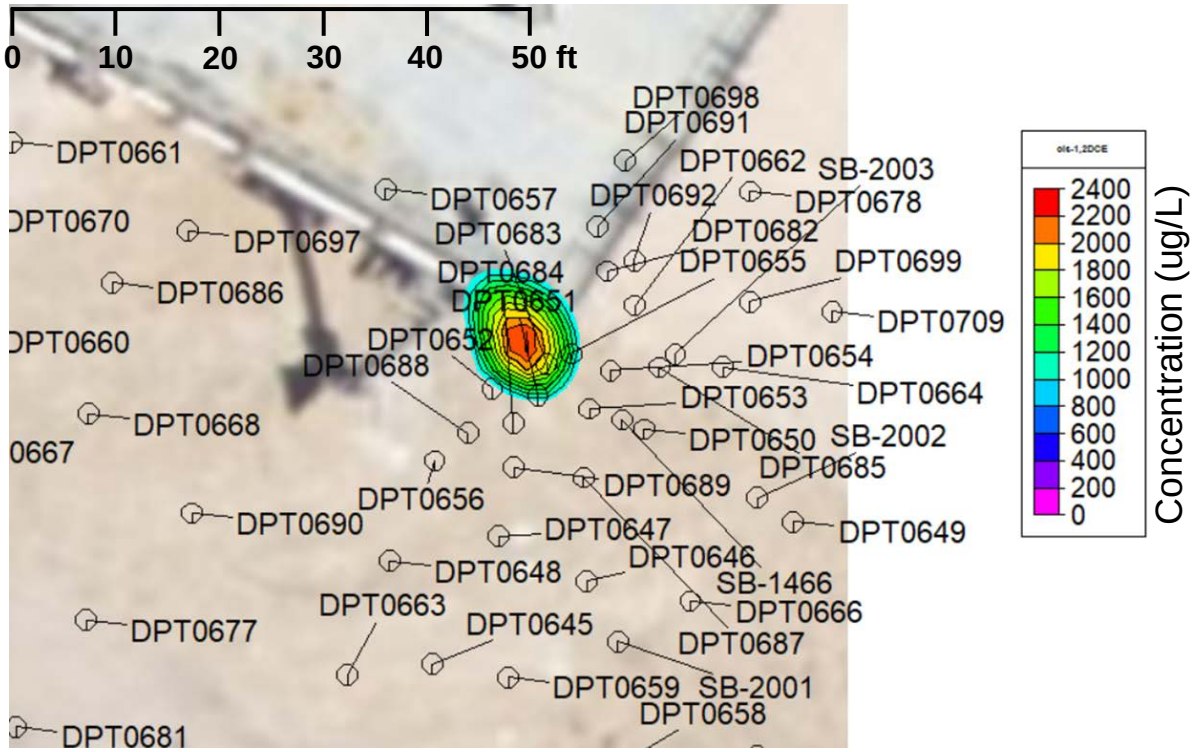






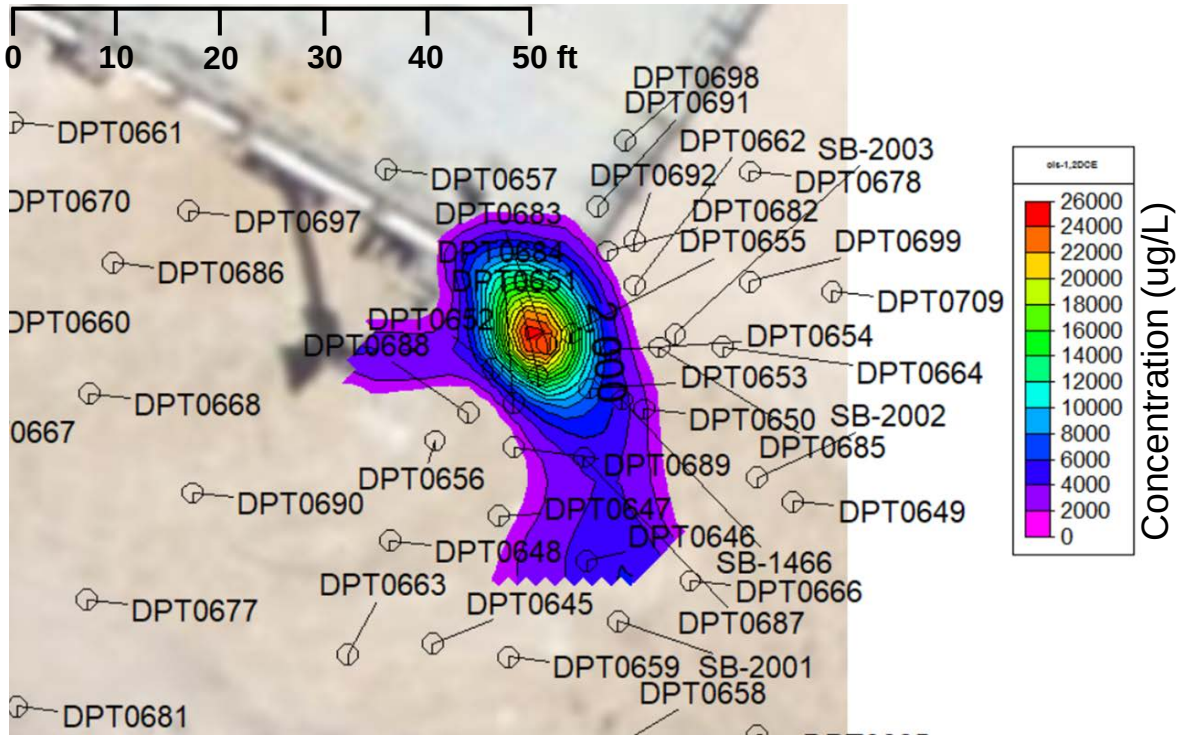
DPT Assessment Results – cDCE (>700 ug/L) Plan View

7 ft bls (0 ft amsl)



(fine sand and silty sand)

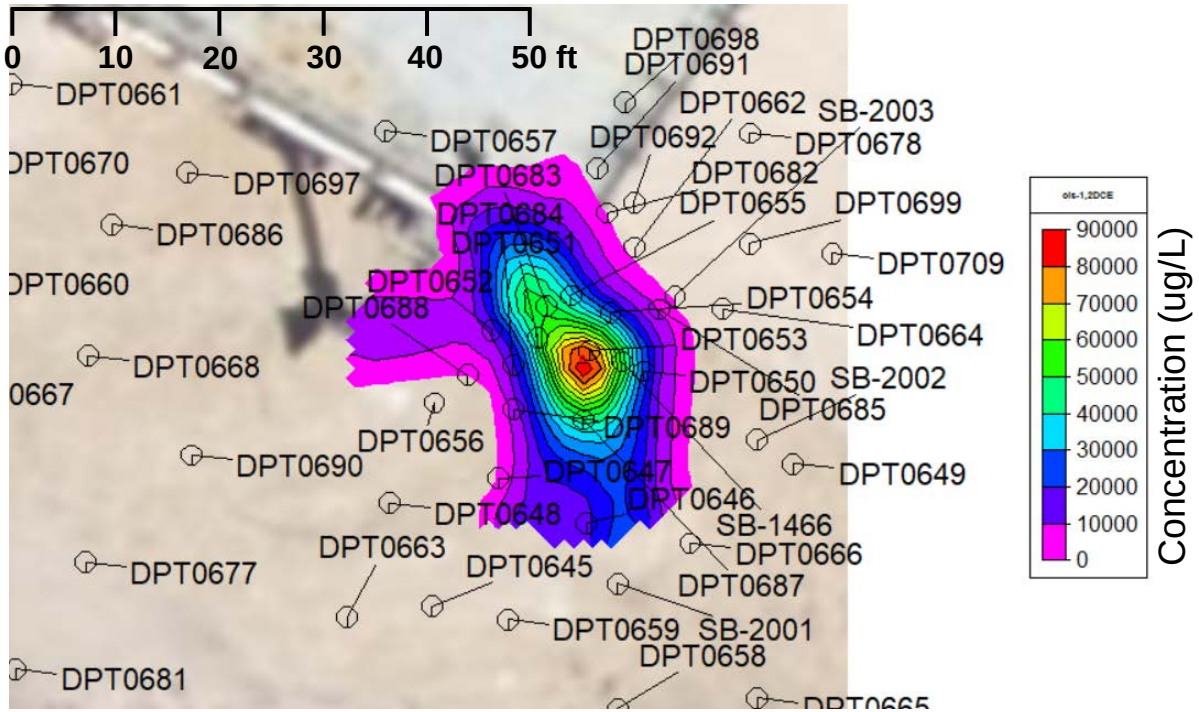
11 ft bls (-4 ft amsl)



(fine sand and silty sand)

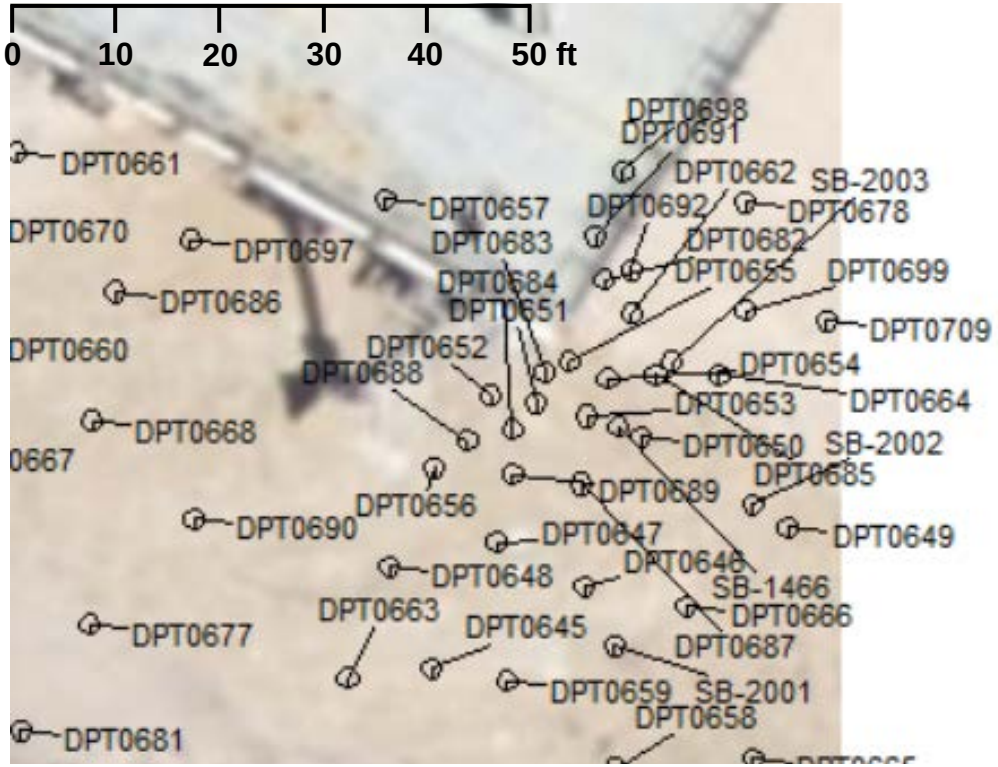
DPT Assessment Results – cDCE (>700 ug/L) Plan View

16 ft bls (-9 ft amsl)



(fine sand and silty sand)

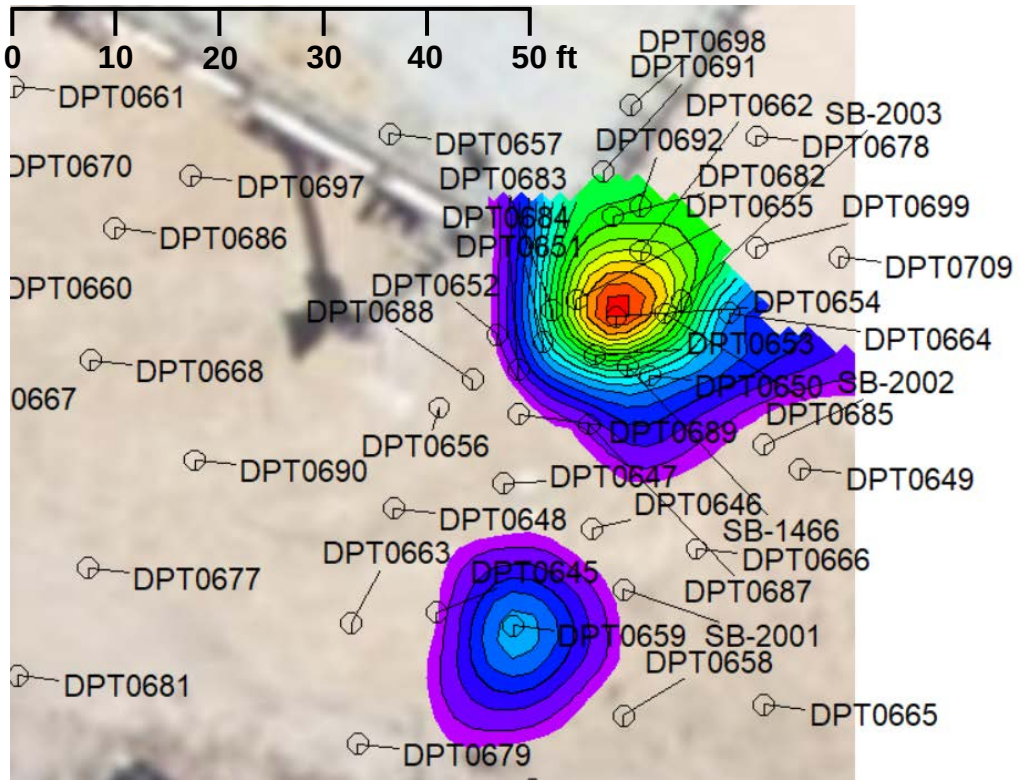
22 to 38 ft bls (-15 to -31 ft amsl)



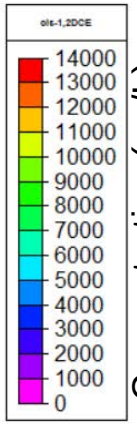
(fine sand, shell hash, fine sand with shells)

DPT Assessment Results – cDCE (>700 ug/L) Plan View

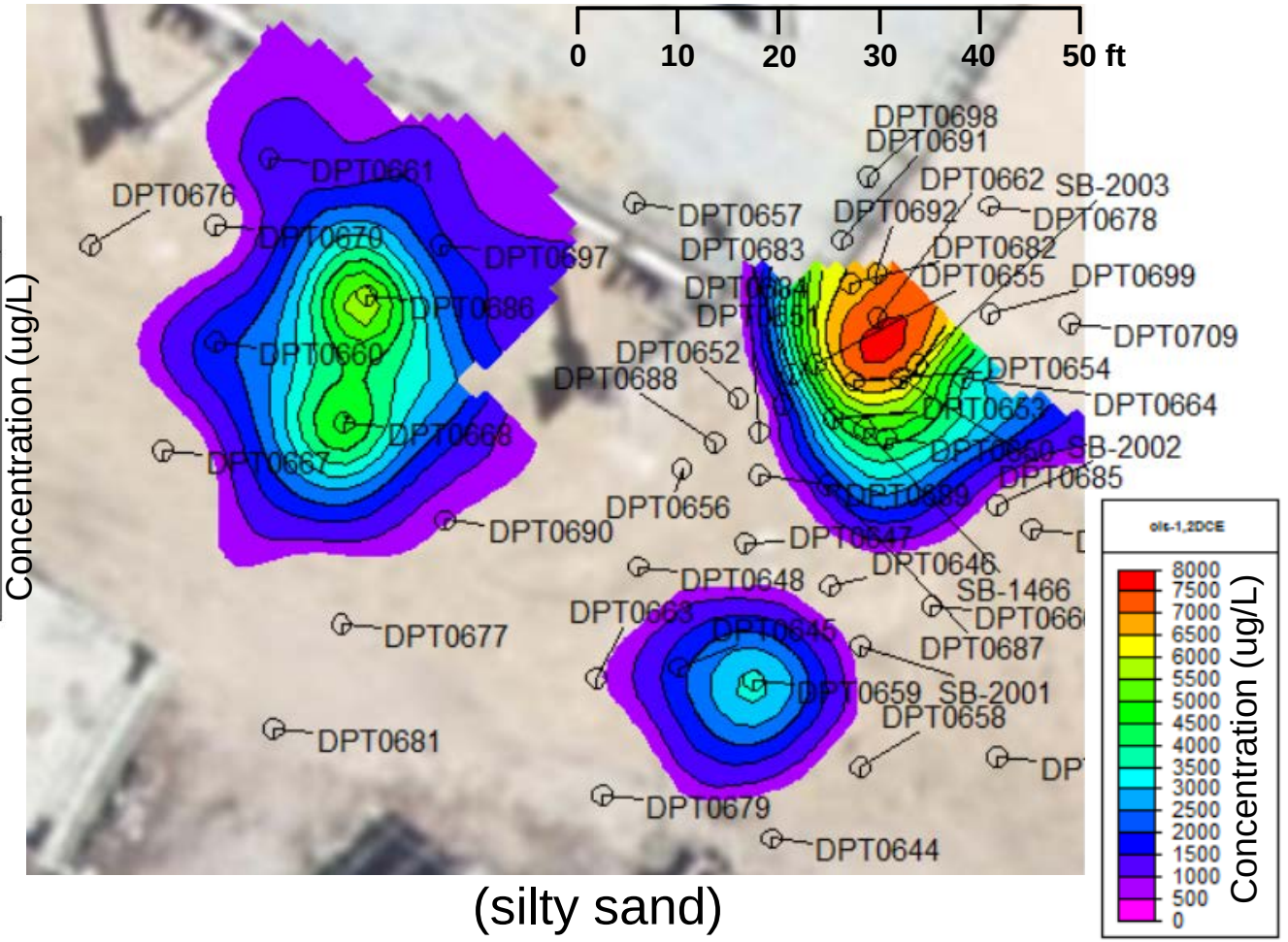
45 ft bls (-38 ft amsl)



(medium sand with shells)



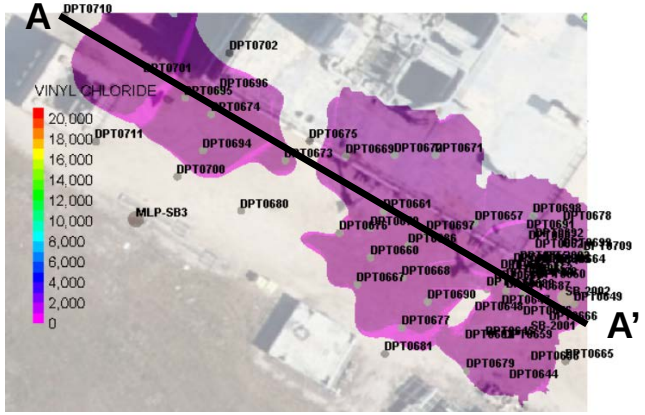
50 ft bls (-43 ft amsl)

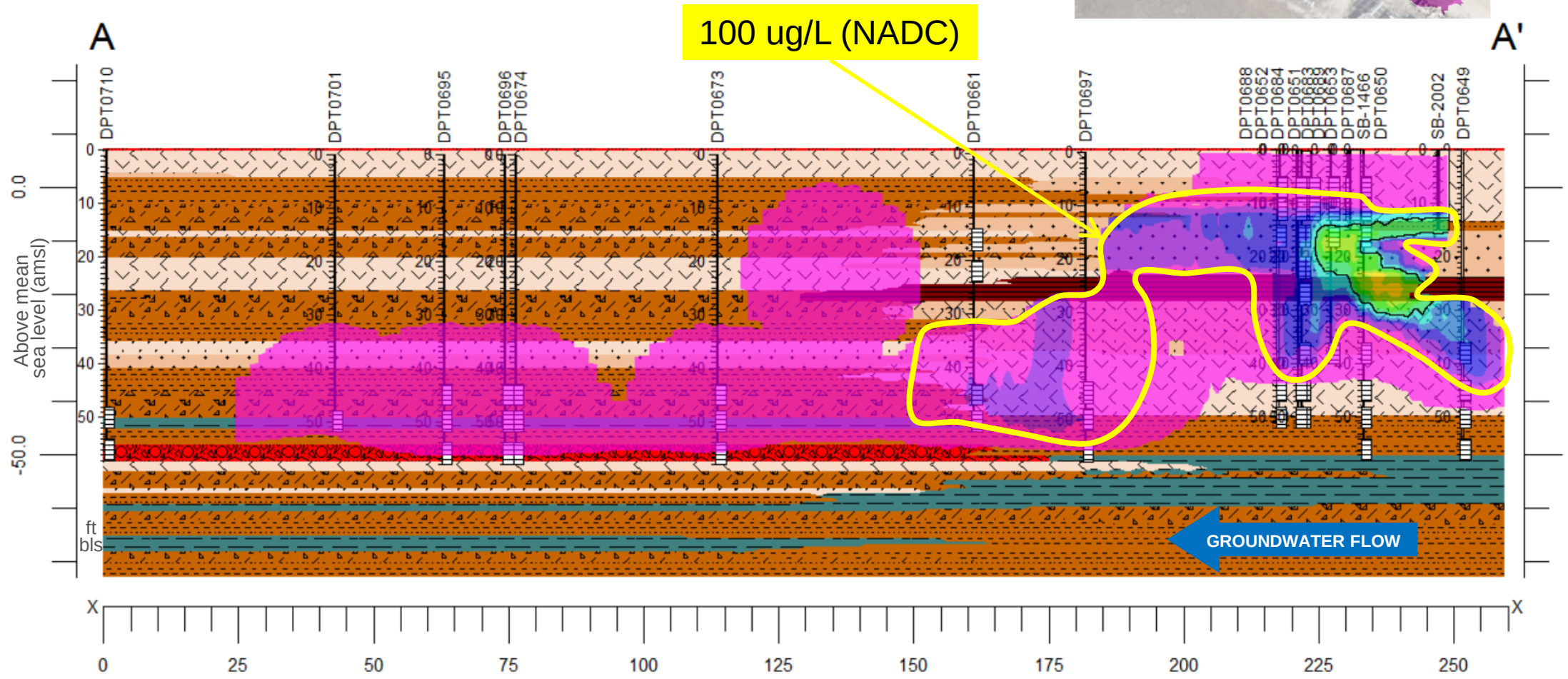


(silty sand)

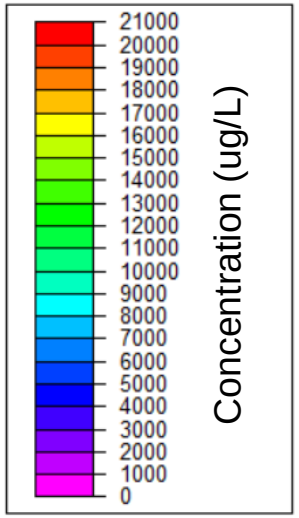
DPT Assessment Results – VC (>1 ug/L)

- 45 samples >100 ug/L
- Max=21,000 ug/L at DPT0653 between 14-18 ft bls



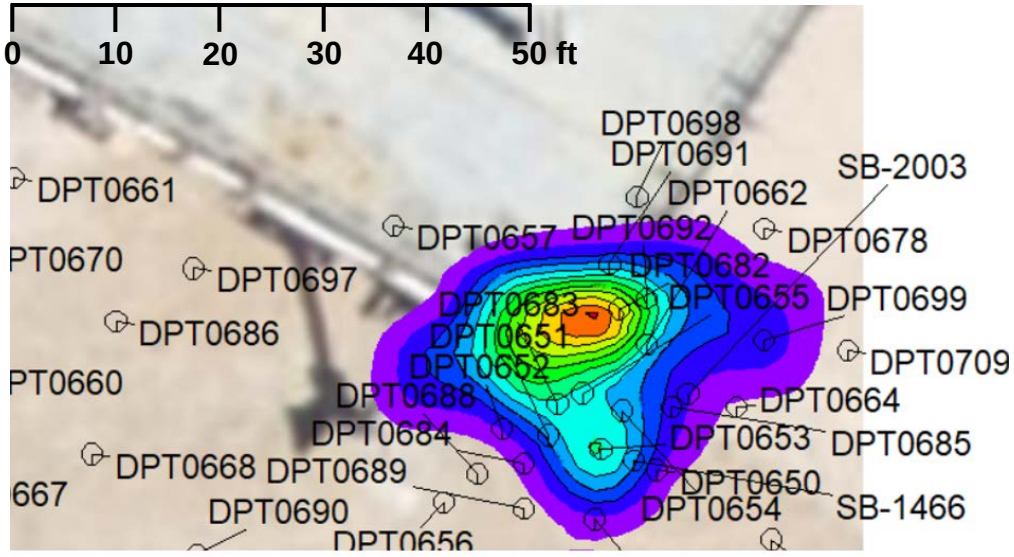


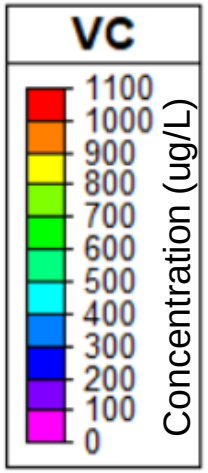




DPT Assessment Results – VC (>100 ug/L) Plan View

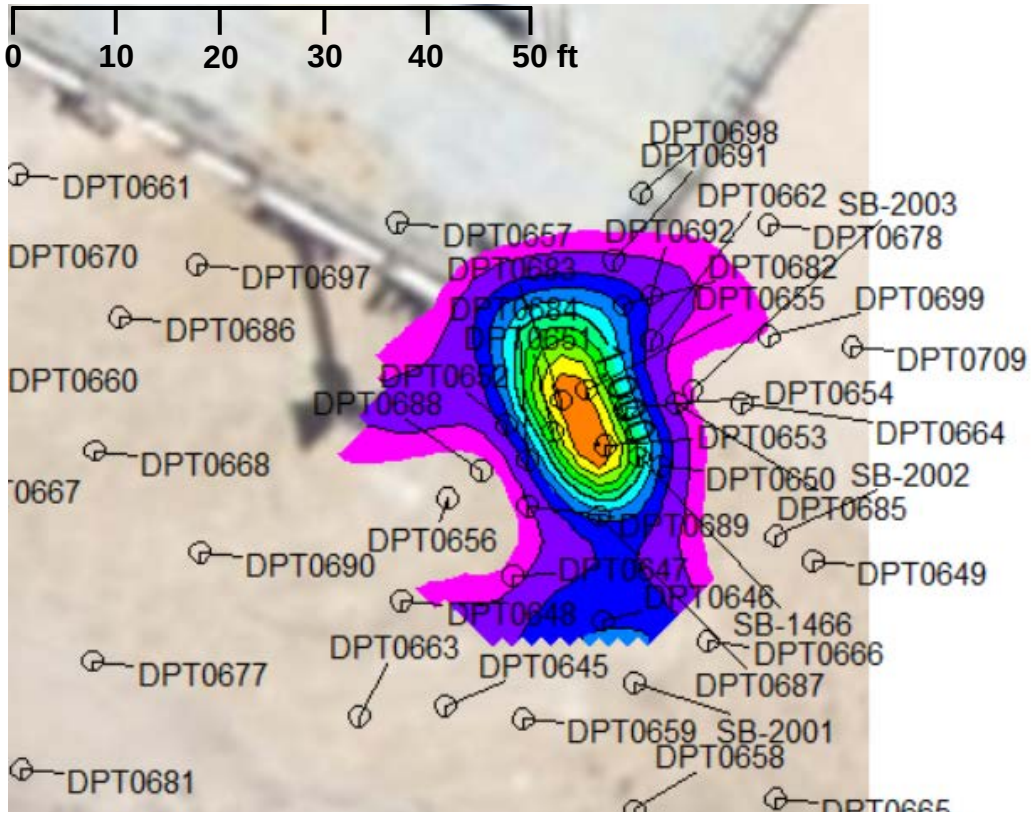
7 ft bls (0 ft amsl)

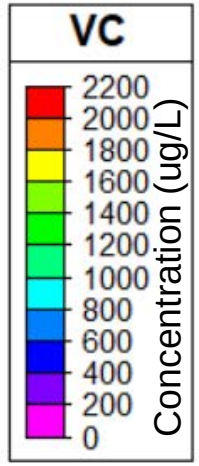




(fine sand and silty sand)

11 ft bls (-4 ft amsl)

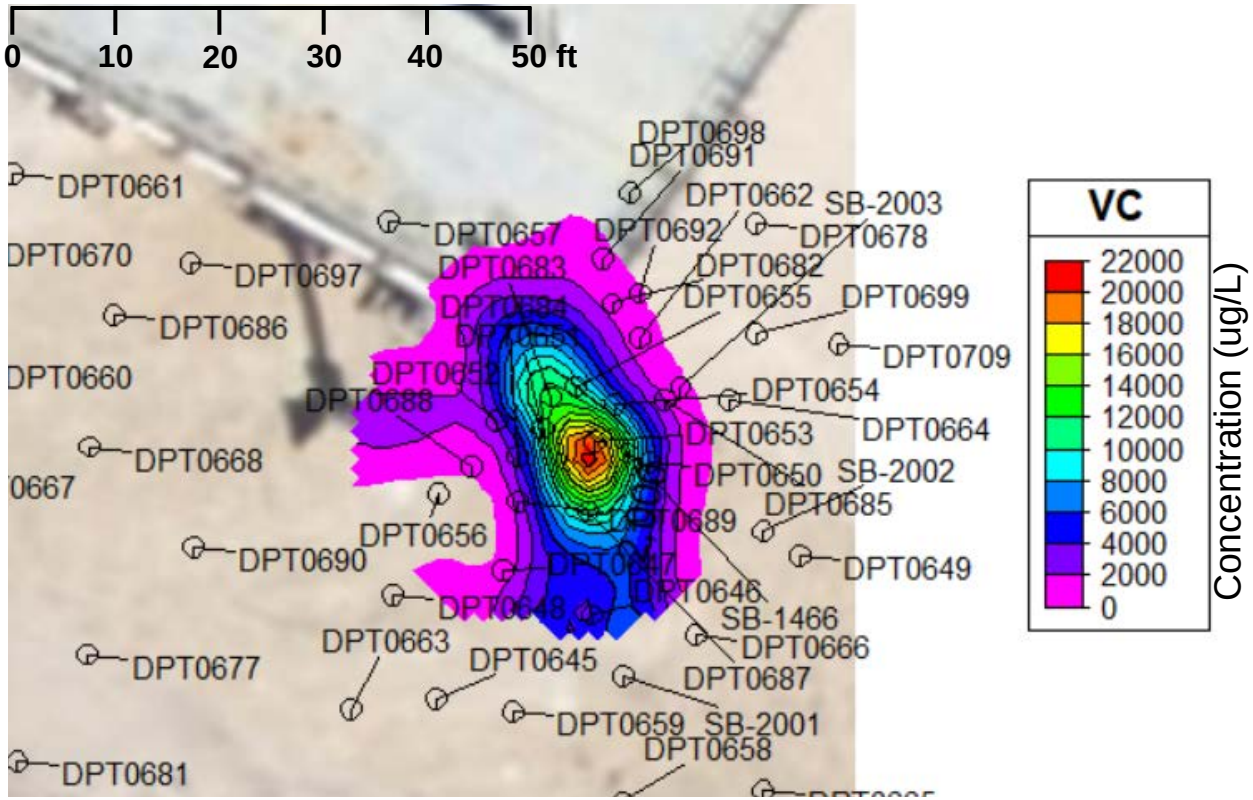




(fine sand and silty sand)

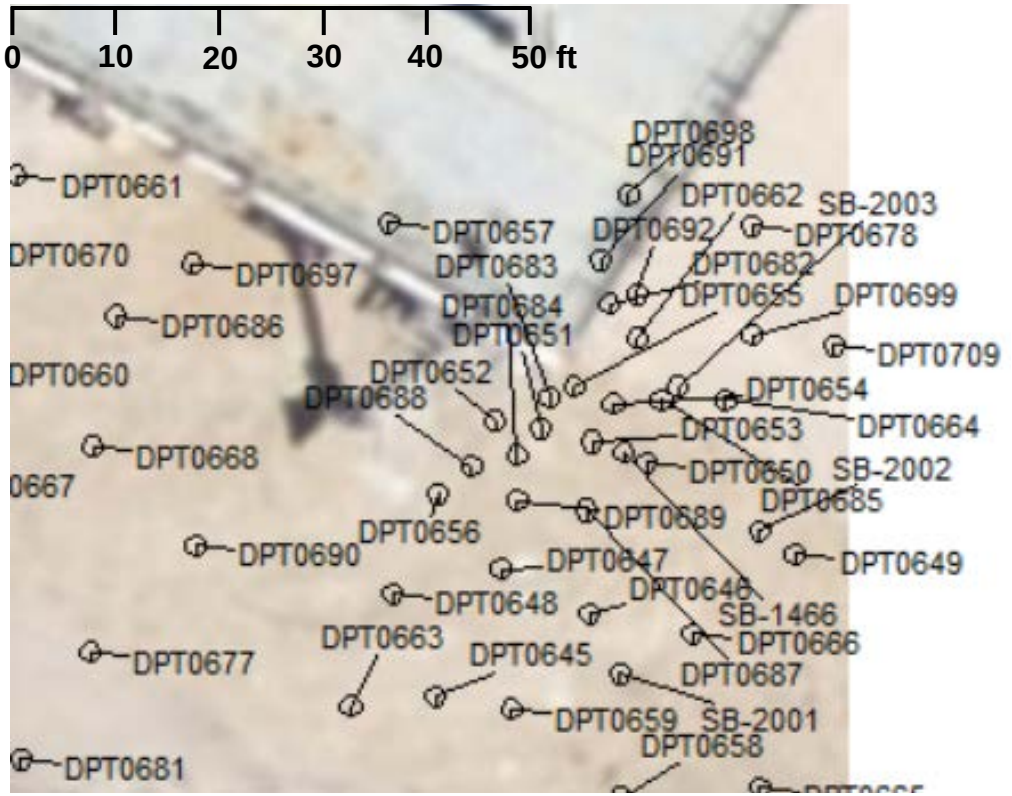
DPT Assessment Results – VC (>100 ug/L) Plan View

16 ft bls (-9 ft amsl)



(fine sand and silty sand)

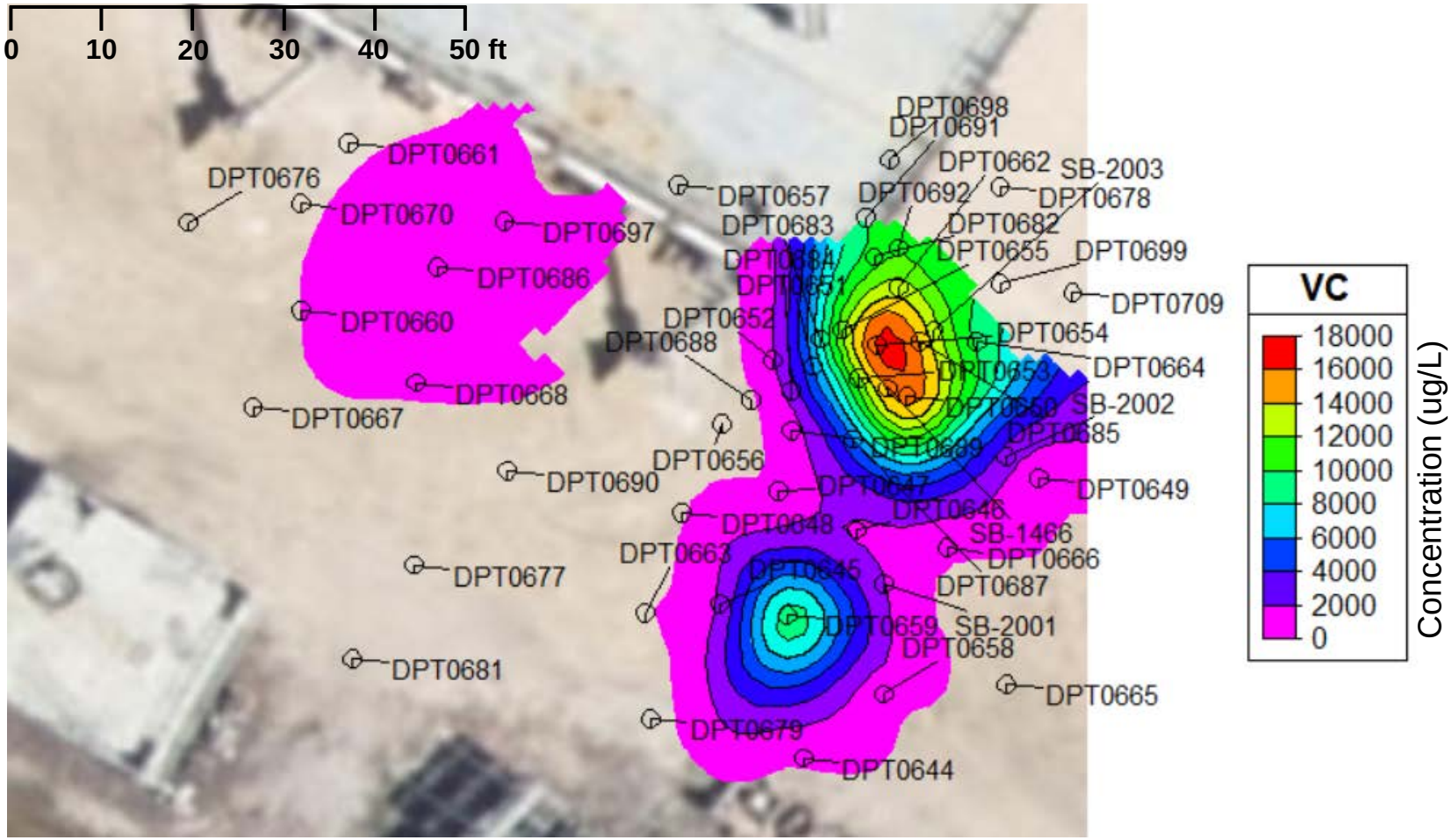
22 to 38 ft bls (-15 to -31 ft amsl)



(fine sand, shell hash, fine sand with shells)

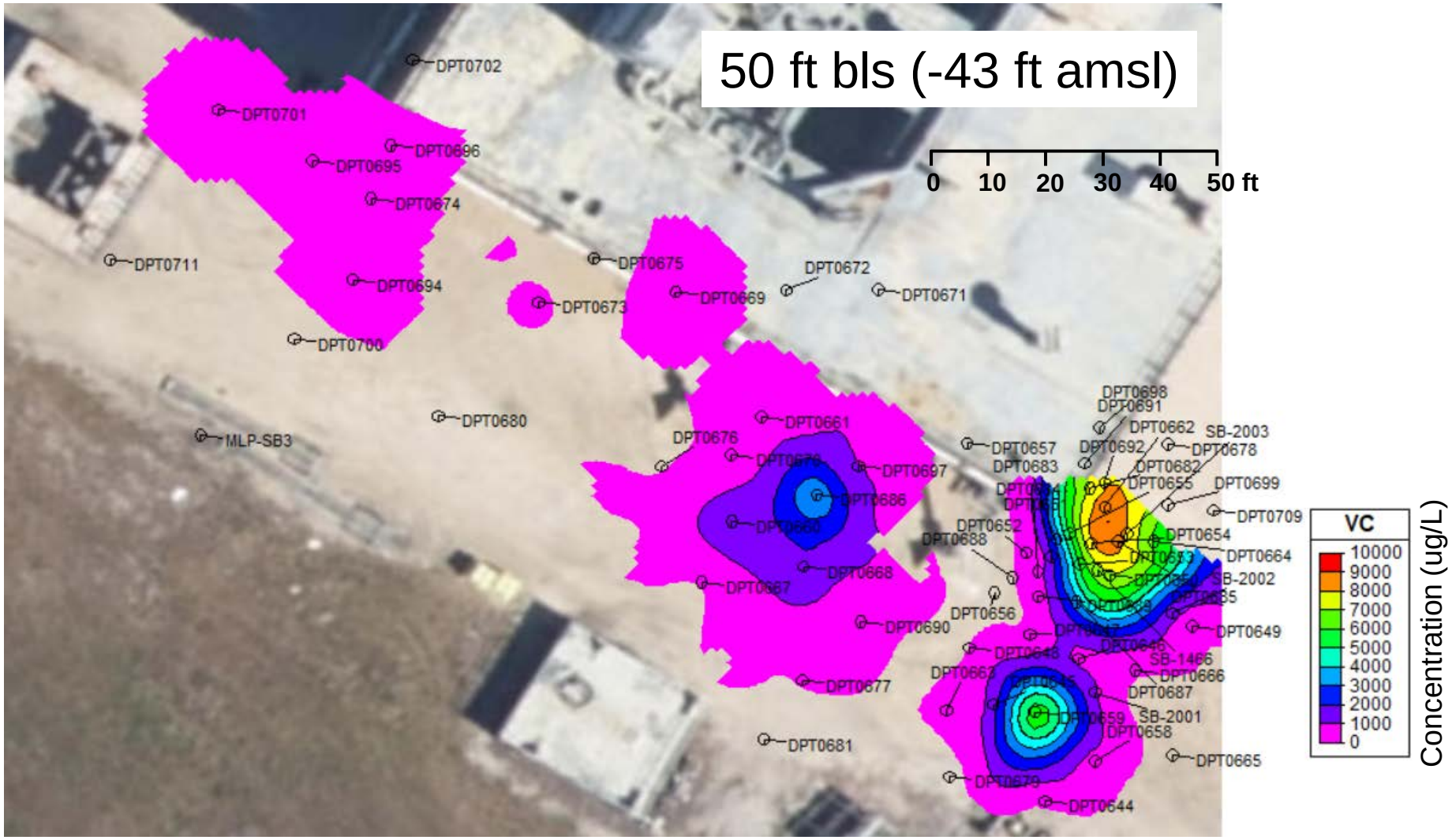
DPT Assessment Results – VC (>100 ug/L) Plan View

45 ft bls (-38 ft amsl)



(medium sand with shells)

DPT Assessment Results – VC (>100 ug/L) Plan View



(silty sand)

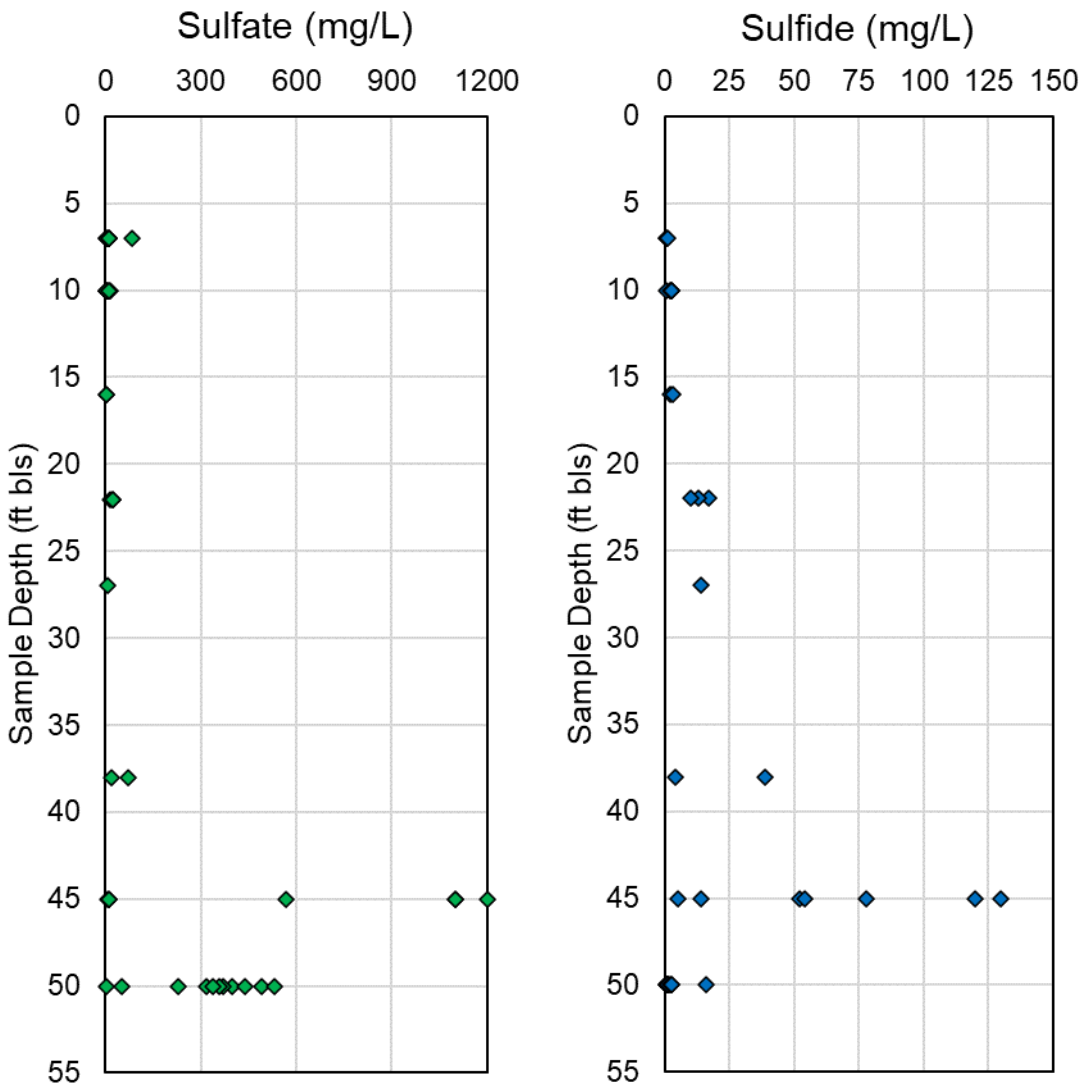
DPT Sampling Summary

- Dissolved CVOCs plumes were delineated to NADCs (GCTLs at some locations)
- Shallow Interval (above 28 ft bls; 2017 treatment depth was 4 to 28 ft bls)
  - Has maximum CVOC concentrations (TCE=129,000 ug/L, cDCE= 88,000 ug/L, VC=21,000 ug/L)
  - Center of plumes (and likely TCE source) is still near SE corner of platform
  - Potential treatment areas (NADC plumes) vary by CVOC:
    - TCE: ~30 ft diameter and consistent to 28 ft bls
    - cDCE: area expands (~10 to ~30 ft diameter) with depth and to the south
    - VC: ~20x30 ft
- Deep Interval (below 40 ft bls; 2017 treatment depth was 39 to 57 ft bls)
  - CVOC concentrations generally decrease with depth and are less than shallow groundwater
  - Center of plumes and treatment areas (NADC plumes) vary by CVOC:
    - TCE: ~25x40 ft with center (max concentrations) ~10 ft east of center in shallow groundwater
    - cDCE: coincides with TCE plus 2 other areas south and downgradient (lower concentrations)
    - VC: similar to cDCE (3 areas) with larger downgradient areas

DPT Sampling Summary

Geochemistry (sulfate/sulfide)

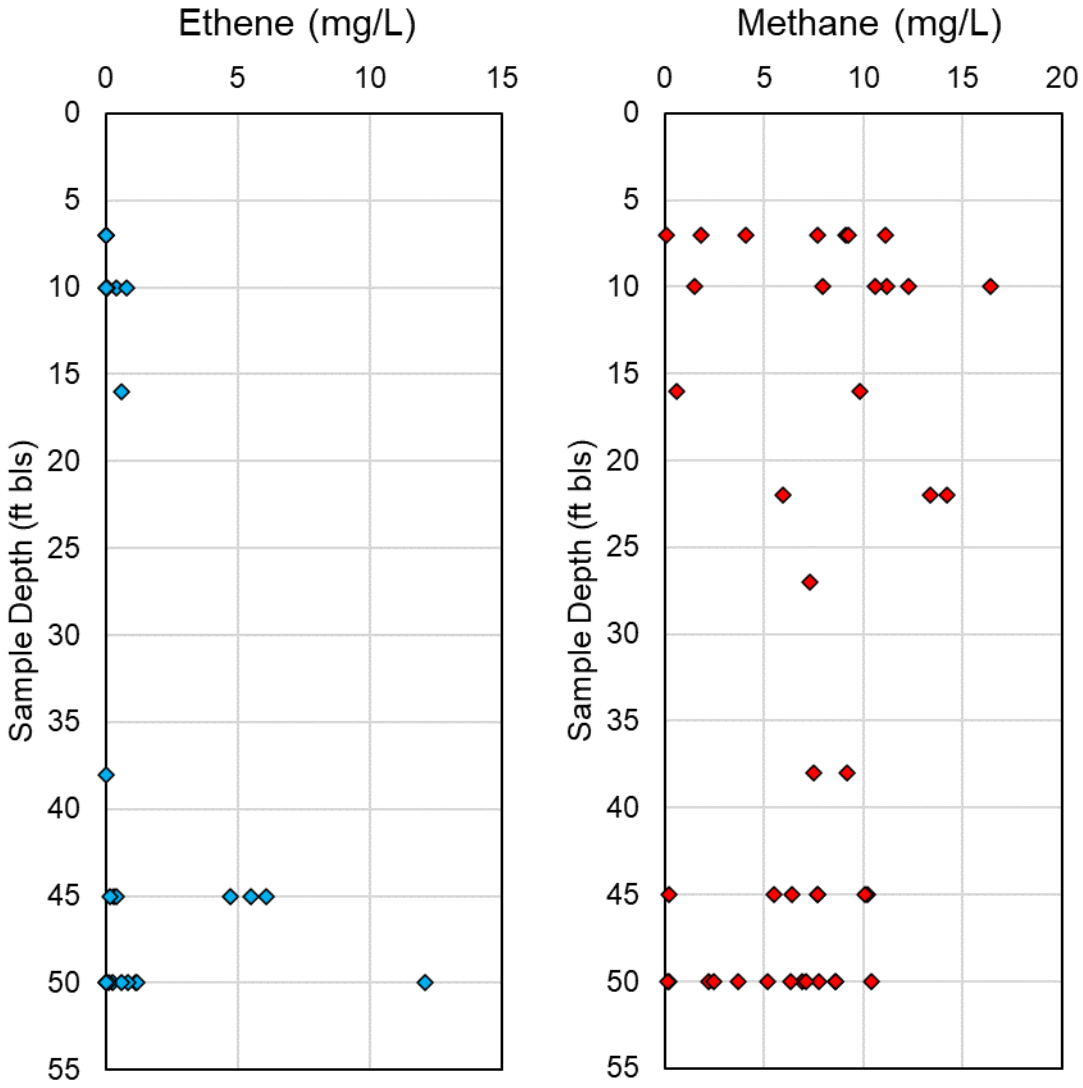
- Sulfate
  - <1 to 1,200 milligrams per liter (mg/L)
  - Average of ~200 mg/L
  - Highest concentrations below 40 ft bls
- Sulfide
  - <1 to 130 mg/L
  - Average of ~16 mg/L
  - Highest concentrations below 40 ft bls
- Sulfate concentrations are high and sulfate reducers are competing for electron donor (TOC) with *Dhc* and other microbes that support enhanced reductive dechlorination (ERD)
- Sulfide concentrations are high (not typical) indicating limited natural iron to precipitate sulfide and the potential inhibition of microbial activity and ERD



DPT Assessment Summary

Geochemistry

- TOC
  - 1.5 to 2,800 mg/L (max at 45 ft bls)
  - Average of ~120 mg/L
  - Can support ERD but not optimal
- Ethene
  - <1 to 12 mg/L (max at 50 ft bls)
  - Average of ~1.4 mg/L
  - Indicates complete ERD in shallow (5 to 18 ft bls) and deep (38 to 52 ft bls) groundwater
- Methane
  - <1 to 16 mg/L (max at 10 ft bls)
  - Average of ~7 mg/L
  - Indicates methanogenesis activity is high (good redox for ERD) and methanogens are competing for electron donor (inefficient use of TOC)
  - Potential for unsafe condition in confined space



Conclusion

Remediation Progress

- EVO injection decreased CVOC mass and plume footprints (source likely still present)
- Redox and pH are appropriate for ongoing ERD but TOC is depleted and not optimal
- High sulfate and low natural iron to control sulfide likely limits ERD and optimal use of TOC
- High methane indicates non-optimal use of TOC by methanogens that limit ERD

Recommendations

- Create optimal conditions for long-term CVOCs degradation that treats plumes and mass flux from the source

Remediation Strategy/Approach

- Promote in situ chemical reduction (ISCR) by emplacing a product that:
  - Enhances biotic and abiotic reduction of CVOCs for a long period (5 or more years)
  - Maintains optimal conditions by limiting methanogenesis and managing sulfate reduction and sulfide accumulation

Conclusion and Team Consensus

Recommended Remedial Approach

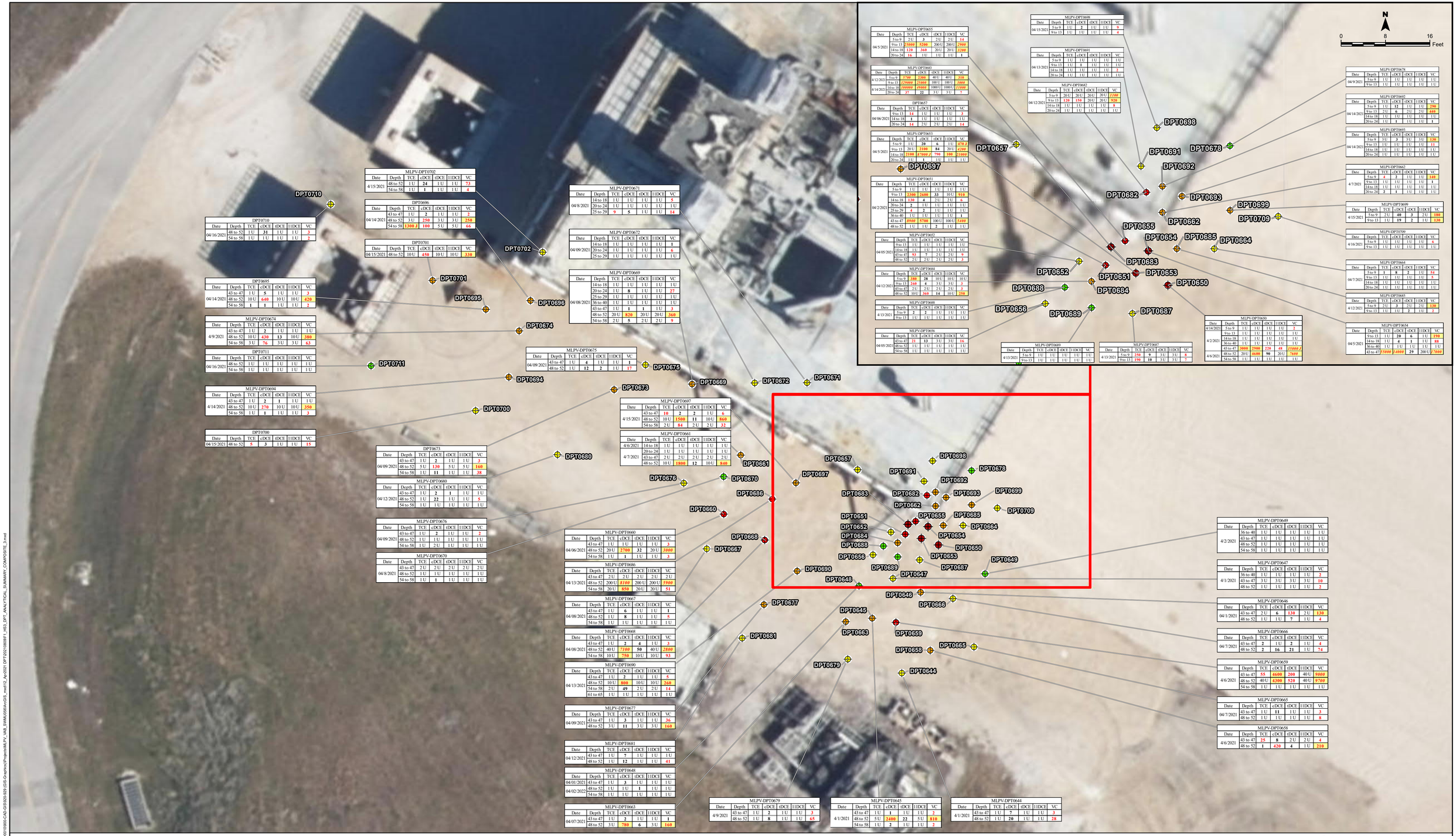
- Optimal ISCR approach uses a slow-release hydrogen substrate and micro- or nano-scale zero valent iron (ZVI)
- High-pressure injection of the product (likely a high viscosity slurry) is typically performed with direct-push, special injection tooling, and high-pressure pumps (>300 psi) to create lateral hydraulic fractures to distribute the remedial product at specified depth intervals
- Process is self-buffering because of ZVI
- Oxidation of ZVI provides iron to limit sulfide accumulation (formation/precipitation of iron sulfides can expand treatment volume)
- Potential products to be evaluated (availability, costs, and injection vendor experience)
  - Provect-IR is a solid that is mixed with water and injected as a slurry. Includes slow-release solid organic hydrogen donors, ZVI, oxygen scavengers, and red yeast rice (RYR) extract to limit methanogenesis
  - PeroxyChem EHC and EHC Plus are similar to Provect-IR but do not include the methanogenesis inhibitor (EHC Plus adds powdered activated carbon to add adsorption to the degradation processes)

Team Consensus

- Proceed with an IMWP to implement ISCR to treat key CVOCs (TCE, cDCE, and VC) exceeding their respective NADC.

  (TCE > 300 ug/L, cDCE >700 ug/L, and VC >100 ug/L)


NASA



MLPV-DPT0702

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	48 to 52	1 U	**24**	1 U	1 U	**73**
	54 to 58	1 U	**1**	1 U	1 U	**4**

DPT0696

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	43 to 47	1 U	**2**	1 U	1 U	**2**
	48 to 52	1 U	**250**	3 U	3 U	**250**
	54 to 58	**1300 J**	**100**	5 U	5 U	**66**

DPT0701

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	10 U	**450**	10 U	10 U	**330**

DPT0710

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	48 to 52	1 U	**31**	1 U	1 U	**3**
	54 to 58	1 U	1 U	1 U	1 U	**2**

DPT0695

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	43 to 47	1 U	**5**	1 U	1 U	**3**
	48 to 52	10 U	**640**	10 U	10 U	**420**
	54 to 58	**1**	**1**	1 U	1 U	**2**

MLPV-DPT0674

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	**2**	1 U	1 U	1 U
	48 to 52	10 U	**430**	**13**	10 U	**380**
	54 to 58	3 U	**76**	3 U	3 U	**63**

DPT0711

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0694

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	43 to 47	1 U	**2**	1 U	1 U	1 U
	48 to 52	10 U	**270**	10 U	10 U	**350**
	54 to 58	1 U	**1**	1 U	1 U	**3**

DPT0700

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	**5**	**3**	1 U	1 U	**15**

DPT0673

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**2**	1 U	1 U	**3**
	48 to 52	5 U	**130**	5 U	5 U	**160**
	54 to 58	1 U	**11**	1 U	1 U	**38**

MLPV-DPT0680

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	**2**	**1**	1 U	1 U
	48 to 52	1 U	**22**	1 U	1 U	**5**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0676

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**2**	1 U	1 U	**2**
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0670

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	**1**	1 U	1 U	1 U

MLPV-DPT0671

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	14 to 18	1 U	1 U	1 U	1 U	**5**
	20 to 24	1 U	1 U	1 U	1 U	1 U
	25 to 29	**9**	**5**	1 U	1 U	**14**

MLPV-DPT0672

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	14 to 18	1 U	1 U	1 U	1 U	**1**
	20 to 24	1 U	1 U	1 U	1 U	**6**
	25 to 29	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0669

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	**8**	1 U	1 U	**27**
	25 to 29	1 U	1 U	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	1 U	**1**	**1**	1 U	**3**
	48 to 52	20 U	**820**	20 U	20 U	**360**
	54 to 58	2 U	**5**	2 U	2 U	9

MLPV-DPT0675

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**4**	1 U	1 U	**1**
	48 to 52	1 U	**12**	**2**	1 U	**17**

MLPV-DPT0697

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	43 to 47	**10**	**9**	**2**	1 U	**6**
	48 to 52	10 U	**1500**	**11**	10 U	**860**
	54 to 58	2 U	**84**	2 U	2 U	**32**

MLPV-DPT0661

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U
4/7/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	10 U	**1800**	**12**	10 U	**840**

MLPV-DPT0660

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	43 to 47	1 U	1 U	1 U	1 U	**3**
	48 to 52	20 U	**2700**	**32**	20 U	***1000***
	54 to 58	1 U	**1**	1 U	1 U	**3**

MLPV-DPT0686

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
	48 to 52	200 U	***8100***	200 U	200 U	***5900***
	54 to 58	20 U	**850**	20 U	20 U	**51**

MLPV-DPT0667

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	**6**	1 U	1 U	**1**
	48 to 52	1 U	**8**	1 U	1 U	**5**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0668

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	**2**	**4**	1 U	**3**
	48 to 52	40 U	***7100***	**50**	40 U	***2800***
	54 to 58	10 U	**750**	10 U	10 U	**93**

MLPV-DPT0690

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	1 U	**2**	1 U	1 U	**5**
	48 to 52	10 U	**800**	10 U	10 U	**260**
	54 to 58	2 U	**49**	2 U	2 U	**14**
	61 to 65	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0677

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	**3**	1 U	1 U	**36**
	48 to 52	3 U	**11**	3 U	3 U	**160**

MLPV-DPT0681

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	**7**	1 U	1 U	1 U
	48 to 52	1 U	**12**	1 U	1 U	**41**

MLPV-DPT0648

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/01/2021	43 to 47	1 U	**3**	1 U	1 U	1 U
04/02/2021	48 to 52	1 U	1 U	**1**	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0663

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/07/2021	43 to 47	1 U	**2**	1 U	1 U	**1**
	48 to 52	3 U	**780**	**6**	3 U	**160**

MLPV-DPT0679

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	**2**	1 U	1 U	**3**
	48 to 52	1 U	**8**	1 U	1 U	**65**

MLPV-DPT0645

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	**1**	1 U	1 U	**2**
	48 to 52	5 U	**2400**	**22**	5 U	**810**
	54 to 58	1 U	**2**	1 U	1 U	**2**

MLPV-DPT0644

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	**7**	1 U	1 U	**3**
	48 to 52	1 U	**20**	1 U	1 U	**28**

MLPV-DPT0649

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	1 U	1 U	1 U	1 U	1 U
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0647

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	36 to 40	1 U	1 U	1 U	1 U	**2**
	43 to 47	3 U	3 U	3 U	3 U	**10**
	48 to 52	1 U	1 U	1 U	1 U	**2**

MLPV-DPT0646

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/1/2021	43 to 47	2 U	**6**	**130**	2 U	**130**
	48 to 52	1 U	1 U	**7**	1 U	**4**

MLPV-DPT0666

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	**2**	1 U	**2**	1 U	**4**
	48 to 52	**2**	**16**	**21**	1 U	**74**

MLPV-DPT0659

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	**55**	**4600**	**200**	40 U	***9000***
	48 to 52	40 U	**4300**	**520**	40 U	***9700***
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0665

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	1 U	**11**	1 U	1 U	**3**
	48 to 52	1 U	1 U	1 U	1 U	**8**

MLPV-DPT0658

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	**25**	**8**	2 U	2 U	**4**
	48 to 52	**1**	**420**	**4**	1 U	**210**

MLPV-DPT0698

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	5 to 9	1 U	**2**	1 U	1 U	**9**
	9 to 13	1 U	1 U	1 U	1 U	**4**

MLPV-DPT0691

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	1 U	**4**	1 U	1 U	1 U
	14 to 18	1 U	1 U	1 U	1 U	**2**
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0682

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	5 to 9	20 U	20 U	20 U	20 U	***1100***
	9 to 13	**120**	**150**	20 U	20 U	**920**
	14 to 18	1 U	1 U	1 U	1 U	**8**
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0655

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	5 to 9	2 U	**3**	2 U	2 U	**14**
	9 to 13	**25000**	**5200**	200 U	200 U	***7900***
	14 to 18	**120**	**360**	20 U	20 U	***3200***
	20 to 24	**16**	1 U	1 U	1 U	**1**

MLPV-DPT0683

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/12/2021	5 to 9	**5700**	**2300**	40 U	40 U	***310***
	9 to 13	***125000***	***15000***	100 U	100 U	***1800***
4/14/2021	14 to 18	***100000***	***19000***	1000 U	1000 U	***11000***
	20 to 24	**37**	**22**	3 U	3 U	**7**

DPT0657

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	9 to 13	**14**	1 U	1 U	1 U	**3**
	14 to 18	**1**	1 U	1 U	1 U	1 U
	20 to 24	**14**	2 U	2 U	2 U	**14**

MLPV-DPT0653

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	5 to 9	1 U	**20**	**6**	1 U	***470 J***
	9 to 13	20 U	**2100**	**84**	20 U	***8200***
	14 to 18	**2100**	***17000 J***	**790**	**180**	***27000***
	20 to 24	1 U	**1**	1 U	1 U	1 U

MLPV-DPT0651

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/2/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	**2300**	**2600**	**33**	10 U	**910**
	14 to 18	**130**	**4**	2 U	2 U	**6**
	20 to 24	**2**	1 U	1 U	1 U	1 U
	25 to 29	**4**	**2**	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	**1**
	43 to 47	***4900***	**5700**	100 U	100 U	***5400***
	48 to 52	1 U	1 U	**2**	1 U	1 U

MLPV-DPT0652

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	**380**	**28**	10 U	10 U	**9**
	14 to 18	1 U	1 U	1 U	1 U	**3**
	43 to 47	**93**	**7**	2 U	2 U	**9**
	48 to 52	2 U	2 U	2 U	2 U	**3**

MLPV-DPT0684

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	5 to 9	**380**	**28**	10 U	10 U	
	9 to 13	**260**	**4**	3 U	3 U	**3**
	43 to 47	2 U	2 U	2 U	2 U	**3**
	48 to 52	10 U	**360**	**14**	10 U	**250**

MLPV-DPT0688

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/13/2021	5 to 9	**2**	**2**	1 U	1 U	1 U
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0656

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	43 to 47	**21**	**13**	3 U	3 U	**16**
	48 to 52	1 U	1 U	1 U	1 U	1 U
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0689

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0687

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/13/2021	5 to 9	**250**	**9**	3 U	3 U	**8**
	9 to 13	**150**	**10**	3 U	3 U	**7**

MLPV-DPT0650

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	5 to 9	1 U	1 U	1 U	1 U	**2**
	9 to 13	1 U	1 U	1 U	1 U	1 U
4/2/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	**3000**	**2900**	**220**	**48**	***15000 J***
4/6/2021	48 to 52	20 U	**4600**	**90**	20 U	**7600**
	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0678

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/9/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0692

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	5 to 9	1 U	**12**	1 U	1 U	**270**
	9 to 13	2 U	**6**	2 U	2 U	**440**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	**1**	1 U	1 U	**1**

MLPV-DPT0693

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	5 to 9	3 U	**3**	3 U	3 U	**120**
	9 to 13	1 U	1 U	1 U	1 U	**11**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0662

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/7/2021	5 to 9	**4**	**2**	1 U	1 U	**140**
	9 to 13	1 U	1 U	1 U	1 U	**1**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	**2**	**1**	1 U	1 U	1 U

MLPV-DPT0699

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	5 to 9	2 U	**40**	**3**	2 U	**180**
	9 to 13	1 U	**19**	**2**	1 U	**130**

MLPV-DPT0709

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/16/2021	5 to 9	1 U	1 U	1 U	1 U	**6**
	9 to 13	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0664

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	5 to 9	**1**	**8**	**2**	1 U	**54**
	9 to 13	1 U	1 U	1 U	1 U	**6**
	14 to 18	1 U	1 U	1 U	1 U	1 U
	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0685

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/12/2021	5 to 9	1 U	**3**	2 U	2 U	**130**
	9 to 13	1 U	1 U	**2**	1 U	**2**

MLPV-DPT0654

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	9 to 13	1 U	**20**	**6**	1 U	**190**
	14 to 18	1 U	**4**	**1**	1 U	**88**
	36 to 40	1 U	1 U	1 U	1 U	1 U
	43 to 47	***5400***	***1400***	**29**	200 U	***7600***

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	**3**	**300**
cDCE	1,1-Dichloroethene	**70**	**700**
11DCE	cis-1,2-Dichloroethene	**7**	**70**
tDCE	trans--Dichloroethene	**100**	**1000**
VC	Vinyl Chloride	**1**	**100**

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform (Stormwater Waste Managment Unit 056)
- Aerial Source: FDOT 2018

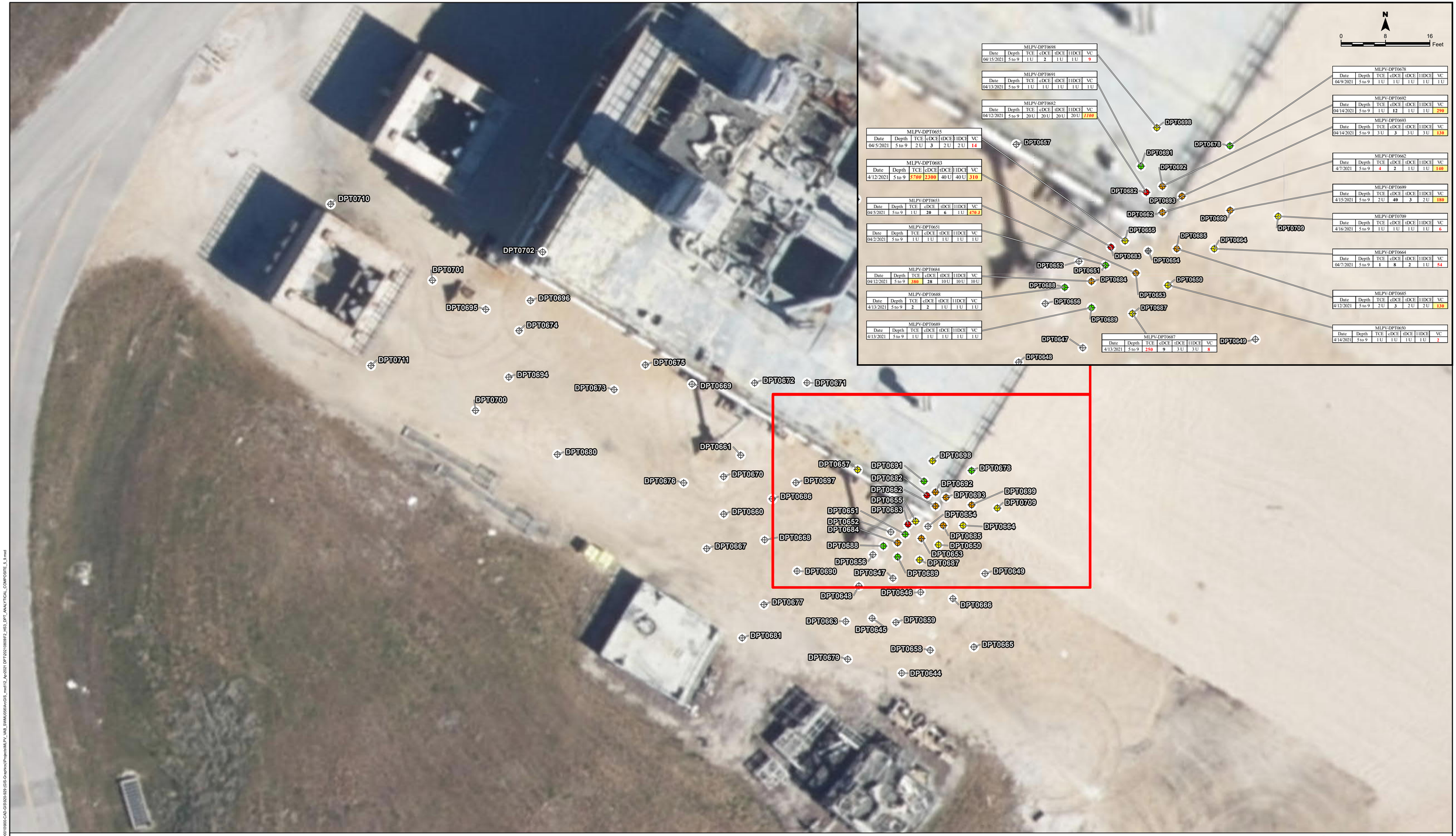
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

N
0
15
30
Feet

FIGURE 1
Hot Spot 3 DPT Sampling Locations 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/10/2021
Document Path: P:\GCS\Projects\EW\NASA\UBOD [KSC\01\0001\000-CAD-GIS\020-023 (GIS-Graphics)\Projects\MLPV_VAB_SWMU056\ArcGIS_mxd\12_Apr2021 DPT\20210809\FF1_HS3_DPT_ANALYTICAL_SUMMARY_COMPOSITE_3.mxd



Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	cis-1,2-Dichloroethene	70	700
tDCE	trans-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

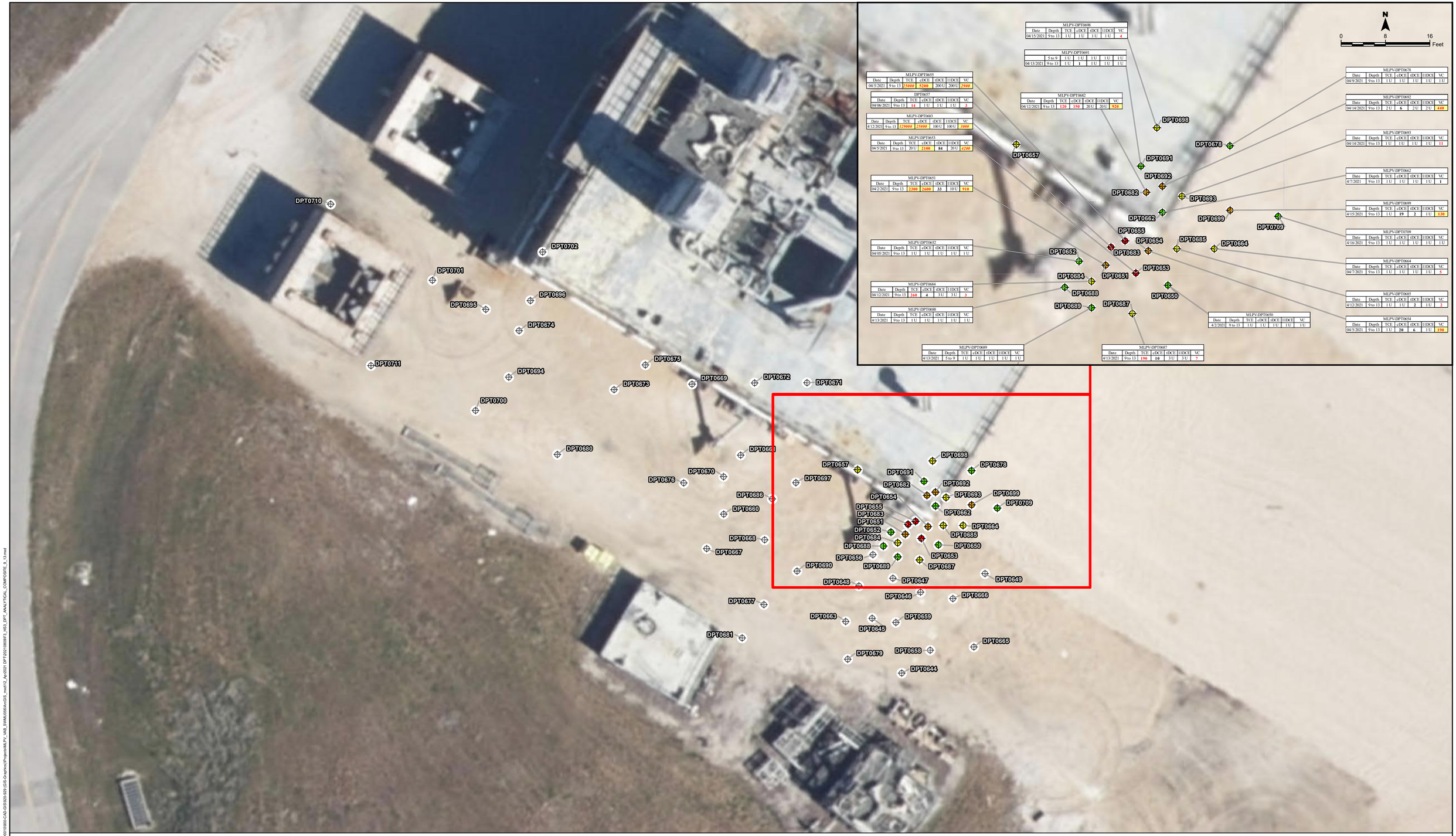
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N
0
15
30
Feet

FIGURE 2
Hot Spot 3 DPT Sampling Locations (5 to 9 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

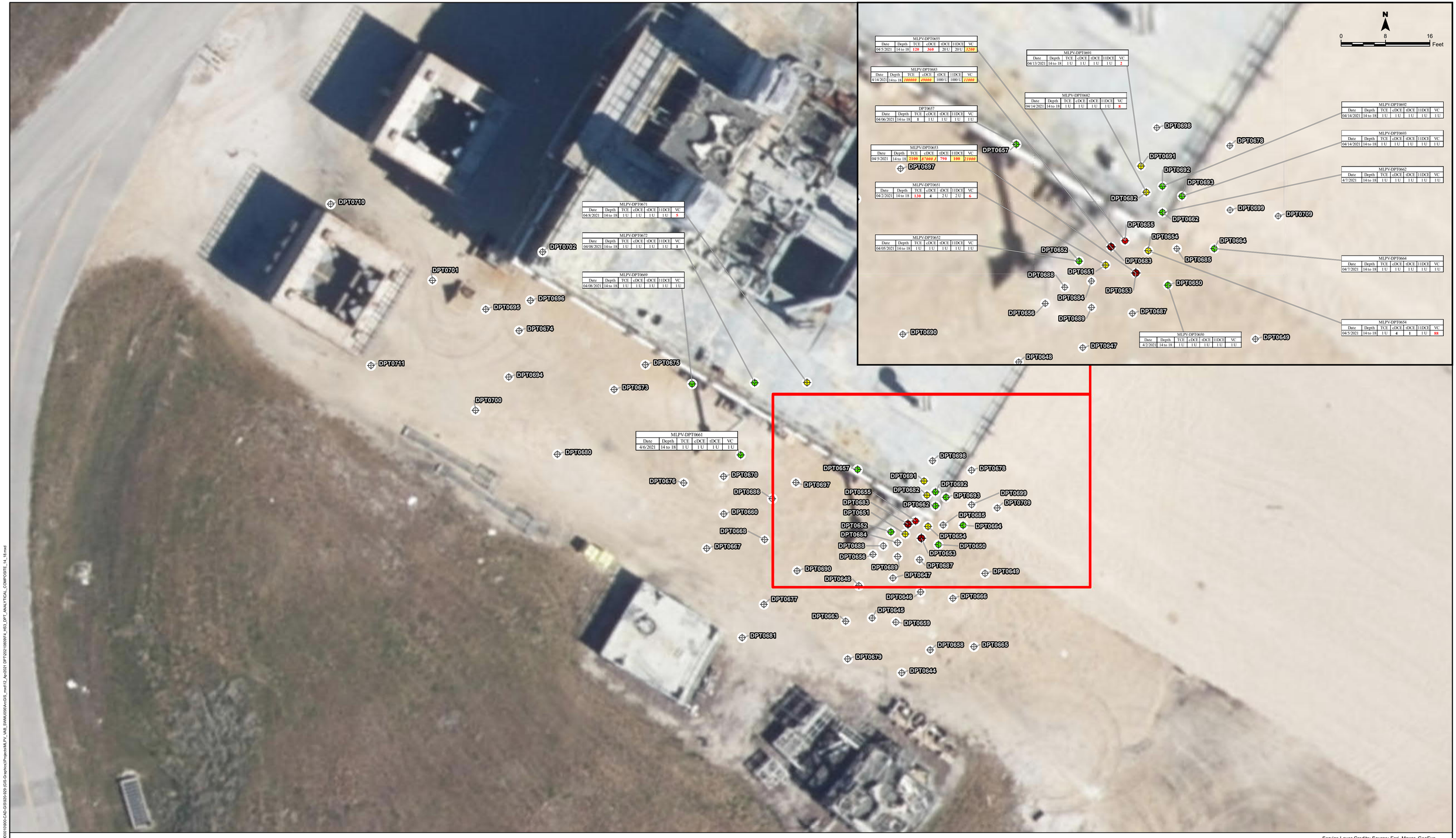
Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans--Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 3
Hot Spot 3 DPT Sampling Locations (9 to 13 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

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- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
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- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
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- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
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- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
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- Aerial Source: FDOT 2018

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

N
0 15 30 Feet

FIGURE 4
Hot Spot 3 DPT Sampling Locations (14 to 18 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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MLPV-DPT0671					
Date	Depth	TCE	cDCE	tDCE	VC
04/8/2021	20 to 24	1 U	1 U	1 U	1 U

MLPV-DPT0672					
Date	Depth	TCE	cDCE	tDCE	VC
04/09/2021	20 to 24	1 U	1 U	1 U	6

MLPV-DPT0669					
Date	Depth	TCE	cDCE	tDCE	VC
04/08/2021	20 to 24	1 U	8	1 U	27

MLPV-DPT0661					
Date	Depth	TCE	cDCE	tDCE	VC
4/7/2021	20 to 24	1 U	1 U	1 U	1 U

MLPV-DPT0655					
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	20 to 24	16	1 U	1 U	1 U	1

MLPV-DPT0683						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	20 to 24	37	22	3 U	3 U	7

DPT0657						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	20 to 24	14	2 U	2 U	2 U	14

MLPV-DPT0651						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/2/2021	20 to 24	2	1 U	1 U	1 U	1 U

MLPV-DPT0682						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0691						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0692						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	20 to 24	1 U	1	1 U	1 U	1

MLPV-DPT0693						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	20 to 24	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0662						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/7/2021	20 to 24	2	1	1 U	1 U	1 U

MLPV-DPT0664						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	20 to 24	1 U	1 U	1 U	1 U	1 U

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
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- **Bold** indicates a detected value
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- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans-,Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

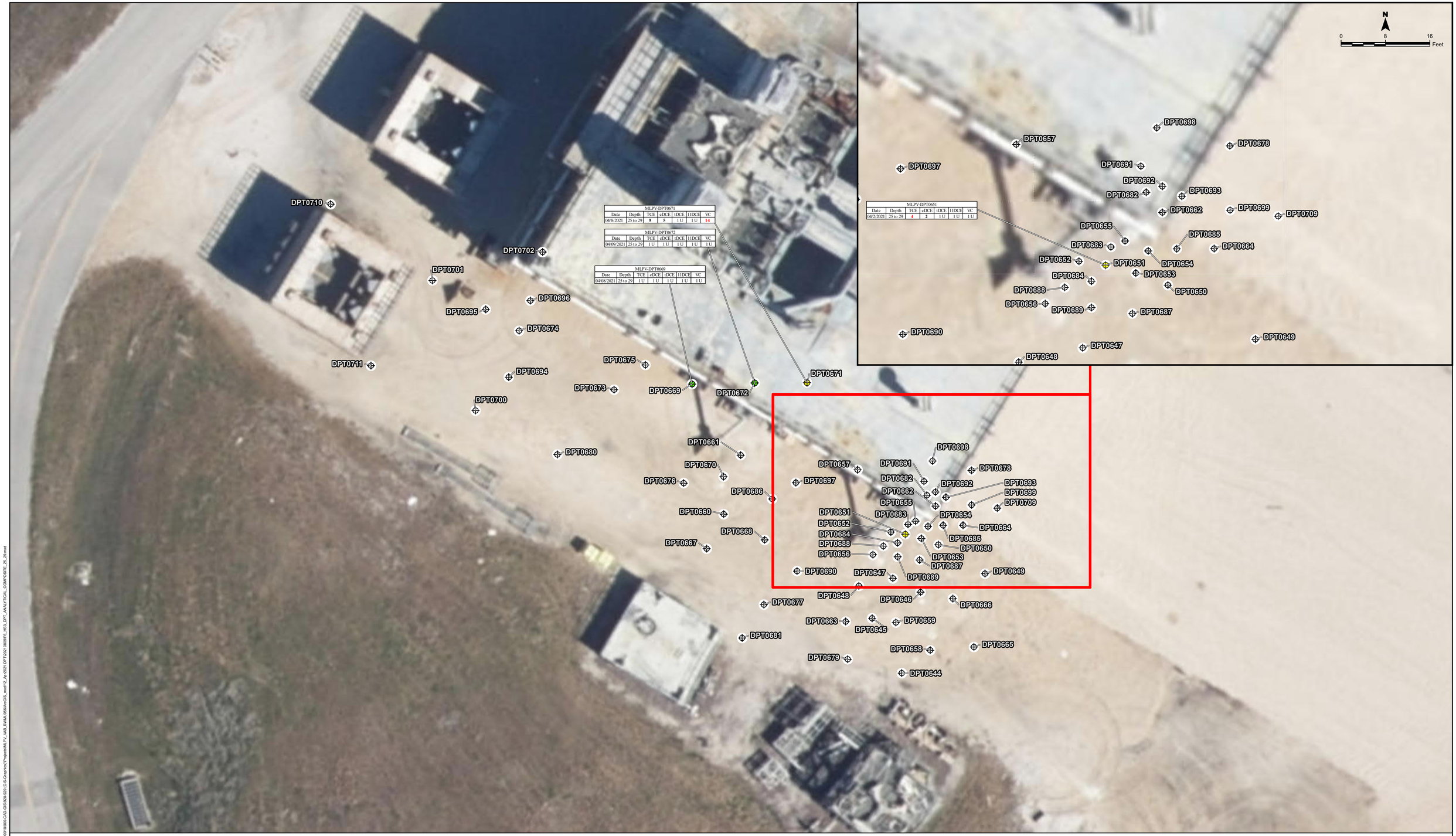
N

0 15 30 Feet

FIGURE 5
Hot Spot 3 DPT Sampling Locations (20 to 24 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
1DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans-,-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

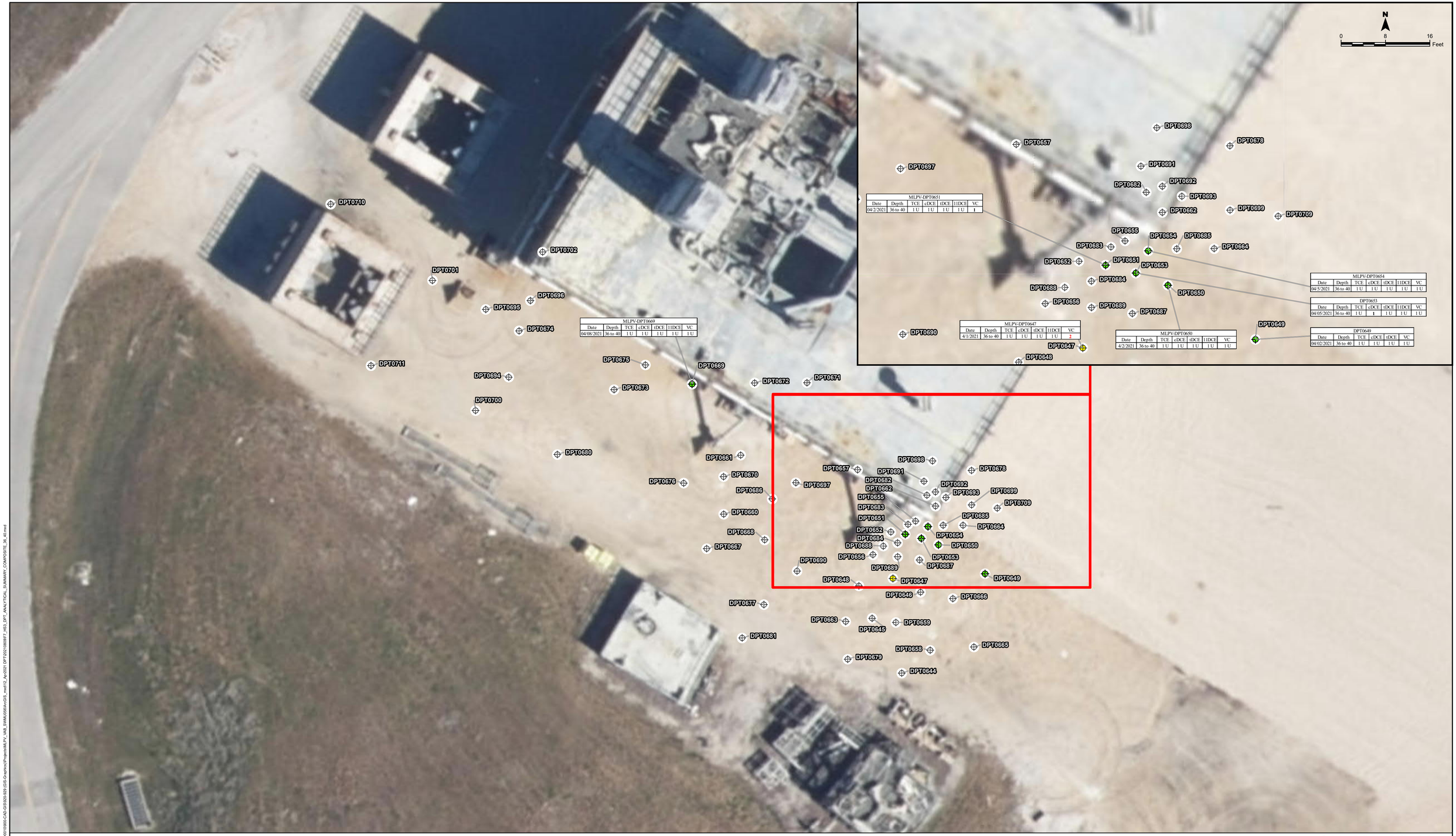
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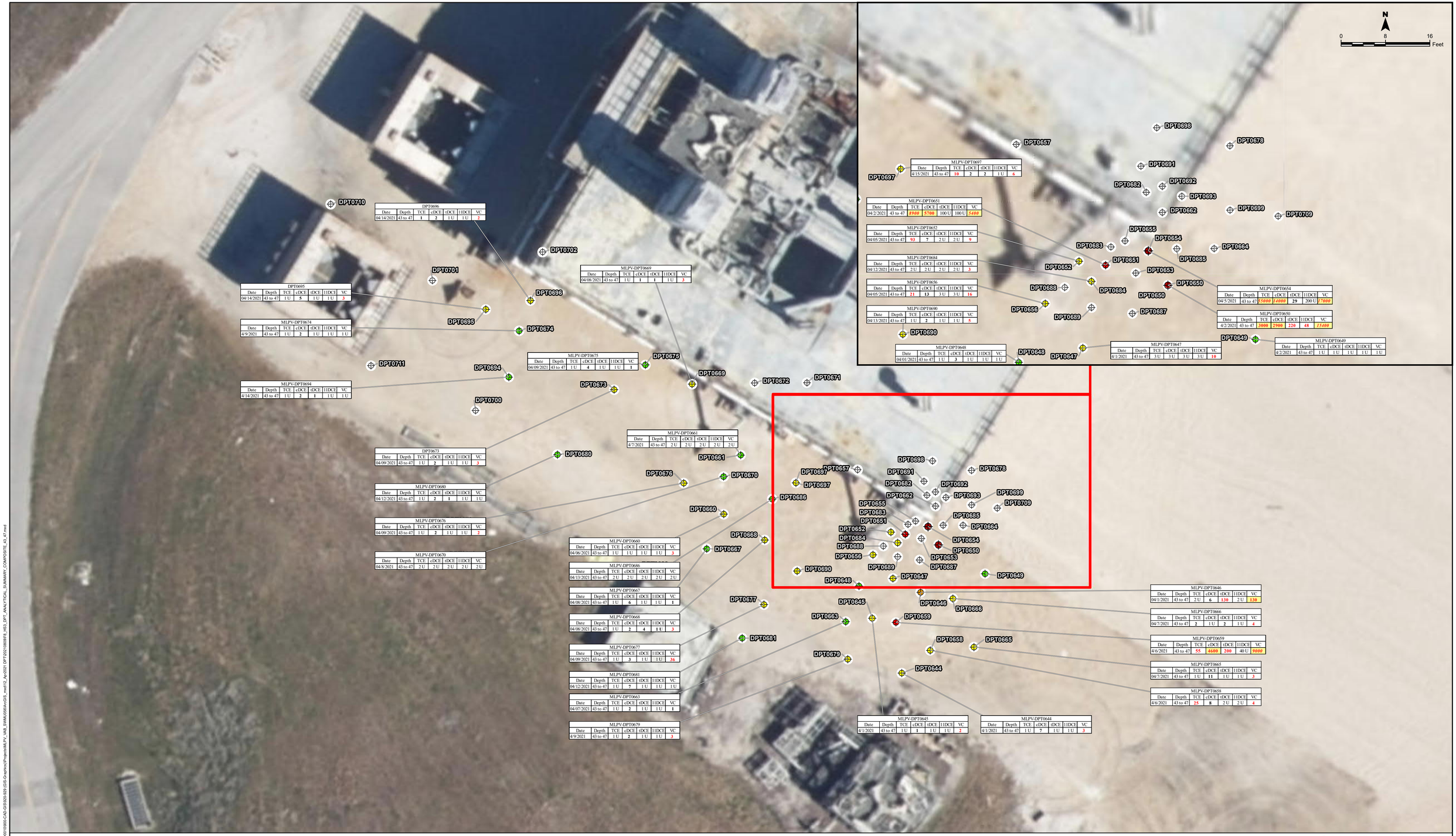
N
0
15
30
Feet

FIGURE 6
Hot Spot 3 DPT Sampling Locations (25 to 29 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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DPT0710
DPT0702
DPT0701
DPT0696
DPT0695
DPT0674
DPT0711
DPT0675
DPT0669
DPT0894
DPT0672
DPT0671
DPT0673
DPT0700
DPT0680
DPT0661
DPT0670
DPT0676
DPT0686
DPT0660
DPT0668
DPT0667
DPT0677
DPT0663
DPT0659
DPT0645
DPT0881
DPT0658
DPT0665
DPT0679
DPT0644
DPT0698
DPT0657
DPT0678
DPT0697
DPT0691
DPT0682
DPT0692
DPT0662
DPT0693
DPT0699
DPT0655
DPT0709
DPT0683
DPT0685
DPT0851
DPT0684
DPT0552
DPT0694
DPT0650
DPT0653
DPT0687
DPT0690
DPT0656
DPT0689
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DPT0657
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DPT0655
DPT0709
DPT0683
DPT0685
DPT0851
DPT0684
DPT0552
DPT0694
DPT0650
DPT0653
DPT0687
DPT0690
DPT0656
DPT0689
DPT0848
DPT0647
DPT0649
DPT0646
DPT0666
DPT0698
DPT0657
DPT0678
DPT0691
DPT0682
DPT0692
DPT0697



DPT0696						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	43 to 47	1	2	1 U	1 U	2

MLPV-DPT0669						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	1	1	1 U	3

DPT0695						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	43 to 47	1 U	5	1 U	1 U	3

MLPV-DPT0674						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	2	1 U	1 U	1 U

MLPV-DPT0675						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	4	1 U	1 U	1

MLPV-DPT0694						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	43 to 47	1 U	2	1	1 U	1 U

DPT0673						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	2	1 U	1 U	3

MLPV-DPT0680						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	2	1	1 U	1 U

MLPV-DPT0676						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	2	1 U	1 U	2

MLPV-DPT0670						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	43 to 47	2 U	2 U	2 U	2 U	2 U

MLPV-DPT0661						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/7/2021	43 to 47	2 U	2 U	2 U	2 U	2 U

MLPV-DPT0660						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	43 to 47	1 U	1 U	1 U	1 U	3

MLPV-DPT0686						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	2 U	2 U	2 U	2 U	2 U

MLPV-DPT0667						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	6	1 U	1 U	1

MLPV-DPT0668						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	43 to 47	1 U	2	4	1 U	3

MLPV-DPT0677						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	43 to 47	1 U	3	1 U	1 U	36

MLPV-DPT0681						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	1 U	7	1 U	1 U	1 U

MLPV-DPT0663						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/07/2021	43 to 47	1 U	2	1 U	1 U	1

MLPV-DPT0679						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	43 to 47	1 U	2	1 U	1 U	3

MLPV-DPT0697						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	43 to 47	10	2	2	1 U	6

MLPV-DPT0651						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/2/2021	43 to 47	5900	5700	100 U	100 U	5400

MLPV-DPT0652						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	43 to 47	93	7	2 U	2 U	9

MLPV-DPT0684						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	43 to 47	2 U	2 U	2 U	2 U	3

MLPV-DPT0656						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	43 to 47	21	13	3 U	3 U	16

MLPV-DPT0690						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	43 to 47	1 U	2	1 U	1 U	5

MLPV-DPT0648						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/01/2021	43 to 47	1 U	3	1 U	1 U	1 U

MLPV-DPT0654						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/5/2021	43 to 47	53000	14000	29	200 U	17000

MLPV-DPT0650						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	43 to 47	3000	2900	220	48	15400

MLPV-DPT0647						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	3 U	3 U	3 U	3 U	10

MLPV-DPT0649						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	43 to 47	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0645						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	1	1 U	1 U	2

MLPV-DPT0644						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	43 to 47	1 U	7	1 U	1 U	3

MLPV-DPT0646						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/1/2021	43 to 47	2 U	6	130	2 U	130

MLPV-DPT0666						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	2	1 U	2	1 U	4

MLPV-DPT0659						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	55	4600	200	40 U	9000

MLPV-DPT0665						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	43 to 47	1 U	11	1 U	1 U	3

MLPV-DPT0658						
Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	43 to 47	25	8	2 U	2 U	4

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
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- Aerial Source: FDOT 2018

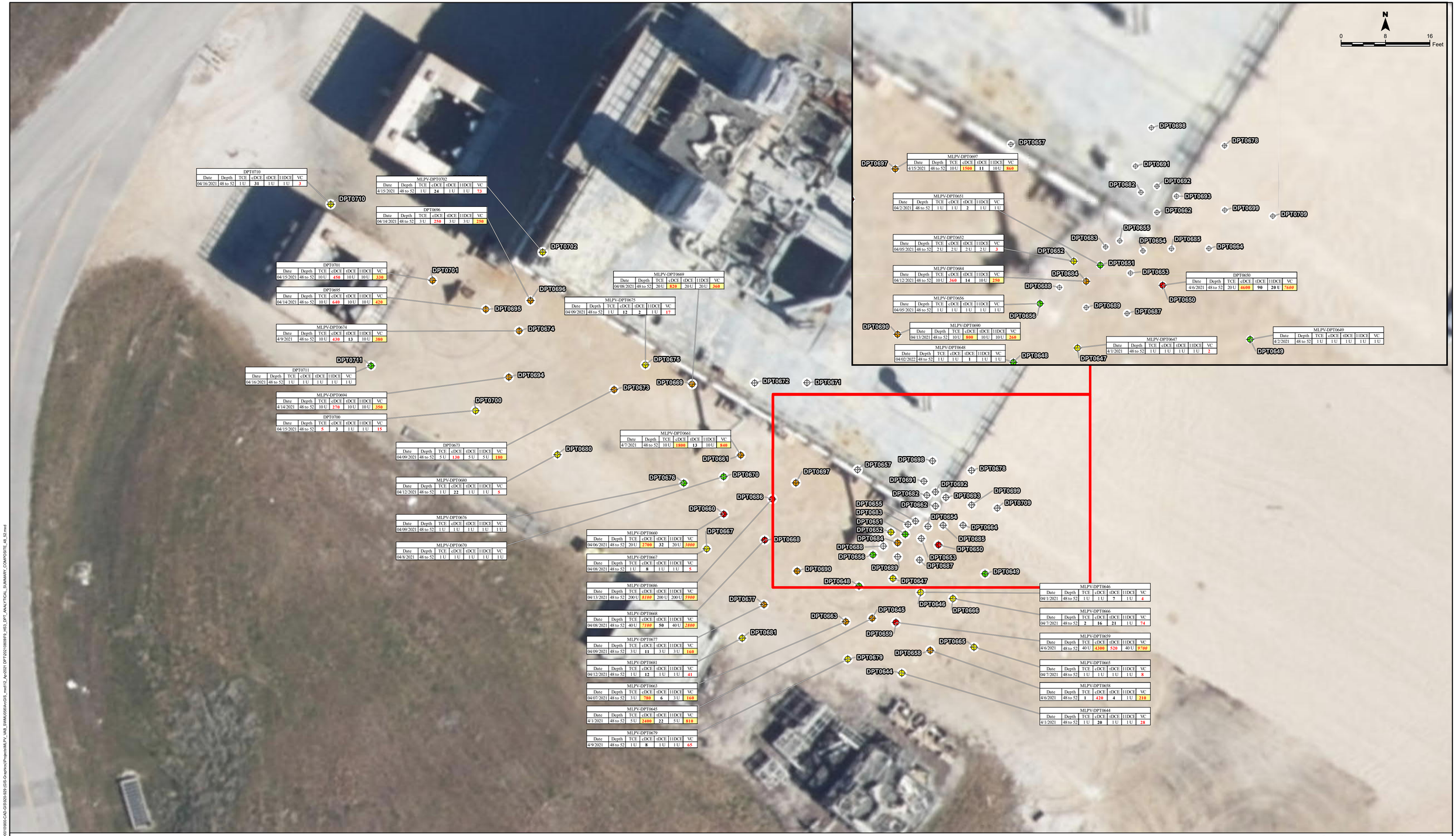
Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 8
Hot Spot 3 DPT Sampling Locations (43 to 47 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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DPT0710

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	48 to 52	1 U	**31**	1 U	1 U	**3**

MLPV-DPT0702

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	48 to 52	1 U	**24**	1 U	1 U	**73**

DPT0696

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	48 to 52	5 U	**250**	5 U	5 U	**250**

DPT0701

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	10 U	**450**	10 U	10 U	**330**

DPT0695

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	48 to 52	10 U	**640**	10 U	10 U	**420**

MLPV-DPT0674

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	48 to 52	10 U	**430**	**13**	10 U	**380**

DPT0711

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	48 to 52	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0694

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	48 to 52	10 U	**270**	10 U	10 U	**350**

DPT0700

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/15/2021	48 to 52	**5**	**3**	1 U	1 U	**15**

DPT0673

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	48 to 52	5 U	**130**	5 U	5 U	**180**

MLPV-DPT0680

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	48 to 52	1 U	**22**	1 U	1 U	**5**

MLPV-DPT0676

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	48 to 52	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0670

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	48 to 52	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0675

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	48 to 52	1 U	**12**	**2**	1 U	**17**

MLPV-DPT0669

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	48 to 52	20 U	**820**	20 U	20 U	**360**

MLPV-DPT0661

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/7/2021	48 to 52	10 U	**1800**	**13**	10 U	**840**

MLPV-DPT0660

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	48 to 52	20 U	**2700**	**32**	20 U	***3000***

MLPV-DPT0667

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	48 to 52	1 U	**8**	1 U	1 U	**5**

MLPV-DPT0686

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	48 to 52	200 U	***8100***	200 U	200 U	***5900***

MLPV-DPT0668

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	48 to 52	40 U	***7100***	**50**	40 U	***2800***

MLPV-DPT0677

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	48 to 52	3 U	**11**	3 U	3 U	**160**

MLPV-DPT0681

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	48 to 52	1 U	**12**	1 U	1 U	**41**

MLPV-DPT0663

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/07/2021	48 to 52	3 U	**780**	**6**	3 U	**160**

MLPV-DPT0645

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	48 to 52	5 U	**2400**	**22**	5 U	**810**

MLPV-DPT0679

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	48 to 52	1 U	**8**	1 U	1 U	**65**

MLPV-DPT0697

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	48 to 52	10 U	**1500**	**11**	10 U	**860**

MLPV-DPT0651

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/2/2021	48 to 52	1 U	1 U	**2**	1 U	1 U

MLPV-DPT0652

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	48 to 52	2 U	2 U	2 U	2 U	**3**

MLPV-DPT0684

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	48 to 52	10 U	**360**	**14**	10 U	**250**

MLPV-DPT0656

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	48 to 52	1 U	1 U	1 U	1 U	1 U

DPT0650

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	48 to 52	20 U	**4600**	**90**	**20 U**	***7600***

MLPV-DPT0690

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	48 to 52	10 U	**800**	10 U	10 U	**260**

MLPV-DPT0648

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/02/2022	48 to 52	1 U	1 U	**1**	1 U	1 U

MLPV-DPT0647

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	48 to 52	1 U	1 U	1 U	1 U	**2**

MLPV-DPT0649

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	48 to 52	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0646

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/1/2021	48 to 52	1 U	1 U	**7**	1 U	**4**

MLPV-DPT0666

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	48 to 52	**2**	**16**	**21**	1 U	**74**

MLPV-DPT0659

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	48 to 52	40 U	**4300**	**520**	40 U	***9700***

MLPV-DPT0665

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/7/2021	48 to 52	1 U	1 U	1 U	1 U	**8**

MLPV-DPT0658

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	48 to 52	**1**	**420**	**4**	1 U	**210**

MLPV-DPT0644

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	48 to 52	1 U	**20**	1 U	1 U	**28**

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

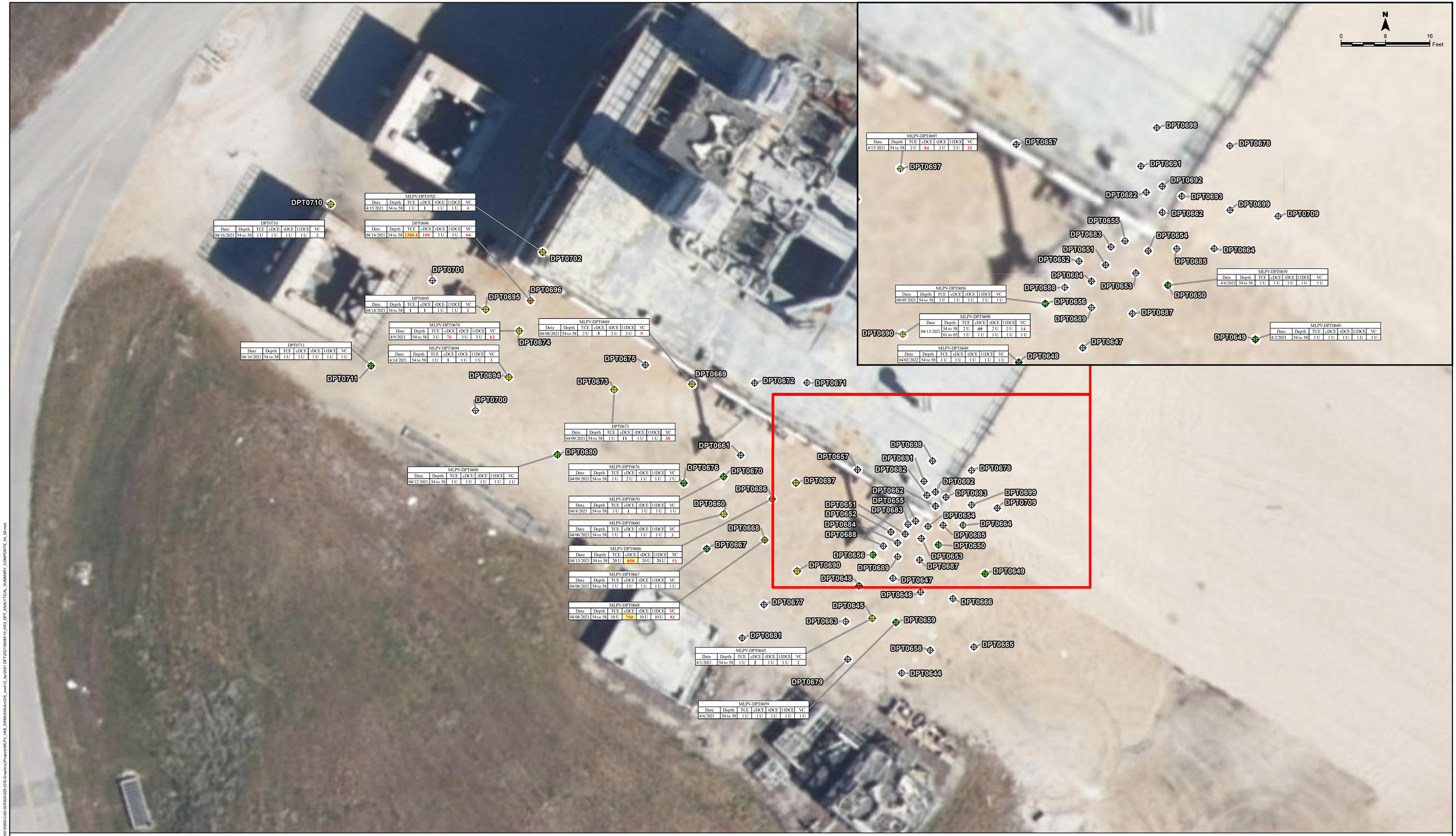
Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans-Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 9
Hot Spot 3 DPT Sampling Locations (48 to 52 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/10/2021
Document Path: P:\GCI\Projects\KWV\NASA\SWDQ 80KSC021I0001\600-CAD-GIS\920-929 (GIS-Graphics)\Projects\MLP's_VAB_SWMU056\ArcGIS_mxd\12_Apr2021 DPT2021080919 Fig_HS3_DPT_ANALYTICAL_SUMMARY_COMPOSITE_48_52.mxd



MLPV-DPT0702

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	54 to 58	1 U	**1**	1 U	1 U	**4**

DPT0710

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	54 to 58	1 U	1 U	1 U	1 U	**2**

DPT0696

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	54 to 58	**1300 J**	**100**	5 U	5 U	**66**

DPT0695

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/14/2021	54 to 58	**1**	**1**	1 U	1 U	**2**

MLPV-DPT0674

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/9/2021	54 to 58	3 U	**76**	3 U	3 U	**63**

MLPV-DPT0669

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	54 to 58	2 U	**5**	2 U	2 U	**9**

DPT0711

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/16/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0694

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/14/2021	54 to 58	1 U	**1**	1 U	1 U	**2**

DPT0673

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	54 to 58	1 U	**11**	1 U	1 U	**38**

MLPV-DPT0680

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/12/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0676

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/09/2021	54 to 58	1 U	2 U	1 U	1 U	1 U

MLPV-DPT0670

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/8/2021	54 to 58	1 U	**1**	1 U	1 U	1 U

MLPV-DPT0660

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/06/2021	54 to 58	1 U	**1**	1 U	1 U	**3**

MLPV-DPT0686

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	54 to 58	20 U	**850**	20 U	20 U	**51**

MLPV-DPT0667

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0668

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/08/2021	54 to 58	10 U	**750**	10 U	10 U	**93**

MLPV-DPT0697

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/15/2021	54 to 58	2 U	**84**	2 U	2 U	**32**

MLPV-DPT0656

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/05/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0650

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0690

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/13/2021	54 to 58	2 U	**49**	2 U	2 U	**14**
	61 to 65	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0649

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/2/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0648

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
04/02/2022	54 to 58	1 U	1 U	1 U	1 U	1 U

MLPV-DPT0645

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/1/2021	54 to 58	1 U	**2**	1 U	1 U	**2**

MLPV-DPT0659

Date	Depth	TCE	cDCE	tDCE	11DCE	VC
4/6/2021	54 to 58	1 U	1 U	1 U	1 U	1 U

Legend

- DPT sampling location
- Monitoring well location (screen interval (ft bls)) (most recent VC concentration (µg/L))
- 1 µg/L VC isopleth (dashed where inferred)
- 100 µg/L VC isopleth (dashed where inferred)
- 1,000 µg/L VC isopleth

Symbology Color Coding

- CVOC concentration less than or equal to GCTLs
- CVOC concentration greater than GCTLs
- CVOC concentration greater than NADCs and less than or equal to 10xNADC
- CVOC concentration greater than 10xNADC
- CVOC concentration greater than 100xNADC
- CVOC detection limit greater than GCTLs
- Sample not collected at this interval

Notes:
- Concentrations are in micrograms per Liter (µg/L)
- U = Indicates that the analyte was undetected
- I = Indicates the analyte was detected but below the reporting limit; therefore, an estimated value
- Q = Results from run #2
- **Bold** indicates a detected value
- **Red bold font** indicates an exceedance of FDEP GCTLs
- **Highlighted Red bold font** indicates an exceedance of FDEP NADCs
- ***Highlighted Red italic font*** indicates an exceedance of FDEP 10xNADCs
- bls = below land surface
- GCTL = Groundwater Cleanup Target Levels as provided in 62-777, F.A.C.
- NADC = Natural Attenuation Default Concentration as provided in 62-777, F.A.C.
- MLP/VAB indicates Mobile Launch Platform/Vehicle Assembly Building
- Aerial Source: FDOT 2018

Abbreviation	Analyte	GCTL	NADC
TCE	Trichloroethene	3	300
cDCE	1,1-Dichloroethene	70	700
11DCE	cis-1,2-Dichloroethene	7	70
tDCE	trans--Dichloroethene	100	1000
VC	Vinyl Chloride	1	100

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

N
0
15
30
Feet

FIGURE 10
Hot Spot 3 DPT Sampling Locations (54 to 58 ft bls) Composite 2021

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

Date Saved: 8/10/2021
Document Path: P:\GCS\Projects\NASA\SUBQ 80KSC019D0010\000-CAD-GIS\303-323 (GIS-Graphics)\Projects\MLPV_VAB_SWMU056\ArcGIS_mxd\12_Apr2021 DPT20210809\F10_HS3_DPT_ANALYTICAL_SUMMARY_COMPOSITE_54_58.mxd

Table 3
DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launch Platform (MLP) and Vehicle Assembly Building (VAB) Area: Hot Spot 3 (OFW Area)

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	70	100	7	1
Location ID	Sample Date	Sample Depth (ft bls)					
MLPV-DPT0644	4/1/2021	43 to 47	1 U	**7**	1 U	1 U	**3**
		48 to 52	1 U	**20**	1 U	1 U	**28**
MLPV-DPT0645	4/1/2021	43 to 47	1 U	**1**	1 U	1 U	**2**
		48 to 52	5 U	**2400**	**22**	5 U	**810**
		54 to 58	1 U	**2**	1 U	1 U	**2**
MLPV-DPT0646	4/1/2021	43 to 47	2 U	**6**	**130**	2 U	**130**
		48 to 52	1 U	1 U	**7**	1 U	**4**
MLPV-DPT0647	4/1/2021	36 to 40	1 U	1 U	1 U	1 U	**2**
		43 to 47	3 U	3 U	3 U	3 U	**10**
		48 to 52	1 U	1 U	1 U	1 U	**2**
MLPV-DPT0648	4/1/2021	43 to 47	1 U	**3**	1 U	1 U	1 U
	4/2/2021	48 to 52	1 U	1 U	**1**	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0649	4/2/2021	36 to 40	1 U	1 U	1 U	1 U	1 U
		43 to 47	1 U	1 U	1 U	1 U	1 U
		48 to 52	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0650	4/14/2021	5 to 9	1 U	1 U	1 U	1 U	**2**
	4/2/2021	9 to 13	1 U	1 U	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	1 U
		43 to 47	**3000**	**2900**	**220**	**48**	**15000 J**
		DUP	**2800**	**2600**	**200**	100 U	**15400**
	4/6/2021	48 to 52	20 U	**4600**	**90**	20 U	**7600**
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0651	4/2/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
		9 to 13	**2300**	**2600**	**33**	10 U	**910**
		14 to 18	**130**	**4**	2 U	2 U	**6**
		20 to 24	**2**	1 U	1 U	1 U	1 U
		25 to 29	**4**	**2**	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	**1**
		43 to 47	**8900**	**5700**	100 U	100 U	**5400**
		48 to 52	1 U	1 U	**2**	1 U	1 U
MLPV-DPT0652	4/5/2021	9 to 13	1 U	1 U	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	1 U
		43 to 47	**93**	**7**	2 U	2 U	**9**
		48 to 52	2 U	2 U	2 U	2 U	**3**
MLPV-DPT0653	4/5/2021	5 to 9	1 U	**20**	**6**	1 U	**470 J**
		DUP	2 U	**19**	**6**	2 U	**430**
		9 to 13	20 U	**2100**	**84**	20 U	**4200**
		14 to 18	**2100**	**87000 J**	**790**	**100**	**21000**
		36 to 40	1 U	**1**	1 U	1 U	1 U
MLPV-DPT0654	4/5/2021	9 to 13	1 U	**20**	**6**	1 U	**190**
		14 to 18	1 U	**4**	**1**	1 U	**88**
		36 to 40	1 U	1 U	1 U	1 U	1 U
		43 to 47	**55000**	**14000**	**29**	200 U	**17000**
MLPV-DPT0655	4/5/2021	5 to 9	2 U	**3**	2 U	2 U	**14**
		9 to 13	**25000**	**5200**	200 U	200 U	**2900**
		14 to 18	**120**	**360**	20 U	20 U	**3200**
		20 to 24	**16**	1 U	1 U	1 U	**1**
MLPV-DPT0656	4/5/2021	43 to 47	**21**	**13**	3 U	3 U	**16**
		48 to 52	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0657	4/6/2021	9 to 13	**11**	1 U	1 U	1 U	**2**
		DUP	**14**	1 U	1 U	1 U	**3**
		14 to 18	**1**	1 U	1 U	1 U	1 U
		20 to 24	**14**	2 U	2 U	2 U	**14**
MLPV-DPT0658	4/6/2021	43 to 47	**25**	**8**	2 U	2 U	**4**
		48 to 52	**1**	**420**	**4**	1 U	**210**
MLPV-DPT0659	4/6/2021	43 to 47	**55**	**4600**	**200**	40 U	**9000**
		48 to 52	40 U	**4300**	**520**	40 U	**9700**
		54 to 58	1 U	1 U	1 U	1 U	1 U

Table 3
DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launch Platform (MLP) and Vehicle Assembly Building (VAB) Area: Hot Spot 3 (OFW Area)

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	70	100	7	1
Location ID	Sample Date	Sample Depth (ft bls)					
MLPV-DPT0660	4/6/2021	43 to 47	1 U	1 U	1 U	1 U	3
		48 to 52	20 U	2700	32	20 U	3000
		54 to 58	1 U	1	1 U	1 U	3
MLPV-DPT0661	4/6/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
	4/7/2021	20 to 24	1 U	1 U	1 U	1 U	1 U
		43 to 47	2 U	2 U	2 U	2 U	2 U
		48 to 52	10 U	1600	12	10 U	770
		DUP	10 U	1800	13	10 U	840
MLPV-DPT0662	4/7/2021	5 to 9	4	2	1 U	1 U	140
		9 to 13	1 U	1 U	1 U	1 U	1
		14 to 18	1 U	1 U	1 U	1 U	1 U
		20 to 24	2	1	1 U	1 U	1 U
MLPV-DPT0663	4/7/2021	43 to 47	1 U	2	1 U	1 U	1
		48 to 52	3 U	780	6	3 U	160
MLPV-DPT0664	4/7/2021	5 to 9	1	8	2	1 U	54
		9 to 13	1 U	1 U	1 U	1 U	5
		14 to 18	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0665	4/7/2021	43 to 47	1 U	11	1 U	1 U	3
		48 to 52	1 U	1 U	1 U	1 U	8
MLPV-DPT0666	4/7/2021	43 to 47	2	1 U	2	1 U	4
		48 to 52	2	16	21	1 U	74
MLPV-DPT0667	4/8/2021	43 to 47	1 U	6	1 U	1 U	1
		48 to 52	1 U	8	1 U	1 U	4
		DUP	1 U	8	1 U	1 U	5
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0668	4/8/2021	43 to 47	1 U	2	4	1 U	3
		48 to 52	40 U	7100	50	40 U	2800
		54 to 58	10 U	750	10 U	10 U	93
MLPV-DPT0669	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	8	1 U	1 U	27
		25 to 29	1 U	1 U	1 U	1 U	1 U
		36 to 40	1 U	1 U	1 U	1 U	1 U
		43 to 47	1 U	1	1	1 U	3
		48 to 52	20 U	820	20 U	20 U	360
		54 to 58	2 U	5	2 U	2 U	9
MLPV-DPT0670	4/8/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
		48 to 52	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1	1 U	1 U	1 U
MLPV-DPT0671	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	5
		20 to 24	1 U	1 U	1 U	1 U	1 U
		25 to 29	9	5	1 U	1 U	14
MLPV-DPT0672	4/8/2021	14 to 18	1 U	1 U	1 U	1 U	1
	4/9/2021	20 to 24	1 U	1 U	1 U	1 U	6
		25 to 29	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0673	4/9/2021	43 to 47	1 U	2	1 U	1 U	3
		48 to 52	5 U	130	5 U	5 U	160
		DUP	5 U	130	5 U	5 U	180
		54 to 58	1 U	11	1 U	1 U	38
MLPV-DPT0674	4/9/2021	43 to 47	1 U	2	1 U	1 U	1 U
		48 to 52	10 U	430	13	10 U	380
		54 to 58	3 U	76	3 U	3 U	63
MLPV-DPT0675	4/9/2021	43 to 47	1 U	4	1 U	1 U	1
		48 to 52	1 U	12	2	1 U	17
MLPV-DPT0676	4/9/2021	43 to 47	1 U	2	1 U	1 U	2
		48 to 52	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0677	4/9/2021	43 to 47	1 U	3	1 U	1 U	36
		48 to 52	3 U	11	3 U	3 U	160
MLPV-DPT0678	4/9/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0679	4/9/2021	43 to 47	1 U	2	1 U	1 U	3
		48 to 52	1 U	8	1 U	1 U	65

Table 3
DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launch Platform (MLP) and Vehicle Assembly Building (VAB) Area: Hot Spot 3 (OFW Area)

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	70	100	7	1
Location ID	Sample Date	Sample Depth (ft bls)					
MLPV-DPT0680	4/12/2021	43 to 47	1 U	**2**	**1**	1 U	1 U
		DUP	1 U	**2**	1 U	1 U	1 U
		48 to 52	1 U	**22**	1 U	1 U	**5**
		54 to 58	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0681	4/12/2021	43 to 47	1 U	**7**	1 U	1 U	1 U
		48 to 52	1 U	**12**	1 U	1 U	**41**
MLPV-DPT0682	4/12/2021	5 to 9	20 U	20 U	20 U	20 U	**1100**
		9 to 13	**120**	**150**	20 U	20 U	**920**
	4/14/2021	14 to 18	1 U	1 U	1 U	1 U	**8**
		20 to 24	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0683	4/12/2021	5 to 9	**5700**	**2300**	40 U	40 U	**310**
		9 to 13	**129000**	**25000**	100 U	100 U	**3000**
	4/14/2021	14 to 18	**100000**	**49000**	1000 U	1000 U	**11000**
		20 to 24	**37**	**22**	3 U	3 U	**7**
MLPV-DPT0684	4/12/2021	5 to 9	**380**	**28**	10 U	10 U	10 U
		9 to 13	**260**	**4**	3 U	3 U	**3**
		43 to 47	2 U	2 U	2 U	2 U	**3**
		48 to 52	10 U	**360**	**14**	10 U	**250**
MLPV-DPT0685	4/12/2021	5 to 9	2 U	**3**	2 U	2 U	**130**
		9 to 13	1 U	1 U	**2**	1 U	**2**
MLPV-DPT0686	4/13/2021	43 to 47	2 U	2 U	2 U	2 U	2 U
		48 to 52	200 U	**8100**	200 U	200 U	**5900**
		DUP	100 U	**7700**	100 U	100 U	**5700**
		54 to 58	20 U	**850**	20 U	20 U	**51**
MLPV-DPT0687	4/13/2021	5 to 9	**250**	**9**	3 U	3 U	**8**
		9 to 13	**190**	**10**	3 U	3 U	**7**
MLPV-DPT0688	4/13/2021	5 to 9	**2**	**2**	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0689	4/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0690	4/13/2021	43 to 47	1 U	**2**	1 U	1 U	**5**
		48 to 52	10 U	**800**	10 U	10 U	**260**
		54 to 58	2 U	**49**	2 U	2 U	**14**
		61 to 65	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0691	4/13/2021	5 to 9	1 U	1 U	1 U	1 U	1 U
		9 to 13	1 U	**1**	1 U	1 U	1 U
		14 to 18	1 U	1 U	1 U	1 U	**2**
		20 to 24	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0692	4/14/2021	5 to 9	1 U	**12**	1 U	1 U	**280 J**
		DUP	2 U	**11**	2 U	2 U	**290**
		9 to 13	2 U	**6**	2 U	2 U	**440**
		14 to 18	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	**1**	1 U	1 U	**1**
MLPV-DPT0693	4/14/2021	5 to 9	3 U	**3**	3 U	3 U	**130**
		9 to 13	1 U	1 U	1 U	1 U	**11**
		14 to 18	1 U	1 U	1 U	1 U	1 U
		20 to 24	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0694	4/14/2021	43 to 47	1 U	**2**	**1**	1 U	1 U
		48 to 52	10 U	**270**	10 U	10 U	**350**
		54 to 58	1 U	**1**	1 U	1 U	**3**
MLPV-DPT0695	4/14/2021	43 to 47	1 U	**5**	1 U	1 U	**3**
		48 to 52	10 U	**640**	10 U	10 U	**420**
		54 to 58	**1**	**1**	1 U	1 U	**2**
MLPV-DPT0696	4/14/2021	43 to 47	1 U	**2**	1 U	1 U	**2**
		48 to 52	3 U	**250**	3 U	3 U	**250**
		54 to 58	**1300 J**	**100**	5 U	5 U	**66**
		DUP	**1300**	**95**	10 U	10 U	**59**
MLPV-DPT0697	4/15/2021	43 to 47	**10**	**2**	**2**	1 U	**6**
		48 to 52	10 U	**1500**	**11**	10 U	**860**
		54 to 58	2 U	**84**	2 U	2 U	**32**
MLPV-DPT0698	4/15/2021	5 to 9	1 U	**2**	1 U	1 U	**9**
		9 to 13	1 U	1 U	1 U	1 U	**4**
MLPV-DPT0699	4/15/2021	5 to 9	2 U	**40**	**3**	2 U	**180**
		9 to 13	1 U	**19**	**2**	1 U	**130**

Table 3
DPT Groundwater Analytical Results: Chlorinated Volatile Organic Compounds
Mobile Launch Platform (MLP) and Vehicle Assembly Building (VAB) Area: Hot Spot 3 (OFW Area)

Category			Volatile Organic Compounds (VOCs) by Method 8260				
Analyte			TRICHLOROETHENE	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
State of Florida GCTLs (µg/L)			3	70	100	7	1
Location ID	**Sample Date**	**Sample Depth (ft bls)**					
MLPV-DPT0700	4/15/2021	48 to 52	**5**	**3**	1 U	1 U	**15**
MLPV-DPT0701	4/15/2021	48 to 52	10 U	**450**	10 U	10 U	**330**
MLPV-DPT0702	4/15/2021	48 to 52	1 U	**24**	1 U	1 U	**73**
		54 to 58	1 U	**1**	1 U	1 U	**4**
MLPV-DPT0709	4/16/2021	5 to 9	1 U	1 U	1 U	1 U	**6**
		9 to 13	1 U	1 U	1 U	1 U	1 U
MLPV-DPT0710	4/16/2021	48 to 52	1 U	**31**	1 U	1 U	**3**
		54 to 58	1 U	1 U	1 U	1 U	**2**
MLPV-DPT0711	4/16/2021	48 to 52	1 U	1 U	1 U	1 U	1 U
		54 to 58	1 U	1 U	1 U	1 U	1 U

Notes:
Bolded results indicate the presence of an analyte at the specified concentration
Red font indicates an exceedance of FDEP GCTLs or Site Approved Target Levels for UIC Sampling
Yellow Highlighted cell indicates an exceedance of FDEP NADCs
Blank cells indicate the analyte was not analyzed for that specific well and date
ft bls = feet below land surface
GCTL = Groundwater Cleanup Target Level, Chapter 62-777 Florida Administrative Code, Table 1 (2005)
NADCs = Natural Attenuation Default Concentration, Chapter 62-777 Florida Administrative Code, Table V (April 2005)
J = Indicates an estimated value
U = Indicates the analyte was not detected
µg/L = micrograms per liter
DPT = Direct Push Technology .

APPENDIX D

EVS MODEL OF CVOC DISTRIBUTION

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Notes:
1. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area.
2. SWMU = Stormwater Waste Management Unit
3. Source of 2018 aerial: Florida Department of Transportation Aerial Photo Lookup System website.
4. Source of plume boundaries: 2018 Annual CMI and IM report that included additional data form DPT sampling locations.

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APPENDIX E

DISTRIBUTION OF CVOCs IN PROPOSED IMNJECTION INTERVALS

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Figure D-1. Estimated TCE NADC plume and TCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 5 to 9 ft bls
Proposed Injection Interval: 4 to 10 ft bls



Figure D-2. Estimated cDCE NADC plume and cDCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 5 to 9 ft bls
Proposed Injection Interval: 4 to 10 ft bls



Figure D-3. Estimated VC NADC plume and VC concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 5 to 9 ft bls
Proposed Injection Interval: 4 to 10 ft bls



Figure D-4. Estimated CVOC NADC plumes from 2021 DPT samples.
DPT Sample Interval: 5 to 9 ft bls
Proposed Injection Interval: 4 to 10 ft bls



Figure D-5. Estimated TCE NADC plume and TCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 9 to 13 ft bls
Proposed Injection Interval: 10 to 14 ft bls



Figure D-6. Estimated cDCE NADC plume and cDCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 9 to 13 ft bls
Proposed Injection Interval: 10 to 14 ft bls



Figure D-7. Estimated VC NADC plume and VC concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 9 to 13 ft bls
Proposed Injection Interval: 10 to 14 ft bls



Figure D-8. Estimated CVOC NADC plumes from 2021 DPT samples.
DPT Sample Interval: 9 to 13 ft bls
Proposed Injection Interval: 10 to 14 ft bls



Figure D-9. Estimated TCE NADC plume and TCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 14 to 18 ft bls
Proposed Injection Interval: 14 to 18 ft bls



Figure D-10. Estimated cDCE NADC plume and cDCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 14 to 18 ft bls
Proposed Injection Interval: 14 to 18 ft bls



Figure D-11. Estimated VC NADC plume and VC concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 14 to 18 ft bls
Proposed Injection Interval: 14 to 18 ft bls



Figure D-12. Estimated CVOC NADC plumes from 2021 DPT samples.
DPT Sample Interval: 14 to 18 ft bls
Proposed Injection Interval: 14 to 18 ft bls



Figure D-13. Estimated TCE NADC plume and TCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 43 to 47 ft bls
Proposed Injection Interval: 42 to 48 ft bls

Estimated extent of TCE NADC plume (300 ug/L)

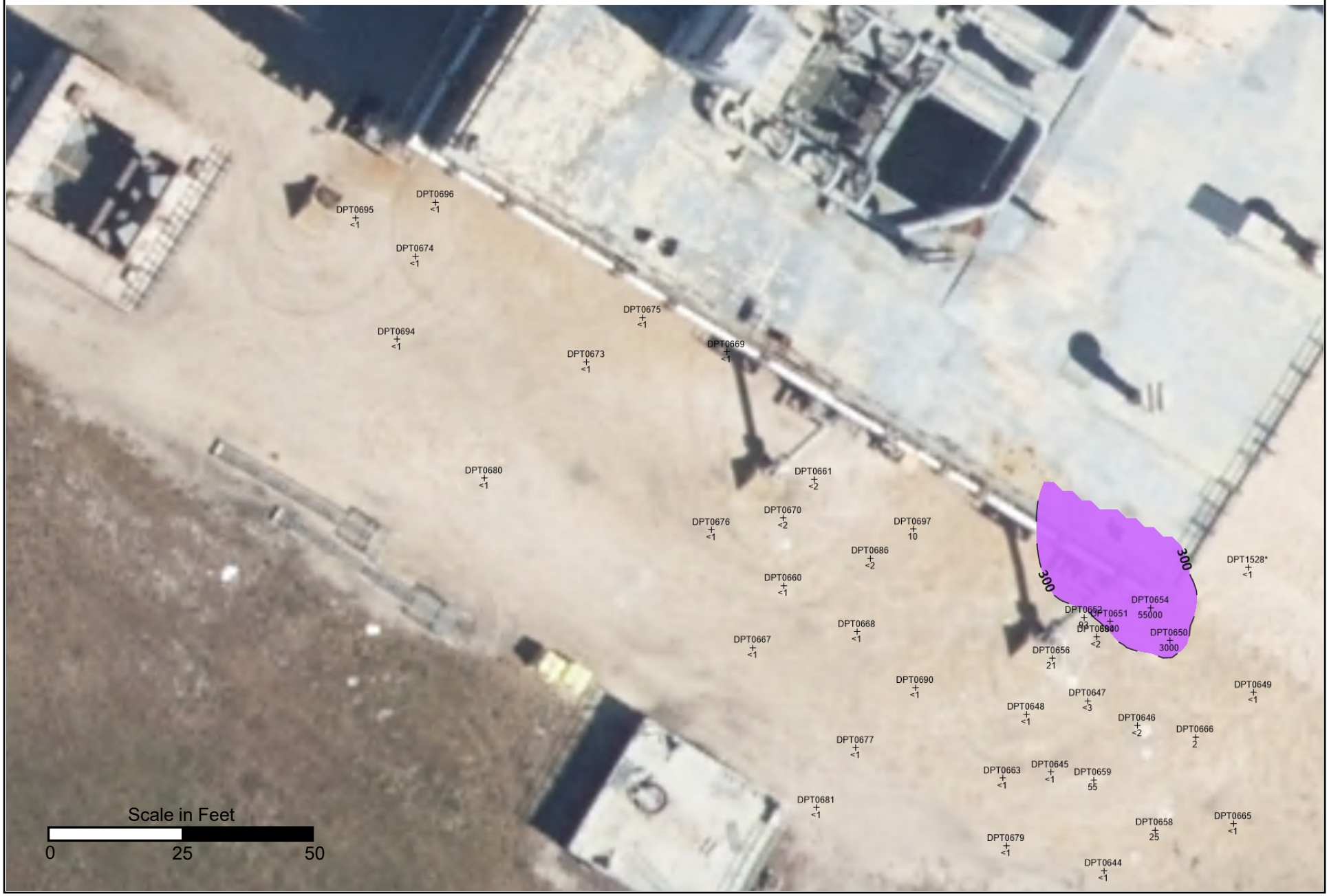


Figure D-14. Estimated cDCE NADC plume and cDCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 43 to 47 ft bls
Proposed Injection Interval: 42 to 48 ft bls

Estimated extent of cDCE NADC plume (700 ug/L)



Figure D-15. Estimated VC NADC plume and VC concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 43 to 47 ft bls
Proposed Injection Interval: 42 to 48 ft bls



Figure D-16. Estimated CVOC NADC plumes from 2021 DPT samples.
DPT Sample Interval: 43 to 47 ft bls
Proposed Injection Interval: 42 to 48 ft bls



Figure D-17. Estimated cDCE NADC plume and cDCE concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 48 to 52 ft bls
Proposed Injection Interval: 48 to 52 ft bls

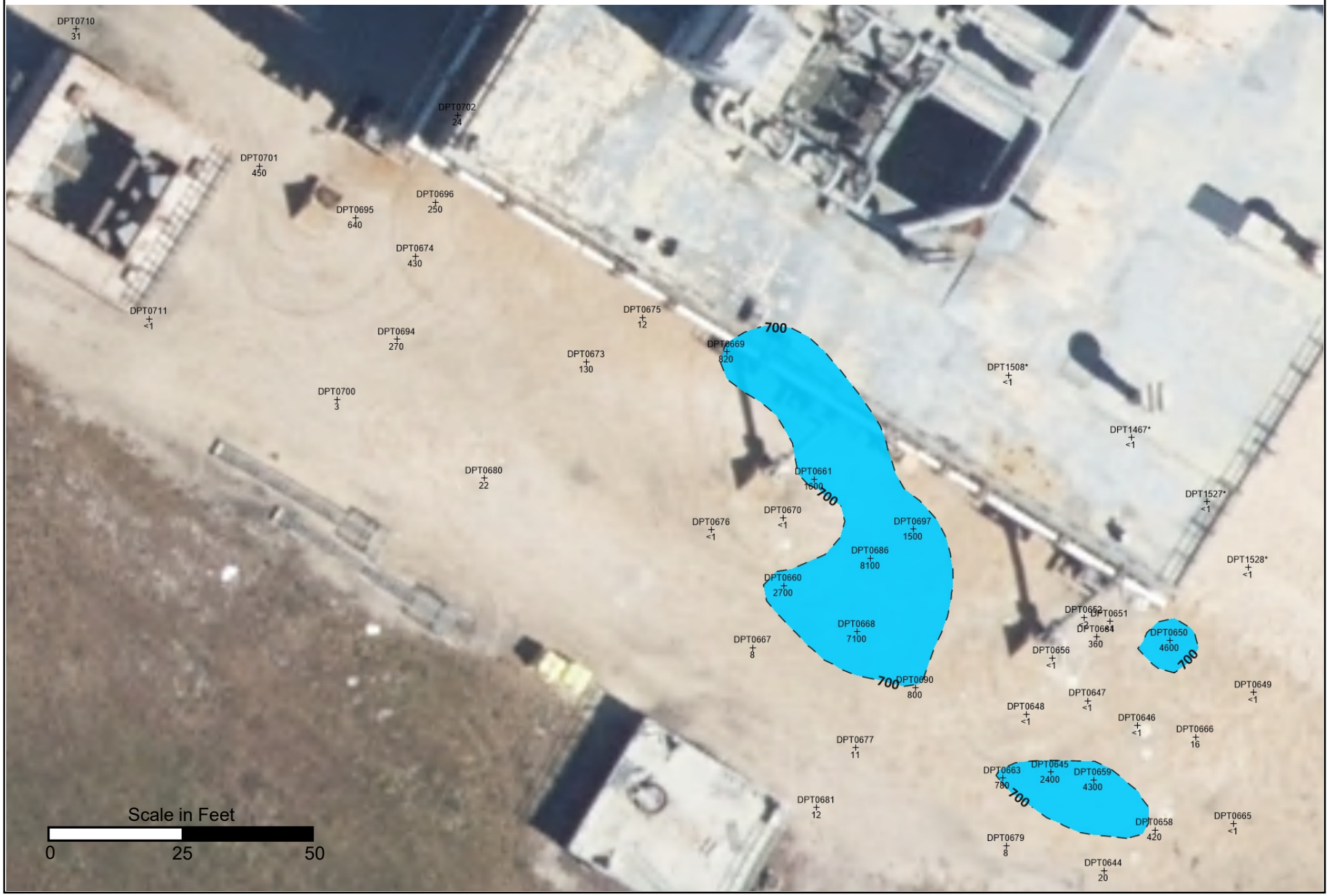


Figure D-18. Estimated VC NADC plume and VC concentrations (ug/L) from 2021 DPT samples.
DPT Sample Interval: 48 to 52 ft bls
Proposed Injection Interval: 48 to 52 ft bls



Figure D-19. Estimated CVOC NADC plumes from 2021 DPT samples.
DPT Sample Interval: 48 to 52 ft bls
Proposed Injection Interval: 48 to 52 ft bls



APPENDIX F

FIELD NOTES

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MLPV HS3 PB/KO

6/24/24 P. 1 of 10

630	PB departs orlando for KSC
730	PB arrive at KSC meet KO, begin field prep
845	John McCoy onsite
8900	John McCoy offsite
1145	John McCoy onsite
1200	John McCoy offsite
1210	PDS onsite H/S meeting + Site walk SOW: DPT sampling Trucks: 903, 427 weather: 82° P. cloudy
1225	Set up sampling
1245	Set up on DPT 712, hand clear top 5'
1250	GPR onsite
1320	DPT0712-016.0 collected
1335	DPT0712-020.0 collected
1355	DPT0712-024.0 collected
1430	DPT0713-026.0 collected
1400	move to DPT 713 hand clear top 5'
1459	DPT0713-030.0 collected
1515	DPT0713-034.0 collected
1520	move to DPT-714 hand clear top 5'
1535	DPT0714-016.0 collected
1555	DPT0714-020.0 collected
1610	DPT0714-024.0 collected

6/24/24 MIPV HS3 P. 2 of 10 PB/KO

1640 DPT0716-0[illegible]7.0 collected
1700 DPT0716-0[illegible]3.0 collected
1715 DPT0716-0[illegible]5.0 collected
1720 PDS clean up work area.
Stage equipment for the night
1800 PB + KO Prep for rest of week
PB + KO offs: to headed to.
orlando
1900 end of day

PB

PB

6/25/24 MIPV HS3 P. 3 of 10

630 PB depart orlando for KSC
730 PB arrive at KSC w/ PDS
735 H/S meeting / SOW for today
SOW: DPT Sampling
Truck: 429
Weather: P. Cloudy 83°F
745 Calibrate and Set up equipment
805 move to DPT0717 hand clear Top 5'
845 DPT0717-046.0 collected
935 DPT0717-050.0 collected
1000 DPT0717-054.0 collected
1010 move to next location hand clear top 5'
1035 DPT0715-043.0 collected
1135 DPT0715-047.0 collected
1130 DPT0715-051.0 collected
1135 Break for lunch
1230 Back from lunch
1240 John Mccoy on site
1255 John mccoy offs: to
1235 move to DPT0728 hand clear top 5'
1300 DPT0728-007.0 collected
1310 DPT0728-011.0 collected
1325 DPT0728-01[illegible].0 collected
1335 move to DPT0750 hand clear top
1350 DPT0750-007.0 collected

MIPV HS3

6/25/24 P. 4 of 10 PB

1400	DPT0750-011.0 collected
1405	move to DPT0729 hand clear top 5'
1415	DPT0729-007.0 collected
1425	DPT0729-011.0 collected
1435	DPT0729-016.0 collected
1455	DPT0729-045.0 collected
1520	DPT0729-050.0 collected
1535	move to DPT0730 hand clear Top5'
1630	DPT0730-007.0 collected
1645	DPT0730-016.0 collected
1705	DPT0730-016.0 collected
1750	DPT0727-050.0 collected
1800	PB + PDS clean up work area and stage for tomorrow
1815	PDS offsite
1830	PB finish collecting GPS locations
1835	PB offsite
1955	end of day

PB

MIPV HS3 PB

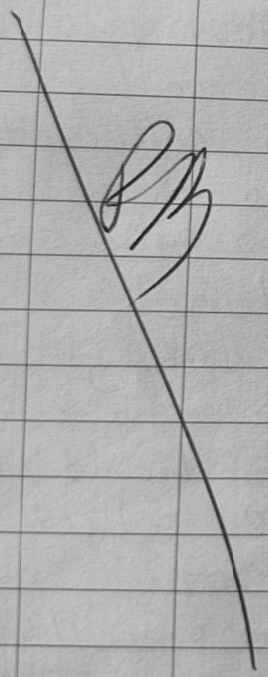
P. 5 of 10

6/26/24

630	PB Depart orlando for KSC
730	PB/PDS onsite H/S meeting
	SOW: DPT sampling
	Truck - 427
	Weather: 81°F clear
735	setup/calibrate equipment for today
750	resume DPT0727 sampling
810	DPT0727-050.0 collected
810	move to DPT0744 hand clear top 5'
855	DPT0744-045.0 collected
930	DPT0744-050.0 collected
940	move to DPT0740. hand clear top 5'
1000	DPT0740-007.0 collected
1020	DPT0740-011.0 collected
1040	DPT0740-045.0 collected
1120	DPT0740-050.0 collected
1135	Break for lunch
1233	resume working
1250	Linnea + natasha on site, move to DPT0736, hand clear top 5'
1335	DPT0736-050.0 collected
1345	move to DPT0751
1415	DPT0751-050.0 collected, Kara onsite
1440	Kara offsite
1500	Linnea offsite

6/26/24 MIPV HS3 P. 6 of 10 PB

1425	moke to DPT0752, hand clear top 5'
1505	DPT0752-050.0 collected
1535	DPT0752-056.0 collected
1545	moke to DPT0726, hand clear top 5'
1615	DPT0726-050.0 collected
1700	DPT0726-056.0 collected
1720	complete DPT 726
1730	start grouting borings
1745	finish grouting borings, cleanup
1750	PB PDS off site
1855	end of day

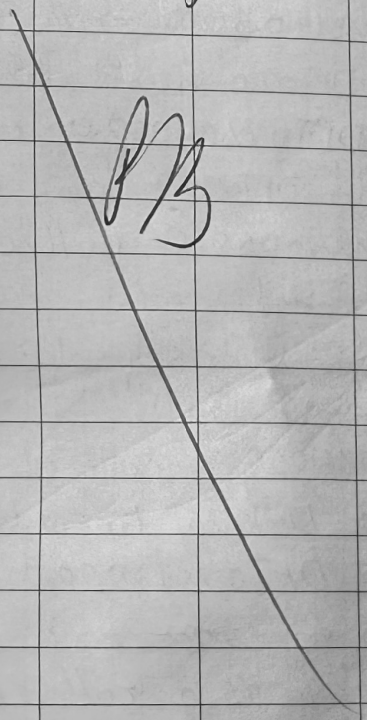


6/27/24 MIPV HS3 P. 7 of 10 PB

700	PB depart orlando for KSC
800	PB+PDS on site H/S meeting
	SOW: DPT sampling
	Truck: 427
	weather: 82°F Clear
810	calibrate equipment, set up for work
840	moke to DPT0749 hand clear top 5'
905	DPT0749-050.0 collected
915	moke to DPT0725, hand clear top 5'
950	DPT0725-050.0 collected
1000	moke to DPT0721 hand clear top 5'
1025	DPT0721-050.0 collected
1035	moke to DPT0720 hand clear top 5'
1100	~~moke~~ DPT0720-050.0 collected
1110	moke to DPT0724 hand clear top 5'
1140	DPT0724-050.0 collected
1145	Break for lunch
1225	resume work, moke to DPT0736, hand clear top 5'
1245	DPT0736-050.0 collected
1255	moke to DPT0751 hand clear top 5'
1310	collect DPT0751-050.0
1320	moke to DPT0744 hand clear top 5'
1340	DPT0744-045.0 collected
1355	moke to DPT0740 hand clear top 5'
1430	DPT0740-045.0 collected

6/27/24 MLPV HS3 P 8. of 10 PB

1445 mob to DPT0731 hand clear to 5'
1500 DPT0731-007.0 collected
1510 DPT0731-011.0 collected
1520 DPT0731-016.0 collected
1535 DPT0731-045.0 collected
1600 DPT0731-050.0 collected
1605 Grout bore holes + clean up work areas
1620 PB + PDS offsite
1735 PB arrive at orlando, unload
1750 end of day



MLPV HS3 KO

6/28/24 P. 9 of 10

0555 KO arrives at AECOM depot to pack up equipment.
0620 KO heads to KSC.
0730 KO arrives on site. KO calibrates aquatroll.
0740 Drillers arrive onsite (PDS). KO holds H&S meeting.
Truck: 903
Weather: 83°F, sunny
0750 Mob to DPT0737, hand clear to 5'.
0810 DPT0737-050.0 collected.
0855 Mob to DPT0733, hand clear to 5'.
0905 DPT0733-007.0 collected
0925 DPT0733-011.0 collected
0940 DPT0733-016.0 collected
0955 Mob to DPT0741, hand clear to 5'.
1005 DPT0741-007.0 collected.
1035 DPT0741-011.0 collected.
1110 DPT0741-016.0 collected.
1125 DPT0741-020.0 collected.
1135 DPT0741-024.0 collected.
1150 DPT0741-045.0 collected.
1205 DPT0741-050.0 collected.
1220 Grout boreholes, mark GPS locations, and pack up.

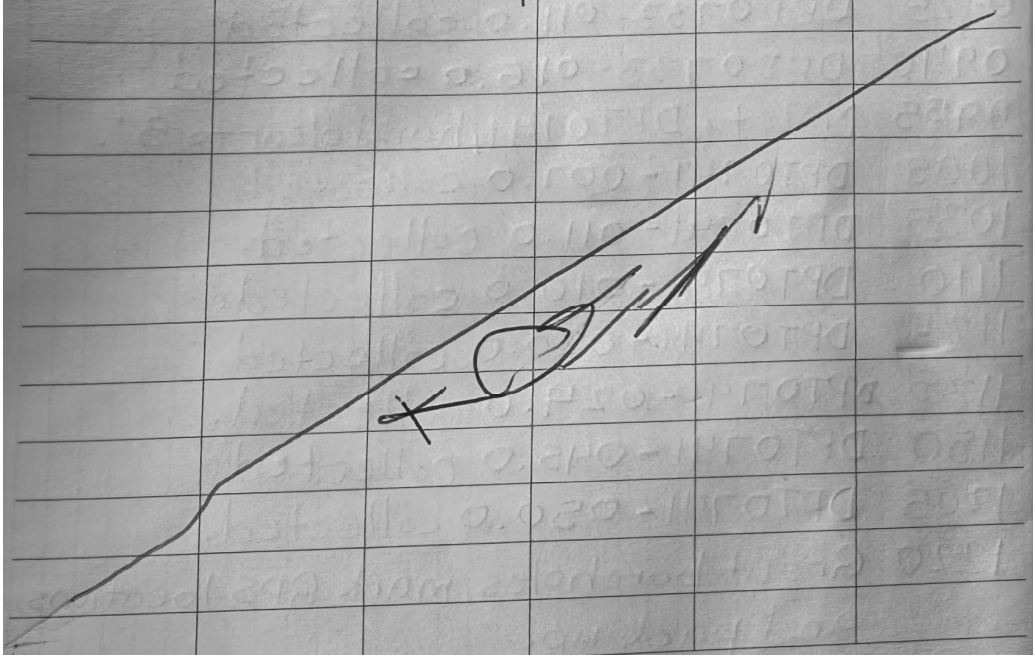
MLPV HS3

6/28/24 P. 10 of 10 KO

1245	Mob to CCF with drillers to drop off IDW drum.
1255	Unload drum, label, take photo.
1310	Sample IDW:

Drum ID	Time	Sample ID	pH
231297	1310	MLPV-IDW01-20240628	8.11

1330	KO heads to logistics to pack coolers and get ice. Drillers mob offsite.
1420	KO meets Eurofins courier at badging office to deliver samples.
1600	KO arrives back at AECOM depot.
1630	End of day.



APPENDIX G

DPT GROUNDWATER SAMPLING LOGS AND EQUIPMENT CALIBRATION RECORDS

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DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0712-016.0-20240624
Sample Date: 6/24/2024 1:20:00 PM
DPT ID: MLPV-DPT0712
Depth (ft): 14 - 18
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:19 PM	0	7.35000	542.600000	5.2600000	396.82000	33.7700	-181.300		
1:34 PM	0	7.41000	571.900000	-271.80000000	4988.000000	31.6600	-271.700		
1:55 PM	0	7.56000	627.800000	0.1000000	4563.800000	28.6500	-346.700		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0712-020.0-20240624
DPT ID: MLPV-DPT0712
Location Type:
Sample Date: 6/24/2024 1:35:00 PM
Depth (ft): 18 - 22
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:19 PM	0	7.35000	542.600000	5.2600000	396.82000	33.7700	-181.300		
1:34 PM	0	7.41000	571.900000	-271.8000000	4988.00000	31.6600	-271.700		
1:55 PM	0	7.56000	627.800000	0.1000000	4563.80000	28.6500	-346.700		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0712-022.0-20240624
DPT ID: MLPV-DPT0712
Location Type:
Sample Date: 6/24/2024 1:55:00 PM
Depth (ft): 22 - 26
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:19 PM	0	7.35000	542.600000	5.2600000	396.82000	33.7700	-181.300		
1:34 PM	0	7.41000	571.900000	-271.800000	4988.000000	31.6600	-271.700		
1:55 PM	0	7.56000	627.800000	0.1000000	4563.800000	28.6500	-346.700		

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0713-026.0-20240624
DPT ID: MLPV-DPT0713
Location Type:
Sample Date: 6/24/2024 2:30:00 PM
Depth (ft): 24 - 28
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:29 PM	0	7.72000	643.800000	1.8800000	768.90000	33.3300	-353.740		
2:55 PM	0	7.86000	452.600000	0.0800000	447.98000	30.7000	-366.700		
3:15 PM	0	7.70511	639.646000	2.0629800	2894.24000	29.8854	-360.865	0.314	0.416

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0713-030.0-20240624
DPT ID: MLPV-DPT0713
Location Type:
Sample Date: 6/24/2024 2:50:00 PM
Depth (ft): 28 - 32
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:29 PM	0	7.72000	643.800000	1.8800000	768.90000	33.3300	-353.740		
2:55 PM	0	7.86000	452.600000	0.0800000	447.98000	30.7000	-366.700		
3:15 PM	0	7.70511	639.646000	2.0629800	2894.24000	29.8854	-360.865	0.314	0.416

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0713-034.0-20240624
DPT ID: MLPV-DPT0713
Location Type:
Sample Date: 6/24/2024 3:15:00 PM
Depth (ft): 32 - 36
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:29 PM	0	7.72000	643.800000	1.8800000	768.90000	33.3300	-353.740		
2:55 PM	0	7.86000	452.600000	0.0800000	447.98000	30.7000	-366.700		
3:15 PM	0	7.70511	639.646000	2.0629800	2894.24000	29.8854	-360.865	0.314	0.416

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0714-016.0-20240624
DPT ID: MLPV-DPT0714
Location Type:
Sample Date: 6/24/2024 3:35:00 PM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
3:35 PM	0	7.71368	496.875000	0.5128720	1194.43000	30.0718	-353.570	0.242	
3:55 PM	0	7.73530	609.276000	0.1356000	1434.03000	28.1737	-378.351	0.298	
4:10 PM	0	7.71871	630.285000	0.2802550	2587.40000	30.3734	-374.794	0.309	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0714-020.0-20240624
DPT ID: MLPV-DPT0714
Location Type:
Sample Date: 6/24/2024 3:55:00 PM
Depth (ft): 18 - 22
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
3:35 PM	0	7.71368	496.875000	0.5128720	1194.43000	30.0718	-353.570	0.242	
3:55 PM	0	7.73530	609.276000	0.1356000	1434.03000	28.1737	-378.351	0.298	
4:10 PM	0	7.71871	630.285000	0.2802550	2587.40000	30.3734	-374.794	0.309	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0714-024.0-20240624
DPT ID: MLPV-DPT0714
Location Type:
Sample Date: 6/24/2024 4:10:00 PM
Depth (ft): 22 - 26
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
3:35 PM	0	7.71368	496.875000	0.5128720	1194.43000	30.0718	-353.570	0.242	
3:55 PM	0	7.73530	609.276000	0.1356000	1434.03000	28.1737	-378.351	0.298	
4:10 PM	0	7.71871	630.285000	0.2802550	2587.40000	30.3734	-374.794	0.309	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0715-043.0-20240625
DPT ID: MLPV-DPT0715
Location Type:
Sample Date: 6/25/2024 10:35:00 AM
Depth (ft): 41 - 45
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:35 AM	0	7.35020	11955.400000	2.5677300	22.78800	40.5936	-278.027	6.908	7.771
11:03 AM	0	6.76020	22987.600000	1.6401800	879.21800	38.3161	-289.924	14.092	14.942
11:28 AM	0	6.70902	15372.500000	0.8228380	2904.01000	30.8755	-402.858	9.098	9.992

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0715-047.0-20240625
DPT ID: MLPV-DPT0715
Location Type:
Sample Date: 6/25/2024 11:05:00 AM
Depth (ft): 45 - 49
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:35 AM	0	7.35020	11955.400000	2.5677300	22.78800	40.5936	-278.027	6.908	7.771
11:03 AM	0	6.76020	22987.600000	1.6401800	879.21800	38.3161	-289.924	14.092	14.942
11:28 AM	0	6.70902	15372.500000	0.8228380	2904.01000	30.8755	-402.858	9.098	9.992

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0715-051.0-20240625
DPT ID: MLPV-DPT0715
Location Type:
Sample Date: 6/25/2024 11:30:00 AM
Depth (ft): 49 - 53
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:35 AM	0	7.35020	11955.400000	2.5677300	22.78800	40.5936	-278.027	6.908	7.771
11:03 AM	0	6.76020	22987.600000	1.6401800	879.21800	38.3161	-289.924	14.092	14.942
11:28 AM	0	6.70902	15372.500000	0.8228380	2904.01000	30.8755	-402.858	9.098	9.992

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0716-007.0-20240624
DPT ID: MLPV-DPT0716
Location Type:
Sample Date: 6/24/2024 4:40:00 PM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:37 PM	0	7.87446	607.846000	5.9593700	4425.55000	36.9182	-257.277	0.296	0.395
5:00 PM	0	7.61862	667.347000	0.0897405	1738.60000	34.8814	-275.001	0.327	
5:15 PM	0	7.62070	604.059000	1.0993300	828.68700	32.2563	-226.912	0.295	0.393

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0716-011.0-20240624
DPT ID: MLPV-DPT0716
Location Type:
Sample Date: 6/24/2024 5:00:00 PM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:37 PM	0	7.87446	607.846000	5.9593700	4425.55000	36.9182	-257.277	0.296	0.395
5:00 PM	0	7.61862	667.347000	0.0897405	1738.60000	34.8814	-275.001	0.327	
5:15 PM	0	7.62070	604.059000	1.0993300	828.68700	32.2563	-226.912	0.295	0.393

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0716-015.0-20240624
DPT ID: MLPV-DPT0716
Location Type:
Sample Date: 6/24/2024 5:15:00 PM
Depth (ft): 13 - 17
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:37 PM	0	7.87446	607.846000	5.9593700	4425.55000	36.9182	-257.277	0.296	0.395
5:00 PM	0	7.61862	667.347000	0.0897405	1738.60000	34.8814	-275.001	0.327	
5:15 PM	0	7.62070	604.059000	1.0993300	828.68700	32.2563	-226.912	0.295	0.393

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0717-046.0-20240625
DPT ID: MLPV-DPT0717
Location Type:
Sample Date: 6/25/2024 8:45:00 AM
Depth (ft): 44 - 48
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:42 AM	0	7.21019	22698.000000	5.1132200	2483.55000	34.6678	-190.556	13.908	14.754
9:30 AM	0	7.12789	14.330700	5.6652100	157.63000	45.9098	-131.944	0.005	0.009
10:00 AM	0	7.51613	41.354500	4.7676200	784.50600	47.6675	-203.550	0.018	0.027

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0717-050.0-20240625
DPT ID: MLPV-DPT0717
Location Type:
Sample Date: 6/25/2024 9:35:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:42 AM	0	7.21019	22698.000000	5.1132200	2483.55000	34.6678	-190.556	13.908	14.754
9:30 AM	0	7.12789	14.330700	5.6652100	157.63000	45.9098	-131.944	0.005	0.009
10:00 AM	0	7.51613	41.354500	4.7676200	784.50600	47.6675	-203.550	0.018	0.027

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0717-054.0-20240625
DPT ID: MLPV-DPT0717
Location Type:
Sample Date: 6/25/2024 10:00:00 AM
Depth (ft): 52 - 56
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:42 AM	0	7.21019	22698.000000	5.1132200	2483.55000	34.6678	-190.556	13.908	14.754
9:30 AM	0	7.12789	14.330700	5.6652100	157.63000	45.9098	-131.944	0.005	0.009
10:00 AM	0	7.51613	41.354500	4.7676200	784.50600	47.6675	-203.550	0.018	0.027

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0720-050.0-20240627
DPT ID: MLPV-DPT0720
Location Type:
Sample Date: 6/27/2024 11:00:00 AM
Depth (ft): 48-52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:58 AM	0	7.41964	24128.800000	0.1126090	1631.24000	28.3138	-290.836	14.871	15.684

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0721-050.0-20240627
DPT ID: MLPV-DPT0721
Location Type:
Sample Date: 6/27/2024 10:25:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:22 AM	0	7.52811	15066.400000	0.8058220	3015.25000	29.6657	-292.572	8.902	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0724-050.0-20240627
Sample Date: 6/27/2024 11:40:00 AM
DPT ID: MLPV-DPT0724
Depth (ft): 48 - 52
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
11:39 AM	0	7.37594	30534.500000	0.0623719	5472.19000	29.2577	-341.862	19.266	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0725-050.0-20240627
DPT ID: MLPV-DPT0725
Location Type:
Sample Date: 6/27/2024 9:50:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
9:47 AM	0	7.24844	16392.300000	2.9419300	48.78440	30.0624	-283.698	9.756	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0726-050.0-20240626
DPT ID: MLPV-DPT0726
Location Type:
Sample Date: 6/26/2024 4:15:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:12 PM	0	7.22308	1547.770000	0.7651730	481.61800	31.6078	-328.492	0.787	1.006
4:58 PM	0	7.68914	1121.170000	0.1832500	5899.43000	29.3627	-257.076	0.562	0.729

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0726-056.0-20240626
DPT ID: MLPV-DPT0726
Location Type:
Sample Date: 6/26/2024 5:00:00 PM
Depth (ft): 54 - 58
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:12 PM	0	7.22308	1547.770000	0.7651730	481.61800	31.6078	-328.492	0.787	1.006
4:58 PM	0	7.68914	1121.170000	0.1832500	5899.43000	29.3627	-257.076	0.562	0.729

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0727-050.0-20240625
DPT ID: MLPV-DPT0727
Location Type:
Sample Date: 6/25/2024 5:50:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
5:50 PM	0	7.39434	23973.300000	0.0834415	1553.58000	30.9135	-324.724	14.770	15.583
8:09 AM	0	7.26591	405.059000	0.3731100	3913.93000	26.7818	-182.427	0.196	0.263

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0727-056.0-20240626
DPT ID: MLPV-DPT0727
Location Type:
Sample Date: 6/26/2024 8:10:00 AM
Depth (ft): 54 - 58
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
5:50 PM	0	7.39434	23973.300000	0.0834415	1553.58000	30.9135	-324.724	14.770	15.583
8:09 AM	0	7.26591	405.059000	0.3731100	3913.93000	26.7818	-182.427	0.196	0.263

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0728-007.0-20240625
Sample Date: 6/25/2024 1:00:00 PM
DPT ID: MLPV-DPT0728
Depth (ft): 5 - 9
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:00 PM	0	7.26927	838.459000	0.7409000	2870.40000	29.7062	-187.013	0.415	0.545
1:10 PM	0	7.62035	13.554900	5.8680400	2.85494	29.0473	-167.525	0.005	
1:25 PM	0	7.05900	574.796000	0.1127320	1439.28000	28.5833	-200.932	0.281	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0728-011.0-20240625
DPT ID: MLPV-DPT0728
Location Type:
Sample Date: 6/25/2024 1:10:00 PM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:00 PM	0	7.26927	838.459000	0.7409000	2870.40000	29.7062	-187.013	0.415	0.545
1:10 PM	0	7.62035	13.554900	5.8680400	2.85494	29.0473	-167.525	0.005	
1:25 PM	0	7.05900	574.796000	0.1127320	1439.28000	28.5833	-200.932	0.281	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0728-016.0-20240625
DPT ID: MLPV-DPT0728
Location Type:
Sample Date: 6/25/2024 1:25:00 PM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:00 PM	0	7.26927	838.459000	0.7409000	2870.40000	29.7062	-187.013	0.415	0.545
1:10 PM	0	7.62035	13.554900	5.8680400	2.85494	29.0473	-167.525	0.005	
1:25 PM	0	7.05900	574.796000	0.1127320	1439.28000	28.5833	-200.932	0.281	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0729-007.0-20240625
DPT ID: MLPV-DPT0729
Location Type:
Sample Date: 6/25/2024 2:15:00 PM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:11 PM	0	7.04781	933.914000	1.6966700	1.97662	31.9316	-181.654	0.464	0.607
2:21 PM	0	6.88566	1064.400000	0.1270700	4319.97000	28.4313	-181.916	0.533	0.692
2:31 PM	0	7.21519	912.192000	1.6657300	3846.61000	31.1858	-210.088	0.453	0.593
2:52 PM	0	6.88119	16434.400000	0.1417530	190.28600	32.8683	-408.075	9.780	10.682
3:20 PM	0	6.67909	18138.700000	0.0786918	3264.99000	28.7650	-228.370	10.891	11.790

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0729-011.0-20240625
DPT ID: MLPV-DPT0729
Location Type:
Sample Date: 6/25/2024 2:25:00 PM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:11 PM	0	7.04781	933.914000	1.6966700	1.97662	31.9316	-181.654	0.464	0.607
2:21 PM	0	6.88566	1064.400000	0.1270700	4319.97000	28.4313	-181.916	0.533	0.692
2:31 PM	0	7.21519	912.192000	1.6657300	3846.61000	31.1858	-210.088	0.453	0.593
2:52 PM	0	6.88119	16434.400000	0.1417530	190.28600	32.8683	-408.075	9.780	10.682
3:20 PM	0	6.67909	18138.700000	0.0786918	3264.99000	28.7650	-228.370	10.891	11.790

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0729-016.0-20240625
DPT ID: MLPV-DPT0729
Location Type:
Sample Date: 6/25/2024 2:35:00 PM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:11 PM	0	7.04781	933.914000	1.6966700	1.97662	31.9316	-181.654	0.464	0.607
2:21 PM	0	6.88566	1064.400000	0.1270700	4319.97000	28.4313	-181.916	0.533	0.692
2:31 PM	0	7.21519	912.192000	1.6657300	3846.61000	31.1858	-210.088	0.453	0.593
2:52 PM	0	6.88119	16434.400000	0.1417530	190.28600	32.8683	-408.075	9.780	10.682
3:20 PM	0	6.67909	18138.700000	0.0786918	3264.99000	28.7650	-228.370	10.891	11.790

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0729-045.0-20240625
DPT ID: MLPV-DPT0729
Location Type:
Sample Date: 6/25/2024 2:55:00 PM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:11 PM	0	7.04781	933.914000	1.6966700	1.97662	31.9316	-181.654	0.464	0.607
2:21 PM	0	6.88566	1064.400000	0.1270700	4319.97000	28.4313	-181.916	0.533	0.692
2:31 PM	0	7.21519	912.192000	1.6657300	3846.61000	31.1858	-210.088	0.453	0.593
2:52 PM	0	6.88119	16434.400000	0.1417530	190.28600	32.8683	-408.075	9.780	10.682
3:20 PM	0	6.67909	18138.700000	0.0786918	3264.99000	28.7650	-228.370	10.891	11.790

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0729-050.0-20240625
DPT ID: MLPV-DPT0729
Location Type:
Sample Date: 6/25/2024 3:20:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:11 PM	0	7.04781	933.914000	1.6966700	1.97662	31.9316	-181.654	0.464	0.607
2:21 PM	0	6.88566	1064.400000	0.1270700	4319.97000	28.4313	-181.916	0.533	0.692
2:31 PM	0	7.21519	912.192000	1.6657300	3846.61000	31.1858	-210.088	0.453	0.593
2:52 PM	0	6.88119	16434.400000	0.1417530	190.28600	32.8683	-408.075	9.780	10.682
3:20 PM	0	6.67909	18138.700000	0.0786918	3264.99000	28.7650	-228.370	10.891	11.790

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0730-007.0-20240625
DPT ID: MLPV-DPT0730
Location Type:
Sample Date: 6/25/2024 4:30:00 PM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:29 PM	0	7.18967	1165.030000	0.6168990	3221.58000	28.3576	-195.310	0.585	0.757
4:41 PM	0	7.57318	415.435000	0.1694000	1235.48000	27.4035	-249.202	0.201	0.270
5:02 PM	0	7.67513	336.825000	0.0908885	3483.29000	27.2640	-245.660	0.162	0.219

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0730-011.0-20240625
DPT ID: MLPV-DPT0730
Location Type:
Sample Date: 6/25/2024 5:05:00 PM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:29 PM	0	7.18967	1165.030000	0.6168990	3221.58000	28.3576	-195.310	0.585	0.757
4:41 PM	0	7.57318	415.435000	0.1694000	1235.48000	27.4035	-249.202	0.201	0.270
5:02 PM	0	7.67513	336.825000	0.0908885	3483.29000	27.2640	-245.660	0.162	0.219

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0730-016.0-20240625
DPT ID: MLPV-DPT0730
Location Type:
Sample Date: 6/25/2024 4:45:00 PM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
4:29 PM	0	7.18967	1165.030000	0.6168990	3221.58000	28.3576	-195.310	0.585	0.757
4:41 PM	0	7.57318	415.435000	0.1694000	1235.48000	27.4035	-249.202	0.201	0.270
5:02 PM	0	7.67513	336.825000	0.0908885	3483.29000	27.2640	-245.660	0.162	0.219

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0731-007.0-20240627
DPT ID: MLPV-DPT0731
Location Type:
Sample Date: 6/27/2024 3:00:00 PM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:55 PM	0	7.32698	515.433000	2.1404700	2367.91000	30.9917	-207.061	0.251	0.335
3:07 PM	0	7.20408	689.486000	0.2300890	3332.45000	27.0893	-171.980	0.339	0.448
3:17 PM	0	7.60494	501.404000	0.6760020	5073.98000	29.0567	-230.364	0.244	0.326
3:34 PM	0	7.22205	9327.230000	5.4070900	1330.81000	31.8230	-232.781	5.301	
4:00 PM	0	7.43831	13154.000000	3.6680300	1603.40000	31.6994	-202.912	7.683	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0731-011.0-20240627
Sample Date: 6/27/2024 3:10:00 PM
DPT ID: MLPV-DPT0731
Depth (ft): 9 - 13
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:55 PM	0	7.32698	515.433000	2.1404700	2367.91000	30.9917	-207.061	0.251	0.335
3:07 PM	0	7.20408	689.486000	0.2300890	3332.45000	27.0893	-171.980	0.339	0.448
3:17 PM	0	7.60494	501.404000	0.6760020	5073.98000	29.0567	-230.364	0.244	0.326
3:34 PM	0	7.22205	9327.230000	5.4070900	1330.81000	31.8230	-232.781	5.301	
4:00 PM	0	7.43831	13154.000000	3.6680300	1603.40000	31.6994	-202.912	7.683	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0731-016.0-20240627
DPT ID: MLPV-DPT0731
Location Type:
Sample Date: 6/27/2024 3:20:00 PM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:55 PM	0	7.32698	515.433000	2.1404700	2367.91000	30.9917	-207.061	0.251	0.335
3:07 PM	0	7.20408	689.486000	0.2300890	3332.45000	27.0893	-171.980	0.339	0.448
3:17 PM	0	7.60494	501.404000	0.6760020	5073.98000	29.0567	-230.364	0.244	0.326
3:34 PM	0	7.22205	9327.230000	5.4070900	1330.81000	31.8230	-232.781	5.301	
4:00 PM	0	7.43831	13154.000000	3.6680300	1603.40000	31.6994	-202.912	7.683	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0731-045.0-20240627
DPT ID: MLPV-DPT0731
Location Type:
Sample Date: 6/27/2024 3:35:00 PM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:55 PM	0	7.32698	515.433000	2.1404700	2367.91000	30.9917	-207.061	0.251	0.335
3:07 PM	0	7.20408	689.486000	0.2300890	3332.45000	27.0893	-171.980	0.339	0.448
3:17 PM	0	7.60494	501.404000	0.6760020	5073.98000	29.0567	-230.364	0.244	0.326
3:34 PM	0	7.22205	9327.230000	5.4070900	1330.81000	31.8230	-232.781	5.301	
4:00 PM	0	7.43831	13154.000000	3.6680300	1603.40000	31.6994	-202.912	7.683	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0731-050.0-20240627
DPT ID: MLPV-DPT0731
Location Type:
Sample Date: 6/27/2024 4:00:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:55 PM	0	7.32698	515.433000	2.1404700	2367.91000	30.9917	-207.061	0.251	0.335
3:07 PM	0	7.20408	689.486000	0.2300890	3332.45000	27.0893	-171.980	0.339	0.448
3:17 PM	0	7.60494	501.404000	0.6760020	5073.98000	29.0567	-230.364	0.244	0.326
3:34 PM	0	7.22205	9327.230000	5.4070900	1330.81000	31.8230	-232.781	5.301	
4:00 PM	0	7.43831	13154.000000	3.6680300	1603.40000	31.6994	-202.912	7.683	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0733-007.0-20240628
DPT ID: MLPV-DPT0733
Location Type:
Sample Date: 6/28/2024 9:05:00 AM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
9:05 AM	0	7.30942	1963.240000	0.5622240	1465.51000	33.4021	-201.918	1.009	
9:25 AM	0	7.77188	1371.730000	1.6725300	38.71010	30.5582	-192.042	0.694	
9:40 AM	0	7.57426	662.456000	0.4533860	3355.74000	28.7640	-278.326	0.325	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0733-011.0-20240628
DPT ID: MLPV-DPT0733
Location Type:
Sample Date: 6/28/2024 9:25:00 AM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
9:05 AM	0	7.30942	1963.240000	0.5622240	1465.51000	33.4021	-201.918	1.009	
9:25 AM	0	7.77188	1371.730000	1.6725300	38.71010	30.5582	-192.042	0.694	
9:40 AM	0	7.57426	662.456000	0.4533860	3355.74000	28.7640	-278.326	0.325	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0733-016.0-20240628
Sample Date: 6/28/2024 9:40:00 AM
DPT ID: MLPV-DPT0733
Depth (ft): 14 - 18
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
9:05 AM	0	7.30942	1963.240000	0.5622240	1465.51000	33.4021	-201.918	1.009	
9:25 AM	0	7.77188	1371.730000	1.6725300	38.71010	30.5582	-192.042	0.694	
9:40 AM	0	7.57426	662.456000	0.4533860	3355.74000	28.7640	-278.326	0.325	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0736-050.0-20240626
DPT ID: MLPV-DPT0736
Location Type:
Sample Date: 6/26/2024 1:35:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:35 PM	0	7.49561	29497.600000	0.0892133	1181.57000	28.8647	-362.247	18.545	19.173
12:40 PM	0	7.26162	28692.600000	0.1069670	2744.30000	26.8516	-331.811	17.978	18.650

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0736-050.0-20240627
DPT ID: MLPV-DPT0736 resample
Location Type:
Sample Date: 6/27/2024 12:45:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:35 PM	0	7.49561	29497.600000	0.0892133	1181.57000	28.8647	-362.247	18.545	19.173
12:40 PM	0	7.26162	28692.600000	0.1069670	2744.30000	26.8516	-331.811	17.978	18.650

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0737-050.0-20240628
Sample Date: 6/28/2024 8:10:00 AM
DPT ID: MLPV-DPT0737
Depth (ft): 48 - 52
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:10 AM	0	6.96408	14436.500000	0.1329320	2422.18000	29.1114	-286.380	8.499	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0740-007.0-20240626
Sample Date: 6/26/2024 10:00:00 AM
DPT ID: MLPV-DPT0740
Depth (ft): 5 - 9
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:00 AM	0	7.08630	1634.230000	0.3375130	1674.32000	36.9754	-176.638	0.831	1.062
10:17 AM	0	11.51350	1238.720000	0.4581600	32.44970	37.2296	-382.356	0.621	0.805
10:37 AM	0	8.01308	3007.020000	0.0797061	7486.07000	32.7878	-331.897	1.583	1.955
11:19 AM	0	7.67436	1.871980	5.6325100	330.65600	48.1982	-132.278	0.000	0.001
2:28 PM	0	7.15795	2160.500000	0.0436124	0.00000	37.6196	-255.531	1.114	1.404

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0740-011.0-20240626
Sample Date: 6/26/2024 10:20:00 AM
DPT ID: MLPV-DPT0740
Depth (ft): 9 - 13
Location Type:
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:00 AM	0	7.08630	1634.230000	0.3375130	1674.32000	36.9754	-176.638	0.831	1.062
10:17 AM	0	11.51350	1238.720000	0.4581600	32.44970	37.2296	-382.356	0.621	0.805
10:37 AM	0	8.01308	3007.020000	0.0797061	7486.07000	32.7878	-331.897	1.583	1.955
11:19 AM	0	7.67436	1.871980	5.6325100	330.65600	48.1982	-132.278	0.000	0.001
2:28 PM	0	7.15795	2160.500000	0.0436124	0.00000	37.6196	-255.531	1.114	1.404

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0740-045.0-20240626
DPT ID: MLPV-DPT0740
Location Type:
Sample Date: 6/26/2024 10:40:00 AM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:00 AM	0	7.08630	1634.230000	0.3375130	1674.32000	36.9754	-176.638	0.831	1.062
10:17 AM	0	11.51350	1238.720000	0.4581600	32.44970	37.2296	-382.356	0.621	0.805
10:37 AM	0	8.01308	3007.020000	0.0797061	7486.07000	32.7878	-331.897	1.583	1.955
11:19 AM	0	7.67436	1.871980	5.6325100	330.65600	48.1982	-132.278	0.000	0.001
2:28 PM	0	7.15795	2160.500000	0.0436124	0.00000	37.6196	-255.531	1.114	1.404

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0740-045.0-20240627
DPT ID: MLPV-DPT0740 resample
Location Type:
Sample Date: 6/27/2024 2:30:00 PM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:00 AM	0	7.08630	1634.230000	0.3375130	1674.32000	36.9754	-176.638	0.831	1.062
10:17 AM	0	11.51350	1238.720000	0.4581600	32.44970	37.2296	-382.356	0.621	0.805
10:37 AM	0	8.01308	3007.020000	0.0797061	7486.07000	32.7878	-331.897	1.583	1.955
11:19 AM	0	7.67436	1.871980	5.6325100	330.65600	48.1982	-132.278	0.000	0.001
2:28 PM	0	7.15795	2160.500000	0.0436124	0.00000	37.6196	-255.531	1.114	1.404

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0740-050.0-20240626
DPT ID: MLPV-DPT0740
Location Type:
Sample Date: 6/26/2024 11:20:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:00 AM	0	7.08630	1634.230000	0.3375130	1674.32000	36.9754	-176.638	0.831	1.062
10:17 AM	0	11.51350	1238.720000	0.4581600	32.44970	37.2296	-382.356	0.621	0.805
10:37 AM	0	8.01308	3007.020000	0.0797061	7486.07000	32.7878	-331.897	1.583	1.955
11:19 AM	0	7.67436	1.871980	5.6325100	330.65600	48.1982	-132.278	0.000	0.001
2:28 PM	0	7.15795	2160.500000	0.0436124	0.00000	37.6196	-255.531	1.114	1.404

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-007.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 10:05:00 AM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-011.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 10:35:00 AM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-016.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 11:10:00 AM
Depth (ft): 14 - 18
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-020.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 11:25:00 AM
Depth (ft): 18 - 22
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-024.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 11:35:00 AM
Depth (ft): 22 - 26
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-045.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 11:50:00 AM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0741-050.0-20240628
DPT ID: MLPV-DPT0741
Location Type:
Sample Date: 6/28/2024 12:05:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
10:05 AM	0	7.65924	387.646000	5.6096500	8074.51000	30.9508	-133.973	0.187	
10:35 AM	0	7.58233	119.158000	1.9076700	711.77800	32.4297	-177.818	0.056	
11:10 AM	0	7.50104	442.183000	2.5541900	950.23900	31.6649	-175.720	0.214	
11:25 AM	0	7.48700	688.847000	0.4907650	3320.59000	30.1141	-190.025	0.339	
11:35 AM	0	7.61008	656.122000	3.7830500	3191.40000	31.0998	-244.080	0.322	
11:50 AM	0	7.82723	1.007040	7.2650100	721.88000	32.6555	-212.432	0.000	
12:05 PM	0	7.55280	12280.400000	3.0043100	927.59000	32.0128	-230.647	7.132	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0744-045.0-20240626
DPT ID: MLPV-DPT0744
Location Type:
Sample Date: 6/26/2024 8:55:00 AM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:53 AM	0	7.09388	17725.800000	0.4895200	719.51600	30.3055	-319.852	10.622	11.522
9:30 AM	0	6.73814	6770.490000	0.7734160	5842.33000	29.7821	-326.613	3.760	
1:53 PM	0	7.63881	2233.480000	0.0701699	3805.42000	39.7368	-298.518	1.152	1.452

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0744-045.0-20240627
DPT ID: MLPV-DPT0744 resample
Location Type:
Sample Date: 6/27/2024 1:40:00 PM
Depth (ft): 43 - 47
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:53 AM	0	7.09388	17725.800000	0.4895200	719.51600	30.3055	-319.852	10.622	11.522
9:30 AM	0	6.73814	6770.490000	0.7734160	5842.33000	29.7821	-326.613	3.760	
1:53 PM	0	7.63881	2233.480000	0.0701699	3805.42000	39.7368	-298.518	1.152	1.452

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0744-050.0-20240626
DPT ID: MLPV-DPT0744
Location Type:
Sample Date: 6/26/2024 9:30:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
8:53 AM	0	7.09388	17725.800000	0.4895200	719.51600	30.3055	-319.852	10.622	11.522
9:30 AM	0	6.73814	6770.490000	0.7734160	5842.33000	29.7821	-326.613	3.760	
1:53 PM	0	7.63881	2233.480000	0.0701699	3805.42000	39.7368	-298.518	1.152	1.452

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0749-050.0-20240627
DPT ID: MLPV-DPT0749
Location Type:
Sample Date: 6/27/2024 9:05:00 AM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
9:04 AM	0	7.20910	23666.400000	0.4245730	1501.16000	28.6932	-392.588	14.560	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0750-007.0-20240625
DPT ID: MLPV-DPT0750
Location Type:
Sample Date: 6/25/2024 1:50:00 PM
Depth (ft): 5 - 9
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:47 PM	0	7.16835	746.170000	4.0289300	1405.13000	30.6801	-114.034	0.368	0.485
1:58 PM	0	7.23839	0.903745	5.3079400	4347.63000	31.0839	-236.829	0.000	0.001

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0750-011.0-20240625
DPT ID: MLPV-DPT0750
Location Type:
Sample Date: 6/25/2024 2:00:00 PM
Depth (ft): 9 - 13
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:47 PM	0	7.16835	746.170000	4.0289300	1405.13000	30.6801	-114.034	0.368	0.485
1:58 PM	0	7.23839	0.903745	5.3079400	4347.63000	31.0839	-236.829	0.000	0.001

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0751-050.0-20240626
DPT ID: MLPV-DPT0751
Location Type:
Sample Date: 6/26/2024 2:15:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:14 PM	0	7.63422	11691.200000	0.2323370	4519.39000	30.4609	-288.996	6.764	7.599
1:08 PM	0	7.36705	1237.150000	0.0696788	3482.05000	30.3579	-378.746	0.623	0.804

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0751-050.0-20240627
DPT ID: MLPV-DPT0751 resample
Location Type:
Sample Date: 6/27/2024 1:10:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
2:14 PM	0	7.63422	11691.200000	0.2323370	4519.39000	30.4609	-288.996	6.764	7.599
1:08 PM	0	7.36705	1237.150000	0.0696788	3482.05000	30.3579	-378.746	0.623	0.804

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0752-050.0-20240626
DPT ID: MLPV-DPT0752
Location Type:
Sample Date: 6/26/2024 3:05:00 PM
Depth (ft): 48 - 52
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
3:05 PM	0	7.57682	1442.970000	0.1075550	4661.17000	30.7774	-279.430	0.731	0.938
3:33 PM	0	7.76951	9164.880000	0.1904630	3157.16000	29.7215	-265.979	5.203	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-DPT0752-056.0-20240626
DPT ID: MLPV-DPT0752
Location Type:
Sample Date: 6/26/2024 3:35:00 PM
Depth (ft): 54 - 58
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
3:05 PM	0	7.57682	1442.970000	0.1075550	4661.17000	30.7774	-279.430	0.731	0.938
3:33 PM	0	7.76951	9164.880000	0.1904630	3157.16000	29.7215	-265.979	5.203	

DPT GROUNDWATER SAMPLING LOG

AECOM

Event: DPT Groundwater Sampling
Site Name: Hot Spot 3
Project #: 60615493

Sample ID: MLPV-IDW01--20240628
DPT ID: MLPV-IDW01
Location Type:
Sample Date: 6/28/2024 1:10:00 PM
Depth (ft): -
Sampler: BendlP

Comments:

Purge Information

Time	Cumul. Vol Purged (gal)	pH (S.U.)	COND (US/CM)	DO (MG/L)	Turb (NTU)	Temp (DEG_C)	ORP (MV)	Salinity (NA)	TOTAL DISSOLVED SOLIDS (G/L)
1:10 PM	0	8.11068	3.504320	4.3418100	0.00000	29.5100	-63.792	0.001	0.002

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	959853
Created	6/25/2024

Sensor: Conductivity

Serial Number	917099
Last Calibrated	6/24/2024

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.913
Offset	0.00 µS/cm
Reference Temperature	25.00 °C

Calibration Point 1

Pre Measurement

Actual Conductivity	9,675.3 µS/cm
Specific Conductivity	8,459.4 µS/cm

Post Measurement

Actual Conductivity	9,149.8 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor: RDO

Serial Number	1014387
Last Calibrated	6/25/2024

Calibration Details

Slope	1.0765907
Offset	-0.00 mg/L

Calibration point 100%

Concentration	7.34 mg/L
Pre Measurement	101.85 %Sat
Post Measurement	100.00 %Sat
Temperature	27.32 °C
Barometric Pressure	1,010.6 mbar

Sensor: Turbidity

Serial Number	989763
Last Calibrated	6/24/2024

Calibration Details

Slope	1
Offset	3.07 NTU

Calibration Point 1

Pre Measurement	2.30 NTU
Post Measurement	2.00 NTU

Sensor	**pH/ORP**
Serial Number	997093
Last Calibrated	6/24/2024

Calibration Details

Calibration Point 1

pH of Buffer	6.97 pH
pH mV	-1.0 mV
Temperature	32.53 °C

Pre Measurement

pH	6.97 pH
pH mV	-0.8 mV

Post Measurement

pH	6.97 pH
pH mV	-1.0 mV

Slope and Offset 1

Slope	-60.65 mV/pH
Offset	-2.8 mV

ORP

ORP Solution	Quick Cal
Offset	-45.2 mV
Temperature	32.53 °C
Pre Measurement	230.5 mV
Post Measurement	212.2 mV

Sensor	**Barometric Pressure**
Serial Number	959853
Last Calibrated	5/29/2024

Calibration Details

Offset	-3.68 mm Hg
Pre Measurement	14.77 psi
Post Measurement	14.70 psi

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	959853
Created	6/25/2024

Sensor: Conductivity

Serial Number	917099
Last Calibrated	6/25/2024

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.927
Offset	0.00 µS/cm
Reference Temperature	25.00 °C

Calibration Point 1

Pre Measurement

Actual Conductivity	8,171.5 µS/cm
Specific Conductivity	7,875.7 µS/cm

Post Measurement

Actual Conductivity	8,300.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor: RDO

Serial Number	1014387
Last Calibrated	6/25/2024

Calibration Details

Slope	1.0765907
Offset	-0.00 mg/L

Calibration point 100%

Concentration	7.34 mg/L
Pre Measurement	101.85 %Sat
Post Measurement	100.00 %Sat
Temperature	27.32 °C
Barometric Pressure	1,010.6 mbar

Sensor: Turbidity

Serial Number	989763
Last Calibrated	6/25/2024

Calibration Details

Slope	1
Offset	2.29 NTU

Calibration Point 1

Pre Measurement	11.23 NTU
Post Measurement	10.00 NTU

Sensor	**pH/ORP**
Serial Number	997093
Last Calibrated	6/25/2024

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-10.7 mV
Temperature	26.97 °C

Pre Measurement

pH	7.09 pH
pH mV	-7.8 mV

Post Measurement

pH	6.98 pH
pH mV	-10.8 mV

Slope and Offset 1

Slope	-59.55 mV/pH
Offset	-11.9 mV

ORP

ORP Solution	Quick Cal
Offset	-28.6 mV
Temperature	26.97 °C
Pre Measurement	211.8 mV
Post Measurement	220.6 mV

Sensor	**Barometric Pressure**
Serial Number	959853
Last Calibrated	5/29/2024

Calibration Details

Offset	-3.68 mm Hg
Pre Measurement	14.77 psi
Post Measurement	14.70 psi

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	959853
Created	6/26/2024

Sensor: Conductivity

Serial Number	917099
Last Calibrated	6/26/2024

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.922
Offset	0.00 µS/cm
Reference Temperature	25.00 °C

Calibration Point 1

Pre Measurement

Actual Conductivity	8,237.7 µS/cm
Specific Conductivity	8,023.9 µS/cm

Post Measurement

Actual Conductivity	8,213.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor: RDO

Serial Number	1014387
Last Calibrated	6/26/2024

Calibration Details

Slope	1.0072408
Offset	-0.00 mg/L

Calibration point 100%

Concentration	7.91 mg/L
Pre Measurement	106.69 %Sat
Post Measurement	100.00 %Sat
Temperature	26.88 °C
Barometric Pressure	1,010.6 mbar

Sensor: Turbidity

Serial Number	989763
Last Calibrated	6/26/2024

Calibration Details

Slope	1
Offset	-9.31 NTU

Calibration Point 1

Pre Measurement	12.34 NTU
Post Measurement	1.00 NTU

Sensor	**pH/ORP**
Serial Number	997093
Last Calibrated	6/26/2024

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-5.8 mV
Temperature	26.40 °C

Pre Measurement

pH	6.90 pH
pH mV	-5.8 mV

Post Measurement

pH	6.98 pH
pH mV	-5.9 mV

Slope and Offset 1

Slope	-59.44 mV/pH
Offset	-7.0 mV

ORP

ORP Solution	Quick Cal
Offset	-26.5 mV
Temperature	26.40 °C
Pre Measurement	221.3 mV
Post Measurement	221.4 mV

Sensor	**Barometric Pressure**
Serial Number	959853
Last Calibrated	5/29/2024

Calibration Details

Offset	-3.68 mm Hg
Pre Measurement	14.77 psi
Post Measurement	14.70 psi

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	959853
Created	6/27/2024

Sensor: Conductivity

Serial Number	917099
Last Calibrated	6/27/2024

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.969
Offset	0.00 µS/cm
Reference Temperature	25.00 °C

Calibration Point 1

Pre Measurement

Actual Conductivity	7,318.4 µS/cm
Specific Conductivity	7,612.9 µS/cm

Post Measurement

Actual Conductivity	7,690.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor: RDO

Serial Number	1014387
Last Calibrated	6/27/2024

Calibration Details

Slope	0.98776406
Offset	-0.00 mg/L

Calibration point 100%

Concentration	8.17 mg/L
Pre Measurement	102.01 %Sat
Post Measurement	100.00 %Sat
Temperature	26.02 °C
Barometric Pressure	1,008.6 mbar

Sensor: Turbidity

Serial Number	989763
Last Calibrated	6/27/2024

Calibration Details

Slope	1
Offset	-60.47 NTU

Calibration Point 1

Pre Measurement	53.50 NTU
Post Measurement	1.00 NTU

Sensor	**pH/ORP**
Serial Number	997093
Last Calibrated	6/27/2024

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-14.2 mV
Temperature	22.97 °C

Pre Measurement

pH	7.13 pH
pH mV	-14.6 mV

Post Measurement

pH	7.00 pH
pH mV	-14.1 mV

Slope and Offset 1

Slope	-58.76 mV/pH
Offset	-14.2 mV

ORP

ORP Solution	Quick Cal
Offset	-13.7 mV
Temperature	22.97 °C
Pre Measurement	214.6 mV
Post Measurement	226.6 mV

Sensor	**Barometric Pressure**
Serial Number	959853
Last Calibrated	5/29/2024

Calibration Details

Offset	-3.68 mm Hg
Pre Measurement	14.77 psi
Post Measurement	14.70 psi

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	959853
Created	6/28/2024

Sensor: Conductivity

Serial Number	917099
Last Calibrated	6/28/2024

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.945
Offset	0.00 µS/cm
Reference Temperature	25.00 °C

Calibration Point 1

Pre Measurement

Actual Conductivity	8,204.4 µS/cm
Specific Conductivity	8,199.6 µS/cm

Post Measurement

Actual Conductivity	8,004.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor: RDO

Serial Number	1014387
Last Calibrated	6/27/2024

Calibration Details

Slope	0.98776406
Offset	-0.00 mg/L

Calibration point 100%

Concentration	8.17 mg/L
Pre Measurement	102.01 %Sat
Post Measurement	100.00 %Sat
Temperature	26.02 °C
Barometric Pressure	1,008.6 mbar

Sensor: Turbidity

Serial Number	989763
Last Calibrated	6/28/2024

Calibration Details

Slope	1
Offset	-22.51 NTU

Calibration Point 1

Pre Measurement	0.00 NTU
Post Measurement	1.00 NTU

Sensor	**pH/ORP**
Serial Number	997093
Last Calibrated	6/28/2024

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-8.8 mV
Temperature	25.03 °C

Pre Measurement

pH	6.91 pH
pH mV	-9.1 mV

Post Measurement

pH	6.98 pH
pH mV	-8.8 mV

Slope and Offset 1

Slope	-59.17 mV/pH
Offset	-10.0 mV

ORP

ORP Solution	Quick Cal
Offset	-11.2 mV
Temperature	25.03 °C
Pre Measurement	221.1 mV
Post Measurement	223.5 mV

Sensor	**Barometric Pressure**
Serial Number	959853
Last Calibrated	6/28/2024

Calibration Details

Offset	-3.48 mm Hg
Pre Measurement	14.62 psi
Post Measurement	14.70 psi

APPENDIX H

LABORATORY ANALYTICAL REPORTS

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Signature

10.14.2022

Date

Eurofins Environment Testing Southeast, LLC
Alex Montoya
President
5102 LaRoche Avenue
Savannah, GA 31404

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ANALYTICAL REPORT

PREPARED FOR

Attn: Teresa Amentt Jennings
AECOM Technical Services Inc.
150 North Orange Avenue
Suite 200
Orlando, Florida 32801

Generated 7/17/2024 12:39:51 PM Revision 1

JOB DESCRIPTION

NASA KSC MLPV - HS3 DPT

JOB NUMBER

670-42467-1

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs FL 32701

See page two for job notes and contact information.

my EOL

Job Notes

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Authorization



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Authorized for release by
Shelby Sharpe, Project Manager
Shelby.Sharpe@et.eurofinsus.com
Designee for
Kaitlin Dylnicki, Project Manager
kaitlin.dylnicki@et.eurofinsus.com
(407)339-5984

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Definitions/Glossary

Client: AECOM Technical Services Inc. Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

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.
L	Off-scale high. Actual value is known to be greater than the value given.
U	Indicates that the compound was analyzed for but not detected.

GC 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.
V	Indicates that the analyte was detected at or above the method detection limit in both the sample and the associated method blank and the value of 10 times the blank value was equal to or greater than the associated sample value.

GC Semi VOA

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

HPLC/IC

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

Metals

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

General Chemistry

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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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 ID: 670-42467-1 Eurofins Orlando

Job Narrative
670-42467-1

REVISION

The report being provided is a revision of the original report sent on 7/8/2024. The report (revision 1) is being revised due to update sample ID for 670-42467-6 per client request.

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 6/26/2024 3:01 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 1.9°C.

Receipt Exceptions
The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Last two samples are missing the FLpro methods.

GC/MS VOA
Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0715-047.0-20240625 (670-42467-17). Elevated reporting limits (RLs) are provided.

Method 8260D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 670-98141 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 following samples were diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0715-047.0-20240625 (670-42467-17), MLPV-DPT0715-051.0-20240625 (670-42467-18), MLPV-DPT0728-007.0-20240625 (670-42467-19) and MLPV-DPT0728-011.0-20240625 (670-42467-20). Elevated reporting limits (RLs) are provided.

Method 8260D: The following sample was diluted due to the nature of the sample matrix: MLPV-DPT0740-045.0-20240626 (670-42467-37). Elevated reporting limits (RLs) are provided.

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0728-016.0-20240625 (670-42467-21), MLPV-DPT0750-007.0-20240625 (670-42467-22), MLPV-DPT0750-011.0-20240625 (670-42467-23), MLPV-DPT0729-007.0-20240625 (670-42467-24), MLPV-DPT0729-011.0-20240625 (670-42467-25), MLPV-DPT0729-016.0-20240625 (670-42467-26), MLPV-DPT0729-045.0-20240625 (670-42467-27), MLPV-DPT0729-050.0-20240625 (670-42467-28), MLPV-DPT0730-007.0-20240625 (670-42467-29), MLPV-DPT0730-016.0-20240625 (670-42467-30), MLPV-DPT0730-011.0-20240625 (670-42467-31), MLPV-DPT0727-050.0-20240625 (670-42467-32), MLPV-DPT0727-056.0-20240626 (670-42467-33), MLPV-DPT0744-045.0-20240626 (670-42467-34), MLPV-DPT0744-050.0-20240626 (670-42467-35), MLPV-DPT0740-007.0-20240626 (670-42467-36), MLPV-DPT0740-011.0-20240626 (670-42467-38), MLPV-DPT0740-050.0-20240626 (670-42467-39) and MLPV-DPT0736-050.0-20240626 (670-42467-40). Elevated reporting limits (RLs) are provided.

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0715-051.0-20240625 (670-42467-18) and MLPV-DPT0728-007.0-20240625 (670-42467-19). Elevated reporting limits (RLs) are provided.

Job ID: 670-42467-1 (Continued) Eurofins Orlando

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0728-016.0-20240625 (670-42467-21), MLPV-DPT0750-007.0-20240625 (670-42467-22), MLPV-DPT0750-011.0-20240625 (670-42467-23), MLPV-DPT0729-007.0-20240625 (670-42467-24), MLPV-DPT0729-045.0-20240625 (670-42467-27), MLPV-DPT0729-050.0-20240625 (670-42467-28), MLPV-DPT0730-007.0-20240625 (670-42467-29), MLPV-DPT0730-016.0-20240625 (670-42467-30), MLPV-DPT0740-045.0-20240626 (670-42467-37), MLPV-DPT0740-011.0-20240626 (670-42467-38) and MLPV-DPT0740-050.0-20240626 (670-42467-39). Elevated reporting limits (RLs) are provided.

Method 8260D: The following sample(s) was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The samples were analyzed within the 7-day holding time specified for unpreserved samples: MLPV-DPT0750-011.0-20240625 (670-42467-23), MLPV-DPT0729-007.0-20240625 (670-42467-24), MLPV-DPT0729-050.0-20240625 (670-42467-28) and MLPV-DPT0740-050.0-20240626 (670-42467-39).

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

GC VOA

Method RSK_175: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: MLPV-DPT0744-045.0-20240626 (670-42467-34), MLPV-DPT0740-045.0-20240626 (670-42467-37) and MLPV-DPT0751-050.0-20240626 (670-42467-41).

Method RSK_175: The sample duplicate (DUP) precision for analytical batch 400-676513 was outside control limits. Sample matrix interference is suspected.

Method RSK_175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 400-676513.

Method RSK_175: The following samples were diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0744-045.0-20240626 (670-42467-34), MLPV-DPT0740-045.0-20240626 (670-42467-37) and MLPV-DPT0736-050.0-20240626 (670-42467-40). Elevated reporting limits (RLs) are provided.

Method RSK_175: The method blank for analytical batch 400-676513 contained Ethene above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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

GC Semi VOA

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

HPLC/IC

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

Metals

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

General Chemistry

Method 350.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 670-98720 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 350.1: The method blank contained Ammonia above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-analysis of samples were not performed.

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

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0712-016.0-20240624 — Lab Sample ID: 670-42467-1

No Detections.

Client Sample ID: MLPV-DPT0712-020.0-20240624 — Lab Sample ID: 670-42467-2

No Detections.

Client Sample ID: MLPV-DPT0712-022.0-20240624 — Lab Sample ID: 670-42467-3

No Detections.

Client Sample ID: MLPV-DPT0713-026.0-20240624 — Lab Sample ID: 670-42467-4

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.72	I	1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0713-030.0-20240624 — Lab Sample ID: 670-42467-5

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.65	I	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: MLPV-DPT0713-034.0-20240624 — Lab Sample ID: 670-42467-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.2		1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	5.8		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0714-016.0-20240624 — Lab Sample ID: 670-42467-7

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.57	I	1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	1.1		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0714-020.0-20240624 — Lab Sample ID: 670-42467-8

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.72	I	1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	1.5		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0714-024.0-20240624 — Lab Sample ID: 670-42467-9

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.99	I	1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	2.0		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0716-007.0-20240624 — Lab Sample ID: 670-42467-10

No Detections.

Client Sample ID: MLPV-DPT0716-011.0-20240624 — Lab Sample ID: 670-42467-11

No Detections.

Client Sample ID: MLPV-DPT0716-015.0-20240624 — Lab Sample ID: 670-42467-12

No Detections.

Client Sample ID: MLPV-DPT0717-046.0-20240625 — Lab Sample ID: 670-42467-13

No Detections.

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0717-050.0-20240625 — Lab Sample ID: 670-42467-14

No Detections.

Client Sample ID: MLPV-DPT0717-054.0-20240625 — Lab Sample ID: 670-42467-15

No Detections.

Client Sample ID: MLPV-DPT0715-043.0-20240625 — Lab Sample ID: 670-42467-16

No Detections.

Client Sample ID: MLPV-DPT0715-047.0-20240625 — Lab Sample ID: 670-42467-17

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	230000		20000	11000	ug/L	20000		8260D	Total/NA
trans-1,2-Dichloroethene - DL	3800		2000	1500	ug/L	2000		8260D	Total/NA
Trichloroethene - DL	610000		20000	18000	ug/L	20000		8260D	Total/NA
Vinyl chloride - DL	58000		2000	1400	ug/L	2000		8260D	Total/NA

Client Sample ID: MLPV-DPT0715-051.0-20240625 — Lab Sample ID: 670-42467-18

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	290000		5000	2700	ug/L	5000		8260D	Total/NA
Trichloroethene - DL	350000		20000	18000	ug/L	20000		8260D	Total/NA
Vinyl chloride - DL	52000		5000	3600	ug/L	5000		8260D	Total/NA

Client Sample ID: MLPV-DPT0728-007.0-20240625 — Lab Sample ID: 670-42467-19

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	240		25	13	ug/L	25		8260D	Total/NA
Trichloroethene - DL	1600		25	22	ug/L	25		8260D	Total/NA

Client Sample ID: MLPV-DPT0728-011.0-20240625 — Lab Sample ID: 670-42467-20

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	830		100	53	ug/L	100		8260D	Total/NA
Trichloroethene - DL	8200		100	89	ug/L	100		8260D	Total/NA

Client Sample ID: MLPV-DPT0728-016.0-20240625 — Lab Sample ID: 670-42467-21

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	26		5.0	2.7	ug/L	5		8260D	Total/NA
Trichloroethene - DL	490		5.0	4.5	ug/L	5		8260D	Total/NA

Client Sample ID: MLPV-DPT0750-007.0-20240625 — Lab Sample ID: 670-42467-22

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	24		10	5.3	ug/L	10		8260D	Total/NA
Trichloroethene - DL	570		10	8.9	ug/L	10		8260D	Total/NA

Client Sample ID: MLPV-DPT0750-011.0-20240625 — Lab Sample ID: 670-42467-23

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	29		10	5.3	ug/L	10		8260D	Total/NA
Trichloroethene - DL	620		10	8.9	ug/L	10		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0729-007.0-20240625 — Lab Sample ID: 670-42467-24

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	22		5.0	2.7	ug/L	5		8260D	Total/NA
Trichloroethene - DL	440		10	8.9	ug/L	10		8260D	Total/NA
Vinyl chloride - DL	67		5.0	3.6	ug/L	5		8260D	Total/NA

Client Sample ID: MLPV-DPT0729-011.0-20240625 — Lab Sample ID: 670-42467-25

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	2900		100	53	ug/L	100		8260D	Total/NA
trans-1,2-Dichloroethene - DL	480		100	73	ug/L	100		8260D	Total/NA
Trichloroethene - DL	1600		100	89	ug/L	100		8260D	Total/NA
Vinyl chloride - DL	5200		100	71	ug/L	100		8260D	Total/NA

Client Sample ID: MLPV-DPT0729-016.0-20240625 — Lab Sample ID: 670-42467-26

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	5700		100	53	ug/L	100		8260D	Total/NA
trans-1,2-Dichloroethene - DL	560		100	73	ug/L	100		8260D	Total/NA
Trichloroethene - DL	960		100	89	ug/L	100		8260D	Total/NA
Vinyl chloride - DL	1700		100	71	ug/L	100		8260D	Total/NA

Client Sample ID: MLPV-DPT0729-045.0-20240625 — Lab Sample ID: 670-42467-27

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	29		2.0	1.1	ug/L	2		8260D	Total/NA
trans-1,2-Dichloroethene - DL	2.5		2.0	1.5	ug/L	2		8260D	Total/NA
Trichloroethene - DL	180		2.0	1.8	ug/L	2		8260D	Total/NA

Client Sample ID: MLPV-DPT0729-050.0-20240625 — Lab Sample ID: 670-42467-28

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	14		2.0	1.1	ug/L	2		8260D	Total/NA
Trichloroethene - DL	150		2.0	1.8	ug/L	2		8260D	Total/NA

Client Sample ID: MLPV-DPT0730-007.0-20240625 — Lab Sample ID: 670-42467-29

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	8.8		5.0	2.7	ug/L	5		8260D	Total/NA
Trichloroethene - DL	260		5.0	4.5	ug/L	5		8260D	Total/NA

Client Sample ID: MLPV-DPT0730-016.0-20240625 — Lab Sample ID: 670-42467-30

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	66		2.0	1.1	ug/L	2		8260D	Total/NA
Trichloroethene - DL	130		2.0	1.8	ug/L	2		8260D	Total/NA
Vinyl chloride - DL	89		2.0	1.4	ug/L	2		8260D	Total/NA

Client Sample ID: MLPV-DPT0730-011.0-20240625 — Lab Sample ID: 670-42467-31

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	6.7		1.0	0.53	ug/L	1		8260D	Total/NA
Trichloroethene	97		1.0	0.89	ug/L	1		8260D	Total/NA
Vinyl chloride	1.4		1.0	0.71	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0727-050.0-20240625 — Lab Sample ID: 670-42467-32

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	2300		25	13	ug/L	25		8260D	Total/NA
Trichloroethene - DL	24	I	25	22	ug/L	25		8260D	Total/NA
Vinyl chloride - DL	470		25	18	ug/L	25		8260D	Total/NA

Client Sample ID: MLPV- DPT0727-056.0-20240626 — Lab Sample ID: 670-42467-33

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	15		5.0	2.7	ug/L	5		8260D	Total/NA
Trichloroethene - DL	290		5.0	4.5	ug/L	5		8260D	Total/NA

Client Sample ID: MLPV-DPT0744-045.0-20240626 — Lab Sample ID: 670-42467-34

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	7.4		1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	1.1		1.0	0.71	ug/L	1		8260D	Total/NA
Methane	4900		5.0	2.5	ug/L	5		RSK-175	Total/NA
Ethane	2.0		1.0	0.26	ug/L	1		RSK-175	Total/NA
Ethene	1.5	V	1.0	0.55	ug/L	1		RSK-175	Total/NA
Sulfate	690000		40000	20000	ug/L	40		300.0	Total/NA
Iron	36000		360	190	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	13000000		25000	25000	ug/L	1		2540C - 2015	Total/NA
Ammonia	150		20	14	ug/L	1		350.1	Total/NA
Sulfide	76000		1600	800	ug/L	1		SM 4500 S2 F	Total/NA

Client Sample ID: MLPV-DPT0744-050.0-20240626 — Lab Sample ID: 670-42467-35

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	320000		5000	2700	ug/L	5000		8260D	Total/NA
trans-1,2-Dichloroethene - DL	3200		1000	730	ug/L	1000		8260D	Total/NA
Trichloroethene - DL	390000		5000	4500	ug/L	5000		8260D	Total/NA
Vinyl chloride - DL	35000		1000	710	ug/L	1000		8260D	Total/NA

Client Sample ID: MLPV-DPT0740-007.0-20240626 — Lab Sample ID: 670-42467-36

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	1000		50	27	ug/L	50		8260D	Total/NA
Trichloroethene - DL	2700		50	45	ug/L	50		8260D	Total/NA
Vinyl chloride - DL	100		50	36	ug/L	50		8260D	Total/NA

Client Sample ID: MLPV-DPT0740-045.0-20240626 — Lab Sample ID: 670-42467-37

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	180		10	5.3	ug/L	10		8260D	Total/NA
Trichloroethene - DL	720		10	8.9	ug/L	10		8260D	Total/NA
Methane	4300		5.0	2.5	ug/L	5		RSK-175	Total/NA
Ethane	4.5		1.0	0.26	ug/L	1		RSK-175	Total/NA
Ethene	1.5	V	1.0	0.55	ug/L	1		RSK-175	Total/NA
Sulfate	120000		10000	5000	ug/L	10		300.0	Total/NA
Iron	72000		900	480	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	1700000		10000	10000	ug/L	1		2540C - 2015	Total/NA
Ammonia	1400		200	140	ug/L	10		350.1	Total/NA
Sulfide	10000		1600	800	ug/L	1		SM 4500 S2 F	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Orlando

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0740-011.0-20240626 — Lab Sample ID: 670-42467-38

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	1200		100	53	ug/L	100		8260D	Total/NA
Trichloroethene - DL	7300		100	89	ug/L	100		8260D	Total/NA

Client Sample ID: MLPV-DPT0740-050.0-20240626 — Lab Sample ID: 670-42467-39

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	28		2.0	1.1	ug/L	2		8260D	Total/NA
Trichloroethene - DL	170		2.0	1.8	ug/L	2		8260D	Total/NA

Client Sample ID: MLPV-DPT0736-050.0-20240626 — Lab Sample ID: 670-42467-40

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.1		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.1		1.0	0.73	ug/L	1		8260D	Total/NA
Methane	6400		5.0	2.5	ug/L	5		RSK-175	Total/NA
Ethane	2.0		1.0	0.26	ug/L	1		RSK-175	Total/NA
Ethene	0.92	I V	1.0	0.55	ug/L	1		RSK-175	Total/NA
Sulfate	1500000		40000	20000	ug/L	40		300.0	Total/NA
Iron	11000		200	110	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	20000000		25000	25000	ug/L	1		2540C - 2015	Total/NA
Ammonia	3300		200	140	ug/L	10		350.1	Total/NA
Sulfide	20000		1600	800	ug/L	1		SM 4500 S2 F	Total/NA

Client Sample ID: MLPV-DPT0751-050.0-20240626 — Lab Sample ID: 670-42467-41

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	68		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.5		1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	25		1.0	0.71	ug/L	1		8260D	Total/NA
Methane	690		1.0	0.50	ug/L	1		RSK-175	Total/NA
Ethane	5.2		1.0	0.26	ug/L	1		RSK-175	Total/NA
Ethene	11	V	1.0	0.55	ug/L	1		RSK-175	Total/NA
Sulfate	510000		40000	20000	ug/L	40		300.0	Total/NA
Iron	18000		200	110	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	13000000		25000	25000	ug/L	1		2540C - 2015	Total/NA
Ammonia	4300		200	140	ug/L	10		350.1	Total/NA
Sulfide	3100		1600	800	ug/L	1		SM 4500 S2 F	Total/NA

Client Sample ID: MLPV-TB01-20240626 — Lab Sample ID: 670-42467-42

No Detections.

Client Sample ID: MLPV-TB02-20240626 — Lab Sample ID: 670-42467-43

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MLPV-DPT0712-016.0-20240624 Lab Sample ID: 670-42467-1

Date Collected: 06/24/24 13:20 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 12:26	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 12:26	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 12:26	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 12:26	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 12:26*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*06/28/24 12:26*	*1*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*06/28/24 12:26*	*1*

Client Sample ID: MLPV-DPT0712-020.0-20240624 Lab Sample ID: 670-42467-2

Date Collected: 06/24/24 13:35 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 12:43	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 12:43	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 12:43	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 12:43	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 12:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 12:43*	*1*
4-Bromofluorobenzene (Surr)	*103*		*41 - 142*		*06/28/24 12:43*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 12:43*	*1*

Client Sample ID: MLPV-DPT0712-022.0-20240624 Lab Sample ID: 670-42467-3

Date Collected: 06/24/24 13:55 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 13:01	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 13:01	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 13:01	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 13:01	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 13:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 13:01*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*06/28/24 13:01*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 13:01*	*1*

Client Sample ID: MLPV-DPT0713-026.0-20240624 Lab Sample ID: 670-42467-4

Date Collected: 06/24/24 14:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 13:19	1

Client Sample ID: MLPV-DPT0713-026.0-20240624 Lab Sample ID: 670-42467-4

Date Collected: 06/24/24 14:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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			06/28/24 13:19	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 13:19	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 13:19	1
Vinyl chloride	**0.72**	**I**	1.0	0.71	ug/L			06/28/24 13:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*06/28/24 13:19*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 13:19*	*1*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*06/28/24 13:19*	*1*

Client Sample ID: MLPV-DPT0713-030.0-20240624 Lab Sample ID: 670-42467-5

Date Collected: 06/24/24 14:50 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 13:37	1
cis-1,2-Dichloroethene	**0.65**	**I**	1.0	0.53	ug/L			06/28/24 13:37	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 13:37	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 13:37	1
Vinyl chloride	**1.2**		1.0	0.71	ug/L			06/28/24 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*06/28/24 13:37*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*06/28/24 13:37*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 13:37*	*1*

Client Sample ID: MLPV-DPT0713-034.0-20240624 Lab Sample ID: 670-42467-6

Date Collected: 06/24/24 15:15 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 13:54	1
cis-1,2-Dichloroethene	**3.2**		1.0	0.53	ug/L			06/28/24 13:54	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 13:54	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 13:54	1
Vinyl chloride	**5.8**		1.0	0.71	ug/L			06/28/24 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*06/28/24 13:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 13:54*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*06/28/24 13:54*	*1*

Client Sample ID: MLPV-DPT0714-016.0-20240624 Lab Sample ID: 670-42467-7

Date Collected: 06/24/24 15:35 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 14:12	1
cis-1,2-Dichloroethene	**0.57**	**I**	1.0	0.53	ug/L			06/28/24 14:12	1

Client Sample ID: MLPV-DPT0714-016.0-20240624 Lab Sample ID: 670-42467-7

Date Collected: 06/24/24 15:35 **Matrix: Water**
Date Received: 06/26/24 15:01

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			06/28/24 14:12	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 14:12	1
Vinyl chloride	**1.1**		1.0	0.71	ug/L			06/28/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*06/28/24 14:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*41 - 142*		*06/28/24 14:12*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 14:12*	*1*

Client Sample ID: MLPV-DPT0714-020.0-20240624 Lab Sample ID: 670-42467-8

Date Collected: 06/24/24 15:55 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 14:30	1
cis-1,2-Dichloroethene	**0.72**	**I**	1.0	0.53	ug/L			06/28/24 14:30	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 14:30	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 14:30	1
Vinyl chloride	**1.5**		1.0	0.71	ug/L			06/28/24 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 14:30*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 14:30*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 14:30*	*1*

Client Sample ID: MLPV-DPT0714-024.0-20240624 Lab Sample ID: 670-42467-9

Date Collected: 06/24/24 16:10 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 14:48	1
cis-1,2-Dichloroethene	**0.99**	**I**	1.0	0.53	ug/L			06/28/24 14:48	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 14:48	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 14:48	1
Vinyl chloride	**2.0**		1.0	0.71	ug/L			06/28/24 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 14:48*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*06/28/24 14:48*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 14:48*	*1*

Client Sample ID: MLPV-DPT0716-007.0-20240624 Lab Sample ID: 670-42467-10

Date Collected: 06/24/24 16:40 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 15:05	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 15:05	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 15:05	1

Client Sample ID: MLPV-DPT0716-007.0-20240624 Lab Sample ID: 670-42467-10

Date Collected: 06/24/24 16:40 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 15:05	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 15:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 15:05*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 15:05*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 15:05*	*1*

Client Sample ID: MLPV-DPT0716-011.0-20240624 Lab Sample ID: 670-42467-11

Date Collected: 06/24/24 17:00 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 15:23	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 15:23	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 15:23	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 15:23	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 15:23*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 15:23*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 15:23*	*1*

Client Sample ID: MLPV-DPT0716-015.0-20240624 Lab Sample ID: 670-42467-12

Date Collected: 06/24/24 17:15 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 15:41	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 15:41	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 15:41	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 15:41	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 15:41*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*06/28/24 15:41*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 15:41*	*1*

Client Sample ID: MLPV-DPT0717-046.0-20240625 Lab Sample ID: 670-42467-13

Date Collected: 06/25/24 08:45 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 15:59	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 15:59	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 15:59	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 15:59	1

Client Sample ID: MLPV-DPT0717-046.0-20240625

Lab Sample ID: 670-42467-13

Date Collected: 06/25/24 08:45

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 15:59*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*06/28/24 15:59*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 15:59*	*1*

Client Sample ID: MLPV-DPT0717-050.0-20240625

Lab Sample ID: 670-42467-14

Date Collected: 06/25/24 09:35

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 16:17	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 16:17	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 16:17	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 16:17	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 16:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*06/28/24 16:17*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 16:17*	*1*

Client Sample ID: MLPV-DPT0717-054.0-20240625

Lab Sample ID: 670-42467-15

Date Collected: 06/25/24 10:00

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 16:35	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 16:35	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 16:35	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 16:35	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 16:35*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*06/28/24 16:35*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 16:35*	*1*

Client Sample ID: MLPV-DPT0715-043.0-20240625

Lab Sample ID: 670-42467-16

Date Collected: 06/25/24 10:35

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 16:52	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 16:52	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 16:52	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 16:52	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 16:52	1

Client Sample ID: MLPV-DPT0715-043.0-20240625 Lab Sample ID: 670-42467-16

Date Collected: 06/25/24 10:35 **Matrix: Water**
Date Received: 06/26/24 15:01

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 16:52*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*06/28/24 16:52*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 16:52*	*1*

Client Sample ID: MLPV-DPT0715-047.0-20240625 Lab Sample ID: 670-42467-17

Date Collected: 06/25/24 11:05 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1900	U	2000	1900	ug/L			06/28/24 11:15	2000
cis-1,2-Dichloroethene	**230000**		20000	11000	ug/L			06/28/24 16:31	20000
trans-1,2-Dichloroethene	**3800**		2000	1500	ug/L			06/28/24 11:15	2000
Trichloroethene	**610000**		20000	18000	ug/L			06/28/24 16:31	20000
Vinyl chloride	**58000**		2000	1400	ug/L			06/28/24 11:15	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*06/28/24 11:15*	*2000*
Toluene-d8 (Surr)	*98*		*40 - 146*		*06/28/24 16:31*	*20000*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*06/28/24 11:15*	*2000*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*06/28/24 16:31*	*20000*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*06/28/24 11:15*	*2000*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*06/28/24 16:31*	*20000*

Client Sample ID: MLPV-DPT0715-051.0-20240625 Lab Sample ID: 670-42467-18

Date Collected: 06/25/24 11:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4700	U	5000	4700	ug/L			07/01/24 17:56	5000
cis-1,2-Dichloroethene	**290000**		5000	2700	ug/L			07/01/24 17:56	5000
trans-1,2-Dichloroethene	3700	U	5000	3700	ug/L			07/01/24 17:56	5000
Trichloroethene	**350000**		20000	18000	ug/L			06/28/24 17:48	20000
Vinyl chloride	**52000**		5000	3600	ug/L			07/01/24 17:56	5000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*06/28/24 17:48*	*20000*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/01/24 17:56*	*5000*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*06/28/24 17:48*	*20000*
4-Bromofluorobenzene (Surr)	*95*		*41 - 142*		*07/01/24 17:56*	*5000*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 17:48*	*20000*
Dibromofluoromethane (Surr)	*105*		*53 - 146*		*07/01/24 17:56*	*5000*

Client Sample ID: MLPV-DPT0728-007.0-20240625 Lab Sample ID: 670-42467-19

Date Collected: 06/25/24 13:00 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	24	U	25	24	ug/L			07/01/24 17:39	25
cis-1,2-Dichloroethene	**240**		25	13	ug/L			07/01/24 17:39	25

Client Sample ID: MLPV-DPT0728-007.0-20240625 Lab Sample ID: 670-42467-19

Date Collected: 06/25/24 13:00 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	18	U	25	18	ug/L			07/01/24 17:39	25
Trichloroethene	**1600**		25	22	ug/L			07/01/24 17:39	25
Vinyl chloride	18	U	25	18	ug/L			07/01/24 17:39	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/01/24 17:39*	*25*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/01/24 17:39*	*25*
Dibromofluoromethane (Surr)	*104*		*53 - 146*		*07/01/24 17:39*	*25*

Client Sample ID: MLPV-DPT0728-011.0-20240625 Lab Sample ID: 670-42467-20

Date Collected: 06/25/24 13:10 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			06/28/24 17:28	100
cis-1,2-Dichloroethene	**830**		100	53	ug/L			06/28/24 17:28	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			06/28/24 17:28	100
Trichloroethene	**8200**		100	89	ug/L			06/28/24 17:28	100
Vinyl chloride	71	U	100	71	ug/L			06/28/24 17:28	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*40 - 146*		*06/28/24 17:28*	*100*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*06/28/24 17:28*	*100*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 17:28*	*100*

Client Sample ID: MLPV-DPT0728-016.0-20240625 Lab Sample ID: 670-42467-21

Date Collected: 06/25/24 13:25 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.7	U	5.0	4.7	ug/L			07/02/24 14:46	5
cis-1,2-Dichloroethene	**26**		5.0	2.7	ug/L			07/02/24 14:46	5
trans-1,2-Dichloroethene	3.7	U	5.0	3.7	ug/L			07/02/24 14:46	5
Trichloroethene	**490**		5.0	4.5	ug/L			07/02/24 14:46	5
Vinyl chloride	3.6	U	5.0	3.6	ug/L			07/02/24 14:46	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 14:46*	*5*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*		*07/02/24 14:46*	*5*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/02/24 14:46*	*5*

Client Sample ID: MLPV-DPT0750-007.0-20240625 Lab Sample ID: 670-42467-22

Date Collected: 06/25/24 13:50 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	9.4	U	10	9.4	ug/L			07/02/24 15:50	10
cis-1,2-Dichloroethene	**24**		10	5.3	ug/L			07/02/24 15:50	10
trans-1,2-Dichloroethene	7.3	U	10	7.3	ug/L			07/02/24 15:50	10

Client Sample ID: MLPV-DPT0750-007.0-20240625
Lab Sample ID: 670-42467-22
Date Collected: 06/25/24 13:50
Matrix: Water
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**570**		10	8.9	ug/L			07/02/24 15:50	10
Vinyl chloride	7.1	U	10	7.1	ug/L			07/02/24 15:50	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/02/24 15:50*	*10*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*		*07/02/24 15:50*	*10*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/02/24 15:50*	*10*

Client Sample ID: MLPV-DPT0750-011.0-20240625
Lab Sample ID: 670-42467-23
Date Collected: 06/25/24 14:00
Matrix: Water
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	9.4	U	10	9.4	ug/L			07/02/24 16:11	10
cis-1,2-Dichloroethene	**29**		10	5.3	ug/L			07/02/24 16:11	10
trans-1,2-Dichloroethene	7.3	U	10	7.3	ug/L			07/02/24 16:11	10
Trichloroethene	**620**		10	8.9	ug/L			07/02/24 16:11	10
Vinyl chloride	7.1	U	10	7.1	ug/L			07/02/24 16:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 16:11*	*10*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*		*07/02/24 16:11*	*10*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/02/24 16:11*	*10*

Client Sample ID: MLPV-DPT0729-007.0-20240625
Lab Sample ID: 670-42467-24
Date Collected: 06/25/24 14:15
Matrix: Water
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.7	U	5.0	4.7	ug/L			07/02/24 15:07	5
cis-1,2-Dichloroethene	**22**		5.0	2.7	ug/L			07/02/24 15:07	5
trans-1,2-Dichloroethene	3.7	U	5.0	3.7	ug/L			07/02/24 15:07	5
Trichloroethene	**440**		10	8.9	ug/L			07/02/24 17:31	10
Vinyl chloride	**67**		5.0	3.6	ug/L			07/02/24 15:07	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/02/24 15:07*	*5*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 17:31*	*10*
4-Bromofluorobenzene (Surr)	*90*		*41 - 142*		*07/02/24 15:07*	*5*
4-Bromofluorobenzene (Surr)	*90*		*41 - 142*		*07/02/24 17:31*	*10*
Dibromofluoromethane (Surr)	*113*		*53 - 146*		*07/02/24 15:07*	*5*
Dibromofluoromethane (Surr)	*112*		*53 - 146*		*07/02/24 17:31*	*10*

Client Sample ID: MLPV-DPT0729-011.0-20240625
Lab Sample ID: 670-42467-25
Date Collected: 06/25/24 14:25
Matrix: Water
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			06/28/24 18:29	100

Client Sample ID: MLPV-DPT0729-011.0-20240625 Lab Sample ID: 670-42467-25

Date Collected: 06/25/24 14:25 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**2900**		100	53	ug/L			06/28/24 18:29	100
trans-1,2-Dichloroethene	**480**		100	73	ug/L			06/28/24 18:29	100
Trichloroethene	**1600**		100	89	ug/L			06/28/24 18:29	100
Vinyl chloride	**5200**		100	71	ug/L			06/28/24 18:29	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*06/28/24 18:29*	*100*
4-Bromofluorobenzene (Surr)	*104*		*41 - 142*		*06/28/24 18:29*	*100*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*06/28/24 18:29*	*100*

Client Sample ID: MLPV-DPT0729-016.0-20240625 Lab Sample ID: 670-42467-26

Date Collected: 06/25/24 14:35 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			06/28/24 18:47	100
cis-1,2-Dichloroethene	**5700**		100	53	ug/L			06/28/24 18:47	100
trans-1,2-Dichloroethene	**560**		100	73	ug/L			06/28/24 18:47	100
Trichloroethene	**960**		100	89	ug/L			06/28/24 18:47	100
Vinyl chloride	**1700**		100	71	ug/L			06/28/24 18:47	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*06/28/24 18:47*	*100*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*06/28/24 18:47*	*100*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*06/28/24 18:47*	*100*

Client Sample ID: MLPV-DPT0729-045.0-20240625 Lab Sample ID: 670-42467-27

Date Collected: 06/25/24 14:55 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.9	U	2.0	1.9	ug/L			07/02/24 13:21	2
cis-1,2-Dichloroethene	**29**		2.0	1.1	ug/L			07/02/24 13:21	2
trans-1,2-Dichloroethene	**2.5**		2.0	1.5	ug/L			07/02/24 13:21	2
Trichloroethene	**180**		2.0	1.8	ug/L			07/02/24 13:21	2
Vinyl chloride	1.4	U	2.0	1.4	ug/L			07/02/24 13:21	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*40 - 146*		*07/02/24 13:21*	*2*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/02/24 13:21*	*2*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*07/02/24 13:21*	*2*

Client Sample ID: MLPV-DPT0729-050.0-20240625 Lab Sample ID: 670-42467-28

Date Collected: 06/25/24 15:20 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.9	U	2.0	1.9	ug/L			07/02/24 13:42	2
cis-1,2-Dichloroethene	**14**		2.0	1.1	ug/L			07/02/24 13:42	2

Client Sample ID: MLPV-DPT0729-050.0-20240625 Lab Sample ID: 670-42467-28

Date Collected: 06/25/24 15:20 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	1.5	U	2.0	1.5	ug/L			07/02/24 13:42	2
Trichloroethene	**150**		2.0	1.8	ug/L			07/02/24 13:42	2
Vinyl chloride	1.4	U	2.0	1.4	ug/L			07/02/24 13:42	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*40 - 146*		*07/02/24 13:42*	*2*
4-Bromofluorobenzene (Surr)	*90*		*41 - 142*		*07/02/24 13:42*	*2*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 13:42*	*2*

Client Sample ID: MLPV-DPT0730-007.0-20240625 Lab Sample ID: 670-42467-29

Date Collected: 06/25/24 16:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.7	U	5.0	4.7	ug/L			07/02/24 15:29	5
cis-1,2-Dichloroethene	**8.8**		5.0	2.7	ug/L			07/02/24 15:29	5
trans-1,2-Dichloroethene	3.7	U	5.0	3.7	ug/L			07/02/24 15:29	5
Trichloroethene	**260**		5.0	4.5	ug/L			07/02/24 15:29	5
Vinyl chloride	3.6	U	5.0	3.6	ug/L			07/02/24 15:29	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 15:29*	*5*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*		*07/02/24 15:29*	*5*
Dibromofluoromethane (Surr)	*111*		*53 - 146*		*07/02/24 15:29*	*5*

Client Sample ID: MLPV-DPT0730-016.0-20240625 Lab Sample ID: 670-42467-30

Date Collected: 06/25/24 16:45 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.9	U	2.0	1.9	ug/L			07/02/24 14:04	2
cis-1,2-Dichloroethene	**66**		2.0	1.1	ug/L			07/02/24 14:04	2
trans-1,2-Dichloroethene	1.5	U	2.0	1.5	ug/L			07/02/24 14:04	2
Trichloroethene	**130**		2.0	1.8	ug/L			07/02/24 14:04	2
Vinyl chloride	**89**		2.0	1.4	ug/L			07/02/24 14:04	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/02/24 14:04*	*2*
4-Bromofluorobenzene (Surr)	*92*		*41 - 142*		*07/02/24 14:04*	*2*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 14:04*	*2*

Client Sample ID: MLPV-DPT0730-011.0-20240625 Lab Sample ID: 670-42467-31

Date Collected: 06/25/24 17:05 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/01/24 17:04	1
cis-1,2-Dichloroethene	**6.7**		1.0	0.53	ug/L			07/01/24 17:04	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/01/24 17:04	1

Client Sample ID: MLPV-DPT0730-011.0-20240625 Lab Sample ID: 670-42467-31

Date Collected: 06/25/24 17:05 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**97**		1.0	0.89	ug/L			07/01/24 17:04	1
Vinyl chloride	**1.4**		1.0	0.71	ug/L			07/01/24 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/01/24 17:04*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/01/24 17:04*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/01/24 17:04*	*1*

Client Sample ID: MLPV-DPT0727-050.0-20240625 Lab Sample ID: 670-42467-32

Date Collected: 06/25/24 17:50 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	24	U	25	24	ug/L			06/28/24 17:48	25
cis-1,2-Dichloroethene	**2300**		25	13	ug/L			06/28/24 17:48	25
trans-1,2-Dichloroethene	18	U	25	18	ug/L			06/28/24 17:48	25
Trichloroethene	**24**	**I**	25	22	ug/L			06/28/24 17:48	25
Vinyl chloride	**470**		25	18	ug/L			06/28/24 17:48	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*06/28/24 17:48*	*25*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*06/28/24 17:48*	*25*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*06/28/24 17:48*	*25*

Client Sample ID: MLPV- DPT0727-056.0-20240626 Lab Sample ID: 670-42467-33

Date Collected: 06/26/24 08:10 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	4.7	U	5.0	4.7	ug/L			06/28/24 14:18	5
cis-1,2-Dichloroethene	**15**		5.0	2.7	ug/L			06/28/24 14:18	5
trans-1,2-Dichloroethene	3.7	U	5.0	3.7	ug/L			06/28/24 14:18	5
Trichloroethene	**290**		5.0	4.5	ug/L			06/28/24 14:18	5
Vinyl chloride	3.6	U	5.0	3.6	ug/L			06/28/24 14:18	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*40 - 146*		*06/28/24 14:18*	*5*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*06/28/24 14:18*	*5*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*06/28/24 14:18*	*5*

Client Sample ID: MLPV-DPT0744-045.0-20240626 Lab Sample ID: 670-42467-34

Date Collected: 06/26/24 08:55 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/01/24 17:21	1
cis-1,2-Dichloroethene	**7.4**		1.0	0.53	ug/L			07/01/24 17:21	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/01/24 17:21	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/01/24 17:21	1

Client Sample ID: MLPV-DPT0744-045.0-20240626

Lab Sample ID: 670-42467-34

Date Collected: 06/26/24 08:55

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**1.1**		1.0	0.71	ug/L			07/01/24 17:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/01/24 17:21*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/01/24 17:21*	*1*
Dibromofluoromethane (Surr)	*112*		*53 - 146*		*07/01/24 17:21*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**4900**		5.0	2.5	ug/L			07/01/24 16:40	5
Ethane	**2.0**		1.0	0.26	ug/L			07/01/24 11:52	1
Ethene	**1.5**	**V**	1.0	0.55	ug/L			07/01/24 11:52	1

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		06/29/24 13:31	07/01/24 17:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*113*		*66 - 139*	*06/29/24 13:31*	*07/01/24 17:37*	*1*
C35 (Surr)	*114*		*40 - 129*	*06/29/24 13:31*	*07/01/24 17:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**690000**		40000	20000	ug/L			06/27/24 20:57	40

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**36000**		360	190	ug/L		06/27/24 11:03	06/27/24 17:31	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	**13000000**		25000	25000	ug/L			06/27/24 09:25	1
Ammonia (EPA 350.1)	**150**		20	14	ug/L			07/02/24 12:26	1
Sulfide (SM 4500 S2 F)	**76000**		1600	800	ug/L			06/27/24 14:40	1
Total Organic Carbon (SM 5310C)	20000	U	40000	20000	ug/L			06/27/24 16:59	20

Client Sample ID: MLPV-DPT0744-050.0-20240626

Lab Sample ID: 670-42467-35

Date Collected: 06/26/24 09:30

Matrix: Water

Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	940	U	1000	940	ug/L			06/28/24 19:25	1000
cis-1,2-Dichloroethene	**320000**		5000	2700	ug/L			07/02/24 16:51	5000
trans-1,2-Dichloroethene	**3200**		1000	730	ug/L			06/28/24 19:25	1000
Trichloroethene	**390000**		5000	4500	ug/L			07/02/24 16:51	5000
Vinyl chloride	**35000**		1000	710	ug/L			06/28/24 19:25	1000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*06/28/24 19:25*	*1000*

Client Sample ID: MLPV-DPT0744-050.0-20240626 Lab Sample ID: 670-42467-35

Date Collected: 06/26/24 09:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*40 - 146*		*07/02/24 16:51*	*5000*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*06/28/24 19:25*	*1000*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*		*07/02/24 16:51*	*5000*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 19:25*	*1000*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 16:51*	*5000*

Client Sample ID: MLPV-DPT0740-007.0-20240626 Lab Sample ID: 670-42467-36

Date Collected: 06/26/24 10:00 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	47	U	50	47	ug/L			06/28/24 18:10	50
cis-1,2-Dichloroethene	**1000**		50	27	ug/L			06/28/24 18:10	50
trans-1,2-Dichloroethene	37	U	50	37	ug/L			06/28/24 18:10	50
Trichloroethene	**2700**		50	45	ug/L			06/28/24 18:10	50
Vinyl chloride	**100**		50	36	ug/L			06/28/24 18:10	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*40 - 146*		*06/28/24 18:10*	*50*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*06/28/24 18:10*	*50*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*06/28/24 18:10*	*50*

Client Sample ID: MLPV-DPT0740-045.0-20240626 Lab Sample ID: 670-42467-37

Date Collected: 06/26/24 10:40 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	9.4	U	10	9.4	ug/L			07/02/24 16:33	10
cis-1,2-Dichloroethene	**180**		10	5.3	ug/L			07/02/24 16:33	10
trans-1,2-Dichloroethene	7.3	U	10	7.3	ug/L			07/02/24 16:33	10
Trichloroethene	**720**		10	8.9	ug/L			07/02/24 16:33	10
Vinyl chloride	7.1	U	10	7.1	ug/L			07/02/24 16:33	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*40 - 146*		*07/02/24 16:33*	*10*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*		*07/02/24 16:33*	*10*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/02/24 16:33*	*10*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**4300**		5.0	2.5	ug/L			07/01/24 16:55	5
Ethane	**4.5**		1.0	0.26	ug/L			07/01/24 12:01	1
Ethene	**1.5**	**V**	1.0	0.55	ug/L			07/01/24 12:01	1

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/02/24 13:41	07/02/24 20:00	1

Client Sample ID: MLPV-DPT0740-045.0-20240626 Lab Sample ID: 670-42467-37

Date Collected: 06/26/24 10:40 **Matrix: Water**
Date Received: 06/26/24 15:01

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*118*		*66 - 139*	*07/02/24 13:41*	*07/02/24 20:00*	*1*
C35 (Surr)	*119*		*40 - 129*	*07/02/24 13:41*	*07/02/24 20:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**120000**		10000	5000	ug/L			06/27/24 21:14	10

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**72000**		900	480	ug/L		06/27/24 11:03	06/27/24 17:34	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	**1700000**		10000	10000	ug/L			06/27/24 09:25	1
Ammonia (EPA 350.1)	**1400**		200	140	ug/L			07/02/24 12:29	10
Sulfide (SM 4500 S2 F)	**10000**		1600	800	ug/L			06/27/24 14:40	1
Total Organic Carbon (SM 5310C)	20000	U	40000	20000	ug/L			06/27/24 17:20	20

Client Sample ID: MLPV-DPT0740-011.0-20240626 Lab Sample ID: 670-42467-38

Date Collected: 06/26/24 10:20 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/02/24 11:28	100
cis-1,2-Dichloroethene	**1200**		100	53	ug/L			07/02/24 11:28	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/02/24 11:28	100
Trichloroethene	**7300**		100	89	ug/L			07/02/24 11:28	100
Vinyl chloride	71	U	100	71	ug/L			07/02/24 11:28	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 11:28*	*100*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*		*07/02/24 11:28*	*100*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/02/24 11:28*	*100*

Client Sample ID: MLPV-DPT0740-050.0-20240626 Lab Sample ID: 670-42467-39

Date Collected: 06/26/24 11:20 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.9	U	2.0	1.9	ug/L			07/02/24 14:25	2
cis-1,2-Dichloroethene	**28**		2.0	1.1	ug/L			07/02/24 14:25	2
trans-1,2-Dichloroethene	1.5	U	2.0	1.5	ug/L			07/02/24 14:25	2
Trichloroethene	**170**		2.0	1.8	ug/L			07/02/24 14:25	2
Vinyl chloride	1.4	U	2.0	1.4	ug/L			07/02/24 14:25	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*40 - 146*		*07/02/24 14:25*	*2*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/02/24 14:25*	*2*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/02/24 14:25*	*2*

Client Sample ID: MLPV-DPT0736-050.0-20240626 Lab Sample ID: 670-42467-40

Date Collected: 06/26/24 13:35 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 13:00	1
cis-1,2-Dichloroethene	**3.1**		1.0	0.53	ug/L			07/02/24 13:00	1
trans-1,2-Dichloroethene	**1.1**		1.0	0.73	ug/L			07/02/24 13:00	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 13:00	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/02/24 13:00*	*1*
4-Bromofluorobenzene (Surr)	*90*		*41 - 142*		*07/02/24 13:00*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 13:00*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**6400**		5.0	2.5	ug/L			07/01/24 17:07	5
Ethane	**2.0**		1.0	0.26	ug/L			07/01/24 12:43	1
Ethene	**0.92**	**I V**	1.0	0.55	ug/L			07/01/24 12:43	1

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/02/24 13:41	07/02/24 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*104*		*66 - 139*	*07/02/24 13:41*	*07/02/24 19:42*	*1*
C35 (Surr)	*101*		*40 - 129*	*07/02/24 13:41*	*07/02/24 19:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1500000**		40000	20000	ug/L			06/27/24 21:31	40

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**11000**		200	110	ug/L		06/27/24 11:03	06/27/24 17:36	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	**20000000**		25000	25000	ug/L			06/27/24 09:25	1
Ammonia (EPA 350.1)	**3300**		200	140	ug/L			07/02/24 12:31	10
Sulfide (SM 4500 S2 F)	**20000**		1600	800	ug/L			06/27/24 14:40	1
Total Organic Carbon (SM 5310C)	20000	U	40000	20000	ug/L			06/27/24 17:42	20

Client Sample ID: MLPV-DPT0751-050.0-20240626 Lab Sample ID: 670-42467-41

Date Collected: 06/26/24 14:15 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/01/24 16:46	1
cis-1,2-Dichloroethene	**68**		1.0	0.53	ug/L			07/01/24 16:46	1
trans-1,2-Dichloroethene	**1.5**		1.0	0.73	ug/L			07/01/24 16:46	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/01/24 16:46	1

Client Sample ID: MLPV-DPT0751-050.0-20240626 Lab Sample ID: 670-42467-41

Date Collected: 06/26/24 14:15 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**25**		1.0	0.71	ug/L			07/01/24 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/01/24 16:46*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/01/24 16:46*	*1*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*07/01/24 16:46*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**690**		1.0	0.50	ug/L			07/01/24 12:54	1
Ethane	**5.2**		1.0	0.26	ug/L			07/01/24 12:54	1
Ethene	**11**	**V**	1.0	0.55	ug/L			07/01/24 12:54	1

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/02/24 13:41	07/02/24 19:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*108*		*66 - 139*	*07/02/24 13:41*	*07/02/24 19:24*	*1*
C35 (Surr)	*108*		*40 - 129*	*07/02/24 13:41*	*07/02/24 19:24*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**510000**		40000	20000	ug/L			06/27/24 23:13	40

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**18000**		200	110	ug/L		06/27/24 11:03	06/27/24 17:39	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	**13000000**		25000	25000	ug/L			06/27/24 09:25	1
Ammonia (EPA 350.1)	**4300**		200	140	ug/L			07/02/24 12:35	10
Sulfide (SM 4500 S2 F)	**3100**		1600	800	ug/L			06/27/24 14:40	1
Total Organic Carbon (SM 5310C)	20000	U	40000	20000	ug/L			06/27/24 17:55	20

Client Sample ID: MLPV-TB01-20240626 Lab Sample ID: 670-42467-42

Date Collected: 06/26/24 14:30 **Matrix: Water**
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 18:35	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 18:35	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 18:35	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 18:35	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 18:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*06/28/24 18:35*	*1*

Client Sample ID: MLPV-TB01-20240626
Lab Sample ID: 670-42467-42

Date Collected: 06/26/24 14:30
Matrix: Water
Date Received: 06/26/24 15:01

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*41 - 142*		*06/28/24 18:35*	*1*
Dibromofluoromethane (Surr)	*98*		*53 - 146*		*06/28/24 18:35*	*1*

Client Sample ID: MLPV-TB02-20240626
Lab Sample ID: 670-42467-43

Date Collected: 06/26/24 14:30
Matrix: Water
Date Received: 06/26/24 15:01

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 18:17	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 18:17	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 18:17	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 18:17	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*40 - 146*		*06/28/24 18:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*06/28/24 18:17*	*1*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*06/28/24 18:17*	*1*

Surrogate Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(40-146)	(41-142)	(53-146)
670-42441-L-4 MS	Matrix Spike	101	94	101
670-42441-L-4 MSD	Matrix Spike Duplicate	102	94	102
670-42449-G-1 MS - DL	Matrix Spike	102	93	100
670-42449-G-1 MSD - DL	Matrix Spike Duplicate	102	94	100
670-42467-1	MLPV-DPT0712-016.0-20240624	101	102	107
670-42467-2	MLPV-DPT0712-020.0-20240624	101	103	108
670-42467-3	MLPV-DPT0712-022.0-20240624	103	99	108
670-42467-4	MLPV-DPT0713-026.0-20240624	102	100	107
670-42467-5	MLPV-DPT0713-030.0-20240624	102	101	108
670-42467-6	MLPV-DPT0713-034.0-20240624	102	100	109
670-42467-7	MLPV-DPT0714-016.0-20240624	102	97	108
670-42467-8	MLPV-DPT0714-020.0-20240624	103	100	110
670-42467-9	MLPV-DPT0714-024.0-20240624	103	98	110
670-42467-10	MLPV-DPT0716-007.0-20240624	103	100	108
670-42467-11	MLPV-DPT0716-011.0-20240624	103	100	110
670-42467-12	MLPV-DPT0716-015.0-20240624	103	99	110
670-42467-13	MLPV-DPT0717-046.0-20240625	101	99	108
670-42467-14	MLPV-DPT0717-050.0-20240625	101	102	108
670-42467-15	MLPV-DPT0717-054.0-20240625	103	98	110
670-42467-16	MLPV-DPT0715-043.0-20240625	101	98	108
670-42467-17 - DL	MLPV-DPT0715-047.0-20240625	98	96	107
670-42467-17 - DL	MLPV-DPT0715-047.0-20240625	101	102	107
670-42467-17 MS - DL	MLPV-DPT0715-047.0-20240625	100	97	99
670-42467-17 MSD - DL	MLPV-DPT0715-047.0-20240625	100	98	102
670-42467-18 - DL	MLPV-DPT0715-051.0-20240625	103	99	108
670-42467-18 - DL	MLPV-DPT0715-051.0-20240625	97	95	105
670-42467-19 - DL	MLPV-DPT0728-007.0-20240625	100	94	104
670-42467-20 - DL	MLPV-DPT0728-011.0-20240625	104	98	108
670-42467-21 - DL	MLPV-DPT0728-016.0-20240625	99	89	108
670-42467-22 - DL	MLPV-DPT0750-007.0-20240625	97	89	110

Surrogate Summary

Client: AECOM Technical Services Inc. Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

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

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

		Percent Surrogate Recovery (Acceptance Limits)		
		TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(40-146)	(41-142)	(53-146)
670-42467-23 - DL	MLPV-DPT0750-011.0-20240625	99	89	110
670-42467-24 - DL	MLPV-DPT0729-007.0-20240625	97	90	113
670-42467-24 - DL	MLPV-DPT0729-007.0-20240625	99	90	112
670-42467-25 - DL	MLPV-DPT0729-011.0-20240625	97	104	108
670-42467-26 - DL	MLPV-DPT0729-016.0-20240625	100	101	109
670-42467-27 - DL	MLPV-DPT0729-045.0-20240625	93	101	107
670-42467-28 - DL	MLPV-DPT0729-050.0-20240625	96	90	109
670-42467-29 - DL	MLPV-DPT0730-007.0-20240625	99	91	111
670-42467-30 - DL	MLPV-DPT0730-016.0-20240625	100	92	109
670-42467-31	MLPV-DPT0730-011.0-20240625	103	98	109
670-42467-32 - DL	MLPV-DPT0727-050.0-20240625	97	96	106
670-42467-33 - DL	MLPV-DPT0727-056.0-20240626	95	100	106
670-42467-34	MLPV-DPT0744-045.0-20240626	102	98	112
670-42467-35 - DL	MLPV-DPT0744-050.0-20240626	97	101	110
670-42467-35 - DL	MLPV-DPT0744-050.0-20240626	95	91	109
670-42467-36 - DL	MLPV-DPT0740-007.0-20240626	98	94	110
670-42467-37 - DL	MLPV-DPT0740-045.0-20240626	95	91	110
670-42467-37 MS - DL	MLPV-DPT0740-045.0-20240626	95	96	106
670-42467-37 MSD - DL	MLPV-DPT0740-045.0-20240626	95	96	105
670-42467-38 - DL	MLPV-DPT0740-011.0-20240626	99	91	110
670-42467-38 MS	MLPV-DPT0740-011.0-20240626	95	89	100
670-42467-38 MSD	MLPV-DPT0740-011.0-20240626	97	92	102
670-42467-39 - DL	MLPV-DPT0740-050.0-20240626	93	94	110
670-42467-40	MLPV-DPT0736-050.0-20240626	97	90	109
670-42467-41	MLPV-DPT0751-050.0-20240626	101	101	107
670-42467-42	MLPV-TB01-20240626	100	103	98
670-42467-43	MLPV-TB02-20240626	107	102	106
670-42543-E-2 MS	Matrix Spike	99	96	102
670-42543-E-2 MSD	Matrix Spike Duplicate	100	98	102
752-21197-C-2 MS	Matrix Spike	99	102	99
752-21197-C-2 MSD	Matrix Spike Duplicate	100	102	100
LCS 670-98134/4	Lab Control Sample	100	95	101

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

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

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	TOL (40-146)	BFB (41-142)	DBFM (53-146)
LCS 670-98135/5	Lab Control Sample	99	102	100
LCS 670-98141/4	Lab Control Sample	101	99	102
LCS 670-98170/4	Lab Control Sample	98	97	102
LCS 670-98404/4	Lab Control Sample	101	96	101
LCS 670-98410/4	Lab Control Sample	102	96	103
LCS 670-98618/4	Lab Control Sample	97	88	101
MB 670-98134/7	Method Blank	99	96	105
MB 670-98135/8	Method Blank	97	99	99
MB 670-98141/7	Method Blank	102	101	109
MB 670-98170/8	Method Blank	98	102	106
MB 670-98404/6	Method Blank	102	98	106
MB 670-98410/7	Method Blank	100	96	104
MB 670-98618/7	Method Blank	99	94	109

Surrogate Legend

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

Method: FL-PRO - Florida - Petroleum Range Organics (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	OTP (66-139)	C-35 (40-129)
670-42467-34	MLPV-DPT0744-045.0-20240626	113	114
670-42467-37	MLPV-DPT0740-045.0-20240626	118	119
670-42467-40	MLPV-DPT0736-050.0-20240626	104	101
670-42467-41	MLPV-DPT0751-050.0-20240626	108	108
LCS 670-98386/2-A	Lab Control Sample	94	95
LCS 670-98710/2-A	Lab Control Sample	103	106
LCSD 670-98386/3-A	Lab Control Sample Dup	108	108
LCSD 670-98710/3-A	Lab Control Sample Dup	104	103
MB 670-98386/1-A	Method Blank	127	124
MB 670-98710/1-A	Method Blank	121	125

Surrogate Legend

OTP = o- terphenyl (Surr)
C-35 = C35 (Surr)

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

Lab Sample ID: MB 670-98134/7
Matrix: Water
Analysis Batch: 98134

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 10:26	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 10:26	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 10:26	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 10:26	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 10:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*06/28/24 10:26*	*1*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*06/28/24 10:26*	*1*
Dibromofluoromethane (Surr)	*105*		*53 - 146*		*06/28/24 10:26*	*1*

Lab Sample ID: LCS 670-98134/4
Matrix: Water
Analysis Batch: 98134

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	5.00	5.03		ug/L		101	47 - 139
cis-1,2-Dichloroethene	5.00	4.96		ug/L		99	56 - 128
trans-1,2-Dichloroethene	5.00	4.96		ug/L		99	54 - 134
Trichloroethene	5.00	4.56		ug/L		91	62 - 135
Vinyl chloride	5.00	5.42		ug/L		108	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*40 - 146*
4-Bromofluorobenzene (Surr)	*95*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

Lab Sample ID: 670-42441-L-4 MS
Matrix: Water
Analysis Batch: 98134

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-Dichloroethene	0.94	U	20.0	22.2		ug/L		111	49 - 139
cis-1,2-Dichloroethene	0.53	U	20.0	18.8		ug/L		94	56 - 128
trans-1,2-Dichloroethene	0.73	U	20.0	20.0		ug/L		100	54 - 134
Trichloroethene	0.89	U	20.0	18.8		ug/L		94	62 - 135
Vinyl chloride	0.71	U	20.0	27.7		ug/L		139	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*40 - 146*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

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

Lab Sample ID: 670-42441-L-4 MSD
Matrix: Water
Analysis Batch: 98134

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-Dichloroethene	0.94	U	20.0	21.4		ug/L		107	49 - 139	3	16
cis-1,2-Dichloroethene	0.53	U	20.0	18.5		ug/L		92	56 - 128	2	17
trans-1,2-Dichloroethene	0.73	U	20.0	18.9		ug/L		95	54 - 134	6	20
Trichloroethene	0.89	U	20.0	18.0		ug/L		90	62 - 135	4	20
Vinyl chloride	0.71	U	20.0	26.5		ug/L		133	20 - 167	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*40 - 146*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*

Lab Sample ID: MB 670-98135/8
Matrix: Water
Analysis Batch: 98135

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 11:00	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 11:00	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 11:00	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 11:00	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 11:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*06/28/24 11:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*06/28/24 11:00*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*06/28/24 11:00*	*1*

Lab Sample ID: LCS 670-98135/5
Matrix: Water
Analysis Batch: 98135

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	5.00	5.49		ug/L		110	47 - 139
cis-1,2-Dichloroethene	5.00	5.51		ug/L		110	56 - 128
trans-1,2-Dichloroethene	5.00	5.24		ug/L		105	54 - 134
Trichloroethene	5.00	5.60		ug/L		112	62 - 135
Vinyl chloride	5.00	3.35		ug/L		67	20 - 167

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

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

Lab Sample ID: 752-21197-C-2 MS
Matrix: Water
Analysis Batch: 98135

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-Dichloroethene	0.94	U	20.0	23.4		ug/L		117	49 - 139
cis-1,2-Dichloroethene	0.53	U	20.0	22.4		ug/L		112	56 - 128
trans-1,2-Dichloroethene	0.73	U	20.0	22.8		ug/L		114	54 - 134
Trichloroethene	0.89	U	20.0	22.1		ug/L		111	62 - 135
Vinyl chloride	0.71	U	20.0	15.1		ug/L		75	20 - 167

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

Lab Sample ID: 752-21197-C-2 MSD
Matrix: Water
Analysis Batch: 98135

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-Dichloroethene	0.94	U	20.0	22.7		ug/L		113	49 - 139	3	16
cis-1,2-Dichloroethene	0.53	U	20.0	22.8		ug/L		114	56 - 128	2	17
trans-1,2-Dichloroethene	0.73	U	20.0	22.1		ug/L		110	54 - 134	3	20
Trichloroethene	0.89	U	20.0	22.5		ug/L		112	62 - 135	1	20
Vinyl chloride	0.71	U	20.0	14.1		ug/L		70	20 - 167	7	24

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

Lab Sample ID: MB 670-98141/7
Matrix: Water
Analysis Batch: 98141

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 10:52	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 10:52	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 10:52	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 10:52	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 10:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*06/28/24 10:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*06/28/24 10:52*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*06/28/24 10:52*	*1*

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

Lab Sample ID: LCS 670-98141/4
Matrix: Water
Analysis Batch: 98141

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	20.1		ug/L		100	47 - 139		
cis-1,2-Dichloroethene			20.0	19.9		ug/L		99	56 - 128		
trans-1,2-Dichloroethene			20.0	19.9		ug/L		99	54 - 134		
Trichloroethene			20.0	19.3		ug/L		96	62 - 135		
Vinyl chloride			20.0	23.8		ug/L		119	20 - 167		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*40 - 146*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*

Lab Sample ID: MB 670-98170/8
Matrix: Water
Analysis Batch: 98170

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			06/28/24 11:37	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			06/28/24 11:37	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			06/28/24 11:37	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			06/28/24 11:37	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			06/28/24 11:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*40 - 146*		*06/28/24 11:37*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*06/28/24 11:37*	*1*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*06/28/24 11:37*	*1*

Lab Sample ID: LCS 670-98170/4
Matrix: Water
Analysis Batch: 98170

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1-Dichloroethene			20.0	22.0		ug/L		110	47 - 139		
cis-1,2-Dichloroethene			20.0	17.1		ug/L		85	56 - 128		
trans-1,2-Dichloroethene			20.0	19.4		ug/L		97	54 - 134		
Trichloroethene			20.0	18.9		ug/L		94	62 - 135		
Vinyl chloride			20.0	23.3		ug/L		117	20 - 167		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*40 - 146*
4-Bromofluorobenzene (Surr)	*97*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*

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

Lab Sample ID: MB 670-98404/6
Matrix: Water
Analysis Batch: 98404

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/01/24 10:13	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/01/24 10:13	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/01/24 10:13	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/01/24 10:13	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/01/24 10:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/01/24 10:13*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/01/24 10:13*	*1*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*07/01/24 10:13*	*1*

Lab Sample ID: LCS 670-98404/4
Matrix: Water
Analysis Batch: 98404

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.7		ug/L		94	47 - 139
cis-1,2-Dichloroethene	20.0	17.4		ug/L		87	56 - 128
trans-1,2-Dichloroethene	20.0	17.7		ug/L		88	54 - 134
Trichloroethene	20.0	18.1		ug/L		90	62 - 135
Vinyl chloride	20.0	19.9		ug/L		99	20 - 167

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

Lab Sample ID: 670-42543-E-2 MS
Matrix: Water
Analysis Batch: 98404

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-Dichloroethene	0.94	U	20.0	22.1		ug/L		110	49 - 139
cis-1,2-Dichloroethene	0.53	U	20.0	19.8		ug/L		99	56 - 128
trans-1,2-Dichloroethene	0.73	U	20.0	20.7		ug/L		104	54 - 134
Trichloroethene	0.89	U	20.0	20.6		ug/L		103	62 - 135
Vinyl chloride	0.71	U	20.0	23.8		ug/L		119	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*40 - 146*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*

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

Lab Sample ID: 670-42543-E-2 MSD
Matrix: Water
Analysis Batch: 98404

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-Dichloroethene	0.94	U	20.0	21.2		ug/L		106	49 - 139	4	16
cis-1,2-Dichloroethene	0.53	U	20.0	19.4		ug/L		97	56 - 128	2	17
trans-1,2-Dichloroethene	0.73	U	20.0	20.3		ug/L		102	54 - 134	2	20
Trichloroethene	0.89	U	20.0	20.2		ug/L		101	62 - 135	2	20
Vinyl chloride	0.71	U	20.0	23.7		ug/L		118	20 - 167	0	24

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

Lab Sample ID: MB 670-98410/7
Matrix: Water
Analysis Batch: 98410

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/01/24 10:33	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/01/24 10:33	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/01/24 10:33	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/01/24 10:33	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/01/24 10:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/01/24 10:33*	*1*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*07/01/24 10:33*	*1*
Dibromofluoromethane (Surr)	*104*		*53 - 146*		*07/01/24 10:33*	*1*

Lab Sample ID: LCS 670-98410/4
Matrix: Water
Analysis Batch: 98410

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	21.2		ug/L		106	47 - 139
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	56 - 128
trans-1,2-Dichloroethene	20.0	19.6		ug/L		98	54 - 134
Trichloroethene	20.0	18.8		ug/L		94	62 - 135
Vinyl chloride	20.0	23.6		ug/L		118	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*40 - 146*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*
Dibromofluoromethane (Surr)	*103*		*53 - 146*

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

Lab Sample ID: MB 670-98618/7
Matrix: Water
Analysis Batch: 98618

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 11:02	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/02/24 11:02	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/02/24 11:02	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 11:02	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 11:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 11:02*	*1*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/02/24 11:02*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 11:02*	*1*

Lab Sample ID: LCS 670-98618/4
Matrix: Water
Analysis Batch: 98618

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.6		ug/L		83	47 - 139
cis-1,2-Dichloroethene	20.0	17.6		ug/L		88	56 - 128
trans-1,2-Dichloroethene	20.0	16.2		ug/L		81	54 - 134
Trichloroethene	20.0	19.1		ug/L		95	62 - 135
Vinyl chloride	20.0	13.3		ug/L		66	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*40 - 146*
4-Bromofluorobenzene (Surr)	*88*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

Lab Sample ID: 670-42467-38 MS
Matrix: Water
Analysis Batch: 98618

Client Sample ID: MLPV-DPT0740-011.0-20240626
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	94	U	2000	1750		ug/L		88	49 - 139
cis-1,2-Dichloroethene	1200		2000	3050		ug/L		91	56 - 128
trans-1,2-Dichloroethene	73	U	2000	1700		ug/L		85	54 - 134
Trichloroethene	7300		2000	9250		ug/L		95	62 - 135
Vinyl chloride	71	U	2000	1240		ug/L		62	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*40 - 146*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*
Dibromofluoromethane (Surr)	*100*		*53 - 146*

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

Lab Sample ID: 670-42467-38 MSD
Matrix: Water
Analysis Batch: 98618

Client Sample ID: MLPV-DPT0740-011.0-20240626
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-Dichloroethene	94	U	2000	1740		ug/L		87	49 - 139	1	16
cis-1,2-Dichloroethene	1200		2000	3060		ug/L		92	56 - 128	0	17
trans-1,2-Dichloroethene	73	U	2000	1740		ug/L		87	54 - 134	2	20
Trichloroethene	7300		2000	9250		ug/L		95	62 - 135	0	20
Vinyl chloride	71	U	2000	1360		ug/L		68	20 - 167	9	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*40 - 146*
4-Bromofluorobenzene (Surr)	*92*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*

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

Lab Sample ID: 670-42467-17 MS
Matrix: Water
Analysis Batch: 98141

Client Sample ID: MLPV-DPT0715-047.0-20240625
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene - DL	1900	U	40000	43100		ug/L		108	49 - 139
cis-1,2-Dichloroethene - DL	340000	L J3	40000	358000	L J3	ug/L		33	56 - 128
trans-1,2-Dichloroethene - DL	3800		40000	44200		ug/L		101	54 - 134
Trichloroethene - DL	1100000	L J3	40000	982000	L J3	ug/L		-184	62 - 135
Vinyl chloride - DL	58000		40000	102000		ug/L		109	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*100*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*97*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*99*		*53 - 146*

Lab Sample ID: 670-42467-17 MSD
Matrix: Water
Analysis Batch: 98141

Client Sample ID: MLPV-DPT0715-047.0-20240625
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-Dichloroethene - DL	1900	U	40000	42800		ug/L		107	49 - 139	1	16
cis-1,2-Dichloroethene - DL	340000	L J3	40000	357000	L J3	ug/L		32	56 - 128	0	17
trans-1,2-Dichloroethene - DL	3800		40000	43200		ug/L		98	54 - 134	2	20
Trichloroethene - DL	1100000	L J3	40000	958000	L J3	ug/L		-244	62 - 135	2	20
Vinyl chloride - DL	58000		40000	99800		ug/L		103	20 - 167	2	24

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

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

Lab Sample ID: 670-42467-37 MS
Matrix: Water
Analysis Batch: 98170

Client Sample ID: MLPV-DPT0740-045.0-20240626
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene - DL	940	U	20000	20900		ug/L		104	49 - 139
cis-1,2-Dichloroethene - DL	530	U	20000	17800		ug/L		89	56 - 128
trans-1,2-Dichloroethene - DL	730	U	20000	20100		ug/L		100	54 - 134
Trichloroethene - DL	890	U	20000	20900		ug/L		105	62 - 135
Vinyl chloride - DL	710	U	20000	22400		ug/L		112	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*95*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*96*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*106*		*53 - 146*

Lab Sample ID: 670-42467-37 MSD
Matrix: Water
Analysis Batch: 98170

Client Sample ID: MLPV-DPT0740-045.0-20240626
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-Dichloroethene - DL	940	U	20000	21000		ug/L		105	49 - 139	1	16
cis-1,2-Dichloroethene - DL	530	U	20000	17600		ug/L		88	56 - 128	2	17
trans-1,2-Dichloroethene - DL	730	U	20000	19300		ug/L		97	54 - 134	4	20
Trichloroethene - DL	890	U	20000	20200		ug/L		101	62 - 135	3	20
Vinyl chloride - DL	710	U	20000	20900		ug/L		104	20 - 167	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*95*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*96*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*105*		*53 - 146*

Lab Sample ID: 670-42449-G-1 MS
Matrix: Water
Analysis Batch: 98410

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-Dichloroethene - DL	4.7	U	100	109		ug/L		109	49 - 139
cis-1,2-Dichloroethene - DL	2.7	U	100	93.6		ug/L		94	56 - 128
trans-1,2-Dichloroethene - DL	3.7	U	100	98.1		ug/L		98	54 - 134
Trichloroethene - DL	4.5	U	100	92.0		ug/L		92	62 - 135
Vinyl chloride - DL	3.6	U	100	137		ug/L		137	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*102*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*93*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*100*		*53 - 146*

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

Lab Sample ID: 670-42449-G-1 MSD
Matrix: Water
Analysis Batch: 98410

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-Dichloroethene - DL	4.7	U	100	104		ug/L		104	49 - 139	5	16
cis-1,2-Dichloroethene - DL	2.7	U	100	91.2		ug/L		91	56 - 128	3	17
trans-1,2-Dichloroethene - DL	3.7	U	100	93.4		ug/L		93	54 - 134	5	20
Trichloroethene - DL	4.5	U	100	92.0		ug/L		92	62 - 135	0	20
Vinyl chloride - DL	3.6	U	100	125		ug/L		125	20 - 167	10	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*102*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*94*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*100*		*53 - 146*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 400-676513/3
Matrix: Water
Analysis Batch: 676513

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.50	U	1.0	0.50	ug/L			07/01/24 09:55	1
Ethane	0.26	U	1.0	0.26	ug/L			07/01/24 09:55	1
Ethene	3.06		1.0	0.55	ug/L			07/01/24 09:55	1

Lab Sample ID: LCS 400-676513/4
Matrix: Water
Analysis Batch: 676513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	389	394		ug/L		101	82 - 117
Ethane	736	728		ug/L		99	85 - 116
Ethene	687	667		ug/L		97	83 - 121

Lab Sample ID: LCSD 400-676513/5
Matrix: Water
Analysis Batch: 676513

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Methane	389	390		ug/L		100	82 - 117	1	20
Ethane	736	721		ug/L		98	85 - 116	1	20
Ethene	687	664		ug/L		97	83 - 121	1	20

Lab Sample ID: 885-6962-J-4 DU
Matrix: Water
Analysis Batch: 676513

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Methane	810		898		ug/L		10	20
Ethane	1.6		0.773	I J3	ug/L		72	20
Ethene	2.1	V	3.17	V J3	ug/L		40	20

Method: FL-PRO - Florida - Petroleum Range Organics (GC)

Lab Sample ID: MB 670-98386/1-A
Matrix: Water
Analysis Batch: 98174

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98386

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		06/29/24 13:31	07/01/24 10:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*127*		*66 - 139*	*06/29/24 13:31*	*07/01/24 10:45*	*1*
C35 (Surr)	*124*		*40 - 129*	*06/29/24 13:31*	*07/01/24 10:45*	*1*

Lab Sample ID: LCS 670-98386/2-A
Matrix: Water
Analysis Batch: 98174

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98386

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Petroleum Hydrocarbons (C8-C40)			15500	14200		ug/L		92	55 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o- terphenyl (Surr)	*94*		*66 - 139*
C35 (Surr)	*95*		*40 - 129*

Lab Sample ID: LCSD 670-98386/3-A
Matrix: Water
Analysis Batch: 98174

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 98386

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Petroleum Hydrocarbons (C8-C40)			15500	16300		ug/L		105	55 - 130	14	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o- terphenyl (Surr)	*108*		*66 - 139*
C35 (Surr)	*108*		*40 - 129*

Lab Sample ID: MB 670-98710/1-A
Matrix: Water
Analysis Batch: 98606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98710

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/02/24 13:41	07/02/24 18:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*121*		*66 - 139*	*07/02/24 13:41*	*07/02/24 18:12*	*1*
C35 (Surr)	*125*		*40 - 129*	*07/02/24 13:41*	*07/02/24 18:12*	*1*

Method: FL-PRO - Florida - Petroleum Range Organics (GC) (Continued)

Lab Sample ID: LCS 670-98710/2-A
Matrix: Water
Analysis Batch: 98606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98710

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Petroleum Hydrocarbons (C8-C40)			15500	14900		ug/L		97	55 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o- terphenyl (Surr)	*103*		*66 - 139*
C35 (Surr)	*106*		*40 - 129*

Lab Sample ID: LCSD 670-98710/3-A
Matrix: Water
Analysis Batch: 98606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 98710

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Petroleum Hydrocarbons (C8-C40)			15500	15100		ug/L		98	55 - 130	2	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o- terphenyl (Surr)	*104*		*66 - 139*
C35 (Surr)	*103*		*40 - 129*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 670-97954/32
Matrix: Water
Analysis Batch: 97954

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	500	U	1000	500	ug/L			06/27/24 18:08	1

Lab Sample ID: MB 670-97954/6
Matrix: Water
Analysis Batch: 97954

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	500	U	1000	500	ug/L			06/27/24 10:26	1

Lab Sample ID: LCS 670-97954/30
Matrix: Water
Analysis Batch: 97954

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			10000	10200		ug/L		102	90 - 110		

Lab Sample ID: LCSD 670-97954/31
Matrix: Water
Analysis Batch: 97954

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate			10000	9570		ug/L		96	90 - 110	6	20

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 670-42480-D-1 MS
Matrix: Water
Analysis Batch: 97954

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		
Sulfate	1400		5000	6010		ug/L		93	80 - 120		

Lab Sample ID: 670-42480-D-1 MSD
Matrix: Water
Analysis Batch: 97954

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
Sulfate	1400		5000	6030		ug/L		93	80 - 120	0	20

Lab Sample ID: 670-42480-D-3 MS
Matrix: Water
Analysis Batch: 97954

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		
Sulfate	1800		5000	6160		ug/L		87	80 - 120		

Lab Sample ID: 670-42480-D-3 MSD
Matrix: Water
Analysis Batch: 97954

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
Sulfate	1800		5000	6150		ug/L		87	80 - 120	0	20

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 670-98002/3-A
Matrix: Water
Analysis Batch: 98168

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 98002

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	96	U	180	96	ug/L		06/27/24 11:03	06/27/24 17:02	1

Lab Sample ID: LCS 670-98002/1-A
Matrix: Water
Analysis Batch: 98168

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 98002

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			10100	10800		ug/L		107	80 - 120		

Lab Sample ID: LCSD 670-98002/2-A
Matrix: Water
Analysis Batch: 98168

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 98002

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron			10100	10700		ug/L		106	80 - 120	0	20

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 670-42481-A-1-A MS
Matrix: Water
Analysis Batch: 98168

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 98002

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	160	I	11200	11800		ug/L		104	70 - 120

Lab Sample ID: 670-42481-A-1-B MSD
Matrix: Water
Analysis Batch: 98168

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 98002

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	160	I	11200	11800		ug/L		103	70 - 120	1	20

Method: 2540C - 2015 - Total Dissolved Solids (Dried at 180 °C)

Lab Sample ID: MB 670-97975/1
Matrix: Water
Analysis Batch: 97975

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5000	U	5000	5000	ug/L			06/27/24 09:25	1

Lab Sample ID: LCS 670-97975/2
Matrix: Water
Analysis Batch: 97975

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1500000	1460000		ug/L		97	80 - 120

Lab Sample ID: 670-42281-E-2 DU
Matrix: Water
Analysis Batch: 97975

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	280000		314000		ug/L		12	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 670-98720/49
Matrix: Water
Analysis Batch: 98720

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	46.0		20	14	ug/L			07/02/24 14:18	1

Lab Sample ID: MB 670-98720/7
Matrix: Water
Analysis Batch: 98720

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	14	U	20	14	ug/L			07/02/24 12:11	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 670-98720/3
Matrix: Water
Analysis Batch: 98720

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	500	463		ug/L		93	90 - 110

Lab Sample ID: LCS 670-98720/47
Matrix: Water
Analysis Batch: 98720

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	500	524		ug/L		105	90 - 110

Lab Sample ID: LCSD 670-98720/48
Matrix: Water
Analysis Batch: 98720

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia	500	488		ug/L		98	90 - 110	7	20

Lab Sample ID: LCSD 670-98720/6
Matrix: Water
Analysis Batch: 98720

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia	500	458		ug/L		92	90 - 110	1	20

Lab Sample ID: 660-136879-E-1 MS
Matrix: Water
Analysis Batch: 98720

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
Ammonia	420	J3	500	530	J3	ug/L		22	90 - 110

Lab Sample ID: 676-4932-C-2 MS
Matrix: Water
Analysis Batch: 98720

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
Ammonia	24	J3	500	148	J3	ug/L		25	90 - 110

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 670-98068/1
Matrix: Water
Analysis Batch: 98068

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	800	U	1600	800	ug/L			06/27/24 14:40	1

Method: SM 4500 S2 F - Sulfide, Total (Continued)

Lab Sample ID: LCS 670-98068/3
Matrix: Water
Analysis Batch: 98068

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfide			2000	2000		ug/L		100	80 - 120		

Lab Sample ID: LCSD 670-98068/4
Matrix: Water
Analysis Batch: 98068

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfide			2000	1900	I	ug/L		95	80 - 120	5	20

Lab Sample ID: 670-42467-40 DU
Matrix: Water
Analysis Batch: 98068

Client Sample ID: MLPV-DPT0736-050.0-20240626
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfide	20000			19400		ug/L				2	20

Method: SM 5310C - TOC

Lab Sample ID: MB 670-98196/7
Matrix: Water
Analysis Batch: 98196

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	2000	1000	ug/L			06/27/24 15:23	1

Lab Sample ID: LCS 670-98196/5
Matrix: Water
Analysis Batch: 98196

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			9980	10200		ug/L		102	80 - 120		

Lab Sample ID: LCSD 670-98196/6
Matrix: Water
Analysis Batch: 98196

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon			9980	10100		ug/L		101	80 - 120	0	20

Lab Sample ID: 670-42358-E-1 MS
Matrix: Water
Analysis Batch: 98196

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		
Total Organic Carbon	7100		9980	16800		ug/L		97	85 - 115		

Method: SM 5310C - TOC (Continued)

Lab Sample ID: 670-42358-E-1 MSD
Matrix: Water
Analysis Batch: 98196

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
Total Organic Carbon	7100		9980	16700		ug/L		96	85 - 115	1	20

GC/MS VOA

Analysis Batch: 98134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-17 - DL	MLPV-DPT0715-047.0-20240625	Total/NA	Water	8260D	
MB 670-98134/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98134/4	Lab Control Sample	Total/NA	Water	8260D	
670-42441-L-4 MS	Matrix Spike	Total/NA	Water	8260D	
670-42441-L-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 98135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-42	MLPV-TB01-20240626	Total/NA	Water	8260D	
670-42467-43	MLPV-TB02-20240626	Total/NA	Water	8260D	
MB 670-98135/8	Method Blank	Total/NA	Water	8260D	
LCS 670-98135/5	Lab Control Sample	Total/NA	Water	8260D	
752-21197-C-2 MS	Matrix Spike	Total/NA	Water	8260D	
752-21197-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 98141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-1	MLPV-DPT0712-016.0-20240624	Total/NA	Water	8260D	
670-42467-2	MLPV-DPT0712-020.0-20240624	Total/NA	Water	8260D	
670-42467-3	MLPV-DPT0712-022.0-20240624	Total/NA	Water	8260D	
670-42467-4	MLPV-DPT0713-026.0-20240624	Total/NA	Water	8260D	
670-42467-5	MLPV-DPT0713-030.0-20240624	Total/NA	Water	8260D	
670-42467-6	MLPV-DPT0713-034.0-20240624	Total/NA	Water	8260D	
670-42467-7	MLPV-DPT0714-016.0-20240624	Total/NA	Water	8260D	
670-42467-8	MLPV-DPT0714-020.0-20240624	Total/NA	Water	8260D	
670-42467-9	MLPV-DPT0714-024.0-20240624	Total/NA	Water	8260D	
670-42467-10	MLPV-DPT0716-007.0-20240624	Total/NA	Water	8260D	
670-42467-11	MLPV-DPT0716-011.0-20240624	Total/NA	Water	8260D	
670-42467-12	MLPV-DPT0716-015.0-20240624	Total/NA	Water	8260D	
670-42467-13	MLPV-DPT0717-046.0-20240625	Total/NA	Water	8260D	
670-42467-14	MLPV-DPT0717-050.0-20240625	Total/NA	Water	8260D	
670-42467-15	MLPV-DPT0717-054.0-20240625	Total/NA	Water	8260D	
670-42467-16	MLPV-DPT0715-043.0-20240625	Total/NA	Water	8260D	
670-42467-17 - DL	MLPV-DPT0715-047.0-20240625	Total/NA	Water	8260D	
670-42467-18 - DL	MLPV-DPT0715-051.0-20240625	Total/NA	Water	8260D	
670-42467-20 - DL	MLPV-DPT0728-011.0-20240625	Total/NA	Water	8260D	
MB 670-98141/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98141/4	Lab Control Sample	Total/NA	Water	8260D	
670-42467-17 MS - DL	MLPV-DPT0715-047.0-20240625	Total/NA	Water	8260D	
670-42467-17 MSD - DL	MLPV-DPT0715-047.0-20240625	Total/NA	Water	8260D	

Analysis Batch: 98170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-25 - DL	MLPV-DPT0729-011.0-20240625	Total/NA	Water	8260D	
670-42467-26 - DL	MLPV-DPT0729-016.0-20240625	Total/NA	Water	8260D	
670-42467-32 - DL	MLPV-DPT0727-050.0-20240625	Total/NA	Water	8260D	
670-42467-33 - DL	MLPV- DPT0727-056.0-20240626	Total/NA	Water	8260D	
670-42467-35 - DL	MLPV-DPT0744-050.0-20240626	Total/NA	Water	8260D	
670-42467-36 - DL	MLPV-DPT0740-007.0-20240626	Total/NA	Water	8260D	
670-42467-37 - DL	MLPV-DPT0740-045.0-20240626	Total/NA	Water	8260D	
MB 670-98170/8	Method Blank	Total/NA	Water	8260D	

GC/MS VOA (Continued)

Analysis Batch: 98170 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 670-98170/4	Lab Control Sample	Total/NA	Water	8260D	
670-42467-37 MS - DL	MLPV-DPT0740-045.0-20240626	Total/NA	Water	8260D	
670-42467-37 MSD - DL	MLPV-DPT0740-045.0-20240626	Total/NA	Water	8260D	

Analysis Batch: 98404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-31	MLPV-DPT0730-011.0-20240625	Total/NA	Water	8260D	
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	8260D	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	8260D	
MB 670-98404/6	Method Blank	Total/NA	Water	8260D	
LCS 670-98404/4	Lab Control Sample	Total/NA	Water	8260D	
670-42543-E-2 MS	Matrix Spike	Total/NA	Water	8260D	
670-42543-E-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 98410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-18 - DL	MLPV-DPT0715-051.0-20240625	Total/NA	Water	8260D	
670-42467-19 - DL	MLPV-DPT0728-007.0-20240625	Total/NA	Water	8260D	
MB 670-98410/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98410/4	Lab Control Sample	Total/NA	Water	8260D	
670-42449-G-1 MS - DL	Matrix Spike	Total/NA	Water	8260D	
670-42449-G-1 MSD - DL	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 98618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-21 - DL	MLPV-DPT0728-016.0-20240625	Total/NA	Water	8260D	
670-42467-22 - DL	MLPV-DPT0750-007.0-20240625	Total/NA	Water	8260D	
670-42467-23 - DL	MLPV-DPT0750-011.0-20240625	Total/NA	Water	8260D	
670-42467-24 - DL	MLPV-DPT0729-007.0-20240625	Total/NA	Water	8260D	
670-42467-24 - DL	MLPV-DPT0729-007.0-20240625	Total/NA	Water	8260D	
670-42467-27 - DL	MLPV-DPT0729-045.0-20240625	Total/NA	Water	8260D	
670-42467-28 - DL	MLPV-DPT0729-050.0-20240625	Total/NA	Water	8260D	
670-42467-29 - DL	MLPV-DPT0730-007.0-20240625	Total/NA	Water	8260D	
670-42467-30 - DL	MLPV-DPT0730-016.0-20240625	Total/NA	Water	8260D	
670-42467-35 - DL	MLPV-DPT0744-050.0-20240626	Total/NA	Water	8260D	
670-42467-37 - DL	MLPV-DPT0740-045.0-20240626	Total/NA	Water	8260D	
670-42467-38 - DL	MLPV-DPT0740-011.0-20240626	Total/NA	Water	8260D	
670-42467-39 - DL	MLPV-DPT0740-050.0-20240626	Total/NA	Water	8260D	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	8260D	
MB 670-98618/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98618/4	Lab Control Sample	Total/NA	Water	8260D	
670-42467-38 MS	MLPV-DPT0740-011.0-20240626	Total/NA	Water	8260D	
670-42467-38 MSD	MLPV-DPT0740-011.0-20240626	Total/NA	Water	8260D	

GC VOA

Analysis Batch: 676513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	RSK-175	
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	RSK-175	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	RSK-175	

GC VOA (Continued)

Analysis Batch: 676513 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	RSK-175	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	RSK-175	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	RSK-175	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	RSK-175	
MB 400-676513/3	Method Blank	Total/NA	Water	RSK-175	
LCS 400-676513/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 400-676513/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
885-6962-J-4 DU	Duplicate	Total/NA	Water	RSK-175	

GC Semi VOA

Analysis Batch: 98174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	FL-PRO	98386
MB 670-98386/1-A	Method Blank	Total/NA	Water	FL-PRO	98386
LCS 670-98386/2-A	Lab Control Sample	Total/NA	Water	FL-PRO	98386
LCSD 670-98386/3-A	Lab Control Sample Dup	Total/NA	Water	FL-PRO	98386

Prep Batch: 98386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	3511	
MB 670-98386/1-A	Method Blank	Total/NA	Water	3511	
LCS 670-98386/2-A	Lab Control Sample	Total/NA	Water	3511	
LCSD 670-98386/3-A	Lab Control Sample Dup	Total/NA	Water	3511	

Analysis Batch: 98606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	FL-PRO	98710
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	FL-PRO	98710
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	FL-PRO	98710
MB 670-98710/1-A	Method Blank	Total/NA	Water	FL-PRO	98710
LCS 670-98710/2-A	Lab Control Sample	Total/NA	Water	FL-PRO	98710
LCSD 670-98710/3-A	Lab Control Sample Dup	Total/NA	Water	FL-PRO	98710

Prep Batch: 98710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	3511	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	3511	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	3511	
MB 670-98710/1-A	Method Blank	Total/NA	Water	3511	
LCS 670-98710/2-A	Lab Control Sample	Total/NA	Water	3511	
LCSD 670-98710/3-A	Lab Control Sample Dup	Total/NA	Water	3511	

HPLC/IC

Analysis Batch: 97954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	300.0	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	300.0	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	300.0	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	300.0	
MB 670-97954/32	Method Blank	Total/NA	Water	300.0	

HPLC/IC (Continued)

Analysis Batch: 97954 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 670-97954/6	Method Blank	Total/NA	Water	300.0	
LCS 670-97954/30	Lab Control Sample	Total/NA	Water	300.0	
LCSD 670-97954/31	Lab Control Sample Dup	Total/NA	Water	300.0	
670-42480-D-1 MS	Matrix Spike	Total/NA	Water	300.0	
670-42480-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
670-42480-D-3 MS	Matrix Spike	Total/NA	Water	300.0	
670-42480-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Metals

Prep Batch: 98002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total Recoverable	Water	3005A	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total Recoverable	Water	3005A	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total Recoverable	Water	3005A	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total Recoverable	Water	3005A	
MB 670-98002/3-A	Method Blank	Total Recoverable	Water	3005A	
LCS 670-98002/1-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCSD 670-98002/2-A	Lab Control Sample Dup	Total Recoverable	Water	3005A	
670-42481-A-1-A MS	Matrix Spike	Total Recoverable	Water	3005A	
670-42481-A-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Analysis Batch: 98168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total Recoverable	Water	6010D	98002
670-42467-37	MLPV-DPT0740-045.0-20240626	Total Recoverable	Water	6010D	98002
670-42467-40	MLPV-DPT0736-050.0-20240626	Total Recoverable	Water	6010D	98002
670-42467-41	MLPV-DPT0751-050.0-20240626	Total Recoverable	Water	6010D	98002
MB 670-98002/3-A	Method Blank	Total Recoverable	Water	6010D	98002
LCS 670-98002/1-A	Lab Control Sample	Total Recoverable	Water	6010D	98002
LCSD 670-98002/2-A	Lab Control Sample Dup	Total Recoverable	Water	6010D	98002
670-42481-A-1-A MS	Matrix Spike	Total Recoverable	Water	6010D	98002
670-42481-A-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	6010D	98002

General Chemistry

Analysis Batch: 97975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	2540C - 2015	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	2540C - 2015	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	2540C - 2015	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	2540C - 2015	
MB 670-97975/1	Method Blank	Total/NA	Water	2540C - 2015	
LCS 670-97975/2	Lab Control Sample	Total/NA	Water	2540C - 2015	
670-42281-E-2 DU	Duplicate	Total/NA	Water	2540C - 2015	

Analysis Batch: 98068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	SM 4500 S2 F	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	SM 4500 S2 F	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	SM 4500 S2 F	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	SM 4500 S2 F	

General Chemistry (Continued)

Analysis Batch: 98068 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 670-98068/1	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 670-98068/3	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	
LCSD 670-98068/4	Lab Control Sample Dup	Total/NA	Water	SM 4500 S2 F	
670-42467-40 DU	MLPV-DPT0736-050.0-20240626	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 98196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	SM 5310C	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	SM 5310C	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	SM 5310C	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	SM 5310C	
MB 670-98196/7	Method Blank	Total/NA	Water	SM 5310C	
LCS 670-98196/5	Lab Control Sample	Total/NA	Water	SM 5310C	
LCSD 670-98196/6	Lab Control Sample Dup	Total/NA	Water	SM 5310C	
670-42358-E-1 MS	Matrix Spike	Total/NA	Water	SM 5310C	
670-42358-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310C	

Analysis Batch: 98720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42467-34	MLPV-DPT0744-045.0-20240626	Total/NA	Water	350.1	
670-42467-37	MLPV-DPT0740-045.0-20240626	Total/NA	Water	350.1	
670-42467-40	MLPV-DPT0736-050.0-20240626	Total/NA	Water	350.1	
670-42467-41	MLPV-DPT0751-050.0-20240626	Total/NA	Water	350.1	
MB 670-98720/49	Method Blank	Total/NA	Water	350.1	
MB 670-98720/7	Method Blank	Total/NA	Water	350.1	
LCS 670-98720/3	Lab Control Sample	Total/NA	Water	350.1	
LCS 670-98720/47	Lab Control Sample	Total/NA	Water	350.1	
LCSD 670-98720/48	Lab Control Sample Dup	Total/NA	Water	350.1	
LCSD 670-98720/6	Lab Control Sample Dup	Total/NA	Water	350.1	
660-136879-E-1 MS	Matrix Spike	Total/NA	Water	350.1	
676-4932-C-2 MS	Matrix Spike	Total/NA	Water	350.1	

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0712-016.0-20240624
Lab Sample ID: 670-42467-1
Date Collected: 06/24/24 13:20
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 12:26

Client Sample ID: MLPV-DPT0712-020.0-20240624
Lab Sample ID: 670-42467-2
Date Collected: 06/24/24 13:35
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 12:43

Client Sample ID: MLPV-DPT0712-022.0-20240624
Lab Sample ID: 670-42467-3
Date Collected: 06/24/24 13:55
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 13:01

Client Sample ID: MLPV-DPT0713-026.0-20240624
Lab Sample ID: 670-42467-4
Date Collected: 06/24/24 14:30
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 13:19

Client Sample ID: MLPV-DPT0713-030.0-20240624
Lab Sample ID: 670-42467-5
Date Collected: 06/24/24 14:50
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 13:37

Client Sample ID: MLPV-DPT0713-034.0-20240624
Lab Sample ID: 670-42467-6
Date Collected: 06/24/24 15:15
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 13:54

Client Sample ID: MLPV-DPT0714-016.0-20240624
Lab Sample ID: 670-42467-7
Date Collected: 06/24/24 15:35
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 14:12

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0714-020.0-20240624
Lab Sample ID: 670-42467-8
Date Collected: 06/24/24 15:55
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 14:30

Client Sample ID: MLPV-DPT0714-024.0-20240624
Lab Sample ID: 670-42467-9
Date Collected: 06/24/24 16:10
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 14:48

Client Sample ID: MLPV-DPT0716-007.0-20240624
Lab Sample ID: 670-42467-10
Date Collected: 06/24/24 16:40
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 15:05

Client Sample ID: MLPV-DPT0716-011.0-20240624
Lab Sample ID: 670-42467-11
Date Collected: 06/24/24 17:00
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 15:23

Client Sample ID: MLPV-DPT0716-015.0-20240624
Lab Sample ID: 670-42467-12
Date Collected: 06/24/24 17:15
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 15:41

Client Sample ID: MLPV-DPT0717-046.0-20240625
Lab Sample ID: 670-42467-13
Date Collected: 06/25/24 08:45
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 15:59

Client Sample ID: MLPV-DPT0717-050.0-20240625
Lab Sample ID: 670-42467-14
Date Collected: 06/25/24 09:35
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 16:17

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0717-054.0-20240625
Lab Sample ID: 670-42467-15
Date Collected: 06/25/24 10:00
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 16:35

Client Sample ID: MLPV-DPT0715-043.0-20240625
Lab Sample ID: 670-42467-16
Date Collected: 06/25/24 10:35
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98141	KG	EET ORL	06/28/24 16:52

Client Sample ID: MLPV-DPT0715-047.0-20240625
Lab Sample ID: 670-42467-17
Date Collected: 06/25/24 11:05
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	20000	98134	KG	EET ORL	06/28/24 16:31
Total/NA	Analysis	8260D	DL	2000	98141	KG	EET ORL	06/28/24 11:15

Client Sample ID: MLPV-DPT0715-051.0-20240625
Lab Sample ID: 670-42467-18
Date Collected: 06/25/24 11:30
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	5000	98410	KG	EET ORL	07/01/24 17:56
Total/NA	Analysis	8260D	DL	20000	98141	KG	EET ORL	06/28/24 17:48

Client Sample ID: MLPV-DPT0728-007.0-20240625
Lab Sample ID: 670-42467-19
Date Collected: 06/25/24 13:00
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	25	98410	KG	EET ORL	07/01/24 17:39

Client Sample ID: MLPV-DPT0728-011.0-20240625
Lab Sample ID: 670-42467-20
Date Collected: 06/25/24 13:10
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	100	98141	KG	EET ORL	06/28/24 17:28

Client Sample ID: MLPV-DPT0728-016.0-20240625
Lab Sample ID: 670-42467-21
Date Collected: 06/25/24 13:25
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	5	98618	AAM	EET ORL	07/02/24 14:46

Client Sample ID: MLPV-DPT0750-007.0-20240625
Lab Sample ID: 670-42467-22
Date Collected: 06/25/24 13:50
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	10	98618	AAM	EET ORL	07/02/24 15:50

Client Sample ID: MLPV-DPT0750-011.0-20240625
Lab Sample ID: 670-42467-23
Date Collected: 06/25/24 14:00
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	10	98618	AAM	EET ORL	07/02/24 16:11

Client Sample ID: MLPV-DPT0729-007.0-20240625
Lab Sample ID: 670-42467-24
Date Collected: 06/25/24 14:15
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	5	98618	AAM	EET ORL	07/02/24 15:07
Total/NA	Analysis	8260D	DL	10	98618	AAM	EET ORL	07/02/24 17:31

Client Sample ID: MLPV-DPT0729-011.0-20240625
Lab Sample ID: 670-42467-25
Date Collected: 06/25/24 14:25
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	100	98170	LT	EET ORL	06/28/24 18:29

Client Sample ID: MLPV-DPT0729-016.0-20240625
Lab Sample ID: 670-42467-26
Date Collected: 06/25/24 14:35
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	100	98170	LT	EET ORL	06/28/24 18:47

Client Sample ID: MLPV-DPT0729-045.0-20240625
Lab Sample ID: 670-42467-27
Date Collected: 06/25/24 14:55
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	2	98618	AAM	EET ORL	07/02/24 13:21

Client Sample ID: MLPV-DPT0729-050.0-20240625
Lab Sample ID: 670-42467-28
Date Collected: 06/25/24 15:20
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	2	98618	AAM	EET ORL	07/02/24 13:42

Lab Chronicle

Client: AECOM Technical Services Inc.
Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

Client Sample ID: MLPV-DPT0730-007.0-20240625
Lab Sample ID: 670-42467-29
Date Collected: 06/25/24 16:30
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	5	98618	AAM	EET ORL	07/02/24 15:29

Client Sample ID: MLPV-DPT0730-016.0-20240625
Lab Sample ID: 670-42467-30
Date Collected: 06/25/24 16:45
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	2	98618	AAM	EET ORL	07/02/24 14:04

Client Sample ID: MLPV-DPT0730-011.0-20240625
Lab Sample ID: 670-42467-31
Date Collected: 06/25/24 17:05
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98404	KG	EET ORL	07/01/24 17:04

Client Sample ID: MLPV-DPT0727-050.0-20240625
Lab Sample ID: 670-42467-32
Date Collected: 06/25/24 17:50
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	25	98170	LT	EET ORL	06/28/24 17:48

Client Sample ID: MLPV- DPT0727-056.0-20240626
Lab Sample ID: 670-42467-33
Date Collected: 06/26/24 08:10
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	5	98170	LT	EET ORL	06/28/24 14:18

Client Sample ID: MLPV-DPT0744-045.0-20240626
Lab Sample ID: 670-42467-34
Date Collected: 06/26/24 08:55
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98404	KG	EET ORL	07/01/24 17:21
Total/NA	Analysis	RSK-175		1	676513	BJ	EET PEN	07/01/24 11:52
Total/NA	Analysis	RSK-175		5	676513	BJ	EET PEN	07/01/24 16:40
Total/NA	Prep	3511			98386	EH	EET ORL	06/29/24 13:31
Total/NA	Analysis	FL-PRO		1	98174	JR	EET ORL	07/01/24 17:37
Total/NA	Analysis	300.0		40	97954	JA	EET ORL	06/27/24 20:57
Total Recoverable	Prep	3005A			98002	JR	EET ORL	06/27/24 11:03
Total Recoverable	Analysis	6010D		1	98168	AS	EET ORL	06/27/24 17:31
Total/NA	Analysis	2540C - 2015		1	97975	SM	EET ORL	06/27/24 09:25
Total/NA	Analysis	350.1		1	98720	AJ	EET ORL	07/02/24 12:26

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Client Sample ID: MLPV-DPT0744-045.0-20240626
Lab Sample ID: 670-42467-34
Date Collected: 06/26/24 08:55
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	SM 4500 S2 F		1	98068	IAD	EET ORL	06/27/24 14:40
Total/NA	Analysis	SM 5310C		20	98196	IAD	EET ORL	06/27/24 16:59

Client Sample ID: MLPV-DPT0744-050.0-20240626
Lab Sample ID: 670-42467-35
Date Collected: 06/26/24 09:30
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	1000	98170	LT	EET ORL	06/28/24 19:25
Total/NA	Analysis	8260D	DL	5000	98618	AAM	EET ORL	07/02/24 16:51

Client Sample ID: MLPV-DPT0740-007.0-20240626
Lab Sample ID: 670-42467-36
Date Collected: 06/26/24 10:00
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	50	98170	LT	EET ORL	06/28/24 18:10

Client Sample ID: MLPV-DPT0740-045.0-20240626
Lab Sample ID: 670-42467-37
Date Collected: 06/26/24 10:40
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	1000	98170	LT	EET ORL	06/28/24 11:56
Total/NA	Analysis	8260D	DL	10	98618	AAM	EET ORL	07/02/24 16:33
Total/NA	Analysis	RSK-175		1	676513	BJ	EET PEN	07/01/24 12:01
Total/NA	Analysis	RSK-175		5	676513	BJ	EET PEN	07/01/24 16:55
Total/NA	Prep	3511			98710	JR	EET ORL	07/02/24 13:41
Total/NA	Analysis	FL-PRO		1	98606	JR	EET ORL	07/02/24 20:00
Total/NA	Analysis	300.0		10	97954	JA	EET ORL	06/27/24 21:14
Total Recoverable	Prep	3005A			98002	JR	EET ORL	06/27/24 11:03
Total Recoverable	Analysis	6010D		1	98168	AS	EET ORL	06/27/24 17:34
Total/NA	Analysis	2540C - 2015		1	97975	SM	EET ORL	06/27/24 09:25
Total/NA	Analysis	350.1		10	98720	AJ	EET ORL	07/02/24 12:29
Total/NA	Analysis	SM 4500 S2 F		1	98068	IAD	EET ORL	06/27/24 14:40
Total/NA	Analysis	SM 5310C		20	98196	IAD	EET ORL	06/27/24 17:20

Client Sample ID: MLPV-DPT0740-011.0-20240626
Lab Sample ID: 670-42467-38
Date Collected: 06/26/24 10:20
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	100	98618	AAM	EET ORL	07/02/24 11:28

Lab Chronicle

Client: AECOM Technical Services Inc. Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

Client Sample ID: MLPV-DPT0740-050.0-20240626 Lab Sample ID: 670-42467-39

Date Collected: 06/26/24 11:20 **Matrix: Water**
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	2	98618	AAM	EET ORL	07/02/24 14:25

Client Sample ID: MLPV-DPT0736-050.0-20240626 Lab Sample ID: 670-42467-40

Date Collected: 06/26/24 13:35 **Matrix: Water**
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98618	AAM	EET ORL	07/02/24 13:00
Total/NA	Analysis	RSK-175		1	676513	BJ	EET PEN	07/01/24 12:43
Total/NA	Analysis	RSK-175		5	676513	BJ	EET PEN	07/01/24 17:07
Total/NA	Prep	3511			98710	JR	EET ORL	07/02/24 13:41
Total/NA	Analysis	FL-PRO		1	98606	JR	EET ORL	07/02/24 19:42
Total/NA	Analysis	300.0		40	97954	JA	EET ORL	06/27/24 21:31
Total Recoverable	Prep	3005A			98002	JR	EET ORL	06/27/24 11:03
Total Recoverable	Analysis	6010D		1	98168	AS	EET ORL	06/27/24 17:36
Total/NA	Analysis	2540C - 2015		1	97975	SM	EET ORL	06/27/24 09:25
Total/NA	Analysis	350.1		10	98720	AJ	EET ORL	07/02/24 12:31
Total/NA	Analysis	SM 4500 S2 F		1	98068	IAD	EET ORL	06/27/24 14:40
Total/NA	Analysis	SM 5310C		20	98196	IAD	EET ORL	06/27/24 17:42

Client Sample ID: MLPV-DPT0751-050.0-20240626 Lab Sample ID: 670-42467-41

Date Collected: 06/26/24 14:15 **Matrix: Water**
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98404	KG	EET ORL	07/01/24 16:46
Total/NA	Analysis	RSK-175		1	676513	BJ	EET PEN	07/01/24 12:54
Total/NA	Prep	3511			98710	JR	EET ORL	07/02/24 13:41
Total/NA	Analysis	FL-PRO		1	98606	JR	EET ORL	07/02/24 19:24
Total/NA	Analysis	300.0		40	97954	JA	EET ORL	06/27/24 23:13
Total Recoverable	Prep	3005A			98002	JR	EET ORL	06/27/24 11:03
Total Recoverable	Analysis	6010D		1	98168	AS	EET ORL	06/27/24 17:39
Total/NA	Analysis	2540C - 2015		1	97975	SM	EET ORL	06/27/24 09:25
Total/NA	Analysis	350.1		10	98720	AJ	EET ORL	07/02/24 12:35
Total/NA	Analysis	SM 4500 S2 F		1	98068	IAD	EET ORL	06/27/24 14:40
Total/NA	Analysis	SM 5310C		20	98196	IAD	EET ORL	06/27/24 17:55

Client Sample ID: MLPV-TB01-20240626 Lab Sample ID: 670-42467-42

Date Collected: 06/26/24 14:30 **Matrix: Water**
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98135	AAM	EET ORL	06/28/24 18:35

Lab Chronicle

Client: AECOM Technical Services Inc.
Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

Client Sample ID: MLPV-TB02-20240626
Lab Sample ID: 670-42467-43

Date Collected: 06/26/24 14:30
Matrix: Water
Date Received: 06/26/24 15:01

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98135	AAM	EET ORL	06/28/24 18:17

Laboratory References:

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

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Accreditation/Certification Summary

Client: AECOM Technical Services Inc.
Job ID: 670-42467-1
Project/Site: NASA KSC MLPV - HS3 DPT

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

Laboratory: Eurofins Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	06-30-25
ANAB	ISO/IEC 17025	L2471	02-22-26
Arkansas DEQ	State	88-00689	08-01-24
California	State	2510	06-30-25
Florida	NELAP	E81010	06-30-25
Georgia	State	E81010(FL)	06-30-25
Illinois	NELAP	200041	10-09-24
Kansas	NELAP	E-10253	10-31-24
Kentucky (UST)	State	53	06-30-25
Louisiana (All)	NELAP	30976	06-30-25
Louisiana (DW)	State	LA017	12-31-24
North Carolina (WW/SW)	State	314	12-31-24
Oklahoma	NELAP	9810	08-31-24
Pennsylvania	NELAP	68-00467	01-31-25
South Carolina	State	96026	06-30-25
Tennessee	State	TN02907	06-30-25
Texas	NELAP	T104704286	09-30-24
US Fish & Wildlife	US Federal Programs	A22340	06-30-25
USDA	US Federal Programs	FLGNV23001	01-08-26
USDA	US Federal Programs	P330-21-00056	01-09-26
Virginia	NELAP	460166	06-14-25
West Virginia DEP	State	136	03-31-25

Method Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET ORL
RSK-175	Dissolved Gases (GC)	RSK	EET PEN
FL-PRO	Florida - Petroleum Range Organics (GC)	FL-DEP	EET ORL
300.0	Anions, Ion Chromatography	EPA	EET ORL
6010D	Metals (ICP)	SW846	EET ORL
2540C - 2015	Total Dissolved Solids (Dried at 180 °C)	SM	EET ORL
350.1	Nitrogen, Ammonia	EPA	EET ORL
SM 4500 S2 F	Sulfide, Total	SM	EET ORL
SM 5310C	TOC	SM	EET ORL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET ORL
3511	Microextraction of Organic Compounds	SW846	EET ORL
5030C	Purge and Trap	SW846	EET ORL

Protocol References:

EPA = US Environmental Protection Agency

FL-DEP = State Of Florida Department Of Environmental Protection, Florida Administrative Code.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV - HS3 DPT

Job ID: 670-42467-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-42467-1	MLPV-DPT0712-016.0-20240624	Water	06/24/24 13:20	06/26/24 15:01
670-42467-2	MLPV-DPT0712-020.0-20240624	Water	06/24/24 13:35	06/26/24 15:01
670-42467-3	MLPV-DPT0712-022.0-20240624	Water	06/24/24 13:55	06/26/24 15:01
670-42467-4	MLPV-DPT0713-026.0-20240624	Water	06/24/24 14:30	06/26/24 15:01
670-42467-5	MLPV-DPT0713-030.0-20240624	Water	06/24/24 14:50	06/26/24 15:01
670-42467-6	MLPV-DPT0713-034.0-20240624	Water	06/24/24 15:15	06/26/24 15:01
670-42467-7	MLPV-DPT0714-016.0-20240624	Water	06/24/24 15:35	06/26/24 15:01
670-42467-8	MLPV-DPT0714-020.0-20240624	Water	06/24/24 15:55	06/26/24 15:01
670-42467-9	MLPV-DPT0714-024.0-20240624	Water	06/24/24 16:10	06/26/24 15:01
670-42467-10	MLPV-DPT0716-007.0-20240624	Water	06/24/24 16:40	06/26/24 15:01
670-42467-11	MLPV-DPT0716-011.0-20240624	Water	06/24/24 17:00	06/26/24 15:01
670-42467-12	MLPV-DPT0716-015.0-20240624	Water	06/24/24 17:15	06/26/24 15:01
670-42467-13	MLPV-DPT0717-046.0-20240625	Water	06/25/24 08:45	06/26/24 15:01
670-42467-14	MLPV-DPT0717-050.0-20240625	Water	06/25/24 09:35	06/26/24 15:01
670-42467-15	MLPV-DPT0717-054.0-20240625	Water	06/25/24 10:00	06/26/24 15:01
670-42467-16	MLPV-DPT0715-043.0-20240625	Water	06/25/24 10:35	06/26/24 15:01
670-42467-17	MLPV-DPT0715-047.0-20240625	Water	06/25/24 11:05	06/26/24 15:01
670-42467-18	MLPV-DPT0715-051.0-20240625	Water	06/25/24 11:30	06/26/24 15:01
670-42467-19	MLPV-DPT0728-007.0-20240625	Water	06/25/24 13:00	06/26/24 15:01
670-42467-20	MLPV-DPT0728-011.0-20240625	Water	06/25/24 13:10	06/26/24 15:01
670-42467-21	MLPV-DPT0728-016.0-20240625	Water	06/25/24 13:25	06/26/24 15:01
670-42467-22	MLPV-DPT0750-007.0-20240625	Water	06/25/24 13:50	06/26/24 15:01
670-42467-23	MLPV-DPT0750-011.0-20240625	Water	06/25/24 14:00	06/26/24 15:01
670-42467-24	MLPV-DPT0729-007.0-20240625	Water	06/25/24 14:15	06/26/24 15:01
670-42467-25	MLPV-DPT0729-011.0-20240625	Water	06/25/24 14:25	06/26/24 15:01
670-42467-26	MLPV-DPT0729-016.0-20240625	Water	06/25/24 14:35	06/26/24 15:01
670-42467-27	MLPV-DPT0729-045.0-20240625	Water	06/25/24 14:55	06/26/24 15:01
670-42467-28	MLPV-DPT0729-050.0-20240625	Water	06/25/24 15:20	06/26/24 15:01
670-42467-29	MLPV-DPT0730-007.0-20240625	Water	06/25/24 16:30	06/26/24 15:01
670-42467-30	MLPV-DPT0730-016.0-20240625	Water	06/25/24 16:45	06/26/24 15:01
670-42467-31	MLPV-DPT0730-011.0-20240625	Water	06/25/24 17:05	06/26/24 15:01
670-42467-32	MLPV-DPT0727-050.0-20240625	Water	06/25/24 17:50	06/26/24 15:01
670-42467-33	MLPV- DPT0727-056.0-20240626	Water	06/26/24 08:10	06/26/24 15:01
670-42467-34	MLPV-DPT0744-045.0-20240626	Water	06/26/24 08:55	06/26/24 15:01
670-42467-35	MLPV-DPT0744-050.0-20240626	Water	06/26/24 09:30	06/26/24 15:01
670-42467-36	MLPV-DPT0740-007.0-20240626	Water	06/26/24 10:00	06/26/24 15:01
670-42467-37	MLPV-DPT0740-045.0-20240626	Water	06/26/24 10:40	06/26/24 15:01
670-42467-38	MLPV-DPT0740-011.0-20240626	Water	06/26/24 10:20	06/26/24 15:01
670-42467-39	MLPV-DPT0740-050.0-20240626	Water	06/26/24 11:20	06/26/24 15:01
670-42467-40	MLPV-DPT0736-050.0-20240626	Water	06/26/24 13:35	06/26/24 15:01
670-42467-41	MLPV-DPT0751-050.0-20240626	Water	06/26/24 14:15	06/26/24 15:01
670-42467-42	MLPV-TB01-20240626	Water	06/26/24 14:30	06/26/24 15:01
670-42467-43	MLPV-TB02-20240626	Water	06/26/24 14:30	06/26/24 15:01

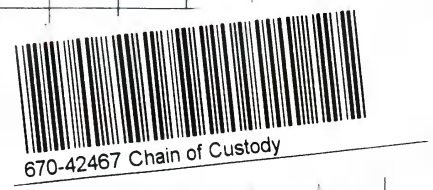
CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

eurofins

Project Name: NASA KSC - MLPV	COC No.	Page: 1 of 4	
Site Location: Hot Spot 3 DPT	PO No. 1621517	Project No. 60615493.4	Phase:
TO No.: 80KSC019F0075 — AECOM Project Manager: **Linnea King Clark; Caroline Bekins**	Send Invoice To: Instructions in MSA		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone # — Patrick Bendl (724-591-6324) — Caroline Bekins (714-943-9928)	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: Eurofins — Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-55

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C	Comments
	MLPV-DPT0712-016.0-20240624	MLPV-DPT0712	20240624	1320	WG	N	G	3	3	2	1	1	3	1	1	3	1	
	MLPV-DPT0712-020.0-20240624	MLPV-DPT0712	6/24/24	1335	WG	N	G	3	3									
	MLPV-DPT0712-025.0-20240624	MLPV-DPT0712	6/24/24	1355	WG	N	G	3	3									
	MLPV-DPT0713-026.0-20240624	MLPV-DPT0713	6/24/24	1430	WG	N	G	3	3									
	MLPV-DPT0713-030.0-20240624	MLPV-DPT0713	6/24/24	1450	WG	N	G	3	3									
	MLPV-DPT0713-034.0-20240624	MLPV-DPT0713	6/24/24	1515	WG	N	G	3	3									
	MLPV-DPT0714-016.0-20240624	MLPV-DPT0714	6/24/24	1535	WG	N	G	3	3									
	MLPV-DPT0714-020.0-20240624	MLPV-DPT0714	6/24/24	1555	WG	N	G	3	3									
	MLPV-DPT0714-024.0-20240624	MLPV-DPT0714	6/24/24	1610	WG	N	G	3	3									
	MLPV-DPT0716-009.0-20240624	MLPV-DPT0716	6/24/24	1640	WG	N	G	3	3									
	MLPV-DPT0716-011.0-20240624	MLPV-DPT0716	6/24/24	1700	WG	N	G	3	3									
	MLPV-DPT0716-015.0-20240624	MLPV-DPT0716	6/24/24	1715	WG	N	G	3	3									



***Field* Comments:**
Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/26/24	1430		6/26/24	1430
2		6/26/24	1500	KENNETH T. JOHNSON	6.26.24	3:04p
3	KENNETH T. JOHNSON	6.26.24	4:17p	ML	6/26/24	1501

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

1.9/1.9

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

eurofins

Project Name: NASA KSC - MLPV			COC No.	Page: 2 of 4	
Site Location: Hot Spot 3 DPT			PO No. 1621517	Project No. 60615493.4	Phase:
TO No.: 80KSC019F0075	AECOM Project Manager: **Linnea King Clark; Caroline Bekins**		Send Invoice To: Instructions in MSA		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Patrick Bendl (724-591-6324)	Caroline Bekins (714-943-9928)	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: Eurofins		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-55

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	mlpv-DPT0717-046.0-20240625	mlpv-DPT0717	20240625	845	WG	N	G	3	3											
	mlpv-DPT0717-050.0-20240625	mlpv-DPT0717	6/25/24	935	WG	N	G	3	3											
	mlpv-DPT0717-054.0-20240625	mlpv-DPT0717	6/25/24	1000	WG	N	G	3	3											
	mlpv-DPT0715-043.0-20240625	mlpv-DPT0715	6/25/24	1035	WG	N	G	3	3											
	mlpv-DPT0715-047.0-20240625	mlpv-DPT0715	6/25/24	1105	WG	N	G	3	3											
	mlpv-DPT0715-051.0-20240625	mlpv-DPT0715	6/25/24	1130	WG	N	G	3	3											
	mlpv-DPT0728-007.0-20240625	mlpv-DPT0728	6/25/24	1300	WG	N	G	3	3											
	mlpv-DPT0728-011.0-20240625	mlpv-DPT0728	6/25/24	1310	WG	N	G	3	3											
	mlpv-DPT0728-016.0-20240625	mlpv-DPT0728	6/25/24	1325	WG	N	G	3	3											
	mlpv-DPT0750-007.0-20240625	mlpv-DPT0750	6/25/24	1350	WG	N	G	3	3											
	mlpv-DPT0750-011.0-20240625	mlpv-DPT0750	6/25/24	1400	WG	N	G	3	3											
	mlpv-DPT0729-007.0-20240625	mlpv-DPT0729	6/25/24	1415	WG	N	G	3	3											

***Field* Comments:**

Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/26/24	1430		6/26/24	1430
2		6/26/24	1506	KENNETH T. JOHNSON	6.26.24	5:02P
3	KENNETH T. JOHNSON	6-26-24	4:17P	MC	6/26/24	1501

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

eurofins

COC No. | Page: 3 of 4

Project Name: NASA KSC - MLPV | PO No. 1621517 | Project No. 60615493.4 | Phase:

Site Location: Hot Spot 3 DPT | Send Invoice To: Instructions in MSA | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC019F0075 | AECOM Project Manager: **Linnea King Clark; Caroline Bekins** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # | Patrick Bendl (724-591-6324) Caroline Bekins (714-943-9928) | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-55

Lab Name: Eurofins | Turnaround Time(specify): Standard 14 day | **Sample Analysis Requested** (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	mIPV-DPT0729-011.0-20240625	mIPV-DPT0729	20240625	1425	WG	N	G	3	3	2	1	1	3	1	2	2	1			
	mIPV-DPT0729-016.0-20240625	mIPV-DPT0729	6/25/24	1435	WG	N	G	3	3											
	mIPV-DPT0729-045.0-20240625	mIPV-DPT0729	6/25/24	1520	WG	N	G	3	3											1455
	mIPV-DPT0729-050.0-20240625	mIPV-DPT0729	6/25/24	1520	WG	N	G	3	3											
	mIPV-DPT0730-007.0-20240625	mIPV-DPT0730	6/25/24	1630	WG	N	G	3	3											
	mIPV-DPT0730-016.0-20240625	mIPV-DPT0730	6/25/24	1645	WG	N	G	3	3											
	mIPV-DPT0730-031.0-20240625	mIPV-DPT0730	6/25/24	1705	WG	N	G	3	3											
	mIPV-DPT0727-050.0-20240625	mIPV-DPT0727	6/25/24	1750	WG	N	G	3	3											
	mIPV-DPT0727-056.0-20240625	mIPV-DPT0727	6/26/24	810	WG	N	G	3	3											
	mIPV-DPT0744-045.0-20240625	mIPV-DPT0744	6/26/24	855	WG	N	G	3	3	2	1	1	1	1	2	2	1			
	mIPV-DPT0744-050.0-20240625	mIPV-DPT0744	6/26/24	930	WG	N	G	3	3											
	mIPV-DPT0740-007.0-20240625	mIPV-DPT0740	6/26/24	1000	WG	N	G	3	3											

***Field* Comments:**

Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/26/24	1430		6/26/24	1430
2		6/26/24	1500	KENNETH T. JOHNSON	6.26.24	5:02P
3	KENNETH T. JOHNSON	6.26.24	4:17P	MC	6/26/24	1501

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: 4 DEG C=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

eurofins

Project Name: NASA KSC - MLPV			COC No.	Page: 4 of 4	
Site Location: Hot Spot 3 DPT			PO No. 1621517	Project No. 60615493.4	Phase:
TO No.: 80KSC019F0075	AECOM Project Manager: **Linnea King Clark; Caroline Bekins**		Send Invoice To: Instructions in MSA		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Patrick Bendl (724-591-6324)	Caroline Bekins (714-943-9928)	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: Eurofins		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-55

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	mlpv-DPT0740-045.0-20240626	MLPV-DPT0740	20240626	1040	WG	N	G	14 12 8	3	2	1	1	2 1	1	2	2 2	1			
	mlpv-DPT0740-011.0-20240626	MLPV-DPT0740	20240626	1020	WG	N	G	3	3											
	mlpv-DPT0740-050.0-20240626	MLPV-DPT0740	6/26/24	1120	WG	N	G	3	3											
	mlpv-DPT0736-050.0-20240626	MLPV-DPT0736	6/26/24	1335	WG	N	G	3	3	2	1	1	1	1	2	2	1			
	mlpv-DPT0736-050.0-20240626	MLPV-DPT0736	6/26/24	1415	WG	N	G	3	3	2	1	1	1	1	2	2	1			751
	MLPV-TB01-20240626	MLPV-TB01	6/26/24	1430	WG	N	G	2	2											
	MLPV-TB02-20240626	MLPV-TB02	6/26/24	1430	WG	N	G	2	2											
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												

***Field* Comments:**

Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/26/24	1430		6/26/24	1430
2		6/26/24	1500	KENNETH T. JOHNSON	6.26.24	1502
3	KENNETH T. JOHNSON	6.26.24	4:17P		6/26/24	1501

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2S04**=Hydrogen sulfate, **H2S04 <2**=Adjust to pH < 2 with sulfuric acid, **H3P04**=Phosphoric acid, **H3P04 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs, FL 32701
Phone: 407-339-5984 Fax: 407-260-6110

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Dylnicki, Kaitlin	Carrier Tracking No(s):	COC No: 670-31643.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: kaitlin.dylnicki@et.eurofinsus.com	State of Origin: Florida	Page: Page 1 of 1
Company: Eurofins Environment Testing Southeast L		Accreditations Required (See note): NELAP - Florida		Job #: 670-42467-1
Address: 3355 McLemore Drive, ,	Due Date Requested: 7/5/2024			Preservation Codes: -
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32514				
Phone: 850-474-1001(Tel) 850-478-2671(Fax)	PO #:			
Email:	WO #:			
Project Name: NASA KSC MLPV - HS3 DPT	Project #: 67001428			
Site:	SSOW#:			Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane, Ethane, Ethene (MEE)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MIPV-DPT0744-045.0-20240625 (670-42467-34)	6/25/24	08:55 Eastern		Water			X	1	Limited Sample. Only One Vial. 06/27/24 DC
MIPV-DPT0740-045.0-20240626 (670-42467-37)	6/26/24	10:40 Eastern		Water			X	1	Limited Sample. Only One Vial. 06/27/24 DC
MIPV-DPT0736-050.0-20240626 (670-42467-40)	6/26/24	13:35 Eastern		Water			X	1	Limited Sample. Only One Vial. 06/27/24 DC
MIPV-DPT0751-050.0-20240626 (670-42467-41)	6/26/24	14:15 Eastern		Water			X	1	Limited Sample. Only One Vial. 06/27/24 DC

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southeast, LLC.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/27/24 1207				
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 6/28/24 8:17	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.6°C IR11

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42467-1

Login Number: 42467
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.	False	Refer to Job Narrative for details.
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	

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42467-1

Login Number: 42467
List Number: 2
Creator: Roberts, Darrien

List Source: Eurofins Pensacola
List Creation: 06/28/24 12:50 PM

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.	N/A	
Sample custody seals, if present, are intact.	N/A	
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	2.6°C IR11
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Teresa Amentt Jennings
AECOM Technical Services Inc.
150 North Orange Avenue
Suite 200
Orlando, Florida 32801

Generated 7/23/2024 3:43:31 PM

JOB DESCRIPTION

NASA KSC MLPV HS3 DPT IDW

JOB NUMBER

670-42622-1

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs FL 32701

See page two for job notes and contact information.

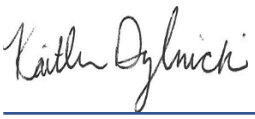
my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



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Authorized for release by
Kaitlin Dylnicki, Project Manager
kaitlin.dylnicki@et.eurofinsus.com
(407)339-5984

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Definitions/Glossary

Client: AECOM Technical Services Inc. Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Qualifiers

GC/MS VOA

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

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Indicates that the compound was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
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 ID: 670-42622-1 Eurofins Orlando

Job Narrative
670-42622-1

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 sample was received on 6/28/2024 2:45 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C.

GC/MS VOA
Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MLPV-IDW091-20240628 (670-42622-1). Elevated reporting limits (RLs) are provided.

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

PFAS
Method PFC_IDA: The recovery for the labeled isotope(s) d3-NMePFOSA in the following sample: MLPV-IDW091-20240628 (670-42622-1) is outside the QC acceptance limits. The following action was taken: This sample was re-extracted within the required holding time and the recovery for the labeled isotope(s) is again outside the QC acceptance limits.

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

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

Detection Summary

Client: AECOM Technical Services Inc.
Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Client Sample ID: MLPV-IDW091-20240628
Lab Sample ID: 670-42622-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	2000		50	27	ug/L	50		8260D	Total/NA
Trichloroethene - DL	3100		50	45	ug/L	50		8260D	Total/NA
Vinyl chloride - DL	150		50	36	ug/L	50		8260D	Total/NA
8:2 Fluorotelomer sulfonic acid	0.0020		0.0019	0.00057	ug/L	1		537 IDA	Total/NA
HFPODA	0.00060	I	0.0019	0.00038	ug/L	1		537 IDA	Total/NA
Perfluorobutanesulfonic acid	0.0062		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluorobutanoic acid	0.015		0.0019	0.00095	ug/L	1		537 IDA	Total/NA
Perfluoroheptanesulfonic acid	0.0025		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluoroheptanoic acid	0.0039		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	0.042		0.0019	0.00019	ug/L	1		537 IDA	Total/NA
Perfluorohexanoic acid	0.016		0.0019	0.00095	ug/L	1		537 IDA	Total/NA
Perfluorononanoic acid	0.00079	I	0.0019	0.00019	ug/L	1		537 IDA	Total/NA
Perfluorooctanesulfonamide	0.0034		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluorooctanesulfonic acid	0.17		0.0019	0.00047	ug/L	1		537 IDA	Total/NA
Perfluorooctanoic acid	0.026		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluoropentanesulfonic acid	0.0070		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Perfluoropentanoic acid	0.0044		0.0019	0.00028	ug/L	1		537 IDA	Total/NA
Total Phosphorus as P	380		100	40	ug/L	1		365.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MLPV-IDW091-20240628 **Lab Sample ID: 670-42622-1**
Date Collected: 06/28/24 13:10 **Matrix: Water**
Date Received: 06/28/24 14:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	47	U	50	47	ug/L			07/02/24 16:57	50
cis-1,2-Dichloroethene	**2000**		50	27	ug/L			07/02/24 16:57	50
trans-1,2-Dichloroethene	37	U	50	37	ug/L			07/02/24 16:57	50
Trichloroethene	**3100**		50	45	ug/L			07/02/24 16:57	50
Vinyl chloride	**150**		50	36	ug/L			07/02/24 16:57	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/02/24 16:57*	*50*
Dibromofluoromethane (Surr)	*104*		*53 - 146*		*07/02/24 16:57*	*50*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 16:57*	*50*

Method: EPA 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11Cl-PF3OUdS	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
4:2 Fluorotelomer sulfonic acid	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
6:2 Fluorotelomer sulfonic acid	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
8:2 Fluorotelomer sulfonic acid	**0.0020**		0.0019	0.00057	ug/L		07/08/24 07:24	07/11/24 18:27	1
9Cl-PF3ONS	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
DONA	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
HFPODA	**0.00060**	**I**	0.0019	0.00038	ug/L		07/08/24 07:24	07/11/24 18:27	1
NEtFOSAA	0.00047	U	0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
NMeFOSAA	0.00038	U	0.0019	0.00038	ug/L		07/08/24 07:24	07/11/24 18:27	1
NMeFOSA	0.00066	U	0.0019	0.00066	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorobutanesulfonic acid	**0.0062**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorobutanoic acid	**0.015**		0.0019	0.00095	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorodecanesulfonic acid	0.00028	U	0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorodecanoic acid	0.00028	U	0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorododecanoic acid	0.00038	U	0.0019	0.00038	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluoroheptanesulfonic acid	**0.0025**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluoroheptanoic acid	**0.0039**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorohexanesulfonic acid	**0.042**		0.0019	0.00019	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorohexanoic acid	**0.016**		0.0019	0.00095	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorononanesulfonic acid	0.00028	U	0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorononanoic acid	**0.00079**	**I**	0.0019	0.00019	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorooctanesulfonamide	**0.0034**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorooctanesulfonic acid	**0.17**		0.0019	0.00047	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorooctanoic acid	**0.026**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluoropentanesulfonic acid	**0.0070**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluoropentanoic acid	**0.0044**		0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorotetradecanoic acid	0.00038	U	0.0019	0.00038	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluorotridecanoic acid	0.00038	U	0.0019	0.00038	ug/L		07/08/24 07:24	07/11/24 18:27	1
Perfluoroundecanoic acid	0.00028	U	0.0019	0.00028	ug/L		07/08/24 07:24	07/11/24 18:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*116*		*35 - 200*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
M2-6:2 FTS	*106*		*40 - 200*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
M2-8:2 FTS	*96*		*37 - 200*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
13C2 PFTeDA	*59*		*10 - 171*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
13C3 HFPO-DA	*49*		*13 - 170*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
13C3 PFBS	*80*		*34 - 200*	*07/08/24 07:24*	*07/11/24 18:27*	*1*
13C4 PFBA	*69*		*22 - 174*	*07/08/24 07:24*	*07/11/24 18:27*	*1*

Client Sample ID: MLPV-IDW091-20240628 **Lab Sample ID: 670-42622-1**
Date Collected: 06/28/24 13:10 **Matrix: Water**
Date Received: 06/28/24 14:45

Method: EPA 537 IDA - EPA 537 Isotope Dilution (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	91		40 - 165	07/08/24 07:24	07/11/24 18:27	1
13C5 PFPeA	59		33 - 196	07/08/24 07:24	07/11/24 18:27	1
13C8 PFOA	71		52 - 153	07/08/24 07:24	07/11/24 18:27	1
13C8 PFOS	75		59 - 155	07/08/24 07:24	07/11/24 18:27	1
d3-NMeFOSAA	68		38 - 168	07/08/24 07:24	07/11/24 18:27	1
d5-NEtFOSAA	93		34 - 181	07/08/24 07:24	07/11/24 18:27	1
13C3 PFHxS	83		48 - 169	07/08/24 07:24	07/11/24 18:27	1
13C5 PFHxA	59		28 - 166	07/08/24 07:24	07/11/24 18:27	1
13C6 PFDA	72		53 - 151	07/08/24 07:24	07/11/24 18:27	1
13C7 PFUnA	87		41 - 163	07/08/24 07:24	07/11/24 18:27	1
d3-NMePFOSA	4	*	10 - 130	07/08/24 07:24	07/11/24 18:27	1
13C8 FOSA	49		10 - 155	07/08/24 07:24	07/11/24 18:27	1
13C2-PFDoDA	65		22 - 165	07/08/24 07:24	07/11/24 18:27	1
13C9 PFNA	88		52 - 168	07/08/24 07:24	07/11/24 18:27	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N (EPA 353.2)	20	U	40	20	ug/L			06/28/24 18:20	1
Total Phosphorus as P (EPA 365.4)	**380**		100	40	ug/L		07/01/24 13:36	07/02/24 13:24	1

Surrogate Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT IDW

Job ID: 670-42622-1

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)
670-42622-1 - DL	MLPV-IDW091-20240628	94	104	99
LB 670-98277/1-A	Method Blank	94	104	99
LCS 670-98614/4	Lab Control Sample	96	102	100
MB 670-98614/7	Method Blank	93	104	101

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)
670-42473-A-1-B MS	Matrix Spike	91	103	102
670-42473-A-1-B MSD	Matrix Spike Duplicate	94	102	102

Surrogate Legend

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

Isotope Dilution Summary

Client: AECOM Technical Services Inc. Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Method: 537 IDA - EPA 537 Isotope Dilution

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		M242FTS	M262FTS	M282FTS	PFTDA	HFPODA	C3PFBS	PFBA	C4PFHA
Lab Sample ID	Client Sample ID	(35-200)	(40-200)	(37-200)	(10-171)	(13-170)	(34-200)	(22-174)	(40-165)
670-42622-1	MLPV-IDW091-20240628	116	106	96	59	49	80	69	91
LCS 410-525410/2-A	Lab Control Sample	77	84	85	91	91	88	70	98
LCSD 410-525410/3-A	Lab Control Sample Dup	77	82	82	83	84	84	73	97
MB 410-525410/1-A	Method Blank	82	87	87	87	90	88	76	93

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFPeA	C8PFOA	C8PFOS	d3NMFOS	d5NEFOS	C3PFHS	13C5PHA	C6PFDA
Lab Sample ID	Client Sample ID	(33-196)	(52-153)	(59-155)	(38-168)	(34-181)	(48-169)	(28-166)	(53-151)
670-42622-1	MLPV-IDW091-20240628	59	71	75	68	93	83	59	72
LCS 410-525410/2-A	Lab Control Sample	81	84	85	98	100	99	84	84
LCSD 410-525410/3-A	Lab Control Sample Dup	75	82	81	93	100	100	86	80
MB 410-525410/1-A	Method Blank	75	82	81	99	104	97	90	83

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		13C7PUA	d3NMFSA	PFOSA	PFDoDA	C9PFNA			
Lab Sample ID	Client Sample ID	(41-163)	(10-130)	(10-155)	(22-165)	(52-168)			
670-42622-1	MLPV-IDW091-20240628	87	4 *	49	65	88			
LCS 410-525410/2-A	Lab Control Sample	100	60	73	85	88			
LCSD 410-525410/3-A	Lab Control Sample Dup	98	58	72	79	84			
MB 410-525410/1-A	Method Blank	107	56	71	81	81			

Surrogate Legend

M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
PFTDA = 13C2 PFTeDA
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS
PFBA = 13C4 PFBA
C4PFHA = 13C4 PFHpA
PFPeA = 13C5 PFPeA
C8PFOA = 13C8 PFOA
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
C3PFHS = 13C3 PFHxS
13C5PHA = 13C5 PFHxA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
d3NMFSA = d3-NMePFOSA
PFOSA = 13C8 FOSA
PFDoDA = 13C2-PFDoDA
C9PFNA = 13C9 PFNA

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

Lab Sample ID: LB 670-98277/1-A
Matrix: Water
Analysis Batch: 98614

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

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/02/24 11:38	100
cis-1,2-Dichloroethene	53	U	100	53	ug/L			07/02/24 11:38	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/02/24 11:38	100
Trichloroethene	89	U	100	89	ug/L			07/02/24 11:38	100
Vinyl chloride	71	U	100	71	ug/L			07/02/24 11:38	100

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*		*07/02/24 11:38*	*100*
Dibromofluoromethane (Surr)	*104*		*53 - 146*		*07/02/24 11:38*	*100*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/02/24 11:38*	*100*

Lab Sample ID: MB 670-98614/7
Matrix: Water
Analysis Batch: 98614

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 11:05	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/02/24 11:05	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/02/24 11:05	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 11:05	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 11:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*		*07/02/24 11:05*	*1*
Dibromofluoromethane (Surr)	*104*		*53 - 146*		*07/02/24 11:05*	*1*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/02/24 11:05*	*1*

Lab Sample ID: LCS 670-98614/4
Matrix: Water
Analysis Batch: 98614

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	5.00	5.86		ug/L		117	47 - 139
cis-1,2-Dichloroethene	5.00	5.96		ug/L		119	56 - 128
trans-1,2-Dichloroethene	5.00	5.90		ug/L		118	54 - 134
Trichloroethene	5.00	5.74		ug/L		115	62 - 135
Vinyl chloride	5.00	5.66		ug/L		113	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*
Toluene-d8 (Surr)	*100*		*40 - 146*

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

Lab Sample ID: 670-42473-A-1-B MS
Matrix: Water
Analysis Batch: 98614

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-Dichloroethene	94	U	2000	2290		ug/L		114	49 - 139
cis-1,2-Dichloroethene	53	U	2000	2030		ug/L		102	56 - 128
trans-1,2-Dichloroethene	73	U	2000	2110		ug/L		106	54 - 134
Trichloroethene	89	U	2000	2000		ug/L		100	62 - 135
Vinyl chloride	71	U	2000	2640		ug/L		132	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*
Dibromofluoromethane (Surr)	*103*		*53 - 146*
Toluene-d8 (Surr)	*102*		*40 - 146*

Lab Sample ID: 670-42473-A-1-B MSD
Matrix: Water
Analysis Batch: 98614

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-Dichloroethene	94	U	2000	2250		ug/L		113	49 - 139	2	16
cis-1,2-Dichloroethene	53	U	2000	1990		ug/L		99	56 - 128	2	17
trans-1,2-Dichloroethene	73	U	2000	2040		ug/L		102	54 - 134	4	20
Trichloroethene	89	U	2000	1920		ug/L		96	62 - 135	4	20
Vinyl chloride	71	U	2000	2550		ug/L		127	20 - 167	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*41 - 142*
Dibromofluoromethane (Surr)	*102*		*53 - 146*
Toluene-d8 (Surr)	*102*		*40 - 146*

Method: 537 IDA - EPA 537 Isotope Dilution

Lab Sample ID: MB 410-525410/1-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 525410

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11Cl-PF3OUdS	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
4:2 Fluorotelomer sulfonic acid	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
6:2 Fluorotelomer sulfonic acid	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
8:2 Fluorotelomer sulfonic acid	0.00060	U	0.0020	0.00060	ug/L		07/08/24 07:24	07/11/24 13:38	1
9Cl-PF3ONS	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
DONA	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
HFPODA	0.00040	U	0.0020	0.00040	ug/L		07/08/24 07:24	07/11/24 13:38	1
NEtFOSAA	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
NMeFOSAA	0.00040	U	0.0020	0.00040	ug/L		07/08/24 07:24	07/11/24 13:38	1
NMeFOSA	0.00070	U	0.0020	0.00070	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorobutanesulfonic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorobutanoic acid	0.0010	U	0.0020	0.0010	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorodecanesulfonic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorodecanoic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: MB 410-525410/1-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 525410

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid	0.00040	U	0.0020	0.00040	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluoroheptanesulfonic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluoroheptanoic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorohexanesulfonic acid	0.00020	U	0.0020	0.00020	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorohexanoic acid	0.0010	U	0.0020	0.0010	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorononanesulfonic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorononanoic acid	0.00020	U	0.0020	0.00020	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorooctanesulfonamide	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorooctanesulfonic acid	0.00050	U	0.0020	0.00050	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorooctanoic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluoropentanesulfonic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluoropentanoic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorotetradecanoic acid	0.00040	U	0.0020	0.00040	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluorotridecanoic acid	0.00040	U	0.0020	0.00040	ug/L		07/08/24 07:24	07/11/24 13:38	1
Perfluoroundecanoic acid	0.00030	U	0.0020	0.00030	ug/L		07/08/24 07:24	07/11/24 13:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*82*		*35 - 200*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
M2-6:2 FTS	*87*		*40 - 200*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
M2-8:2 FTS	*87*		*37 - 200*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C2 PFTeDA	*87*		*10 - 171*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C3 HFPO-DA	*90*		*13 - 170*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C3 PFBS	*88*		*34 - 200*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C4 PFBA	*76*		*22 - 174*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C4 PFHpA	*93*		*40 - 165*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C5 PFPeA	*75*		*33 - 196*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C8 PFOA	*82*		*52 - 153*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C8 PFOS	*81*		*59 - 155*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
d3-NMeFOSAA	*99*		*38 - 168*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
d5-NEtFOSAA	*104*		*34 - 181*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C3 PFHxS	*97*		*48 - 169*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C5 PFHxA	*90*		*28 - 166*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C6 PFDA	*83*		*53 - 151*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C7 PFUnA	*107*		*41 - 163*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
d3-NMePFOSA	*56*		*10 - 130*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C8 FOSA	*71*		*10 - 155*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C2-PFDoDA	*81*		*22 - 165*	*07/08/24 07:24*	*07/11/24 13:38*	*1*
13C9 PFNA	*81*		*52 - 168*	*07/08/24 07:24*	*07/11/24 13:38*	*1*

Lab Sample ID: LCS 410-525410/2-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 525410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11Cl-PF3OUdS	0.0238	0.0229		ug/L		96	57 - 130
4:2 Fluorotelomer sulfonic acid	0.0239	0.0237		ug/L		99	61 - 131
6:2 Fluorotelomer sulfonic acid	0.0243	0.0276		ug/L		114	61 - 132
8:2 Fluorotelomer sulfonic acid	0.0245	0.0254		ug/L		104	55 - 134
9Cl-PF3ONS	0.0238	0.0229		ug/L		96	60 - 130

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: LCS 410-525410/2-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 525410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
DONA	0.0242	0.0266		ug/L		110	61 - 130
HFPODA	0.0256	0.0273		ug/L		107	53 - 131
NEtFOSAA	0.0256	0.0265		ug/L		103	63 - 130
NMeFOSAA	0.0256	0.0265		ug/L		103	62 - 131
NMeFOSA	0.0256	0.0298		ug/L		116	53 - 167
Perfluorobutanesulfonic acid	0.0227	0.0226		ug/L		100	64 - 132
Perfluorobutanoic acid	0.0256	0.0261		ug/L		102	58 - 130
Perfluorodecanesulfonic acid	0.0247	0.0229		ug/L		93	55 - 130
Perfluorodecanoic acid	0.0256	0.0274		ug/L		107	62 - 133
Perfluorododecanoic acid	0.0256	0.0287		ug/L		112	61 - 132
Perfluoroheptanesulfonic acid	0.0244	0.0230		ug/L		94	59 - 130
Perfluoroheptanoic acid	0.0256	0.0265		ug/L		103	64 - 130
Perfluorohexanesulfonic acid	0.0233	0.0229		ug/L		98	62 - 130
Perfluorohexanoic acid	0.0256	0.0270		ug/L		105	59 - 130
Perfluorononanesulfonic acid	0.0246	0.0236		ug/L		96	56 - 130
Perfluorononanoic acid	0.0256	0.0255		ug/L		100	63 - 133
Perfluorooctanesulfonamide	0.0256	0.0280		ug/L		109	67 - 132
Perfluorooctanesulfonic acid	0.0237	0.0230		ug/L		97	62 - 130
Perfluorooctanoic acid	0.0256	0.0274		ug/L		107	58 - 132
Perfluoropentanesulfonic acid	0.0240	0.0234		ug/L		98	64 - 132
Perfluoropentanoic acid	0.0256	0.0282		ug/L		110	60 - 130
Perfluorotetradecanoic acid	0.0256	0.0247		ug/L		96	62 - 131
Perfluorotridecanoic acid	0.0256	0.0275		ug/L		107	59 - 136
Perfluoroundecanoic acid	0.0256	0.0265		ug/L		103	62 - 131

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
M2-4:2 FTS	*77*		*35 - 200*
M2-6:2 FTS	*84*		*40 - 200*
M2-8:2 FTS	*85*		*37 - 200*
13C2 PFTeDA	*91*		*10 - 171*
13C3 HFPO-DA	*91*		*13 - 170*
13C3 PFBS	*88*		*34 - 200*
13C4 PFBA	*70*		*22 - 174*
13C4 PFHpA	*98*		*40 - 165*
13C5 PFPeA	*81*		*33 - 196*
13C8 PFOA	*84*		*52 - 153*
13C8 PFOS	*85*		*59 - 155*
d3-NMeFOSAA	*98*		*38 - 168*
d5-NEtFOSAA	*100*		*34 - 181*
13C3 PFHxS	*99*		*48 - 169*
13C5 PFHxA	*84*		*28 - 166*
13C6 PFDA	*84*		*53 - 151*
13C7 PFUnA	*100*		*41 - 163*
d3-NMePFOSA	*60*		*10 - 130*
13C8 FOSA	*73*		*10 - 155*
13C2-PFDoDA	*85*		*22 - 165*
13C9 PFNA	*88*		*52 - 168*

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: LCSD 410-525410/3-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 525410

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11Cl-PF3OUdS			0.0238	0.0237		ug/L		100	57 - 130	3	30
4:2 Fluorotelomer sulfonic acid			0.0239	0.0247		ug/L		103	61 - 131	4	30
6:2 Fluorotelomer sulfonic acid			0.0243	0.0275		ug/L		113	61 - 132	0	30
8:2 Fluorotelomer sulfonic acid			0.0245	0.0252		ug/L		103	55 - 134	1	30
9Cl-PF3ONS			0.0238	0.0244		ug/L		102	60 - 130	6	30
DONA			0.0242	0.0244		ug/L		101	61 - 130	9	30
HFPODA			0.0256	0.0281		ug/L		110	53 - 131	3	30
NEtFOSAA			0.0256	0.0269		ug/L		105	63 - 130	1	30
NMeFOSAA			0.0256	0.0270		ug/L		105	62 - 131	2	30
NMeFOSA			0.0256	0.0298		ug/L		116	53 - 167	0	30
Perfluorobutanesulfonic acid			0.0227	0.0235		ug/L		104	64 - 132	4	30
Perfluorobutanoic acid			0.0256	0.0243		ug/L		95	58 - 130	7	30
Perfluorodecanesulfonic acid			0.0247	0.0233		ug/L		94	55 - 130	1	30
Perfluorodecanoic acid			0.0256	0.0278		ug/L		108	62 - 133	1	30
Perfluorododecanoic acid			0.0256	0.0287		ug/L		112	61 - 132	0	30
Perfluoroheptanesulfonic acid			0.0244	0.0220		ug/L		90	59 - 130	4	30
Perfluoroheptanoic acid			0.0256	0.0287		ug/L		112	64 - 130	8	30
Perfluorohexanesulfonic acid			0.0233	0.0232		ug/L		99	62 - 130	2	30
Perfluorohexanoic acid			0.0256	0.0275		ug/L		108	59 - 130	2	30
Perfluorononanesulfonic acid			0.0246	0.0248		ug/L		101	56 - 130	5	30
Perfluorononanoic acid			0.0256	0.0269		ug/L		105	63 - 133	5	30
Perfluorooctanesulfonamide			0.0256	0.0275		ug/L		107	67 - 132	2	30
Perfluorooctanesulfonic acid			0.0237	0.0243		ug/L		103	62 - 130	6	30
Perfluorooctanoic acid			0.0256	0.0285		ug/L		111	58 - 132	4	30
Perfluoropentanesulfonic acid			0.0240	0.0233		ug/L		97	64 - 132	0	30
Perfluoropentanoic acid			0.0256	0.0285		ug/L		111	60 - 130	1	30
Perfluorotetradecanoic acid			0.0256	0.0259		ug/L		101	62 - 131	5	30
Perfluorotridecanoic acid			0.0256	0.0271		ug/L		106	59 - 136	1	30
Perfluoroundecanoic acid			0.0256	0.0253		ug/L		99	62 - 131	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
M2-4:2 FTS	*77*		*35 - 200*
M2-6:2 FTS	*82*		*40 - 200*
M2-8:2 FTS	*82*		*37 - 200*
13C2 PFTeDA	*83*		*10 - 171*
13C3 HFPO-DA	*84*		*13 - 170*
13C3 PFBS	*84*		*34 - 200*
13C4 PFBA	*73*		*22 - 174*
13C4 PFHpA	*97*		*40 - 165*
13C5 PFPeA	*75*		*33 - 196*
13C8 PFOA	*82*		*52 - 153*
13C8 PFOS	*81*		*59 - 155*
d3-NMeFOSAA	*93*		*38 - 168*
d5-NEtFOSAA	*100*		*34 - 181*
13C3 PFHxS	*100*		*48 - 169*
13C5 PFHxA	*86*		*28 - 166*
13C6 PFDA	*80*		*53 - 151*
13C7 PFUnA	*98*		*41 - 163*

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: LCSD 410-525410/3-A
Matrix: Water
Analysis Batch: 527053

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 525410

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
d3-NMePFOSA	58		10 - 130
13C8 FOSA	72		10 - 155
13C2-PFDoDA	79		22 - 165
13C9 PFNA	84		52 - 168

Method: 365.4 - Phosphorus, Total

Lab Sample ID: MB 670-98516/2-A
Matrix: Water
Analysis Batch: 98725

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98516

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	40	U	100	40	ug/L		07/01/24 13:36	07/02/24 13:14	1

Lab Sample ID: MB 670-98516/2-A
Matrix: Water
Analysis Batch: 98907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98516

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	40	U	100	40	ug/L		07/01/24 13:36	07/03/24 11:31	1

Lab Sample ID: LCS 670-98516/1-A
Matrix: Water
Analysis Batch: 98725

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98516

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	1500	1600		ug/L		107	90 - 110

Lab Sample ID: LCS 670-98516/1-A
Matrix: Water
Analysis Batch: 98907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98516

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	1500	1350		ug/L		90	90 - 110

Lab Sample ID: 762-4663-D-1-A MS
Matrix: Water
Analysis Batch: 98725

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 98516

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	40	U J3	1500	1190	J3	ug/L		79	85 - 115

Lab Sample ID: 762-4663-D-1-A MS
Matrix: Water
Analysis Batch: 98907

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 98516

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	40	U J3	1500	1250	J3	ug/L		83	85 - 115

Method: 365.4 - Phosphorus, Total (Continued)

Lab Sample ID: 762-4663-D-1-B MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 98725
Prep Batch: 98516

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Phosphorus as P	40	U J3	1500	1210	J3	ug/L		81	85 - 115	2	20

Lab Sample ID: 762-4663-D-1-B MSD
Client Sample ID: Matrix Spike Duplicate
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 98907
Prep Batch: 98516

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Phosphorus as P	40	U J3	1500	1240	J3	ug/L		83	85 - 115	1	20

GC/MS VOA

Leach Batch: 98277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 670-98277/1-A	Method Blank	Total/NA	Water	1311	
670-42473-A-1-B MS	Matrix Spike	TCLP	Water	1311	
670-42473-A-1-B MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Analysis Batch: 98614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1 - DL	MLPV-IDW091-20240628	Total/NA	Water	8260D	
LB 670-98277/1-A	Method Blank	Total/NA	Water	8260D	98277
MB 670-98614/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98614/4	Lab Control Sample	Total/NA	Water	8260D	
670-42473-A-1-B MS	Matrix Spike	TCLP	Water	8260D	98277
670-42473-A-1-B MSD	Matrix Spike Duplicate	TCLP	Water	8260D	98277

LCMS

Prep Batch: 525410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1	MLPV-IDW091-20240628	Total/NA	Water	SPE	
MB 410-525410/1-A	Method Blank	Total/NA	Water	SPE	
LCS 410-525410/2-A	Lab Control Sample	Total/NA	Water	SPE	
LCSD 410-525410/3-A	Lab Control Sample Dup	Total/NA	Water	SPE	

Analysis Batch: 527053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1	MLPV-IDW091-20240628	Total/NA	Water	537 IDA	525410
MB 410-525410/1-A	Method Blank	Total/NA	Water	537 IDA	525410
LCS 410-525410/2-A	Lab Control Sample	Total/NA	Water	537 IDA	525410
LCSD 410-525410/3-A	Lab Control Sample Dup	Total/NA	Water	537 IDA	525410

Prep Batch: 528954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1 - RE	MLPV-IDW091-20240628	Total/NA	Water	SPE	
MB 410-528954/1-A	Method Blank	Total/NA	Water	SPE	
LCS 410-528954/2-A	Lab Control Sample	Total/NA	Water	SPE	

Analysis Batch: 530550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1 - RE	MLPV-IDW091-20240628	Total/NA	Water	537 IDA	528954
MB 410-528954/1-A	Method Blank	Total/NA	Water	537 IDA	528954
LCS 410-528954/2-A	Lab Control Sample	Total/NA	Water	537 IDA	528954

General Chemistry

Analysis Batch: 98357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1	MLPV-IDW091-20240628	Total/NA	Water	353.2	

Prep Batch: 98516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1	MLPV-IDW091-20240628	Total/NA	Water	365.2/365.3/365	
MB 670-98516/2-A	Method Blank	Total/NA	Water	365.2/365.3/365	
LCS 670-98516/1-A	Lab Control Sample	Total/NA	Water	365.2/365.3/365	

General Chemistry (Continued)

Prep Batch: 98516 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
762-4663-D-1-A MS	Matrix Spike	Total/NA	Water	365.2/365.3/365	
762-4663-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	365.2/365.3/365	

Analysis Batch: 98725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42622-1	MLPV-IDW091-20240628	Total/NA	Water	365.4	98516
MB 670-98516/2-A	Method Blank	Total/NA	Water	365.4	98516
LCS 670-98516/1-A	Lab Control Sample	Total/NA	Water	365.4	98516
762-4663-D-1-A MS	Matrix Spike	Total/NA	Water	365.4	98516
762-4663-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	365.4	98516

Analysis Batch: 98907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 670-98516/2-A	Method Blank	Total/NA	Water	365.4	98516
LCS 670-98516/1-A	Lab Control Sample	Total/NA	Water	365.4	98516
762-4663-D-1-A MS	Matrix Spike	Total/NA	Water	365.4	98516
762-4663-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	365.4	98516

Lab Chronicle

Client: AECOM Technical Services Inc.
Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Client Sample ID: MLPV-IDW091-20240628
Lab Sample ID: 670-42622-1
Date Collected: 06/28/24 13:10
Matrix: Water
Date Received: 06/28/24 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	50	98614	KG	EET ORL	07/02/24 16:57
Total/NA	Prep	SPE	RE		528954	V3FW	ELLE	07/16/24 16:02
Total/NA	Analysis	537 IDA	RE	1	530550	DCS9	ELLE	07/21/24 05:52
Total/NA	Prep	SPE			525410	RC3V	ELLE	07/08/24 07:24
Total/NA	Analysis	537 IDA		1	527053	R7RE	ELLE	07/11/24 18:27
Total/NA	Analysis	353.2		1	98357	VJW	EET ORL	06/28/24 18:20
Total/NA	Prep	365.2/365.3/365			98516	DGS	EET ORL	07/01/24 13:36
Total/NA	Analysis	365.4		1	98725	LD	EET ORL	07/02/24 13:24

Laboratory References:

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

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: AECOM Technical Services Inc. Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

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

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

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

Authority	Program	Identification Number	Expiration Date
Florida	NELAP	E87997	06-30-25

Method Summary

Client: AECOM Technical Services Inc.
Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET ORL
537 IDA	EPA 537 Isotope Dilution	EPA	ELLE
353.2	Nitrate	EPA	EET ORL
365.4	Phosphorus, Total	EPA	EET ORL
365.2/365.3/365	Phosphorus, Total	EPA	EET ORL
5030C	Purge and Trap	SW846	EET ORL
SPE	PFAS by SPE	Lab SOP	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Lab SOP = Laboratory Standard Operating Procedure

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

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: AECOM Technical Services Inc.
Job ID: 670-42622-1
Project/Site: NASA KSC MLPV HS3 DPT IDW

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-42622-1	MLPV-IDW091-20240628	Water	06/28/24 13:10	06/28/24 14:45

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

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Project Name: NASA KSC - MLPV		COC No.	Page: 1 of 1
Site Location: Hot Spot 3 DPT IDW		PO No. 1621517	Project No. 60615493.4 Phase:
TO No.: 80KSC019F0075	AECOM Project Manager: **Linnea King Clark; Caroline Bekins**	Send Invoice To: Instructions in MSA	EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Patrick Bendl (724-591-6324) Caroline Bekins (714-943-9928)	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando	Report to:Jennifer Chastain Cc: Teresa Amentt Jennings
		Deliver Samples To:	Site-Spicific WS#15 from QAPP: 15-42
Lab Name: Eurofins	Turnaround Time(specify): Standard 14 day	**Sample Analysis Requested** (*Enter number of containers for each test*)	

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) HCl 4 DEG C 4 DEG H2SO4 <2	Comments
								Total No. of Containers / Select VOCs by SW8260D / Select PFAS by 537 / Nitrate by EPA 300.0 / Total Phosphorus by EPA 345.6	
	MLPV-IDW01-20240628	MLPV-IDW01	20240628	1310	IDW	IDW	G	7 / 3 / 2 / 1 / 1	

670-42622 Chain of Custody

***Field* Comments:**
Report only per QAPP WS #15-42 (not DOD)
48 hr HT for Nitrate

***Lab* Comments:** 2.2/2.2 °C

Sample Shipment and Delivery Details
Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	Elimar Gomez	06/19/24	12:30			
2		6/28/24	1410		06/28/24	0600
3		"	1545		"	1410
					6.28.24	1545

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs, FL 32701
Phone: 407-339-5984 Fax: 407-260-6110

Chain of Custody Record

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Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Dylnicki, Kaitlin	Carrier Tracking No(s):	COC No: 670-31755.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: kaitlin.dylnicki@et.eurofinsus.com	State of Origin: Florida	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): NELAP - Florida		Job #: 670-42622-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 7/10/2024			Preservation Codes:
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: NASA KSC MLPV	Project #: 67001428			
Site:	SSOW#:			Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/PFAS_W_Prep (MOD) PFAs WS#15-2 non DOD	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MLPV-IDW091-20240628 (670-42622-1)	6/28/24	13:10 Eastern		Water			X	2	

Analysis Requested

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6-28-24 1700	E-ORL			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 6/29/24 0945	Company EET

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: R1 2.8 C1 2.9

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42622-1

Login Number: 42622

List Source: Eurofins Orlando

List Number: 1

Creator: Lavardera, Angelina

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.	N/A	
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	

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42622-1

Login Number: 42622
List Number: 2
Creator: Santiago, Nathaniel

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 06/29/24 03:16 PM

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	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	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Teresa Amentt Jennings
AECOM Technical Services Inc.
150 North Orange Avenue
Suite 200
Orlando, Florida 32801

Generated 7/17/2024 1:27:14 PM Revision 1

JOB DESCRIPTION

NASA KSC MLPV HS3 DPT

JOB NUMBER

670-42628-1

Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs FL 32701

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



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7/17/2024 1:27:14 PM
Revision 1

Authorized for release by
Shelby Sharpe, Project Manager
Shelby.Sharpe@et.eurofinsus.com
Designee for
Kaitlin Dylnicki, Project Manager
kaitlin.dylnicki@et.eurofinsus.com
(407)339-5984

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Definitions/Glossary

Client: AECOM Technical Services Inc. Job ID: 670-42628-1
Project/Site: NASA KSC MLPV HS3 DPT

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Indicates that the compound was analyzed for but not detected.

GC VOA

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Indicates that the compound was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
J1	Estimated value; value may not be accurate. Surrogate recovery outside of criteria.
U	Indicates that the compound was analyzed for but not detected.

HPLC/IC

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

Metals

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

General Chemistry

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

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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 ID: 670-42628-1 Eurofins Orlando

Job Narrative
670-42628-1

REVISION

The report being provided is a revision of the original report sent on 7/16/2024. The report (revision 1) is being revised due to update sample ID for sample 670-42628-6 per client request.

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 6/28/2024 3:45 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.9°C and 1.4°C.

Receipt Exceptions
The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Containers sent for an extra sample not listed on COC.

GC/MS VOA
Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0726-056.0-20240626 (670-42628-4). Elevated reporting limits (RLs) are provided.

Method 8260D: The following sample(s) was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The sample was analyzed within the 7-day holding time specified for unpreserved samples: MLPV-DPT0741-016.0-20240628 (670-42628-24).

Method 8260D: The following sample: MLPV-DPT0733-011.0-20240628 (670-42628-20) was decanted prior to analysis because the sample contained sediment.

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

GC VOA
Method RSK_175: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: MLPV-DPT0737-050.0-20240628 (670-42628-18).

Method RSK_175: The following sample was diluted to bring the concentration of target analytes within the calibration range: MLPV-DPT0737-050.0-20240628 (670-42628-18). Elevated reporting limits (RLs) are provided.

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

GC Semi VOA
Method FL_PRO: The surrogate recovery C35 (Surr) for the blank associated with preparation batch 670-98798 and analytical batch 670-98846 was outside the upper control limits.

Method FL_PRO: The method blank for preparation batch 670-98798 contained Total Petroleum Hydrocarbons (C8-C40) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Job ID: 670-42628-1 (Continued) Eurofins Orlando

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

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

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

General Chemistry
Method 350.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 670-99303 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 350.1: The continuing calibration blank for analytical batch 670-99303 contained Ammonia (as N) above the method detection limit (MDL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank, were non-detect or were rejected and re-analyzed.

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

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0752-050.0-20240626 — Lab Sample ID: 670-42628-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.0		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.93	I	1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	2.7		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0752-056.0-20240626 — Lab Sample ID: 670-42628-2

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	47		1.0	0.53	ug/L	1		8260D	Total/NA
Vinyl chloride	40		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0726-050.0-20240626 — Lab Sample ID: 670-42628-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.5		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	32		1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	6.1		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0726-056.0-20240626 — Lab Sample ID: 670-42628-4

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene - DL	7100		100	53	ug/L	100		8260D	Total/NA
Vinyl chloride - DL	880		100	71	ug/L	100		8260D	Total/NA

Client Sample ID: MLPV-DPT0749-050.0-20240627 — Lab Sample ID: 670-42628-5

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.5		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.8		1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	1.1		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0725-050.0-20240627 — Lab Sample ID: 670-42628-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.93	I	1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.2		1.0	0.73	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0721-050.0-20240627 — Lab Sample ID: 670-42628-7

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	8.0		1.0	0.53	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0724-050.0-20240627 — Lab Sample ID: 670-42628-8

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.1		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.3		1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	2.5		1.0	0.71	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0736-050.0-20240627 — Lab Sample ID: 670-42628-9

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.2		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	1.5		1.0	0.73	ug/L	1		8260D	Total/NA
Vinyl chloride	3.3		1.0	0.71	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MLPV-DPT0751-050.0-20240627 — Lab Sample ID: 670-42628-10

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.55	I	1.0	0.53	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0740-045.0-20240627 — Lab Sample ID: 670-42628-11

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

Client Sample ID: MLPV-DPT0744-045.0-20240627 — Lab Sample ID: 670-42628-12

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

Client Sample ID: MLPV-DPT0731-007.0-20240627 — Lab Sample ID: 670-42628-13

No Detections.

Client Sample ID: MLPV-DPT0731-011.0-20240627 — Lab Sample ID: 670-42628-14

No Detections.

Client Sample ID: MLPV-DPT0731-016.0-20240627 — Lab Sample ID: 670-42628-15

No Detections.

Client Sample ID: MLPV-DPT0731-045.0-20240627 — Lab Sample ID: 670-42628-16

No Detections.

Client Sample ID: MLPV-DPT0731-050.0-20240627 — Lab Sample ID: 670-42628-17

No Detections.

Client Sample ID: MLPV-DPT0737-050.0-20240628 — Lab Sample ID: 670-42628-18

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methane	5600		5.0	2.5	ug/L	5		RSK-175	Total/NA
Ethane	18		1.0	0.26	ug/L	1		RSK-175	Total/NA
Sulfate	460000		50000	25000	ug/L	50		300.0	Total/NA
Iron	48000		360	190	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	9800000		25000	25000	ug/L	1		2540C - 2015	Total/NA
Ammonia (as N)	2700		100	70	ug/L	5		350.1	Total/NA
Sulfide	39000		1600	800	ug/L	1		SM 4500 S2 F	Total/NA
Total Organic Carbon	15000	I	20000	10000	ug/L	10		SM 5310C	Total/NA

Client Sample ID: MLPV-DPT0733-007.0-20240628 — Lab Sample ID: 670-42628-19

No Detections.

Client Sample ID: MLPV-DPT0733-011.0-20240628 — Lab Sample ID: 670-42628-20

No Detections.

Client Sample ID: MLPV-DPT0733-016.0-20240628 — Lab Sample ID: 670-42628-21

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0741-007.0-20240628 — Lab Sample ID: 670-42628-22

No Detections.

Client Sample ID: MLPV-DPT0741-011.0-20240628 — Lab Sample ID: 670-42628-23

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methane	65		1.0	0.50	ug/L	1		RSK-175	Total/NA
Ethane	0.62	I	1.0	0.26	ug/L	1		RSK-175	Total/NA
Sulfate	1900		1000	500	ug/L	1		300.0	Total/NA
Iron	75000		360	190	ug/L	1		6010D	Total Recoverable
Total Dissolved Solids	300000		5000	5000	ug/L	1		2540C - 2015	Total/NA
Ammonia (as N)	620		20	14	ug/L	1		350.1	Total/NA
Total Organic Carbon	5400		2000	1000	ug/L	1		SM 5310C	Total/NA

Client Sample ID: MLPV-DPT0741-016.0-20240628 — Lab Sample ID: 670-42628-24

No Detections.

Client Sample ID: MLPV-DPT0741-020.0-20240628 — Lab Sample ID: 670-42628-25

No Detections.

Client Sample ID: MLPV-DPT0741-024.0-20240628 — Lab Sample ID: 670-42628-26

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	11		1.0	0.53	ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	0.92	I	1.0	0.73	ug/L	1		8260D	Total/NA

Client Sample ID: MLPV-DPT0741-045.0-20240628 — Lab Sample ID: 670-42628-27

No Detections.

Client Sample ID: MLPV-DPT0741-050.0-20240628 — Lab Sample ID: 670-42628-28

No Detections.

Client Sample ID: MLPV-TB03-20240628 — Lab Sample ID: 670-42628-29

No Detections.

Client Sample ID: MLPV-TB04-20240628 — Lab Sample ID: 670-42628-30

No Detections.

Client Sample ID: MLPV-DPT0720-050.0-20240627 — Lab Sample ID: 670-42628-31

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.5		1.0	0.53	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MLPV-DPT0752-050.0-20240626 Lab Sample ID: 670-42628-1

Date Collected: 06/26/24 15:05 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 15:36	1
cis-1,2-Dichloroethene	**3.0**		1.0	0.53	ug/L			07/02/24 15:36	1
trans-1,2-Dichloroethene	**0.93**	**I**	1.0	0.73	ug/L			07/02/24 15:36	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 15:36	1
Vinyl chloride	**2.7**		1.0	0.71	ug/L			07/02/24 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/02/24 15:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/02/24 15:36*	*1*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*07/02/24 15:36*	*1*

Client Sample ID: MLPV-DPT0752-056.0-20240626 Lab Sample ID: 670-42628-2

Date Collected: 06/26/24 15:35 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 14:35	1
cis-1,2-Dichloroethene	**47**		1.0	0.53	ug/L			07/03/24 14:35	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 14:35	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 14:35	1
Vinyl chloride	**40**		1.0	0.71	ug/L			07/03/24 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 14:35*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/03/24 14:35*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/03/24 14:35*	*1*

Client Sample ID: MLPV-DPT0726-050.0-20240626 Lab Sample ID: 670-42628-3

Date Collected: 06/26/24 16:15 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 14:53	1
cis-1,2-Dichloroethene	**3.5**		1.0	0.53	ug/L			07/03/24 14:53	1
trans-1,2-Dichloroethene	**32**		1.0	0.73	ug/L			07/03/24 14:53	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 14:53	1
Vinyl chloride	**6.1**		1.0	0.71	ug/L			07/03/24 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/03/24 14:53*	*1*
4-Bromofluorobenzene (Surr)	*108*		*41 - 142*		*07/03/24 14:53*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/03/24 14:53*	*1*

Client Sample ID: MLPV-DPT0726-056.0-20240626 Lab Sample ID: 670-42628-4

Date Collected: 06/26/24 17:00 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/03/24 16:57	100

Client Sample ID: MLPV-DPT0726-056.0-20240626 Lab Sample ID: 670-42628-4

Date Collected: 06/26/24 17:00 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**7100**		100	53	ug/L			07/03/24 16:57	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/03/24 16:57	100
Trichloroethene	89	U	100	89	ug/L			07/03/24 16:57	100
Vinyl chloride	**880**		100	71	ug/L			07/03/24 16:57	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 16:57*	*100*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/03/24 16:57*	*100*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*07/03/24 16:57*	*100*

Client Sample ID: MLPV-DPT0749-050.0-20240627 Lab Sample ID: 670-42628-5

Date Collected: 06/27/24 09:05 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 16:52	1
cis-1,2-Dichloroethene	**2.5**		1.0	0.53	ug/L			07/02/24 16:52	1
trans-1,2-Dichloroethene	**1.8**		1.0	0.73	ug/L			07/02/24 16:52	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 16:52	1
Vinyl chloride	**1.1**		1.0	0.71	ug/L			07/02/24 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/02/24 16:52*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/02/24 16:52*	*1*
Dibromofluoromethane (Surr)	*113*		*53 - 146*		*07/02/24 16:52*	*1*

Client Sample ID: MLPV-DPT0725-050.0-20240627 Lab Sample ID: 670-42628-6

Date Collected: 06/27/24 09:50 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 17:10	1
cis-1,2-Dichloroethene	**0.93**	**I**	1.0	0.53	ug/L			07/02/24 17:10	1
trans-1,2-Dichloroethene	**1.2**		1.0	0.73	ug/L			07/02/24 17:10	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 17:10	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/02/24 17:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/02/24 17:10*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/02/24 17:10*	*1*

Client Sample ID: MLPV-DPT0721-050.0-20240627 Lab Sample ID: 670-42628-7

Date Collected: 06/27/24 10:25 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 17:28	1
cis-1,2-Dichloroethene	**8.0**		1.0	0.53	ug/L			07/02/24 17:28	1

Client Sample ID: MLPV-DPT0721-050.0-20240627 Lab Sample ID: 670-42628-7

Date Collected: 06/27/24 10:25 **Matrix: Water**
Date Received: 06/28/24 15:45

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			07/02/24 17:28	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 17:28	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/02/24 17:28*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/02/24 17:28*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 17:28*	*1*

Client Sample ID: MLPV-DPT0724-050.0-20240627 Lab Sample ID: 670-42628-8

Date Collected: 06/27/24 11:40 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 17:45	1
cis-1,2-Dichloroethene	**4.1**		1.0	0.53	ug/L			07/02/24 17:45	1
trans-1,2-Dichloroethene	**1.3**		1.0	0.73	ug/L			07/02/24 17:45	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 17:45	1
Vinyl chloride	**2.5**		1.0	0.71	ug/L			07/02/24 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/02/24 17:45*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/02/24 17:45*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 17:45*	*1*

Client Sample ID: MLPV-DPT0736-050.0-20240627 Lab Sample ID: 670-42628-9

Date Collected: 06/27/24 12:45 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 18:03	1
cis-1,2-Dichloroethene	**4.2**		1.0	0.53	ug/L			07/02/24 18:03	1
trans-1,2-Dichloroethene	**1.5**		1.0	0.73	ug/L			07/02/24 18:03	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 18:03	1
Vinyl chloride	**3.3**		1.0	0.71	ug/L			07/02/24 18:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/02/24 18:03*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/02/24 18:03*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/02/24 18:03*	*1*

Client Sample ID: MLPV-DPT0751-050.0-20240627 Lab Sample ID: 670-42628-10

Date Collected: 06/27/24 13:10 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 18:21	1
cis-1,2-Dichloroethene	**0.55**	**I**	1.0	0.53	ug/L			07/02/24 18:21	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/02/24 18:21	1

Client Sample ID: MLPV-DPT0751-050.0-20240627

Lab Sample ID: 670-42628-10

Date Collected: 06/27/24 13:10

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 18:21	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/02/24 18:21*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/02/24 18:21*	*1*
Dibromofluoromethane (Surr)	*107*		*53 - 146*		*07/02/24 18:21*	*1*

Client Sample ID: MLPV-DPT0740-045.0-20240627

Lab Sample ID: 670-42628-11

Date Collected: 06/27/24 13:40

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 14:31	1
cis-1,2-Dichloroethene	**0.80**	**I**	1.0	0.53	ug/L			07/03/24 14:31	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 14:31	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 14:31	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 14:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 14:31*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/03/24 14:31*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 14:31*	*1*

Client Sample ID: MLPV-DPT0744-045.0-20240627

Lab Sample ID: 670-42628-12

Date Collected: 06/27/24 14:30

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 14:49	1
cis-1,2-Dichloroethene	**0.89**	**I**	1.0	0.53	ug/L			07/03/24 14:49	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 14:49	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 14:49	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 14:49*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/03/24 14:49*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*07/03/24 14:49*	*1*

Client Sample ID: MLPV-DPT0731-007.0-20240627

Lab Sample ID: 670-42628-13

Date Collected: 06/27/24 15:00

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 15:07	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 15:07	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 15:07	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 15:07	1

Client Sample ID: MLPV-DPT0731-007.0-20240627

Lab Sample ID: 670-42628-13

Date Collected: 06/27/24 15:00

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 15:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 15:07*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/03/24 15:07*	*1*
Dibromofluoromethane (Surr)	*98*		*53 - 146*		*07/03/24 15:07*	*1*

Client Sample ID: MLPV-DPT0731-011.0-20240627

Lab Sample ID: 670-42628-14

Date Collected: 06/27/24 15:10

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 15:25	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 15:25	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 15:25	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 15:25	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*40 - 146*		*07/03/24 15:25*	*1*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/03/24 15:25*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 15:25*	*1*

Client Sample ID: MLPV-DPT0731-016.0-20240627

Lab Sample ID: 670-42628-15

Date Collected: 06/27/24 15:20

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 15:44	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 15:44	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 15:44	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 15:44	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 15:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/03/24 15:44*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/03/24 15:44*	*1*
Dibromofluoromethane (Surr)	*96*		*53 - 146*		*07/03/24 15:44*	*1*

Client Sample ID: MLPV-DPT0731-045.0-20240627

Lab Sample ID: 670-42628-16

Date Collected: 06/27/24 15:35

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 16:02	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 16:02	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 16:02	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 16:02	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 16:02	1

Client Sample ID: MLPV-DPT0731-045.0-20240627 Lab Sample ID: 670-42628-16

Date Collected: 06/27/24 15:35 **Matrix: Water**
Date Received: 06/28/24 15:45

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/03/24 16:02*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*07/03/24 16:02*	*1*
Dibromofluoromethane (Surr)	*98*		*53 - 146*		*07/03/24 16:02*	*1*

Client Sample ID: MLPV-DPT0731-050.0-20240627 Lab Sample ID: 670-42628-17

Date Collected: 06/27/24 16:00 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 16:20	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 16:20	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 16:20	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 16:20	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 16:20*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*07/03/24 16:20*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 16:20*	*1*

Client Sample ID: MLPV-DPT0737-050.0-20240628 Lab Sample ID: 670-42628-18

Date Collected: 06/28/24 08:10 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 16:38	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 16:38	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 16:38	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 16:38	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 16:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/03/24 16:38*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/03/24 16:38*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 16:38*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**5600**		5.0	2.5	ug/L			07/10/24 17:23	5
Ethane	**18**		1.0	0.26	ug/L			07/10/24 17:00	1
Ethene	0.55	U	1.0	0.55	ug/L			07/10/24 17:00	1

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/03/24 06:09	07/03/24 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*93*		*66 - 139*	*07/03/24 06:09*	*07/03/24 15:57*	*1*
C35 (Surr)	*118*		*40 - 129*	*07/03/24 06:09*	*07/03/24 15:57*	*1*

Client Sample ID: MLPV-DPT0737-050.0-20240628 Lab Sample ID: 670-42628-18

Date Collected: 06/28/24 08:10 **Matrix: Water**
Date Received: 06/28/24 15:45

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	460000		50000	25000	ug/L			07/02/24 23:00	50

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	48000		360	190	ug/L		06/29/24 15:31	07/02/24 13:20	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	9800000		25000	25000	ug/L			07/01/24 09:25	1
Ammonia (as N) (EPA 350.1)	2700		100	70	ug/L			07/05/24 16:38	5
Sulfide (SM 4500 S2 F)	39000		1600	800	ug/L			07/02/24 15:50	1
Total Organic Carbon (SM 5310C)	15000	I	20000	10000	ug/L			07/03/24 19:06	10

Client Sample ID: MLPV-DPT0733-007.0-20240628 Lab Sample ID: 670-42628-19

Date Collected: 06/28/24 09:05 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 16:56	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 16:56	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 16:56	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 16:56	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/03/24 16:56*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/03/24 16:56*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 16:56*	*1*

Client Sample ID: MLPV-DPT0733-011.0-20240628 Lab Sample ID: 670-42628-20

Date Collected: 06/28/24 09:25 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:14	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:14	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:14	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:14	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/03/24 17:14*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/03/24 17:14*	*1*
Dibromofluoromethane (Surr)	*98*		*53 - 146*		*07/03/24 17:14*	*1*

Client Sample ID: MLPV-DPT0733-016.0-20240628

Lab Sample ID: 670-42628-21

Date Collected: 06/28/24 09:40

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:32	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:32	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:32	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:32	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/03/24 17:32*	*1*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*		*07/03/24 17:32*	*1*
Dibromofluoromethane (Surr)	*101*		*53 - 146*		*07/03/24 17:32*	*1*

Client Sample ID: MLPV-DPT0741-007.0-20240628

Lab Sample ID: 670-42628-22

Date Collected: 06/28/24 10:05

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:51	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:51	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:51	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:51	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 17:51*	*1*
4-Bromofluorobenzene (Surr)	*98*		*41 - 142*		*07/03/24 17:51*	*1*
Dibromofluoromethane (Surr)	*100*		*53 - 146*		*07/03/24 17:51*	*1*

Client Sample ID: MLPV-DPT0741-011.0-20240628

Lab Sample ID: 670-42628-23

Date Collected: 06/28/24 10:35

Matrix: Water

Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 18:09	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 18:09	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 18:09	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 18:09	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/03/24 18:09*	*1*
4-Bromofluorobenzene (Surr)	*103*		*41 - 142*		*07/03/24 18:09*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 18:09*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**65**		1.0	0.50	ug/L			07/10/24 17:12	1
Ethane	**0.62**	**I**	1.0	0.26	ug/L			07/10/24 17:12	1
Ethene	0.55	U	1.0	0.55	ug/L			07/10/24 17:12	1

Client Sample ID: MLPV-DPT0741-011.0-20240628 Lab Sample ID: 670-42628-23

Date Collected: 06/28/24 10:35 **Matrix: Water**
Date Received: 06/28/24 15:45

Method: FL-DEP FL-PRO - Florida - Petroleum Range Organics (GC)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/03/24 15:41	07/05/24 13:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*113*		*66 - 139*	*07/03/24 15:41*	*07/05/24 13:00*	*1*
C35 (Surr)	*112*		*40 - 129*	*07/03/24 15:41*	*07/05/24 13:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1900**		1000	500	ug/L			07/02/24 23:17	1

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**75000**		360	190	ug/L		06/29/24 15:31	07/02/24 13:22	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C - 2015)	**300000**		5000	5000	ug/L			07/01/24 09:25	1
Ammonia (as N) (EPA 350.1)	**620**		20	14	ug/L			07/05/24 16:03	1
Sulfide (SM 4500 S2 F)	800	U	1600	800	ug/L			07/02/24 15:50	1
Total Organic Carbon (SM 5310C)	**5400**		2000	1000	ug/L			07/03/24 19:20	1

Client Sample ID: MLPV-DPT0741-016.0-20240628 Lab Sample ID: 670-42628-24

Date Collected: 06/28/24 11:10 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 18:27	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 18:27	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 18:27	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 18:27	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 18:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/03/24 18:27*	*1*
4-Bromofluorobenzene (Surr)	*105*		*41 - 142*		*07/03/24 18:27*	*1*
Dibromofluoromethane (Surr)	*100*		*53 - 146*		*07/03/24 18:27*	*1*

Client Sample ID: MLPV-DPT0741-020.0-20240628 Lab Sample ID: 670-42628-25

Date Collected: 06/28/24 11:25 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 16:43	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 16:43	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 16:43	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 16:43	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 16:43	1

Client Sample ID: MLPV-DPT0741-020.0-20240628 Lab Sample ID: 670-42628-25

Date Collected: 06/28/24 11:25 **Matrix: Water**
Date Received: 06/28/24 15:45

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/03/24 16:43*	*1*
4-Bromofluorobenzene (Surr)	*96*		*41 - 142*		*07/03/24 16:43*	*1*
Dibromofluoromethane (Surr)	*109*		*53 - 146*		*07/03/24 16:43*	*1*

Client Sample ID: MLPV-DPT0741-024.0-20240628 Lab Sample ID: 670-42628-26

Date Collected: 06/28/24 11:35 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:01	1
cis-1,2-Dichloroethene	**11**		1.0	0.53	ug/L			07/03/24 17:01	1
trans-1,2-Dichloroethene	**0.92**	**I**	1.0	0.73	ug/L			07/03/24 17:01	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:01	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*40 - 146*		*07/03/24 17:01*	*1*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*		*07/03/24 17:01*	*1*
Dibromofluoromethane (Surr)	*111*		*53 - 146*		*07/03/24 17:01*	*1*

Client Sample ID: MLPV-DPT0741-045.0-20240628 Lab Sample ID: 670-42628-27

Date Collected: 06/28/24 11:50 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:20	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:20	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:20	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:20	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/03/24 17:20*	*1*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*		*07/03/24 17:20*	*1*
Dibromofluoromethane (Surr)	*110*		*53 - 146*		*07/03/24 17:20*	*1*

Client Sample ID: MLPV-DPT0741-050.0-20240628 Lab Sample ID: 670-42628-28

Date Collected: 06/28/24 12:05 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:38	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:38	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:38	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:38	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*40 - 146*		*07/03/24 17:38*	*1*

Client Sample ID: MLPV-DPT0741-050.0-20240628 Lab Sample ID: 670-42628-28

Date Collected: 06/28/24 12:05 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*91*		*41 - 142*		*07/03/24 17:38*	*1*
Dibromofluoromethane (Surr)	*111*		*53 - 146*		*07/03/24 17:38*	*1*

Client Sample ID: MLPV-TB03-20240628 Lab Sample ID: 670-42628-29

Date Collected: 06/28/24 13:45 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 17:56	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 17:56	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 17:56	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 17:56	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 17:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/03/24 17:56*	*1*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*		*07/03/24 17:56*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/03/24 17:56*	*1*

Client Sample ID: MLPV-TB04-20240628 Lab Sample ID: 670-42628-30

Date Collected: 06/28/24 13:45 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 18:15	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 18:15	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 18:15	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 18:15	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 18:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*97*		*40 - 146*		*07/03/24 18:15*	*1*
4-Bromofluorobenzene (Surr)	*90*		*41 - 142*		*07/03/24 18:15*	*1*
Dibromofluoromethane (Surr)	*114*		*53 - 146*		*07/03/24 18:15*	*1*

Client Sample ID: MLPV-DPT0720-050.0-20240627 Lab Sample ID: 670-42628-31

Date Collected: 06/27/24 00:00 **Matrix: Water**
Date Received: 06/28/24 15:45

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

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 18:33	1
cis-1,2-Dichloroethene	**1.5**		1.0	0.53	ug/L			07/03/24 18:33	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 18:33	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 18:33	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 18:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*96*		*40 - 146*		*07/03/24 18:33*	*1*

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0720-050.0-20240627
Date Collected: 06/27/24 00:00
Date Received: 06/28/24 15:45

Lab Sample ID: 670-42628-31
Matrix: Water

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		41 - 142		07/03/24 18:33	1
Dibromofluoromethane (Surr)	112		53 - 146		07/03/24 18:33	1

Surrogate Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	TOL (40-146)	BFB (41-142)	DBFM (53-146)
670-42628-1	MLPV-DPT0752-050.0-20240626	102	100	107
670-42628-2	MLPV-DPT0752-056.0-20240626	101	100	109
670-42628-3	MLPV-DPT0726-050.0-20240626	102	108	109
670-42628-4 - DL	MLPV-DPT0726-056.0-20240626	101	101	107
670-42628-5	MLPV-DPT0749-050.0-20240627	103	99	113
670-42628-6	MLPV-DPT0725-050.0-20240627	103	99	108
670-42628-7	MLPV-DPT0721-050.0-20240627	103	100	109
670-42628-8	MLPV-DPT0724-050.0-20240627	102	100	109
670-42628-9	MLPV-DPT0736-050.0-20240627	101	99	109
670-42628-10	MLPV-DPT0751-050.0-20240627	101	99	107
670-42628-11	MLPV-DPT0740-045.0-20240627	101	99	99
670-42628-12	MLPV-DPT0744-045.0-20240627	101	100	101
670-42628-13	MLPV-DPT0731-007.0-20240627	101	100	98
670-42628-14	MLPV-DPT0731-011.0-20240627	100	100	99
670-42628-15	MLPV-DPT0731-016.0-20240627	102	99	96
670-42628-16	MLPV-DPT0731-045.0-20240627	103	102	98
670-42628-17	MLPV-DPT0731-050.0-20240627	101	102	99
670-42628-18	MLPV-DPT0737-050.0-20240628	102	101	99
670-42628-19	MLPV-DPT0733-007.0-20240628	103	98	99
670-42628-20	MLPV-DPT0733-011.0-20240628	103	99	98
670-42628-21	MLPV-DPT0733-016.0-20240628	102	99	101
670-42628-22	MLPV-DPT0741-007.0-20240628	101	98	100
670-42628-23	MLPV-DPT0741-011.0-20240628	103	103	99
670-42628-24	MLPV-DPT0741-016.0-20240628	103	105	100
670-42628-25	MLPV-DPT0741-020.0-20240628	97	96	109
670-42628-26	MLPV-DPT0741-024.0-20240628	96	93	111
670-42628-27	MLPV-DPT0741-045.0-20240628	97	89	110
670-42628-28	MLPV-DPT0741-050.0-20240628	98	91	111
670-42628-29	MLPV-TB03-20240628	97	93	108

Surrogate Summary

Client: AECOM Technical Services Inc. Job ID: 670-42628-1
Project/Site: NASA KSC MLPV HS3 DPT

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

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

		Percent Surrogate Recovery (Acceptance Limits)		
		TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(40-146)	(41-142)	(53-146)
670-42628-30	MLPV-TB04-20240628	97	90	114
670-42628-31	MLPV-DPT0720-050.0-20240627	96	94	112
860-77370-P-1 MS	Matrix Spike	102	101	97
860-77370-P-1 MSD	Matrix Spike Duplicate	101	99	95
LB 670-98269/1-A	Method Blank	102	97	106
LB 670-98542/1-A	Method Blank	98	95	108
LB 670-98545/1-A	Method Blank	102	100	105
LCS 670-98609/4	Lab Control Sample	100	100	101
LCS 670-98807/4	Lab Control Sample	99	100	100
LCS 670-98813/4	Lab Control Sample	99	100	99
LCS 670-98816/4	Lab Control Sample	95	89	100
LCSD 670-98807/5	Lab Control Sample Dup	100	100	100
MB 670-98609/7	Method Blank	103	101	108
MB 670-98807/8	Method Blank	101	102	106
MB 670-98813/7	Method Blank	99	101	99
MB 670-98816/7	Method Blank	96	93	108

Surrogate Legend

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

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

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)		
		TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(40-146)	(41-142)	(53-146)
660-136891-A-1-A MS	Matrix Spike	100	98	100
660-136891-A-1-A MSD	Matrix Spike Duplicate	102	99	101
660-136943-B-1-A MS	Matrix Spike	95	88	105
660-136943-B-1-A MSD	Matrix Spike Duplicate	96	88	101
670-42656-B-1-A MS - DL	Matrix Spike	100	97	101
670-42656-B-1-A MSD - DL	Matrix Spike Duplicate	100	98	101

Surrogate Legend

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

Method: FL-PRO - Florida - Petroleum Range Organics (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
		OTP	C-35
Lab Sample ID	Client Sample ID	(66-139)	(40-129)
670-42628-18	MLPV-DPT0737-050.0-20240628	93	118
670-42628-23	MLPV-DPT0741-011.0-20240628	113	112
LCS 670-98798/2-A	Lab Control Sample	94	119
LCS 670-98944/2-A	Lab Control Sample	82	89

Surrogate Summary

Client: AECOM Technical Services Inc. Job ID: 670-42628-1
Project/Site: NASA KSC MLPV HS3 DPT

Method: FL-PRO - Florida - Petroleum Range Organics (GC) (Continued)

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

		Percent Surrogate Recovery (Acceptance Limits)									
		OTP	C-35								
Lab Sample ID	Client Sample ID	(66-139)	(40-129)								
LCSD 670-98798/3-A	Lab Control Sample Dup	97	120								
LCSD 670-98944/3-A	Lab Control Sample Dup	91	94								
MB 670-98798/1-A	Method Blank	114	135 J1								
MB 670-98944/1-A	Method Blank	106	112								

Surrogate Legend

OTP = o- terphenyl (Surr)
C-35 = C35 (Surr)

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

Lab Sample ID: LB 670-98269/1-A
Matrix: Water
Analysis Batch: 98609

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

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/02/24 11:26	100
cis-1,2-Dichloroethene	53	U	100	53	ug/L			07/02/24 11:26	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/02/24 11:26	100
Trichloroethene	89	U	100	89	ug/L			07/02/24 11:26	100
Vinyl chloride	71	U	100	71	ug/L			07/02/24 11:26	100

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/02/24 11:26*	*100*
4-Bromofluorobenzene (Surr)	*97*		*41 - 142*		*07/02/24 11:26*	*100*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*07/02/24 11:26*	*100*

Lab Sample ID: MB 670-98609/7
Matrix: Water
Analysis Batch: 98609

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/02/24 10:54	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/02/24 10:54	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/02/24 10:54	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/02/24 10:54	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/02/24 10:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*40 - 146*		*07/02/24 10:54*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/02/24 10:54*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/02/24 10:54*	*1*

Lab Sample ID: LCS 670-98609/4
Matrix: Water
Analysis Batch: 98609

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	18.9		ug/L		94	47 - 139
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	56 - 128
trans-1,2-Dichloroethene	20.0	18.3		ug/L		91	54 - 134
Trichloroethene	20.0	18.1		ug/L		91	62 - 135
Vinyl chloride	20.0	21.1		ug/L		105	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*40 - 146*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

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

Lab Sample ID: LB 670-98545/1-A
Matrix: Water
Analysis Batch: 98807

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

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/03/24 10:28	100
cis-1,2-Dichloroethene	53	U	100	53	ug/L			07/03/24 10:28	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/03/24 10:28	100
Trichloroethene	89	U	100	89	ug/L			07/03/24 10:28	100
Vinyl chloride	71	U	100	71	ug/L			07/03/24 10:28	100

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*40 - 146*		*07/03/24 10:28*	*100*
4-Bromofluorobenzene (Surr)	*100*		*41 - 142*		*07/03/24 10:28*	*100*
Dibromofluoromethane (Surr)	*105*		*53 - 146*		*07/03/24 10:28*	*100*

Lab Sample ID: MB 670-98807/8
Matrix: Water
Analysis Batch: 98807

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 10:10	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 10:10	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 10:10	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 10:10	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 10:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*40 - 146*		*07/03/24 10:10*	*1*
4-Bromofluorobenzene (Surr)	*102*		*41 - 142*		*07/03/24 10:10*	*1*
Dibromofluoromethane (Surr)	*106*		*53 - 146*		*07/03/24 10:10*	*1*

Lab Sample ID: LCS 670-98807/4
Matrix: Water
Analysis Batch: 98807

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	19.1		ug/L		96	47 - 139
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	56 - 128
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	54 - 134
Trichloroethene	20.0	18.4		ug/L		92	62 - 135
Vinyl chloride	20.0	21.0		ug/L		105	20 - 167

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

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

Lab Sample ID: LCSD 670-98807/5
Matrix: Water
Analysis Batch: 98807

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene			20.0	17.2		ug/L		86	47 - 139	11	16
cis-1,2-Dichloroethene			20.0	17.2		ug/L		86	56 - 128	10	17
trans-1,2-Dichloroethene			20.0	17.3		ug/L		87	54 - 134	9	20
Trichloroethene			20.0	16.9		ug/L		85	62 - 135	8	20
Vinyl chloride			20.0	18.7		ug/L		94	20 - 167	11	24

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

Lab Sample ID: MB 670-98813/7
Matrix: Water
Analysis Batch: 98813

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 11:15	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 11:15	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 11:15	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 11:15	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 11:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*40 - 146*		*07/03/24 11:15*	*1*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*		*07/03/24 11:15*	*1*
Dibromofluoromethane (Surr)	*99*		*53 - 146*		*07/03/24 11:15*	*1*

Lab Sample ID: LCS 670-98813/4
Matrix: Water
Analysis Batch: 98813

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene			5.00	4.35		ug/L		87	47 - 139
cis-1,2-Dichloroethene			5.00	5.17		ug/L		103	56 - 128
trans-1,2-Dichloroethene			5.00	4.68		ug/L		94	54 - 134
Trichloroethene			5.00	4.76		ug/L		95	62 - 135
Vinyl chloride			5.00	3.61		ug/L		72	20 - 167

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

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

Lab Sample ID: 860-77370-P-1 MS
Matrix: Water
Analysis Batch: 98813

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-Dichloroethene	0.94	U	20.0	18.1		ug/L		91	49 - 139
cis-1,2-Dichloroethene	0.53	U	20.0	19.4		ug/L		97	56 - 128
trans-1,2-Dichloroethene	0.73	U	20.0	17.9		ug/L		90	54 - 134
Trichloroethene	0.89	U	20.0	19.4		ug/L		97	62 - 135
Vinyl chloride	0.71	U	20.0	15.2		ug/L		76	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*40 - 146*
4-Bromofluorobenzene (Surr)	*101*		*41 - 142*
Dibromofluoromethane (Surr)	*97*		*53 - 146*

Lab Sample ID: 860-77370-P-1 MSD
Matrix: Water
Analysis Batch: 98813

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-Dichloroethene	0.94	U	20.0	18.5		ug/L		92	49 - 139	2	16
cis-1,2-Dichloroethene	0.53	U	20.0	19.6		ug/L		98	56 - 128	1	17
trans-1,2-Dichloroethene	0.73	U	20.0	17.6		ug/L		88	54 - 134	2	20
Trichloroethene	0.89	U	20.0	19.6		ug/L		98	62 - 135	1	20
Vinyl chloride	0.71	U	20.0	14.9		ug/L		75	20 - 167	2	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*40 - 146*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*
Dibromofluoromethane (Surr)	*95*		*53 - 146*

Lab Sample ID: LB 670-98542/1-A
Matrix: Water
Analysis Batch: 98816

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

Analyte	LB Result	LB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	94	U	100	94	ug/L			07/03/24 12:27	100
cis-1,2-Dichloroethene	53	U	100	53	ug/L			07/03/24 12:27	100
trans-1,2-Dichloroethene	73	U	100	73	ug/L			07/03/24 12:27	100
Trichloroethene	89	U	100	89	ug/L			07/03/24 12:27	100
Vinyl chloride	71	U	100	71	ug/L			07/03/24 12:27	100

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*40 - 146*		*07/03/24 12:27*	*100*
4-Bromofluorobenzene (Surr)	*95*		*41 - 142*		*07/03/24 12:27*	*100*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/03/24 12:27*	*100*

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

Lab Sample ID: MB 670-98816/7
Matrix: Water
Analysis Batch: 98816

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	0.94	U	1.0	0.94	ug/L			07/03/24 12:07	1
cis-1,2-Dichloroethene	0.53	U	1.0	0.53	ug/L			07/03/24 12:07	1
trans-1,2-Dichloroethene	0.73	U	1.0	0.73	ug/L			07/03/24 12:07	1
Trichloroethene	0.89	U	1.0	0.89	ug/L			07/03/24 12:07	1
Vinyl chloride	0.71	U	1.0	0.71	ug/L			07/03/24 12:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*40 - 146*		*07/03/24 12:07*	*1*
4-Bromofluorobenzene (Surr)	*93*		*41 - 142*		*07/03/24 12:07*	*1*
Dibromofluoromethane (Surr)	*108*		*53 - 146*		*07/03/24 12:07*	*1*

Lab Sample ID: LCS 670-98816/4
Matrix: Water
Analysis Batch: 98816

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	20.0	16.8		ug/L		84	47 - 139
cis-1,2-Dichloroethene	20.0	17.2		ug/L		86	56 - 128
trans-1,2-Dichloroethene	20.0	16.4		ug/L		82	54 - 134
Trichloroethene	20.0	19.8		ug/L		99	62 - 135
Vinyl chloride	20.0	13.2		ug/L		66	20 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*40 - 146*
4-Bromofluorobenzene (Surr)	*89*		*41 - 142*
Dibromofluoromethane (Surr)	*100*		*53 - 146*

Lab Sample ID: 660-136891-A-1-A MS
Matrix: Water
Analysis Batch: 98609

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-Dichloroethene	94	U	2000	2180		ug/L		109	49 - 139
cis-1,2-Dichloroethene	53	U	2000	2020		ug/L		101	56 - 128
trans-1,2-Dichloroethene	73	U	2000	2050		ug/L		103	54 - 134
Trichloroethene	89	U	2000	1970		ug/L		98	62 - 135
Vinyl chloride	71	U	2000	2230		ug/L		111	20 - 167

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

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

Lab Sample ID: 660-136891-A-1-A MSD
Matrix: Water
Analysis Batch: 98609

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-Dichloroethene	94	U	2000	2040		ug/L		102	49 - 139	7	16
cis-1,2-Dichloroethene	53	U	2000	1980		ug/L		99	56 - 128	2	17
trans-1,2-Dichloroethene	73	U	2000	2020		ug/L		101	54 - 134	2	20
Trichloroethene	89	U	2000	1920		ug/L		96	62 - 135	3	20
Vinyl chloride	71	U	2000	2100		ug/L		105	20 - 167	6	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*40 - 146*
4-Bromofluorobenzene (Surr)	*99*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

Lab Sample ID: 660-136943-B-1-A MS
Matrix: Water
Analysis Batch: 98816

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-Dichloroethene	94	U	2000	1640		ug/L		82	49 - 139
cis-1,2-Dichloroethene	53	U	2000	1770		ug/L		88	56 - 128
trans-1,2-Dichloroethene	73	U	2000	1590		ug/L		79	54 - 134
Trichloroethene	89	U	2000	1930		ug/L		97	62 - 135
Vinyl chloride	71	U	2000	1170		ug/L		59	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*40 - 146*
4-Bromofluorobenzene (Surr)	*88*		*41 - 142*
Dibromofluoromethane (Surr)	*105*		*53 - 146*

Lab Sample ID: 660-136943-B-1-A MSD
Matrix: Water
Analysis Batch: 98816

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-Dichloroethene	94	U	2000	1700		ug/L		85	49 - 139	3	16
cis-1,2-Dichloroethene	53	U	2000	1710		ug/L		86	56 - 128	3	17
trans-1,2-Dichloroethene	73	U	2000	1620		ug/L		81	54 - 134	2	20
Trichloroethene	89	U	2000	1960		ug/L		98	62 - 135	2	20
Vinyl chloride	71	U	2000	1190		ug/L		59	20 - 167	1	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*40 - 146*
4-Bromofluorobenzene (Surr)	*88*		*41 - 142*
Dibromofluoromethane (Surr)	*101*		*53 - 146*

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

Lab Sample ID: 670-42656-B-1-A MS
Matrix: Water
Analysis Batch: 98807

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-Dichloroethene - DL	94	U	2000	2190		ug/L		110	49 - 139
cis-1,2-Dichloroethene - DL	53	U	2000	2050		ug/L		102	56 - 128
trans-1,2-Dichloroethene - DL	73	U	2000	2080		ug/L		104	54 - 134
Trichloroethene - DL	89	U	2000	2050		ug/L		102	62 - 135
Vinyl chloride - DL	71	U	2000	2400		ug/L		120	20 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*100*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*97*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*101*		*53 - 146*

Lab Sample ID: 670-42656-B-1-A MSD
Matrix: Water
Analysis Batch: 98807

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-Dichloroethene - DL	94	U	2000	1990		ug/L		100	49 - 139	10	16
cis-1,2-Dichloroethene - DL	53	U	2000	1890		ug/L		95	56 - 128	8	17
trans-1,2-Dichloroethene - DL	73	U	2000	1870		ug/L		94	54 - 134	11	20
Trichloroethene - DL	89	U	2000	1900		ug/L		95	62 - 135	7	20
Vinyl chloride - DL	71	U	2000	2150		ug/L		107	20 - 167	11	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr) - DL	*100*		*40 - 146*
4-Bromofluorobenzene (Surr) - DL	*98*		*41 - 142*
Dibromofluoromethane (Surr) - DL	*101*		*53 - 146*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 400-677453/3
Matrix: Water
Analysis Batch: 677453

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.50	U	1.0	0.50	ug/L			07/10/24 16:25	1
Ethane	0.26	U	1.0	0.26	ug/L			07/10/24 16:25	1
Ethene	0.55	U	1.0	0.55	ug/L			07/10/24 16:25	1

Lab Sample ID: LCS 400-677453/4
Matrix: Water
Analysis Batch: 677453

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	389	432		ug/L		111	82 - 117
Ethane	736	804		ug/L		109	85 - 116

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 400-677453/4
Matrix: Water
Analysis Batch: 677453

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Ethene			687	748		ug/L		109	83 - 121		

Lab Sample ID: LCSD 400-677453/5
Matrix: Water
Analysis Batch: 677453

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Methane			389	432		ug/L		111	82 - 117	0	20
Ethane			736	805		ug/L		109	85 - 116	0	20
Ethene			687	751		ug/L		109	83 - 121	0	20

Method: FL-PRO - Florida - Petroleum Range Organics (GC)

Lab Sample ID: MB 670-98798/1-A
Matrix: Water
Analysis Batch: 98846

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98798

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	1190		1000	340	ug/L		07/03/24 06:09	07/03/24 14:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*114*		*66 - 139*	*07/03/24 06:09*	*07/03/24 14:50*	*1*
C35 (Surr)	*135*	*J1*	*40 - 129*	*07/03/24 06:09*	*07/03/24 14:50*	*1*

Lab Sample ID: LCS 670-98798/2-A
Matrix: Water
Analysis Batch: 98846

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98798

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Petroleum Hydrocarbons (C8-C40)			15500	13500		ug/L		87	55 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o- terphenyl (Surr)	*94*		*66 - 139*
C35 (Surr)	*119*		*40 - 129*

Lab Sample ID: LCSD 670-98798/3-A
Matrix: Water
Analysis Batch: 98846

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 98798

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Petroleum Hydrocarbons (C8-C40)			15500	14000		ug/L		91	55 - 130	4	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o- terphenyl (Surr)	*97*		*66 - 139*
C35 (Surr)	*120*		*40 - 129*

Method: FL-PRO - Florida - Petroleum Range Organics (GC) (Continued)

Lab Sample ID: MB 670-98944/1-A
Matrix: Water
Analysis Batch: 99093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98944

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Petroleum Hydrocarbons (C8-C40)	340	U	1000	340	ug/L		07/03/24 15:41	07/05/24 11:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o- terphenyl (Surr)	*106*		*66 - 139*	*07/03/24 15:41*	*07/05/24 11:31*	*1*
C35 (Surr)	*112*		*40 - 129*	*07/03/24 15:41*	*07/05/24 11:31*	*1*

Lab Sample ID: LCS 670-98944/2-A
Matrix: Water
Analysis Batch: 99093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98944

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Petroleum Hydrocarbons (C8-C40)	15500	13600		ug/L		88	55 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o- terphenyl (Surr)	*82*		*66 - 139*
C35 (Surr)	*89*		*40 - 129*

Lab Sample ID: LCSD 670-98944/3-A
Matrix: Water
Analysis Batch: 99093

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 98944

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Petroleum Hydrocarbons (C8-C40)	15500	14900		ug/L		96	55 - 130	9	40

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o- terphenyl (Surr)	*91*		*66 - 139*
C35 (Surr)	*94*		*40 - 129*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 670-98624/37
Matrix: Water
Analysis Batch: 98624

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	500	U	1000	500	ug/L			07/02/24 19:54	1

Lab Sample ID: MB 670-98624/6
Matrix: Water
Analysis Batch: 98624

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	500	U	1000	500	ug/L			07/02/24 11:10	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 670-98624/35
Matrix: Water
Analysis Batch: 98624

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfate			10000	9450		ug/L		94	90 - 110		

Lab Sample ID: LCSD 670-98624/36
Matrix: Water
Analysis Batch: 98624

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate			10000	9580		ug/L		96	90 - 110	1	20

Lab Sample ID: 185-1408-D-1 MS
Matrix: Water
Analysis Batch: 98624

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		
Sulfate	2000		5000	6940		ug/L		99	80 - 120		

Lab Sample ID: 185-1408-D-1 MSD
Matrix: Water
Analysis Batch: 98624

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
Sulfate	2000		5000	6920		ug/L		98	80 - 120	0	20

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 670-98390/3-A
Matrix: Water
Analysis Batch: 98627

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 98390

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	96	U	180	96	ug/L		06/29/24 15:31	07/01/24 18:44	1

Lab Sample ID: LCS 670-98390/1-A
Matrix: Water
Analysis Batch: 98627

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 98390

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			10100	10500		ug/L		104	80 - 120		

Lab Sample ID: LCSD 670-98390/2-A
Matrix: Water
Analysis Batch: 98627

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 98390

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron			10100	10200		ug/L		101	80 - 120	3	20

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 670-42540-A-1-B MS
Matrix: Water
Analysis Batch: 98627

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 98390

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	2600		11200	14000		ug/L		102	70 - 120

Lab Sample ID: 670-42540-A-1-C MSD
Matrix: Water
Analysis Batch: 98627

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 98390

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	2600		11200	14000		ug/L		102	70 - 120	0	20

Method: 2540C - 2015 - Total Dissolved Solids (Dried at 180 °C)

Lab Sample ID: MB 670-98449/1
Matrix: Water
Analysis Batch: 98449

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	5000	U	5000	5000	ug/L			07/01/24 09:25	1

Lab Sample ID: LCS 670-98449/2
Matrix: Water
Analysis Batch: 98449

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1500000	1440000		ug/L		96	80 - 120

Lab Sample ID: 670-42628-23 DU
Matrix: Water
Analysis Batch: 98449

Client Sample ID: MLPV-DPT0741-011.0-20240628
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	300000		304000		ug/L		1	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 670-99303/51
Matrix: Water
Analysis Batch: 99303

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	14	U	20	14	ug/L			07/05/24 16:22	1

Lab Sample ID: MB 670-99303/7
Matrix: Water
Analysis Batch: 99303

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	14	U	20	14	ug/L			07/05/24 15:35	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 670-99303/3
Matrix: Water
Analysis Batch: 99303

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia (as N)	500	457		ug/L		91	90 - 110

Lab Sample ID: LCS 670-99303/47
Matrix: Water
Analysis Batch: 99303

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia (as N)	500	460		ug/L		92	90 - 110

Lab Sample ID: LCSD 670-99303/50
Matrix: Water
Analysis Batch: 99303

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia (as N)	500	464		ug/L		93	90 - 110	1	20

Lab Sample ID: LCSD 670-99303/6
Matrix: Water
Analysis Batch: 99303

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia (as N)	500	461		ug/L		92	90 - 110	1	20

Lab Sample ID: 660-137023-B-2 MS
Matrix: Water
Analysis Batch: 99303

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
Ammonia (as N)	140	J3	500	259	J3	ug/L		24	90 - 110

Lab Sample ID: 670-42611-B-4 MS
Matrix: Water
Analysis Batch: 99303

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
Ammonia (as N)	14	U J3	500	14	U J3	ug/L		0	90 - 110

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 670-98765/1
Matrix: Water
Analysis Batch: 98765

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	800	U	1600	800	ug/L			07/02/24 15:50	1

Method: SM 4500 S2 F - Sulfide, Total (Continued)

Lab Sample ID: LCS 670-98765/3
Matrix: Water
Analysis Batch: 98765

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfide			2000	1900	I	ug/L		95	80 - 120		

Lab Sample ID: LCSD 670-98765/4
Matrix: Water
Analysis Batch: 98765

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfide			2000	2100		ug/L		105	80 - 120	10	20

Lab Sample ID: 678-20977-A-1 DU
Matrix: Water
Analysis Batch: 98765

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfide	800	U		800	U	ug/L				NC	20

Method: SM 5310C - TOC

Lab Sample ID: MB 670-99050/20
Matrix: Water
Analysis Batch: 99050

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	2000	1000	ug/L			07/03/24 17:09	1

Lab Sample ID: MB 670-99050/7
Matrix: Water
Analysis Batch: 99050

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	2000	1000	ug/L			07/03/24 14:02	1

Lab Sample ID: LCS 670-99050/18
Matrix: Water
Analysis Batch: 99050

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			9980	10400		ug/L		104	80 - 120		

Lab Sample ID: LCSD 670-99050/19
Matrix: Water
Analysis Batch: 99050

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon			9980	10500		ug/L		105	80 - 120	1	20

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Method: SM 5310C - TOC (Continued)

Lab Sample ID: 670-42611-D-1 MS
Matrix: Water
Analysis Batch: 99050

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		
Total Organic Carbon	1300	I	9980	11300		ug/L		101	85 - 115		

Lab Sample ID: 670-42611-D-1 MSD
Matrix: Water
Analysis Batch: 99050

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
Total Organic Carbon	1300	I	9980	11200		ug/L		100	85 - 115	1	20

GC/MS VOA

Leach Batch: 98269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 670-98269/1-A	Method Blank	Total/NA	Water	1311	
660-136891-A-1-A MS	Matrix Spike	TCLP	Water	1311	
660-136891-A-1-A MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Leach Batch: 98542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 670-98542/1-A	Method Blank	Total/NA	Water	1311	
660-136943-B-1-A MS	Matrix Spike	TCLP	Water	1311	
660-136943-B-1-A MSD	Matrix Spike Duplicate	TCLP	Water	1311	

Leach Batch: 98545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 670-98545/1-A	Method Blank	Total/NA	Water	1311	
670-42656-B-1-A MS - DL	Matrix Spike	TCLP	Water	1311	
670-42656-B-1-A MSD - DL	Matrix Spike Duplicate	TCLP	Water	1311	

Analysis Batch: 98609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-1	MLPV-DPT0752-050.0-20240626	Total/NA	Water	8260D	
670-42628-5	MLPV-DPT0749-050.0-20240627	Total/NA	Water	8260D	
670-42628-6	MLPV-DPT0725-050.0-20240627	Total/NA	Water	8260D	
670-42628-7	MLPV-DPT0721-050.0-20240627	Total/NA	Water	8260D	
670-42628-8	MLPV-DPT0724-050.0-20240627	Total/NA	Water	8260D	
670-42628-9	MLPV-DPT0736-050.0-20240627	Total/NA	Water	8260D	
670-42628-10	MLPV-DPT0751-050.0-20240627	Total/NA	Water	8260D	
LB 670-98269/1-A	Method Blank	Total/NA	Water	8260D	98269
MB 670-98609/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98609/4	Lab Control Sample	Total/NA	Water	8260D	
660-136891-A-1-A MS	Matrix Spike	TCLP	Water	8260D	98269
660-136891-A-1-A MSD	Matrix Spike Duplicate	TCLP	Water	8260D	98269

Analysis Batch: 98807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-2	MLPV-DPT0752-056.0-20240626	Total/NA	Water	8260D	
670-42628-3	MLPV-DPT0726-050.0-20240626	Total/NA	Water	8260D	
670-42628-4 - DL	MLPV-DPT0726-056.0-20240626	Total/NA	Water	8260D	
LB 670-98545/1-A	Method Blank	Total/NA	Water	8260D	98545
MB 670-98807/8	Method Blank	Total/NA	Water	8260D	
LCS 670-98807/4	Lab Control Sample	Total/NA	Water	8260D	
LCSD 670-98807/5	Lab Control Sample Dup	Total/NA	Water	8260D	
670-42656-B-1-A MS - DL	Matrix Spike	TCLP	Water	8260D	98545
670-42656-B-1-A MSD - DL	Matrix Spike Duplicate	TCLP	Water	8260D	98545

Analysis Batch: 98813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-11	MLPV-DPT0740-045.0-20240627	Total/NA	Water	8260D	
670-42628-12	MLPV-DPT0744-045.0-20240627	Total/NA	Water	8260D	
670-42628-13	MLPV-DPT0731-007.0-20240627	Total/NA	Water	8260D	
670-42628-14	MLPV-DPT0731-011.0-20240627	Total/NA	Water	8260D	
670-42628-15	MLPV-DPT0731-016.0-20240627	Total/NA	Water	8260D	
670-42628-16	MLPV-DPT0731-045.0-20240627	Total/NA	Water	8260D	

GC/MS VOA (Continued)

Analysis Batch: 98813 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-17	MLPV-DPT0731-050.0-20240627	Total/NA	Water	8260D	
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	8260D	
670-42628-19	MLPV-DPT0733-007.0-20240628	Total/NA	Water	8260D	
670-42628-20	MLPV-DPT0733-011.0-20240628	Total/NA	Water	8260D	
670-42628-21	MLPV-DPT0733-016.0-20240628	Total/NA	Water	8260D	
670-42628-22	MLPV-DPT0741-007.0-20240628	Total/NA	Water	8260D	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	8260D	
670-42628-24	MLPV-DPT0741-016.0-20240628	Total/NA	Water	8260D	
MB 670-98813/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98813/4	Lab Control Sample	Total/NA	Water	8260D	
860-77370-P-1 MS	Matrix Spike	Total/NA	Water	8260D	
860-77370-P-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260D	

Analysis Batch: 98816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-25	MLPV-DPT0741-020.0-20240628	Total/NA	Water	8260D	
670-42628-26	MLPV-DPT0741-024.0-20240628	Total/NA	Water	8260D	
670-42628-27	MLPV-DPT0741-045.0-20240628	Total/NA	Water	8260D	
670-42628-28	MLPV-DPT0741-050.0-20240628	Total/NA	Water	8260D	
670-42628-29	MLPV-TB03-20240628	Total/NA	Water	8260D	
670-42628-30	MLPV-TB04-20240628	Total/NA	Water	8260D	
670-42628-31	MLPV-DPT0720-050.0-20240627	Total/NA	Water	8260D	
LB 670-98542/1-A	Method Blank	Total/NA	Water	8260D	98542
MB 670-98816/7	Method Blank	Total/NA	Water	8260D	
LCS 670-98816/4	Lab Control Sample	Total/NA	Water	8260D	
660-136943-B-1-A MS	Matrix Spike	TCLP	Water	8260D	98542
660-136943-B-1-A MSD	Matrix Spike Duplicate	TCLP	Water	8260D	98542

GC VOA

Analysis Batch: 677453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	RSK-175	
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	RSK-175	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	RSK-175	
MB 400-677453/3	Method Blank	Total/NA	Water	RSK-175	
LCS 400-677453/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 400-677453/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

GC Semi VOA

Prep Batch: 98798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	3511	
MB 670-98798/1-A	Method Blank	Total/NA	Water	3511	
LCS 670-98798/2-A	Lab Control Sample	Total/NA	Water	3511	
LCSD 670-98798/3-A	Lab Control Sample Dup	Total/NA	Water	3511	

Analysis Batch: 98846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	FL-PRO	98798
MB 670-98798/1-A	Method Blank	Total/NA	Water	FL-PRO	98798

GC Semi VOA (Continued)

Analysis Batch: 98846 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 670-98798/2-A	Lab Control Sample	Total/NA	Water	FL-PRO	98798
LCSD 670-98798/3-A	Lab Control Sample Dup	Total/NA	Water	FL-PRO	98798

Prep Batch: 98944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	3511	
MB 670-98944/1-A	Method Blank	Total/NA	Water	3511	
LCS 670-98944/2-A	Lab Control Sample	Total/NA	Water	3511	
LCSD 670-98944/3-A	Lab Control Sample Dup	Total/NA	Water	3511	

Analysis Batch: 99093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	FL-PRO	98944
MB 670-98944/1-A	Method Blank	Total/NA	Water	FL-PRO	98944
LCS 670-98944/2-A	Lab Control Sample	Total/NA	Water	FL-PRO	98944
LCSD 670-98944/3-A	Lab Control Sample Dup	Total/NA	Water	FL-PRO	98944

HPLC/IC

Analysis Batch: 98624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	300.0	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	300.0	
MB 670-98624/37	Method Blank	Total/NA	Water	300.0	
MB 670-98624/6	Method Blank	Total/NA	Water	300.0	
LCS 670-98624/35	Lab Control Sample	Total/NA	Water	300.0	
LCSD 670-98624/36	Lab Control Sample Dup	Total/NA	Water	300.0	
185-1408-D-1 MS	Matrix Spike	Total/NA	Water	300.0	
185-1408-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Metals

Prep Batch: 98390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total Recoverable	Water	3005A	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total Recoverable	Water	3005A	
MB 670-98390/3-A	Method Blank	Total Recoverable	Water	3005A	
LCS 670-98390/1-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCSD 670-98390/2-A	Lab Control Sample Dup	Total Recoverable	Water	3005A	
670-42540-A-1-B MS	Matrix Spike	Total Recoverable	Water	3005A	
670-42540-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Analysis Batch: 98627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 670-98390/3-A	Method Blank	Total Recoverable	Water	6010D	98390
LCS 670-98390/1-A	Lab Control Sample	Total Recoverable	Water	6010D	98390
LCSD 670-98390/2-A	Lab Control Sample Dup	Total Recoverable	Water	6010D	98390
670-42540-A-1-B MS	Matrix Spike	Total Recoverable	Water	6010D	98390
670-42540-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	6010D	98390

Metals

Analysis Batch: 98840

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total Recoverable	Water	6010D	98390
670-42628-23	MLPV-DPT0741-011.0-20240628	Total Recoverable	Water	6010D	98390

General Chemistry

Analysis Batch: 98449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	2540C - 2015	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	2540C - 2015	
MB 670-98449/1	Method Blank	Total/NA	Water	2540C - 2015	
LCS 670-98449/2	Lab Control Sample	Total/NA	Water	2540C - 2015	
670-42628-23 DU	MLPV-DPT0741-011.0-20240628	Total/NA	Water	2540C - 2015	

Analysis Batch: 98765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	SM 4500 S2 F	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	SM 4500 S2 F	
MB 670-98765/1	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 670-98765/3	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	
LCSD 670-98765/4	Lab Control Sample Dup	Total/NA	Water	SM 4500 S2 F	
678-20977-A-1 DU	Duplicate	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 99050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	SM 5310C	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	SM 5310C	
MB 670-99050/20	Method Blank	Total/NA	Water	SM 5310C	
MB 670-99050/7	Method Blank	Total/NA	Water	SM 5310C	
LCS 670-99050/18	Lab Control Sample	Total/NA	Water	SM 5310C	
LCSD 670-99050/19	Lab Control Sample Dup	Total/NA	Water	SM 5310C	
670-42611-D-1 MS	Matrix Spike	Total/NA	Water	SM 5310C	
670-42611-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310C	

Analysis Batch: 99303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-42628-18	MLPV-DPT0737-050.0-20240628	Total/NA	Water	350.1	
670-42628-23	MLPV-DPT0741-011.0-20240628	Total/NA	Water	350.1	
MB 670-99303/51	Method Blank	Total/NA	Water	350.1	
MB 670-99303/7	Method Blank	Total/NA	Water	350.1	
LCS 670-99303/3	Lab Control Sample	Total/NA	Water	350.1	
LCS 670-99303/47	Lab Control Sample	Total/NA	Water	350.1	
LCSD 670-99303/50	Lab Control Sample Dup	Total/NA	Water	350.1	
LCSD 670-99303/6	Lab Control Sample Dup	Total/NA	Water	350.1	
660-137023-B-2 MS	Matrix Spike	Total/NA	Water	350.1	
670-42611-B-4 MS	Matrix Spike	Total/NA	Water	350.1	

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0752-050.0-20240626
Lab Sample ID: 670-42628-1
Date Collected: 06/26/24 15:05
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 15:36

Client Sample ID: MLPV-DPT0752-056.0-20240626
Lab Sample ID: 670-42628-2
Date Collected: 06/26/24 15:35
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98807	KG	EET ORL	07/03/24 14:35

Client Sample ID: MLPV-DPT0726-050.0-20240626
Lab Sample ID: 670-42628-3
Date Collected: 06/26/24 16:15
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98807	KG	EET ORL	07/03/24 14:53

Client Sample ID: MLPV-DPT0726-056.0-20240626
Lab Sample ID: 670-42628-4
Date Collected: 06/26/24 17:00
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	DL	100	98807	KG	EET ORL	07/03/24 16:57

Client Sample ID: MLPV-DPT0749-050.0-20240627
Lab Sample ID: 670-42628-5
Date Collected: 06/27/24 09:05
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 16:52

Client Sample ID: MLPV-DPT0725-050.0-20240627
Lab Sample ID: 670-42628-6
Date Collected: 06/27/24 09:50
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 17:10

Client Sample ID: MLPV-DPT0721-050.0-20240627
Lab Sample ID: 670-42628-7
Date Collected: 06/27/24 10:25
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 17:28

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0724-050.0-20240627
Lab Sample ID: 670-42628-8
Date Collected: 06/27/24 11:40
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 17:45

Client Sample ID: MLPV-DPT0736-050.0-20240627
Lab Sample ID: 670-42628-9
Date Collected: 06/27/24 12:45
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 18:03

Client Sample ID: MLPV-DPT0751-050.0-20240627
Lab Sample ID: 670-42628-10
Date Collected: 06/27/24 13:10
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98609	KG	EET ORL	07/02/24 18:21

Client Sample ID: MLPV-DPT0740-045.0-20240627
Lab Sample ID: 670-42628-11
Date Collected: 06/27/24 13:40
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 14:31

Client Sample ID: MLPV-DPT0744-045.0-20240627
Lab Sample ID: 670-42628-12
Date Collected: 06/27/24 14:30
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 14:49

Client Sample ID: MLPV-DPT0731-007.0-20240627
Lab Sample ID: 670-42628-13
Date Collected: 06/27/24 15:00
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 15:07

Client Sample ID: MLPV-DPT0731-011.0-20240627
Lab Sample ID: 670-42628-14
Date Collected: 06/27/24 15:10
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 15:25

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0731-016.0-20240627
Lab Sample ID: 670-42628-15
Date Collected: 06/27/24 15:20
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 15:44

Client Sample ID: MLPV-DPT0731-045.0-20240627
Lab Sample ID: 670-42628-16
Date Collected: 06/27/24 15:35
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 16:02

Client Sample ID: MLPV-DPT0731-050.0-20240627
Lab Sample ID: 670-42628-17
Date Collected: 06/27/24 16:00
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 16:20

Client Sample ID: MLPV-DPT0737-050.0-20240628
Lab Sample ID: 670-42628-18
Date Collected: 06/28/24 08:10
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 16:38
Total/NA	Analysis	RSK-175		1	677453	BJ	EET PEN	07/10/24 17:00
Total/NA	Analysis	RSK-175		5	677453	BJ	EET PEN	07/10/24 17:23
Total/NA	Prep	3511			98798	RP	EET ORL	07/03/24 06:09
Total/NA	Analysis	FL-PRO		1	98846	MM	EET ORL	07/03/24 15:57
Total/NA	Analysis	300.0		50	98624	JA	EET ORL	07/02/24 23:00
Total Recoverable	Prep	3005A			98390	EB	EET ORL	06/29/24 15:31
Total Recoverable	Analysis	6010D		1	98840	EV	EET ORL	07/02/24 13:20
Total/NA	Analysis	2540C - 2015		1	98449	SM	EET ORL	07/01/24 09:25
Total/NA	Analysis	350.1		5	99303	VJW	EET ORL	07/05/24 16:38
Total/NA	Analysis	SM 4500 S2 F		1	98765	IAD	EET ORL	07/02/24 15:50
Total/NA	Analysis	SM 5310C		10	99050	IAD	EET ORL	07/03/24 19:06

Client Sample ID: MLPV-DPT0733-007.0-20240628
Lab Sample ID: 670-42628-19
Date Collected: 06/28/24 09:05
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 16:56

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Client Sample ID: MLPV-DPT0733-011.0-20240628
Lab Sample ID: 670-42628-20
Date Collected: 06/28/24 09:25
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 17:14

Client Sample ID: MLPV-DPT0733-016.0-20240628
Lab Sample ID: 670-42628-21
Date Collected: 06/28/24 09:40
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 17:32

Client Sample ID: MLPV-DPT0741-007.0-20240628
Lab Sample ID: 670-42628-22
Date Collected: 06/28/24 10:05
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 17:51

Client Sample ID: MLPV-DPT0741-011.0-20240628
Lab Sample ID: 670-42628-23
Date Collected: 06/28/24 10:35
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 18:09
Total/NA	Analysis	RSK-175		1	677453	BJ	EET PEN	07/10/24 17:12
Total/NA	Prep	3511			98944	BR	EET ORL	07/03/24 15:41
Total/NA	Analysis	FL-PRO		1	99093	MM	EET ORL	07/05/24 13:00
Total/NA	Analysis	300.0		1	98624	JA	EET ORL	07/02/24 23:17
Total Recoverable	Prep	3005A			98390	EB	EET ORL	06/29/24 15:31
Total Recoverable	Analysis	6010D		1	98840	EV	EET ORL	07/02/24 13:22
Total/NA	Analysis	2540C - 2015		1	98449	SM	EET ORL	07/01/24 09:25
Total/NA	Analysis	350.1		1	99303	VJW	EET ORL	07/05/24 16:03
Total/NA	Analysis	SM 4500 S2 F		1	98765	IAD	EET ORL	07/02/24 15:50
Total/NA	Analysis	SM 5310C		1	99050	IAD	EET ORL	07/03/24 19:20

Client Sample ID: MLPV-DPT0741-016.0-20240628
Lab Sample ID: 670-42628-24
Date Collected: 06/28/24 11:10
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98813	AAM	EET ORL	07/03/24 18:27

Client Sample ID: MLPV-DPT0741-020.0-20240628
Lab Sample ID: 670-42628-25
Date Collected: 06/28/24 11:25
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 16:43

Client Sample ID: MLPV-DPT0741-024.0-20240628
Lab Sample ID: 670-42628-26
Date Collected: 06/28/24 11:35
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 17:01

Client Sample ID: MLPV-DPT0741-045.0-20240628
Lab Sample ID: 670-42628-27
Date Collected: 06/28/24 11:50
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 17:20

Client Sample ID: MLPV-DPT0741-050.0-20240628
Lab Sample ID: 670-42628-28
Date Collected: 06/28/24 12:05
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 17:38

Client Sample ID: MLPV-TB03-20240628
Lab Sample ID: 670-42628-29
Date Collected: 06/28/24 13:45
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 17:56

Client Sample ID: MLPV-TB04-20240628
Lab Sample ID: 670-42628-30
Date Collected: 06/28/24 13:45
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 18:15

Client Sample ID: MLPV-DPT0720-050.0-20240627
Lab Sample ID: 670-42628-31
Date Collected: 06/27/24 00:00
Matrix: Water
Date Received: 06/28/24 15:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	98816	P1K	EET ORL	07/03/24 18:33

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Laboratory References:

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

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Accreditation/Certification Summary

Client: AECOM Technical Services Inc.
Job ID: 670-42628-1
Project/Site: NASA KSC MLPV HS3 DPT

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

Laboratory: Eurofins Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	06-30-25
ANAB	ISO/IEC 17025	L2471	02-22-26
Arkansas DEQ	State	88-00689	08-01-24
California	State	2510	06-30-25
Florida	NELAP	E81010	06-30-25
Georgia	State	E81010(FL)	06-30-25
Illinois	NELAP	200041	10-09-24
Kansas	NELAP	E-10253	10-31-24
Kentucky (UST)	State	53	06-30-25
Louisiana (All)	NELAP	30976	06-30-25
Louisiana (DW)	State	LA017	12-31-24
North Carolina (WW/SW)	State	314	12-31-24
Oklahoma	NELAP	9810	08-31-24
Pennsylvania	NELAP	68-00467	01-31-25
South Carolina	State	96026	06-30-25
Tennessee	State	TN02907	06-30-25
Texas	NELAP	T104704286	09-30-24
US Fish & Wildlife	US Federal Programs	A22340	06-30-25
USDA	US Federal Programs	FLGNV23001	01-08-26
USDA	US Federal Programs	P330-21-00056	01-09-26
Virginia	NELAP	460166	06-14-25
West Virginia DEP	State	136	03-31-25

Method Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET ORL
RSK-175	Dissolved Gases (GC)	RSK	EET PEN
FL-PRO	Florida - Petroleum Range Organics (GC)	FL-DEP	EET ORL
300.0	Anions, Ion Chromatography	EPA	EET ORL
6010D	Metals (ICP)	SW846	EET ORL
2540C - 2015	Total Dissolved Solids (Dried at 180 °C)	SM	EET ORL
350.1	Nitrogen, Ammonia	EPA	EET ORL
SM 4500 S2 F	Sulfide, Total	SM	EET ORL
SM 5310C	TOC	SM	EET ORL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET ORL
3511	Microextraction of Organic Compounds	SW846	EET ORL
5030C	Purge and Trap	SW846	EET ORL

Protocol References:

EPA = US Environmental Protection Agency

FL-DEP = State Of Florida Department Of Environmental Protection, Florida Administrative Code.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: AECOM Technical Services Inc.
Project/Site: NASA KSC MLPV HS3 DPT

Job ID: 670-42628-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-42628-1	MLPV-DPT0752-050.0-20240626	Water	06/26/24 15:05	06/28/24 15:45
670-42628-2	MLPV-DPT0752-056.0-20240626	Water	06/26/24 15:35	06/28/24 15:45
670-42628-3	MLPV-DPT0726-050.0-20240626	Water	06/26/24 16:15	06/28/24 15:45
670-42628-4	MLPV-DPT0726-056.0-20240626	Water	06/26/24 17:00	06/28/24 15:45
670-42628-5	MLPV-DPT0749-050.0-20240627	Water	06/27/24 09:05	06/28/24 15:45
670-42628-6	MLPV-DPT0725-050.0-20240627	Water	06/27/24 09:50	06/28/24 15:45
670-42628-7	MLPV-DPT0721-050.0-20240627	Water	06/27/24 10:25	06/28/24 15:45
670-42628-8	MLPV-DPT0724-050.0-20240627	Water	06/27/24 11:40	06/28/24 15:45
670-42628-9	MLPV-DPT0736-050.0-20240627	Water	06/27/24 12:45	06/28/24 15:45
670-42628-10	MLPV-DPT0751-050.0-20240627	Water	06/27/24 13:10	06/28/24 15:45
670-42628-11	MLPV-DPT0740-045.0-20240627	Water	06/27/24 13:40	06/28/24 15:45
670-42628-12	MLPV-DPT0744-045.0-20240627	Water	06/27/24 14:30	06/28/24 15:45
670-42628-13	MLPV-DPT0731-007.0-20240627	Water	06/27/24 15:00	06/28/24 15:45
670-42628-14	MLPV-DPT0731-011.0-20240627	Water	06/27/24 15:10	06/28/24 15:45
670-42628-15	MLPV-DPT0731-016.0-20240627	Water	06/27/24 15:20	06/28/24 15:45
670-42628-16	MLPV-DPT0731-045.0-20240627	Water	06/27/24 15:35	06/28/24 15:45
670-42628-17	MLPV-DPT0731-050.0-20240627	Water	06/27/24 16:00	06/28/24 15:45
670-42628-18	MLPV-DPT0737-050.0-20240628	Water	06/28/24 08:10	06/28/24 15:45
670-42628-19	MLPV-DPT0733-007.0-20240628	Water	06/28/24 09:05	06/28/24 15:45
670-42628-20	MLPV-DPT0733-011.0-20240628	Water	06/28/24 09:25	06/28/24 15:45
670-42628-21	MLPV-DPT0733-016.0-20240628	Water	06/28/24 09:40	06/28/24 15:45
670-42628-22	MLPV-DPT0741-007.0-20240628	Water	06/28/24 10:05	06/28/24 15:45
670-42628-23	MLPV-DPT0741-011.0-20240628	Water	06/28/24 10:35	06/28/24 15:45
670-42628-24	MLPV-DPT0741-016.0-20240628	Water	06/28/24 11:10	06/28/24 15:45
670-42628-25	MLPV-DPT0741-020.0-20240628	Water	06/28/24 11:25	06/28/24 15:45
670-42628-26	MLPV-DPT0741-024.0-20240628	Water	06/28/24 11:35	06/28/24 15:45
670-42628-27	MLPV-DPT0741-045.0-20240628	Water	06/28/24 11:50	06/28/24 15:45
670-42628-28	MLPV-DPT0741-050.0-20240628	Water	06/28/24 12:05	06/28/24 15:45
670-42628-29	MLPV-TB03-20240628	Water	06/28/24 13:45	06/28/24 15:45
670-42628-30	MLPV-TB04-20240628	Water	06/28/24 13:45	06/28/24 15:45
670-42628-31	MLPV-DPT0720-050.0-20240627	Water	06/27/24 00:00	06/28/24 15:45

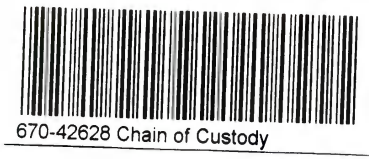
CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

eurofins

Project Name: NASA KSC - MLPV			COC No.	Page: 1 of 3	
Site Location: Hot Spot 3 DPT			PO No. 1621517	Project No. 60615493.4	Phase:
TO No.: 80KSC019F0075	AECOM Project Manager: **Linnea King Clark; Caroline Bekins**		Send Invoice To: Instructions in MSA		EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings
Sampler/Phone #	Patrick Bendl (724-591-6324)	Caroline Bekins (714-943-9928)	Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando		Report to: Jennifer Chastain Cc: Teresa Amentt Jennings
Lab Name: Eurofins		Turnaround Time(specify): Standard 14 day	Deliver Samples To:		Site-Spicific WS#15 from QAPP: 15-55

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4< 2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4< 2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	mlpv-DPT0752-050.0-20240626	mlpv-DPT0752	20240626	1505	WG	N	G	3	3	2	1	1	3	1	2	3	1			
	mlpv-DPT0752-056.0-20240626	mlpv-DPT0752	6/26/24	1535	WG	N	G	3	3											
	mlpv-DPT0726-050.0-20240626	mlpv-DPT0726	6/26/24	1615	WG	N	G	3	3											
	mlpv-DPT0726-056.0-20240626	mlpv-DPT0726	6/26/24	1700	WG	N	G	3	3											
	mlpv-DPT0749-050.0-20240627	mlpv-DPT0749	6/27/24	905	WG	N	G	3	3											
	mlpv-DPT0725-050.0-20240627	mlpv-DPT0725	6/27/24	950	WG	N	G	3	3											
	mlpv-DPT0721-050.0-20240627	mlpv-DPT0721	6/27/24	1025	WG	N	G	3	3											
	mlpv-DPT0724-050.0-20240627	mlpv-DPT0724	6/27/24	1140	WG	N	G	3	3											
	mlpv-DPT0736-050.0-20240627	mlpv-DPT0736	6/27/24	1245	WG	N	G	3	3											
	mlpv-DPT0731-050.0-20240627	mlpv-DPT0731	6/27/24	1310	WG	N	G	3	3											
	mlpv-DPT0740-050.0-20240627	mlpv-DPT0740	6/27/24	1340	WG	N	G	3	3											
	mlpv-DPT0744-050.0-20240627	mlpv-DPT0744	6/27/24	1430	WG	N	G	3	3											



***Field* Comments:**
Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details
Number of coolers in shipment:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1	6/27/24	1700	1	06/28/24	0600
2	6/28/24	1410	2 MC	06/28/24	1545
3	"	1410	3	"	1545

Samples Iced?(check) Yes_____ No_____
Shipping Company:
Tracking No:
Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

1.4/1.4 0.9/0.9

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CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 2 of 3

Project Name: NASA KSC - MLPV | PO No. 1621517 | Project No. 60615493.4 | Phase:

Site Location: Hot Spot 3 DPT | Send Invoice To: Instructions in MSA | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC019F0075 | AECOM Project Manager: **Linnea King Clark; Caroline Bekins** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to:Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # | Patrick Bendl (724-591-6324) Caroline Bekins (714-943-9928) | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-55

Lab Name: Eurofins | Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	mlpv-DPT0731-002.0-20240627	mlpv-DPT0731	20240627	1500	WG	N	G	3 ~~13~~	3	~~2~~	~~1~~	~~1~~	~~3~~	~~1~~	~~2~~	~~3~~	1	PB		
	mlpv-DPT0731-011.0-20240627	mlpv-DPT0731	24/6/27	1510	WG	N	G	3	3											
	mlpv-DPT0731-016.0-20240627	mlpv-DPT0731	24/6/27	1520	WG	N	G	3	3											
	mlpv-DPT0731-045.0-20240627	mlpv-DPT0731	24/6/27	1535	WG	N	G	3	3											
	mlpv-DPT0731-050.0-20240627	mlpv-DPT0731	24/6/27	1600	WG	N	G	3	3											
	MLPV-DPT0737-050.0-20240628	MLPV-DPT0737	24/6/28	0810	WG	N	G	3	3	2	1	1	3	1	2	3	1			
	MLPV-DPT0733-007.0-20240628	MLPV-DPT0733	24/6/28	0905	WG	N	G	3	3											
	MLPV-DPT0733-011.0-20240628	MLPV-DPT0733	24/6/28	0925	WG	N	G	3	3											
	MLPV-DPT0733-016.0-20240628	MLPV-DPT0733	24/6/28	0940	WG	N	G	3	3											
	MLPV-DPT0741-007.0-20240628	MLPV-DPT0741	24/6/28	1005	WG	N	G	3	3											
	MLPV-DPT0741-011.0-20240628	MLPV-DPT0741	24/6/28	1035	WG	N	G	3	3	2	1	1	3	1	2	3	1			
	MLPV-DPT0741-016.0-20240628	MLPV-DPT0741	24/6/28	1110	WG	N	G	3	3											

***Field* Comments:**

Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/27/24	1700		06/28/24	0600
2		6/28/24	1410		"	1410
3	JCB	"	1545	MC	06/28/24	1545

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) Preservative added: **4 DEG C**=Cool to 4 degrees, **Dark**=Store in Darkness, store cool at 4 degrees C **H2SO4**=Hydrogen sulfate, **H2SO4 <2**=Adjust to pH < 2 with sulfuric acid, **H3PO4**=Phosphoric acid, **H3PO4 <2**=Adjust to pH <2 with phosphoric acid, **HCl <2**=Adjust to pH < 2 with hydrochloric acid, **HNaO4S**=Sodium bisulfate preservation, **HNO3 <2**=Adjust to pH < 2 with nitric acid, **MeOH**=Methanol preservation, **Na2O3S2**=Sodium thiosulfate, **Na2O3S2 3/gal**=Add 3 mL 10% sodium thiosulfate per l-gal, **Na2O3S2 4/4oz**=4 drops of 10% sodium thiosulfate to 4 oz, **NaHSO4 <2**=Adjust to pH < 2 with sodium hydrogen sulfate, NaOH >12=Adjust to pH > 12 with sodium hydroxide, NaOH >9=Adjust to pH >9 with sodium hydroxide, **VitC 0.6/500**=0.6 g of ascorbic acid to 500mLs, **ZnAct 2/500**=Add 2 mL of zinc acetate to 500mLs, **ZnAct+NaOH >9**=Zinc acetate and NaOH to pH>9; store cool at 4C If **NO preservative** added leave blank **Rev 8/19**

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CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. | Page: 3 of 3

Project Name: NASA KSC - MLPV | PO No. 1621517 | Project No. 60615493.4 | Phase:

Site Location: Hot Spot 3 DPT | Send Invoice To: Instructions in MSA | EDD to: Jennifer Chastain Cc: Teresa Amentt Jennings

TO No.: 80KSC019F0075 | AECOM Project Manager: **Linnea King Clark; Caroline Bekins** | Deliver Sample Kits To: AECOM Depot, 523 18th Street, Orlando | Report to: Jennifer Chastain Cc: Teresa Amentt Jennings

Sampler/Phone # | Patrick Bendl (724-591-6324) Caroline Bekins (714-943-9928) | Deliver Samples To: | Site-Spicific WS#15 from QAPP: 15-55

Lab Name: Eurofins | Turnaround Time(specify): Standard 14 day

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (YYYYMMDD)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	G=Grab C=Comp	(3) Total No. of Containers	HCl<2 Select VOCs by SW8260D	H2SO4<2 TRPH by FL PRO	HNO3<2 Fe by SW6010D	4 Deg C Sulfate by EPA 300.0	HCl<2 MEE by SOP RSK	H2SO4<2 Ammonia by EPA 350.1	HCl<2 TOC by SM 5310	NaOH>9 ZnAc Sulfide by SM 4500-S	4 Deg C TDS by SM 2540C			Comments
	MLPV-DPT0741-020.0-20240628	MLPV-DPT0741	20240628	1125	WG	N	G	3 KO	3									KO		
	MLPV-DPT0741-030.0-20240628	MLPV-DPT0741	240628	1135	WG	N	G	3	3											
	MLPV-DPT0741-045.0-20240628	MLPV-DPT0741	240628	1150	WG	N	G	3	3											
	MLPV-DPT0741-050.0-20240628	MLPV-DPT0741	240628	1205	WG	N	G	3	3											
	TB03 KO MLPV-TB03-20240628	MLPV-TB03	240628	1345	WG	N	G	2 KO	2											
	MLPV-TB04-20240628	MLPV-TB04	240628	1345	WG	N	G	2 KO	2											
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												
					WG	N	G	3												

***Field* Comments:**

Report only per QAPP WS #15-55
Sulfide & TDS 7 day HT

***Lab* Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment:

	Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1		6/27/1900			06/28/24	0600
2		6/28/24	1410			1410
3	IGD	"	1545	MC	06/28/24	1545

Samples Iced?(check) Yes_____ No_____

Shipping Company:

Tracking No:

Date Shipped:

(1) AA=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) Sample Type: AB=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

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Eurofins Orlando
481 Newburyport Avenue
Altamonte Springs, FL 32701
Phone: 407-339-5984 Fax: 407-260-6110

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Dylnicki, Kaitlin	Carrier Tracking No(s):	COC No: 670-31814.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: kaitlin.dylnicki@et.eurofinsus.com	State of Origin: Florida	Page: Page 1 of 1
Company: Eurofins Environment Testing Southeast L		Accreditations Required (See note): NELAP - Florida		Job #: 670-42628-1
Address: 3355 McLemore Drive, ,	Due Date Requested: 7/9/2024			Preservation Codes: -
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32514				
Phone: 850-474-1001(Tel) 850-478-2671(Fax)	PO #:			
Email:	WO #:			
Project Name: NASA KSC MLPV	Project #: 67001428			
Site:	SSOW#:			Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175/ Methane, Ethane, Ethene (MEE)	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X		X	
MIPV-DPT0737-050.0-20240627 (670-42628-18)	6/27/24	08:10 Eastern		Water			X	3	
MIPV-DPT0741-011.0-20240628 (670-42628-23)	6/28/24	10:35 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southeast, LLC.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		7-1-24 1700	E-ORL		7-2-24 857	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.7-C/IR10

Ver: 04/02/2024

7/17/2024 (Rev. 1)

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42628-1

Login Number: 42628
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.	False	Refer to Job Narrative for details.
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	

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc.

Job Number: 670-42628-1

Login Number: 42628
List Number: 2
Creator: Wilson, Lance

List Source: Eurofins Pensacola
List Creation: 07/02/24 12:25 PM

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.	N/A	
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	3.7°C IR10
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX I

RIS COMPLETION TICKETS

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EDE HOME

DATA CHECKER

RESOURCES

VALID VALUES

REQUEST A VALID VALUE

Data Checker

Completion Ticket

On 10/16/2024 at 10:35 AM the following files were submitted to Tetra Tech

COMPLETION_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

LITHOLOGY_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

LOCATION_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

PROJECT_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

RESULT_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

SAMPLE_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

WATER_AECOM_MLPV_HS3-DPT_Jun2024_20241016.txt

The following comment was provided with this submission:
AECOM - MLPV HS3 DPT GW Sampling June2024

If you need to identify this session at a later date you may use the Ticket Key:

F:\TetraTechExternalClients\ProtectedData\Repository\20241016_628520142_kedd_AECOM\

You may print this page by clicking on the "Print This Page" button
Thank you for using the Data Checker, to upload more files click the "Data Checker" link in the menu.

Printer Friendly Version

APPENDIX J

UIC NOTIFICATION MEMORANDUM

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Underground Injection Control Notification Memorandum for In-Situ Injection-Type Aquifer Remediation Projects: Instructions and Supplemental Information

{This version of UIC Notice memo is for use by staff of the Division of Waste Management and District offices}

Reminder: This memorandum must be completed by an FDEP employee of the Division of Waste Management or a FDEP District Office. A person working for a consultant company preparing a RAP/RAPMOD/Pilot Test plan may complete some portions of this memo to expedite the FDEP's review but if so, the "From" and "Date" (cover page), the date of RAP/UIC approval order and phone number (page 4) should all be left blank for the FDEP technical reviewer. The FDEP technical reviewer is to complete the blanks after verifying other information in the memo is accurate and conforms to applicable rules and procedures. The completed UIC Notice and executed order should then be routed to the UIC section addressed in this notice.

oOo

Please remove this message box prior to submittal of this memorandum to the Underground Injection Control Section.

TO: Ronald McCulley & Richard Lobinske
Florida Department of Environmental Protection
Division of Water Resource Management
Aquifer Protection Program – MS 3530
2600 Blair Stone Road, Tallahassee, Florida 32399-2400

THROUGH: _____

(An employee of Div. of Waste Management or DEP District Office)

FROM: _____

(An employee of Div. of Waste Management or DEP District Office; if another Entity then the "Through" must be an employee of Div. of Waste Management or DEP District Office)

DATE: _____

SUBJECT: **Remediation Product Injection Well(s) for In-Situ Aquifer Remediation at a Contaminated[1] Site**

Pursuant to paragraph 62-528.630(2)(c), F.A.C., inventory information is hereby provided in regard to the proposed construction of temporary injection well(s) for the purpose of in-situ aquifer remediation at a contaminated site.

Facility name: NASA Kennedy Space Center

Facility address: Former Mobile Launcher Platform (West) , Kennedy Space Center, FL 32899

City/County: Merritt Island / Brevard County

Latitude/Longitude: 28.589444, -80.653889

FDEP Facility Number: DOD 18 3072

Facility owner's name: NASA

Facility owner's address: KSC Headquarters Building, Kennedy Space Center, FL 32899

Well contractor's name: AECOM Technical Services, Inc.

Well contractor's address: 390 N. Orange Ave, Suite 750, Orlando FL 32801

[1] - "Contaminated" as defined per Rule 62-780.200 (10)

Underground Injection Control Notification Memorandum for In-Situ Injection-Type Aquifer Remediation Projects: Instructions and Supplemental Information

AFFECTED AQUIFER

Name of aquifer: Surficial

Depth to groundwater (feet): Approximately 1 to 4 feet below land surface

Aquifer thickness (feet): Approximately 58 feet (impacted aquifer)

Areal extent of contamination (square feet): 5,000

INJECTION WELLS

A site map showing the location and spacing of injection wells, the areal extent of the groundwater contamination plume, and associated monitoring wells is attached. The injection well(s) features are summarized below, and/or a schematic of the injection well(s) is attached.

Direct-push or HSA/Mud rotary *(circle the appropriate well type)*

Diameter of well(s) (i.e., riser pipe & screen) (inches): N/A (temporary injection points)

Total depth of well(s) (feet): _____

Screened interval: N/A to N/A feet below land surface

Grouted interval, if applicable: N/A to _: N/A feet below land surface

Casing diameter, if applicable (inches): _: N/A

Cased depth, if applicable: _: N/A to _: N/A feet below land surface

Casing material, if applicable: _: N/A

If a remediation product will be injected as a DP rod is inserted, indicate injection interval: _4_____ to __18____ feet below land surface; 42____ to _52____ feet below land surface; and 54____ to _58____ feet below land surface.

PROJECT DESCRIPTION

The in-situ, injection-type aquifer remediation product/process remediates contaminants by:
(check those that apply)

- ■ use of a bioremediation product,
- ☐ use of a chemical oxidation product,
- ☐ recirculation of partially treated contaminated groundwater, or
- ☐ other (describe) _____

Brief description of the project: Provect-IR is a mixture of solid reagents in a single product that promotes enhanced reductive chlorination and in-situ chemical reduction for CVOC impacted groundwater.

Summary of major design considerations and features of the project:

Number of injection wells: 15 temporary injection points

Injection volume per well (gallons): See attached Table 5-2

Single or multiple injection events: Single

Injection volume total (all wells, all events): See attached Table 5-2

Underground Injection Control Notification Memorandum for In-Situ Injection-Type Aquifer Remediation Projects: Instructions and Supplemental Information

For continuous recirculation of partially treated water, indicate total daily design flow rate: _____ gallons per day

FLUID TO BE INJECTED

Brand name of remediation product(s): Provect-IR® Antimethanogenic ISCR Reagent

Has an innovative technology acceptance letter been issued for this product by the Innovative Technology Acceptance Program: __ (yes) __ no (Note: it is not required that an innovative technology acceptance letter be issued for the technology or product to be proposed in a RAP)

> If product formula is proprietary, then non-disclosure of the formula to the PE reviewing the RAP for the Department is only acceptable if there is an innovative technology acceptance letter issued by the Innovative Technology Acceptance Program with an attached proprietary voucher of confidential disclosure and it is verified that the proposed application rates (dosage) is limited to the rates specified in the innovative technology acceptance letter.

Is product formulation proprietary? __ (yes) __ no.

If product formulation is proprietary are proposed application rates limited to that indicated in innovative technology acceptance correspondence? __ (yes) __ no __ N/A

Composition of injected fluid (e.g. ingredient, wt. %): Iron [7439-89-6] (5-90%); Calcium dipropionate [4075-81-4] (0-4%); Yeast extracts [8013-01-2] (0.5-5%); Guar gum [9000-30-0] (0-5%); Sodium sulfite [7757-83-7] (0-2%); and Proprietary Additives (40-90%).

TEMPORARY INJECTION ZONE OF DISCHARGE (ZOD)

(check those that apply as specified in the innovative technology acceptance letter)

☐ No ZOD needed. The fluid to be injected meets the primary and secondary groundwater standards of Chapter 62-550, F.A.C., and the minimum groundwater criteria of Chapters 62-520 and 62-777, F.A.C.

■ ZOD permission by rule 62-520.310(8)(c) †, F.A.C., for reagent chemical species and/or parameter(s) in the fluid to be injected (or re-injected) that exceed secondary groundwater standards. ZOD permission by this rule also applies to chemical species in the fluid to be injected that exceed primary groundwater standards or minimum groundwater criteria, provided those species are prime constituents of the reagents used to remediate site contaminants. The chemical species and parameters for which the approved Remedial Action Plan identifies zone size and duration and addresses groundwater monitoring are summarized below.

Chemical species & parameters: Primary drinking water standards: arsenic (10 µg/L), fluoride (4,000 µg/L), and sodium (160,000 µg/L); Secondary drinking water standards: fluoride (2,000 µg/L) and sulfate (250,000 µg/L); Additionally, monitoring of iron, manganese, and TRPH is required.

Zone size (sq. ft.) 14,500 Duration (mos.) 120 Yes, monitoring addressed. ■

☐ ZOD permission by rule 62-520.310(8)(c) †, F.A.C., for the following contaminants of concern that exceed their groundwater standards in the fluid to be re-injected as part of a closed-loop re-injection system for which the approved Remedial Action Plan identifies zone size and duration, and groundwater monitoring:

Contaminants of concern:_____
Zone size (sq. ft.)___ Duration (mos.)_____ Yes, monitoring addressed. ☐

☐ ZOD permission by variance because the fluid to be injected contains the following impurities that are not prime constituents of the reagents used to remediate the site's contaminants, and the concentrations of those impurities in the fluid to be injected are in excess of their primary groundwater standards:

Impurities regulated as primary groundwater contaminants:_____

_____

Zone size (sq. ft.)___ Duration (mos.)_____ Yes, monitoring addressed. ☐

☐ A variance needs to be granted before the remediation can be conducted.

☐ A variance has already been granted for the impurities listed above:

Date variance granted: _____

Zone size (sq.ft.): _____

Duration (mos.): _____

■ If ZOD permission by rule 62-520.310(8)(c) †, F.A.C., or by variance is checked above, then a figure that delineates the ZOD is attached. (Use the lines below to more fully describe the ZOD if a figure alone will not suffice).

Provect-IR to be injected at 15 points spaced dependent on the treatment radius ranging from approximately five to fifteen feet for each point (see attached site figure for treatment radius varying by depth of injection).

CLEANUP CRITERIA AND ENFORCEABLE APPROVAL ORDER

The in-situ injection-type aquifer remediation plan for this contaminated site is intended to meet the groundwater cleanup criteria set forth in Chapter 62-777, F.A.C. Additionally, all other groundwater standards will be met at the time of project completion for any residuals associated with the ingredients of the injected remediation products, and any by-products or intermediates produced as a result of the chemical or biochemical reactions induced by those ingredients or the contaminants of concern during their use. Applicable primary and secondary groundwater standards are set forth in Chapter 62-550, F.A.C., and minimum groundwater criteria are set forth in Chapter 62-520, F.A.C.

The remediation plan estimates that site remediation will take approximately 60 – 120 months. We will notify you if there are any modifications to the remediation strategy which will affect the injection well design or the chemical composition and volume of the injected remediation product(s).

The proposed remediation plan was approved on_____ by an enforceable approval order. A copy is attached. The remediation system installation is expected to commence within 60 days. Please call me at 407-456-1535 if you require additional information.

† Effective July 12, 2009, rule 62-522.300(2)(c), Florida Administrative Code (F.A.C.), was relocated to Chapter 62-520, F.A.C., and renumbered as rule 62-520.310(8)(c), F.A.C.

Underground Injection Control Notification Memorandum for In-Situ Injection-Type Aquifer Remediation Projects: Instructions and Supplemental Information

THESE INSTRUCTIONS DO NOT HAVE TO BE SUBMITTED TO THE UIC SECTION. DETACH PAGES 5 THROUGH 8 PRIOR TO SUBMITTAL OF THE UIC NOTIFICATION MEMORANDUM.

The Underground Injection Control (UIC) Notification Memorandum is for use by staff in the Division of Waste Management and DEP District Offices. The notification memorandum is for the reporting of inventory information to the UIC Section of the Division of Water Resources Management when injection wells are used for injection of remediation products for in-situ remediation, including closed-loop re-injection of partially treated groundwater. An example of partially treated groundwater in a closed-loop re-injection system is water that is not fully treated by a mechanical system such as an air stripper, and as a result still contains Contaminants of Concern (COCs) at concentrations in excess of their groundwater standards. Other examples of partial treatment prior to closed-loop re-injection are the addition of bioremediation enhancements, surfactants and chemical oxidizers. In those cases, it is possible that both the COCs and the constituents of the bioremediation or oxidation reagents may be present in the re-injected water at concentrations that exceed their groundwater standards. For disposal, by injection, of effluent that has been fully treated to groundwater standards, use the UIC Notification Memorandum for Effluent disposal via injection.

Procedure

Reviewers of in-situ, injection-type aquifer remediation plans in the Division of Waste Management and DEP District Offices must complete a UIC Notification Memorandum (and must place a check mark in all appropriate check boxes on that notification). Zone of discharge (ZOD) check box help is provided below. Submit the completed notification memorandum to the UIC Section, along with a copy of the executed order that approves the injection-type Remedial Action Plan (RAP), Remedial Action Modification Plan, or Pilot Test.

Enforceable Approval Order

The standard RAP Approval Order is an enforceable approval order, and therefore an acceptable instrument by which to approve an in situ, injection-type aquifer Remedial Action Plan. However, for the approval of any other type of injection (such as an injection-type Remedial Action Modification Plan, or an injection-type pilot test for bioremediation or chemical remediation products) the approval must also be in the form of an enforceable Order. Use the UIC Approval Order to fulfill this requirement. Use the procedure described above and be sure to place a check mark in all appropriate check boxes on the UIC Notification Memorandum.

Underground Injection Control Notification Memorandum for In-Situ Injection-Type Aquifer Remediation Projects: Instructions and Supplemental Information

ZOD Check Box Help for Completion of the UIC Notification Memorandum – Note that most innovative technology acceptance letters will indicate which ZOD option should be checked

Below is a discussion about situations that are possible with respect to an in-situ, injection-type remediation strategy with Chapter 62-520, F.A.C., and the necessity for delineation of a ZOD and supplemental monitoring of the ZOD. Depending on the nature of the fluid to be injected, more than one situation below may apply.

- When **no ZOD** permission is necessary. If the remediation fluid to be injected meets the primary and secondary groundwater standards and minimum groundwater criteria at the point of discharge, it is not necessary to delineate and seek permission for a ZOD. No groundwater monitoring for underground injection control ZOD purposes is necessary. The only groundwater monitoring necessary is that which would normally be required for the COCs.

- When **reagents** (i.e., ingredients of remediation products) require permission for a ZOD by rule. If a remediation fluid to be injected does not meet the secondary groundwater standards, or the prime constituents of the remediation reagents in that fluid do not meet primary groundwater standards or minimum groundwater criteria at the point of discharge during active remediation, then permission for a ZOD can be granted by way of paragraph 62-520.310(8)(c), F.A.C., without the need to request a variance. In this situation, the groundwater in the ZOD must be monitored for those constituents of the reagents that do not meet their groundwater standards. In most cases, monitoring on a quarterly basis will suffice, and shall continue for each constituent until it reaches its groundwater standard or naturally-occurring background concentration at the cleanup site, whichever is less stringent. The key point to note in this situation, with respect to ZOD permission for a primary groundwater standard by way of rule, is that the primary contaminant (i.e., the ingredient chemical species of concern) must be a prime constituent of the reagent used to remediate the site's petroleum contaminants. For example: If potassium nitrate is a reagent, then permission for a ZOD can be granted by paragraph 62-520.310(8)(c), F.A.C., because the nitrate (which is a primary groundwater contaminant) is a prime constituent of the reagent being used to remediate the petroleum contaminants. The foregoing discussion about reagents is only one of several aspects of paragraph 62-520.310(8)(c), F.A.C. In this situation, the reviewer attaches to the UIC Notification Memorandum a figure that delineates the ZOD.

- When **a site's contaminants of concern** in a re-injection system require permission for a ZOD by rule. This is another aspect of paragraph 62-520.310(8)(c), F.A.C. If the fluid to be injected is part of a re-injection type treatment system that only partially treats recovered contaminated groundwater prior to re-injection, then paragraph 62-520.310(8)(c), F.A.C., provides a way to grant permission for a ZOD for the COCs in the re-injected fluid that are still in excess of their maximum allowable standards. Normal groundwater sampling at monitoring wells during active remediation will be sufficient to verify there are no COCs in the ZOD by the conclusion of active remediation, or post remediation monitoring. In this situation, the reviewer attaches to the UIC Notification Memorandum a figure that delineates the ZOD.

- When **impurities** in the reagents require permission for a ZOD by variance. A variance is necessary for ZOD permission when the fluid to be injected contains impurities that are not prime constituents of the reagents used to remediate a site's petroleum contaminants, and those impurities themselves are regulated as primary groundwater contaminants, and their concentrations in the fluid to be injected exceed primary standards at the point of discharge. Examples of reagents that often need to seek permission for a ZOD by way of variance are potassium permanganate and sodium permanganate, because they contain heavy metal impurities such as cadmium, chromium, vanadium, mercury, etc., that play no active role in the remediation. In this case, the responsible party's agent must petition for the necessary variance in order to obtain permission for the ZOD. A variance, when granted, will require that the groundwater in the ZOD be monitored for the impurities during and following active remediation to verify that their concentrations return to their respective primary groundwater standards or naturally occurring background concentrations at the remediation site, whichever is less stringent. In most cases, monitoring on a quarterly basis will suffice. In this situation, the reviewer attaches to the UIC Notification Memorandum a figure that delineates the ZOD.

Additional Notes for Completion of the UIC Notification Memorandum

Note 1. The UIC Notification Memorandum must be completed by a DEP employee of the Division of Waste Management or a DEP District Office. A person working for a consultant company preparing a RAP may complete some portions of the memo to expedite the DEP's review but if so, the "From" and "Date" (cover page), the date of RAP/UIC approval order and phone number (page 4) should all be left blank for the FDEP technical reviewer to complete after verifying other information in the memo is accurate.

Note 2. If an injection well installation contractor has not yet been selected, then indicate the name and address of the project's general remediation contractor/consultant.

Note 3. Complete chemical analysis of the fluid to be injected is required by Chapter 62-520.310(8)(c), F.A.C. Some remediation products and processes may have already submitted this information at the time of application for acceptance by the Innovative Technology Acceptance Program. For those situations, when completing the Fluid To Be Injected section of the UIC Notification Memorandum, it will suffice to indicate: (1) an Innovative Technology Acceptance letter has been issued;

(2) the date of the acceptance letter; (3) the acceptance letter contains the chemical analysis, or a voucher for the confidential disclosure of the injected fluid's chemical composition if it is a proprietary formulation; and (4) the fluid will be injected at concentrations that are less than or equal to those cited in the acceptance letter. For products and processes that do not hold an Innovative Technology Acceptance letter, but for which the site-specific Remedial Action Plan provides a complete description of the chemical composition of the fluid to be injected, it will be necessary to enter this information into the Fluid To Be Injected section of the UIC Notification Memorandum.

Paragraph 62-520.310(8)(c), F.A.C., is included in its entirety below, for FDEP-approved aquifer remediation projects that use Class V, Group 4, injection wells:

"A zone of discharge shall be allowed for primary standards for ground water for closed-loop re-injection systems and for the prime constituents of the reagents used to remediate site contaminants, and for the secondary standards for ground water, as specified in a Department-approved remedial action plan that addresses the duration and size of the zone of discharge, and ground water monitoring requirements".

MLPV-MW000K (15-25)

MLPV-MW000J (25-35)

MLPV-MW000I (15-25)

MLPV-MW000O (48-58)

IP14

IP15

MLPV-MW000F (48-58)

IP13

MLPV-MW000P (42-52)

MLPV-MW000E (47-52)

MLPV-MW000M (6-16)

IP12

MLPV-MW000N (42-52)

IP10

IP11

MLPV-MW000D (48-58)

IP09

MLPV-MW000Q (42-52)

MLPV-MW000S (60-70)

MLPV-MW000C (42-52)

IP08

MLPV-MW000R (42-52)

MLPV-MW000T (6-16)

IP02

IP01

IP03

IP05

IP04

IP07

IP06

MLPV-MW000A (6-16)

MLPV-MW000B (42-52)

MLPV-MW000H (60-70)

MLPV-MW000L (6-16)

MLPV-MW000G (45-55)

Legend

- IP Location (4 to 14 feet bls)
- IP Location (4 to 18 feet bls)
- IP Location (42 to 52 feet bls)
- IP Location (48 to 52 feet bls)
- IP Location (54 to 58 feet bls)
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 14 feet
- Approximate IP ROI (7.5 feet, 10 feet, 4 to 18 feet
- Approximate IP ROI (15 feet, 42 to 52 feet bls)
- Approximate IP ROI (15 feet, 48 to 52 feet bls)
- Approximate IP ROI (15 feet, 54 to 58 feet bls)
- Proposed Monitoring Well Location
- Approximate Extent of Composite High Concentration Plume

Notes:
1. bls = Below land surface
2. IP = Injection Point
3. ROI = Radius of Influence
4. MLP/VAB = Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB)
5. SWMU = Solid Waste Management Unit (SWMU 056)
6. MW = Monitoring Well
7. Radius of Influence is approximate.
8. **Low Concentration Plume Monitoring Well**
9. **Performance Monitoring Well**

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

N

0 10 20 Feet

FIGURE 1

Injection Layout and Monitoring Well Network

Hot Spot 3
MLP/VAB (SWMU 056)
NASA Kennedy Space Center, Florida

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Table 5-2

Injection Point Coordinates and Injection Details

Mobile Launcher Platform Rehabilitation Sites / Vehicle Assembly Building Area (MLP/VAB): Hot Spot 3

Injection Point ID	Easting (feet)	Northing (feet)	Injection Top Depth (feet bls)	Injection Bottom Depth (feet bls)	Injection Interval Length (feet)	Provect-IR Mass Injection Rate (lb/feet)	Water Injection Rate (gal/feet)	Provect-IR Mass (lb)	Estimated Mix Water (gal)
IP01	767211.4	1547246.0	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP02	767201.6	1547247.3	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP03	767190.6	1547245.5	4	10	6	71	48	424	288
			10	14	4	157	75	628	302
IP04	767205.9	1547238.1	4	10	6	71	48	424	288
			10	14	4	157	48	628	192
IP05	767197.1	1547240.4	4	10	6	71	48	424	288
			10	18	8	157	75	1,257	603
IP06	767197.9	1547230.7	4	10	6	71	48	424	288
			10	18	8	157	75	1,257	603
IP07	767203.1	1547231.6	42	52	10	424	204	4,241	2,036
IP08	767186.3	1547204.3	42	52	10	424	204	4,241	2,036
IP09	767147.0	1547223.6	48	52	4	424	204	1,696	814
IP10	767134.8	1547250.6	48	52	4	424	204	1,696	814
IP11	767160.2	1547248.7	48	52	4	424	204	1,696	814
			54	58	4	424	204	1,696	814
IP12	767113.0	1547283.5	48	52	4	424	204	1,696	814
IP13	767060.0	1547297.0	48	52	4	424	204	1,696	814
IP14	767046.0	1547318.7	48	52	4	424	204	1,696	814
IP15	767079.6	1547315.0	54	58	4	424	204	1,696	814
							Total	29,625	14,620

Notes:
bls = below land surface
gal = gallons
ID = identification
IP = injection point
lb = pounds
Provect-IR = selected amendment
Easting and Northing coordinates based on United States Plane, North American Datum of 1983, Florida East, feet (NAD83)

APPENDIX K

PRODUCT SAFETY DATA SHEET AND TECHNICAL DATA SHEET

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Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

* 1 Identification

· **Product identifier**

· **Trade name: Provect-IR ISCR Reagent (Antimethanogenic)**
· **Product description**
Remediation product for the treatment of soil, sediment and groundwater. Not for use in potable water sources.

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Provectus Environmental Products, Inc.
2871 W. Forest Road - Suite 2
Freeport, IL 61032
Phone: 815-650-2230
Fax: 815-650-2230
www.provectusenvironmental.com
· **Emergency telephone number:** 815-650-2230

* 2 Hazard(s) identification

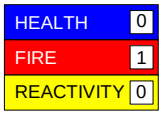
· **Classification of the substance or mixture**
The product is not classified according to the Globally Harmonized System (GHS).

· **Label elements**
· **GHS label elements** Non-Regulated Material
· **Hazard pictograms** Non-Regulated Material
· **Signal word** Non-Regulated Material
· **Hazard statements** Non-Regulated Material
· **Hazard description:**
CONTAINMENT HAZARD: Any vessel that contains wetted reagent must be vented due to potential pressure build up from fermentation gases.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 1
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 0
Fire = 1
Reactivity = 0

3 Composition/information on ingredients

	Proprietary	40 to 90%
7439-89-6	iron	5 to 90%
4075-81-4	calcium dipropionate	0 to 4%

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

8013-01-2	Yeast extracts	STOT SE 3, H335	0.5 to 5%

(Contd. on page 2)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

Trade name: Provect-IR ISCR Reagent

(Contd. of page 1)

9000-30-0	Guar gum	STOT SE 3, H335; Eye Irritant 2B, H320; Combustible Dust	0 to 5%
7757-83-7	sodium sulfite	Acute Toxicity 4, H302	0 to 2%

· ***Additional information:*** Product contains red yeast rice

4 First-aid measures

· ***Description of first aid measures***
· ***After inhalation:*** Remove person to fresh air. If signs/symptoms continue, get medical attention.
· ***After skin contact:*** Wash off with soap and water. Get medical attention if irritation develops.
· ***After eye contact:*** Flush with water for 5 minutes
· ***After swallowing:***
Rinse mouth with water and afterwards drink plenty of milk or water. Call a poison control center or doctor immediately for treatment advice.
· ***Most important symptoms and effects, both acute and delayed*** No further relevant information available.
· ***Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

5 Fire-fighting measures

· ***Extinguishing media***
· ***Suitable extinguishing agents:***
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· ***Special hazards arising from the substance or mixture*** No further relevant information available.
· ***Advice for firefighters***
· ***Protective equipment:*** No special measures required.

* 6 Accidental release measures

· ***Personal precautions, protective equipment and emergency procedures*** Not required.
· ***Environmental precautions:*** Do not allow to enter sewers or potable water sources.
· ***Methods and material for containment and cleaning up:***
Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Sweep or vacuum up spillage and place in vented container.
· ***Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and storage

· ***Precautions for safe handling*** No special measures required.
· ***Information about protection against explosions and fires:*** Combustible material

· ***Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
CONTAINMENT HAZARD: Any vessel that contains wetted reagent must be vented due to potential pressure build up from fermentation gases.
· ***Information about storage in one common storage facility:*** Not required.
· ***Further information about storage conditions:***
Keep tightly closed in a dry and cool place. Keep away from open flames, hot surfaces and sources of ignition. Any material that is wetted must be vented due to potential pressure build up from fermentation gases.

(Contd. on page 3)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

Trade name: Provect-IR ISCR Reagent

(Contd. of page 2)

· ***Specific end use(s)*** No further relevant information available.

* 8 Exposure controls/personal protection

· ***Additional information about design of technical systems:*** No further data; see section 7.

· ***Control parameters***
· ***Components with occupational exposure limits:***
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· ***Additional information:***
Dry or powdered ingredients are combustible. Dispersal of finely divided dust from products into air may form mixtures that are ignitable and explosive. Minimize airborne dust generation and eliminate sources of ignition.

· ***Exposure controls***
· ***Personal protective equipment:***
· ***General protective and hygienic measures:***
The usual precautionary measures for handling chemicals should be followed.
· ***Breathing equipment:*** Not required.
· ***Protection of hands:*** Not required.
· ***Eye protection:*** Not required.

* 9 Physical and chemical properties

· ***Information on basic physical and chemical properties***
· ***General Information***
· ***Appearance:***

Form:	Solid
Color:	Brown to Green
· ***Odor:***	Pleasant
· ***Odor threshold:***	Not determined.
· ***pH-value:***	Not applicable.
· ***Change in condition***	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	Undetermined.
· ***Flash point:***	Not applicable.
· ***Flammability (solid, gaseous):***	Not determined.
· ***Ignition temperature:***	
Decomposition temperature:	Not determined.
· ***Auto igniting:***	Product is not self-igniting.
· ***Danger of explosion:***	Dry or powdered ingredients are combustible. Dispersal of finely divided dust from products into air may form mixtures that are ignitable and explosive. Minimize airborne dust generation and eliminate sources of ignition.
· ***Explosion limits:***	
Lower:	Not determined.
Upper:	Not determined.
· ***Vapor pressure:***	Not applicable.
· ***Density:***	Not determined.

(Contd. on page 4)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

Trade name: Provect-IR ISCR Reagent

(Contd. of page 3)

· **Relative density** Not determined.
· **Vapor density** Not applicable.
· **Evaporation rate** Not applicable.

· **Solubility in / Miscibility with**
Water: Soluble.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not applicable.
Kinematic: Not applicable.

· **Solvent content:**
Organic solvents: 0.0 %

Solids content: 100.0 %
· **Other information** No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** Product is stable under normal conditions.
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

* 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Product dust may cause eye irritation.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.
· **NTP (National Toxicology Program)**
None of the ingredients is listed.
· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.

(Contd. on page 5)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

Trade name: Provect-IR ISCR Reagent

(Contd. of page 4)

· ***Persistence and degradability*** No further relevant information available.
· ***Bioaccumulative potential*** No further relevant information available.
· ***Mobility in soil*** No further relevant information available.
· ***Additional ecological information:***
· ***General notes:*** Water hazard class 1 (Self-assessment): slightly hazardous for water
· ***Results of PBT and vPvB assessment***
· ***PBT:*** Not applicable.
· ***vPvB:*** Not applicable.
· ***Other adverse effects*** No further relevant information available.

13 Disposal considerations

· ***Waste treatment methods***
· ***Recommendation:*** Smaller quantities can be disposed of with household waste.

· ***Uncleaned packaging:***
· ***Recommendation:*** Disposal according to official regulations municipal.
· ***Recommended cleansing agent:*** Water, if necessary with cleansing agents.

* 14 Transport information

· ***UN-Number***
· ***DOT, ADR, ADN, IMDG, IATA*** Non-Regulated Material
· ***UN proper shipping name***
· ***DOT, ADR, ADN, IMDG, IATA*** Non-Regulated Material
· ***Transport hazard class(es)***

· ***DOT, ADR, ADN, IMDG, IATA***
· ***Class*** Non-Regulated Material
· ***Packing group***
· ***DOT, ADR, IMDG, IATA*** Non-Regulated Material
· ***Environmental hazards:***
· ***Marine pollutant:*** No
· ***Special precautions for user*** Not applicable.
· ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code*** Not applicable.
· ***UN "Model Regulation":*** -

15 Regulatory information

· ***Safety, health and environmental regulations/legislation specific for the substance or mixture***
· ***Sara***

· ***Section 355 (extremely hazardous substances):***

None of the ingredients is listed.

· ***Section 313 (Specific toxic chemical listings):***

None of the ingredients is listed.

· ***TSCA (Toxic Substances Control Act):***

7439-89-6	iron
4075-81-4	calcium dipropionate
8013-01-2	Yeast extracts
9000-30-0	Guar gum
7757-83-7	sodium sulfite

(Contd. on page 6)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 Reviewed on 01/23/2016

Trade name: Provect-IR ISCR Reagent

(Contd. of page 5)

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.
· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.
· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.
· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.
· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.
· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **GHS label elements** Non-Regulated Material
· **Hazard pictograms** Non-Regulated Material
· **Signal word** Non-Regulated Material
· **Hazard statements** Non-Regulated Material

· **National regulations:**

The product is subject to be labeled according with the prevailing version of the regulations on hazardous substances.

· **State Right to Know**

	Proprietary	40-90%
7439-89-6	iron	5-90%
4075-81-4	calcium dipropionate	2-12%
8013-01-2	Yeast extracts STOT SE 3, H335	≤ 2.5%
9000-30-0	Guar gum STOT SE 3, H335; Eye Irrit. 2B, H320; Combustible Dust	≤ 2.5%
7757-83-7	sodium sulfite Acute Tox. 4, H302	≤ 2.5%

All ingredients are listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 01/23/2016 / 4
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association

(Contd. on page 7)

Safety Data Sheet (SDS)

OSHA HazCom 2012 Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Printing date 01/25/2016 *Reviewed on 01/23/2016*

Trade name: Provect-IR ISCR Reagent

(Contd. of page 6)

ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
Acute Tox. 4: Acute toxicity, Hazard Category 4
Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

· **** Data compared to the previous version altered.***

SDS / MSDS Created by MSDS Authoring Services (www.MSDSAuthoring.com)

Provect-IR® ISCR Reagent



Provect-IR® is a unique mixture of reagents combined into a single product that optimizes the *in situ* reductive dechlorination of chemicals present in soil, sediment, and groundwater. It acts by promoting synergistic interactions between:

- Natural antimethanogenic compounds
- Hydrophilic, nutrient rich organic carbon sources
- Zero-Valent Iron (ZVI)
- Chemical oxygen scavengers
- Vitamin and mineral sources

This distinctive, patented combination of natural and food-grade chemicals promotes *in situ* chemical reduction (ISCR) conditions for fast and effective destruction of targeted constituents of interest (COIs) such as chlorinated solvents, organochlorine pesticides, and other halogenated compounds (Brown *et al.*, 2009; Dolfing *et al.*, 2008; US Patent Office Scalzi *et al* 2012). Notably, Provect-IR® is the only ISCR reagent to simultaneously inhibit the production of methane during the requisite carbon fermentation processes (US Patent Office Scalzi *et al*, 2013, 2014). This promotes more efficient use of the hydrogen donor while avoiding negative issues associated with elevated methane (CH4) in groundwater, soil gas, and indoor air.

Current regulations for methane in groundwater vary from ca. 10 to 28 mg CH4/L (Indiana Department of Environmental Management, 2014). More State regulations are pending, with several enhanced reductive dechlorination (ERD) projects which intended to use liquid carbon (emulsified oils) sources failing to receive regulatory approval due to issues associated with excessive production of methane during previous technology applications (Personal Communication - State of California; State of Minnesota). Many remedial practitioners have subsequently been required to establish contingencies for conventional ERD/ISCR implementation if methane exceeds a threshold level ranging from 1 ppm to 10 ppm groundwater. These contingencies often entail expensive and extensive systems for capturing and treating methane in soil gas/vapor captured via SVE systems.

MODE OF ACTION – HOW DOES IT WORK?

What is a Methanogen? In the 1970s, Dr. Carl Woese (1928 to 2012) and his colleagues at the University of Illinois - Urbana studied prokaryotic relationships using DNA sequences and they found that microbes that produce methane – or methanogens - are Archaea (Woese and Fox, 1977). The identification of this new Domain of microorganism was very important for many reasons, but from our limited perspective herein this vast difference in genetic composition means that methanogens are significantly different from typical heterotrophic bacteria and eukaryotes. In other words, *Dehalococcoides* ethenogenes are as different from methanogens as you are.

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What is a Statin? A statin can be defined as "a class of lipid-lowering drugs that reduce serum cholesterol levels by inhibiting a key enzyme involved in the biosynthesis of cholesterol". Lovastatin is a widely known, potent statin used for decades to lower cholesterol in human blood by inhibiting 3-hydro-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, which is a key enzyme in the cholesterol biosynthesis pathway (Alberts et al., 1980). It was the first statin approved by the United States Food and Drug Administration in 1987 as a hypercholesterolemic drug.

What is Red Yeast (Rice) Extract? The red yeast rice (RYR) extract that is component of Provect-IR® is a substance extracted from rice that has been fermented with a type of yeast called Monascus purpureus. Red yeast extract is used as a food coloring, food additive/preservative, and is widely consumed by humans. The RYR extract contains a number of monacolins - most importantly, Monacolin K, otherwise known as Lovastatin or Mevinolin. Monacolin K is the only naturally occurring statin compound. In addition to Monacolin K, RYR extract also contains mono-unsaturated fatty acids and other vitamins that will effectively stimulate anaerobic bacteria in the subsurface.

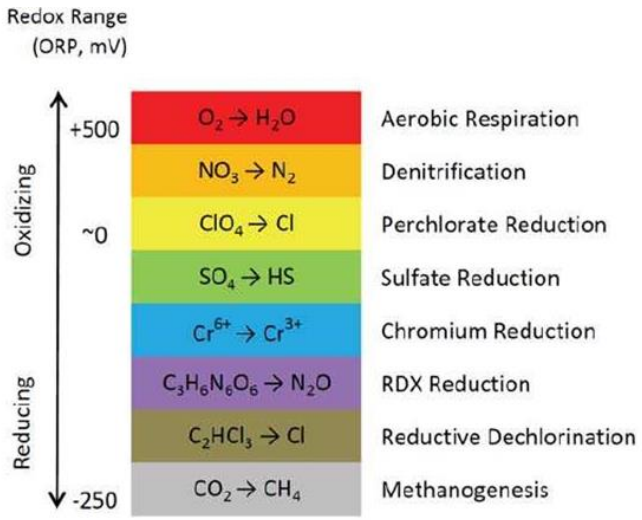
So - How Does a Statin Inhibit a Methanogen? Interestingly, Monacolin K is a potent inhibitor of methanogenic archaea because cell membrane production in archaea shares a similar pathway with cholesterol biosynthesis (Miller and Wolin, 2001). And since methanogens are so uniquely different than bacteria, the inhibitory effect is not observed in microbes that are typically associated with: i) catabolism of organic contaminants (such as pseudomonas species) and/or, ii) halo-respiration/biodegradation of chlorinated solvents (such as *Dehalococcoides* species). RYR has been used in the cattle industry for decades in efforts to manage rumen microbiology and control methane production in cows.

ATTENUATION PROCESSES – SAFER, MORE EFFICIENT ISCR TREATMENT

In situ chemical reduction as defined by Dolfing et al (2008) describes the combined effect of stimulated biological oxygen consumption (via fermentation of an organic carbon source), direct chemical reduction with ZVI or other reduced metals. The corresponding enhanced thermodynamic decomposition reactions that are realized at the lowered redox (Eh) conditions allow for more effective mineralization of many COIs.

Several ERD substrates and other accelerated anaerobic bioremediation technologies exist (e.g., emulsified oils, non-emulsified oils, carbon-based hydrogen release compounds, vegetable matter + ZVI amendments) that purportedly offer similar responses. However, the Provect-IR® antimethanogenic ISCR substrate is unique in its ability to yield Eh values most conducive to reductive dechlorination while simultaneously preventing methane production - which is a waste of the H being generated and potentially a safety issue under field conditions.

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Provect-IR® uniquely combines RYR extract with of a variety of specially selected reagents in order to induce genuine ISCR conditions and facilitate the destruction of targeted COIs in a safer, more efficacious manner. As outlined below, it can be used to manage environments impacted by chlorinated solvents, pesticides, heavy metals and other COIs.

Specially Selected Organic Hydrogen Donors: A variety of hydrophilic, nutrient rich organic carbon sources are incorporated in Provect-IR® that assist in promoting the ISCR process. The Provect-IR bioremediation amendments consist of slow, medium and long-term release carbon sources. Such a formulation is desirable because it provides both a rapidly utilized electron donor (calcium propionate), slow-release long-term electron donors (kelp meal and yeast extract) and long-term release carbon sources (other cellulose and hemi-cellulose carbon such as soy meal). More specifically,

- Calcium propionate and other readily biodegradable carbon sources: Following the addition of simple carbon sources such as lactate, formate, ethanol or glucose to an aquifer setting these compounds are often converted rapidly to hydrogen and acetate. Although this is the desired response, the process is sometimes too rapid, and this can result in aquifer acidification (due to rapid VFA production) and the liberation of too much hydrogen (which allows methanogens and sulfate reducers to compete effectively with dehalogenators, which tend to grow more slowly). Hence, calcium propionate is used as a readily biodegradable carbon source.
- Yeast extract: This supplement provides a variety of organic hydrogen donors that have slower release profiles (i.e., they are not fermented as rapidly as proprionate). Yeast extract also contains biological components that are very useful to anaerobes, but are not available through other carbon-only media. In particular, yeast extract provides an abundant source of priming ATPase along with trace nutrients and vitamin B complexes.

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- Kelp meal/Cellulose based carbon: These hydrogen sources are composed of a hydrophilic, solid and complex carbon that ferment more slowly and inherently generate less methane. The hydrophilic organic component of the kelp meal, for example, is composed of cellulose and hemicellulose and it may be treated during the manufacturing process so that some of the components more easily undergo hydrolysis to glucose while maintaining an overall longevity of 3 to 5+ years.

Chemical Oxygen Scavengers: The presence of chemical oxygen scavengers such as sodium sulfite helps minimize performance lag phases that are often observed following the injection of remedial amendments. This is due, in part, to the presence of oxygen that is introduced as a result of the field mixing and blending operations. It takes a certain amount of time and reagent consumption to remove that introduced oxygen and allow the ISCR reactions to proceed. Provect-IR is unique it that manages this impact chemically, which is a more effective, reliable manner thus allowing the ISCR process to be more effective.

Zero-Valent Iron: The presence of ZVI in Provect-IR® is critical to ISCR reactions. The ZVI is added as a reduced material that is oxidized during the reductive dechlorination reactions which use ZVI as the reducing agent. The beta-elimination reaction mainly produces (chloro)acetylene, ethane/ethane and chloride ions, without the accumulation of potentially problematic catabolites typical of microbiologically mediated sequential reductive dehalogenation processes (e.g., DCE "stall"). As the ZVI reacts, hydroxyl ions are released and pH increases which is useful in neutralizing the acidity generated during the fermentation of carbon, where acids are generated. Oxidized iron species are also produced, where are useful in alpha-elimination reactions and iron cycling. One limitation to ZVI reactions is that they are surface mediated which means that direct contact is required for direct COI destruction.

RYR Extract: Provect-IR® is the only ISCR amendment that will rapidly induce ISCR conditions while simultaneously preventing or significantly minimizing the production of methane. The benefits are notable:

- Safer: Methane is explosive with an LEL of 5% and an UEL of 15%. Production of methane will result from the addition of any conventional ERD or ISCR amendment: excessive and extended production of methane can result in elevated in groundwater concentrations (as high as 1,000 ppm have been reported) which can lead to accumulation in soil gas subsequently impacting indoor air. State specific regulations for methane in groundwater have been promulgated, with others pending for soil gas and indoor air.
- More Efficient = More Cost Effective: Production of methane is a direct indication that the hydrogen generated from the organic carbon amendments was used by methanogens and the amendment has been wasted because it was not utilized by acetogens or

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dehalorespiration. By inhibiting the growth and proliferation of methane producing Archaea, chlororespiring bacteria can become the more dominant bacterial populations.

PRIMARY FEATURES

- Effective: No accumulation of dead-end catabolic intermediates as a function of substrate addition (as is common with [emulsified] oils and sources of carbon only).
  - Does not rely on physical sorption/sequestration as a major "removal" mechanism (as is common with oils).
  - Inherently buffered for pH control – will not acidify an aquifer and liberate heavy metals as potential secondary COIs.
- Efficient: Significantly lower costs as a result more efficient amendment utilization and avoidance of contingencies for methane management. No need for additional buffers.
- Safe: Fewer health and safety concerns as compared with use of traditional ERD or ISCR reagents; Avoid issues associated with new and emerging methane regulations.
- Ease of Use: Green and sustainable. All components integrated in a single package. Logistics with no surprises.
- Longevity: Engineered profile of carbon sources for multi-year longevity estimated at 3 to 7 years based on site-specific hydrogeology. Reagent will stay in place and remain active which prevents rebound.
- Improved Performance: More efficient use of hydrogen donors (does not get wasted as methane).
- Adaptable Formulations for Heavy Metals: Will not mobilize arsenic or other heavy metals yielding secondary contaminants (as is common with [emulsified] oils and sources of carbon only). Can be formulated to manage environments that are co-impacted by various inorganic contaminants while simultaneously mineralizing the organic compounds.
- Patented Technologies: Technology end users and their clients are fully protected from all Patent and other legal issues

PHYSICAL PROPERTIES

Particle Size: ranges from ca. <5 to >100 micron (can be manufactured to specifications).

Dry Density: ranges from 0.4 to 0.5 g/cm3

29% Aqueous Slurry Density: ranges from 0.9 to 1.0 g/cm3

29% Aqueous Slurry Viscosity: ranges from 500 to 1,500 cP

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APPENDIX L

PROVECT-IR HANDLING AND APPLICATION GUIDLINES

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OVERVIEW



Provect-IR® Antimethanogenic *In Situ* Chemical Reduction (ISCR) Reagent is designed to treat persistent organic and/or inorganic contaminants present in the subsurface environment. As developers of the conventional ISCR amendment (EHC®), scientists now at Provectus know that Provect-IR is a more efficient, safer, better amendment. It is unique in its composition:

- Zero-Valent Iron: Up to 85% (weight basis), average particle size = 20 µm yields 25 ft ZVI surface area / lb product
- Integrated Vitamins, minerals and nutrients (yeast extract) specially selected for anaerobes
- Chemical oxygen scavenger to maintain reduced condition
- Multiple, Complex, Hydrophilic, Timed-Release organic carbon sources (plant materials, Kelp, Calcium Propionate) @ 390 g H donor / lb product
- METHANE INHIBITORS to increase safety and efficiency

MATERIAL PACKAGING, HANDLING AND STORAGE



Provect-IR can be specially formulated to meet site-specific needs. The standard formulation contains 10% ZVI and is packaged as a dry powder in 50-lb easy-open (NO SHARPS), polyethylene-lined, recycled paper bags or, upon request, in 2,000 lb Supersacks. Typical shipments entail multiple units of 4x4 wooden pallets containing 40 bags x 50 lbs/ bag = 2,000 lbs reagent per pallet. Each pallet is neatly wrapped in water-resistant plastic, but direct exposure to rain should be avoided.

GENERAL HEALTH AND SAFETY GUIDELINES

Provect-IR is non-hazardous and safe to handle. The use of standard personal protective equipment is always recommended, including safety glasses, steel-toe boots, gloves, hearing protection (in the proximity of loud machinery) and hard hat. Dust mask may be desired when working with the material under certain conditions. The SDS is posted on our web site at the following link: Click Here!

SLURRY PREPARATION

Provect-IR is mixed with clean water on site to yield an aqueous slurry (see **Table 1** for field mixing guidelines). Experienced injection contractors can easily manage (mix, transport/pump,

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and inject) slurry containing between 20% and 30% solids (defined as the mass of dry Provect-IR divided by the total mass of slurry, including the water). For situations where more volume is desired, slurry density can be decreased, *e.g.*, using a thinner slurry. Conversely, for situations where less volume is required (for example to minimize surfacing issues), thicker slurry with higher solids can be applied. A slurry containing *ca.* 29% solids will have the following general characteristics:

- Wet Density = 0.9 to 1.1 g/cm^3
- Dry Density = 0.3 to 0.4 g/cm^3
- Viscosity = 500 to 1,500 c P

TABLE 1. FIELD GUIDE FOR MAKING SLURRY

per 50 pound bag		per 25 kg bag	
Target weight %	**USG water required**	**Target weight %**	**Liters water required**
15	34	15	142
20	24	20	100
22	21	22	89
24	19	24	79
26	17	26	71
28	15	28	64
30	14	30	58
32	13	32	53
34	12	34	49
36	11	36	44

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APPLICATION TECHNIQUES

Provect-IR has been employed for source area treatment, plume treatment and/or plume management using permeable reactive barrier (PRBs). The choice of installation method will depend on the site-specific conditions, including treatment depth and geology. The most commonly practiced *in situ* application method has been direct injection of aqueous slurry.

Provect-IR slurry containing 10 to 35% solids has been added to numerous aquifers using a variety of injection methods, including hydraulic fracturing, pneumatic fracturing and direct injection. It can also be added via direct soil mixing using deep soil mixing equipment, or it can placed directly into an open excavation or trench. ABC-CH4 is a liquid formulation of our antimethanogenic ERD reagent which has been added to existing well screens.

GENERAL GUIDELINES FOR DIRECT PUSH INJECTION OF AQUEOUS SLURRY



Mixing Equipment. Reagent slurry has be prepared in various ways, ranging from in-line automated mixing systems, to manual mixing using a hand-held drill with a mixing attachment, to more creative processes. Particularly for larger projects, experienced drillers will have some form of mechanical mixing system on site that includes a tank with a paddle-type mixer at the bottom. The slurry is then transferred to a feed tank connected to an injection pump so that slurry can be prepared continuously while injections are being performed (see example, ChemGrout mixing system www.chemgrout.com/500hp.htm). Slurry mixes quickly in these systems (<1 minute), and injections can proceed without interruption.

Pumps. Experienced drillers will have a variety of pumping equipment on site. For injecting slurries, an injection pump capable of generating at least 300 psi of pressure at a flow rate of >5 gpm is desired. Obviously, the pump needs to be able to handle solids, such as piston pumps, grout pumps, and progressing cavity pumps - with a preference towards the piston and grout pumps. Slurry is typically injected at pressures of 100 to 200 psi; however, higher pressures are sometimes required to initiate the injection. It is recommended to have a higher pressure pump available on site that can generate over 500 psi and ca. >10 gpm, as deeper installations often require higher injection pressures.

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Tooling. Experienced drillers will have sufficient rod length on site to allow 3 to 5 injection points to be capped overnight to allow pressure to dissipate. This can help prevent backflow and surfacing of slurry as the injection rods are retracted. Likewise, experienced drillers will have on hand a variety of injection tips, some that direct the slurry horizontally (see for example GeoProbe's pressure activated tip at geoprobe.com).

In a "top-down" injection approach, the rods are initially advanced to the top of the targeted depth interval, and a specified volume of slurry is injected while recording flow rate, injection pressure, and slurry volume delivered. The injection rods are then further advanced a distance ranging 2 to 4 feet and the process is repeated to help ensure even distribution of slurry over the targeted depth interval. At the end of each injection point, a small volume of water (15 USG) is often used to clear the rods and the injection tip of any slurry.

CONTACT US FOR A COMPLIMENTARY SITE EVALUATION

PROVECTUS ENVIRONMENTAL PRODUCTS, INC.

2871 West Forest Road, Suite 2 | Freeport, IL 61032

Tel: (815) 650-2230 | Fax: (815) 650-2232 | Email: info@ProvectusEnv.com

Multiple remedial contracting options available via strategic providers

Turn-Key, Risk-Reward, Pay-for Performance, Remedial Guarantees/Warranties

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APPENDIX M

INNOVATIVE TECHNOLOGY ACCEPTANCE LETTER FOR PROVECT-IR

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FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Alexis A. Lambert
Secretary

April 30, 2025

Via Electronic Troy.Lizer@Provectusenv.com

Troy Lizer
Technical Sales Director – North America
Provectus Environmental Products, Inc.
P.O. Box 358
Free Port, IL 61032

Re: **Provect-IR®**
Innovative Technology Application Acceptance Letter

Dear Mr. Lizer:

The Florida Department of Environmental Protection's (FDEP) Division of Waste Management (Division) hereby accepts *Provect-IR®* for the purpose of in-situ reductive dechlorination of chlorinated hydrocarbons in soil and groundwater.

Provect-IR® must be diluted to at least 20% concentration by weight prior to injections into the aquifer.

Enclosure 1 is a voucher for a confidential disclosure of the proprietary ingredients submitted by Provectus Environmental Products, Inc. Enclosure 2 contains regulatory information.

For in-situ injections of *Provect-IR®* there are underground injection control regulations that must be observed.

For vadose zone remediation, such as soil blending, the underlying groundwater may be affected by the leaching of the *Provect-IR®* formulation. Although this remediation approach is not subject to the regulatory requirements of Chapters 62-528 and 62-520, Florida Administrative Code (F.A.C.), a regulatory advisory for Remedial Action Plan preparers and reviewers is included in Enclosure 2 for assistance with compliance with Chapters 62-780 and 62-777, F.A.C.

The FDEP does not provide endorsement of specific or brand name remediation products or processes, however, it does recognize the need to determine their acceptability from an environmental standpoint with respect to applicable rules and regulations, and the interests of public health safety. Vendors are responsible for marketing their product or process on its merits regarding performance, cost, and safety in comparison to competing alternatives in the marketplace. This acceptance letter shall not be construed as either an approval of the product or a certification of its performance.

Additionally, FDEP acceptance of any product or process does not imply it has been deemed applicable for any particular cleanup situation, or that it is preferred over other treatment or cleanup techniques. A site-specific evaluation of applicability should be considered for any product or process, whether conventional or innovative, and adequate site-specific design details must be provided in a Remedial Action Plan.

It is not a requirement that a remediation product or process obtain an acceptance from the FDEP in order to be proposed for use in a site-specific Remedial Action Plan, but the plan must contain information to show that it meets all applicable and appropriate rules and regulations. For *Provect-IR®* a copy of this acceptance letter containing regulatory compliance advice should be included in the appendix of each site-specific Remedial Action Plan that proposes its use.

The FDEP reserves the right to revoke its acceptance of a product or process if any component has been falsely represented.

This acceptance letter is valid for a period of ten (10) years from the issuance date above. At the end of the ten-year period, the acceptance can be renewed subject to an updated review of the product's use and formulation. The purpose of the updated review is to determine if the use conditions and monitoring requirements for this product need to be modified.

If you have any questions, contact Elena Compton at (850) 245-8911, through Mail Station 4535 at the letterhead address, or by e-mail at Elena.Compton@FloridaDEP.gov.

Sincerely,

Elena Compton, M.S., P.E.
Professional Engineer III
District Support Program, FDEP
850-245-8911

Enclosures: (1) Voucher; (2) Regulatory Information

FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Alexis A. Lambert
Secretary

April 30, 2025

Troy Lizer
Technical Sales Director – North America
Provectus Environmental Products, Inc.
P.O. Box 358
Free Port, IL 61032

Re: **Proprietary Ingredients: Provect-IR®**

Dear Mr. Lizer:

The Division of Waste Management hereby acknowledges the submittal of a confidential disclosure by Provectus Environmental Products, Inc. The disclosure provided the proprietary ingredients and their concentrations in *Provect-IR®.* Without this voucher for the disclosures, and the advice provided by the Division in Enclosure 2 based on its review of all the ingredients, users of *Provect-IR®* would not know how to comply with the requirements of paragraph 62-520.310(8)(c), Florida Administrative Code (F.A.C.), for a temporary Zone of Discharge.

For underground injection control purposes, remediation plans proposing the use of *Provect-IR®* must indicate the volume and complete chemical composition of the fluid to be injected. Since the identities of some ingredients are proprietary, it will suffice to just specify the overall volume and concentration of *Provect-IR®* and then provide a footnote indicating that the confidential disclosure was received October 8, 2024, and analytical results were received on April 21, 2025. Please direct questions regarding this voucher to Elena Compton at 850-245-8911.

Sincerely,

Elena Compton, M.S., P.E.
Professional Engineer III
District Support Program, FDEP

1. Groundwater cleanup standards: The onus shall be on users of *Provect-IR®* to ensure that all applicable groundwater standards will be met at the time of project completion for the contaminants of concern being remediated, and any byproducts produced as a result of chemical reactions induced or assisted by *Provect-IR®* The following chapters of the Florida Administrative Code (F.A.C.) are cited: Chapter 62-550, F.A.C., for primary and secondary water quality standards; Chapter 62-520, F.A.C., for groundwater classes, for groundwater permitting, and for monitoring requirements; Chapter 62-528, F.A.C., for underground injection control, particularly Part V, for Class V, Group 4 aquifer remediation projects; Chapter 62-780, F.A.C., for cleanup criteria, allowance of alternative cleanup target levels and conditional closure requirements; and Chapter 62-777, F.A.C., for cleanup target levels.

2. Injection well permit: Per paragraph 62-528.630(2)(c), F.A.C., the issuance of an enforceable, site-specific Remedial Action Plan Approval Order by the Department for injection-type aquifer remediation constitutes the granting of a Class V injection well construction/clearance permit.

3. Underground Injection Control (UIC): Remedial Action Plans proposing injection-type aquifer remediation shall include the information required by subparagraphs 62-528.630(2)(c)1 through 6, F.A.C., for the purposes of the UIC program. Reviewers of those plans, upon issuance of a Department-enforceable Remedial Action Plan Approval Order, must transmit this information to the UIC program in Tallahassee by submitting a completed copy of the "UIC Notification". The notification for sites that are impacted with contaminants of concern is in the form of a memorandum currently located on the Internet at https://floridadep.gov/waste/district-business-support/documents/uic-notice-remediation-products

4. General information about temporary Zones of Discharge (ZOD): For groundwater remediation, the composition of a fluid to be injected must meet the primary and secondary drinking water standards set forth in Chapter 62-550, F.A.C., and the minimum groundwater criteria of Chapter 62-520, F.A.C. [and Chapter 62-777, F.A.C.], pursuant to UIC paragraph 62-528.600(2)(d), F.A.C. Aquifer remediation products that do not meet these requirements must seek relief from water quality criteria by one of two mechanisms as follows. Permission for a temporary ZOD may be obtained via paragraph 62-520.310(8)(c), F.A.C. If permission for a ZOD cannot be obtained by rule, then it will be necessary to seek a variance from Department rules in accordance with Section 120.542, Florida Statutes.

   Paragraph 62-520.310(8)(c), F.A.C., allows for a temporary ZOD for closed-loop re-injection systems, for the prime constituents of the reagents used to remediate site contaminants, and for groundwater secondary standards. In order to obtain permission for a temporary ZOD by rule, a site-specific Remedial Action Plan must indicate: (a) the chemical ingredients of concern in the fluid to be injected that will be present in excess of groundwater standards; (b) the size of the ZOD that is needed; (c) the amount of time that the ZOD will be needed; and (d) a plan for monitoring the injected chemical ingredients of concern.

   The size of the temporary ZOD will usually be the injection well radius of influence when the treatment system is a single injection point. For a multiple point system, the ZOD can usually be expressed and illustrated as the total area covered by all the injection points, located side-by-side with overlapping radii of influence.

5. Upon expiration of the time-period granted for the ZOD by way of paragraph 62-520.310(8)(c), F.A.C., the concentrations of the above referenced analytes must meet their respective groundwater standards or their site-specific background values, whichever is less stringent.

   Conditional closure is also allowable provided the closure criteria of Rule 62-780.680, F.A.C., are met and there are no exceedances of a primary standard due to impurities in the product. Note that such conditional closure may require a modification of the size or duration of the ZOD. This modification must be approved in an enforceable order of the department, such as a conditional Site Rehabilitation Completion Order.

6. Site-specific Remedial Action Plans shall describe the volume and concentration of *Provect-IR*® that will be injected.

7. Specific ZOD information for *Provect-IR*®

   - Prior to injections:

   a. *Provect-IR*® must be diluted to at least 20%.

   b. Please note: Chapter 62-528, F.A.C, requires that the quality of the fluid (or non-liquid substance) introduced to the sub-surface be compared to the primary and secondary drinking water standards and the minimum criteria for groundwater before it is injected (i.e., before it is diluted by the receiving groundwater). A non-compliance with dilution of *Provect-IR*® to at least 20% prior to its introduction into aquifer, may result in a violation of

      i. Primary drinking water standard for **arsenic** (10 micrograms per liter [ug/L]),
      Primary drinking water standard for **fluoride** (4,000 ug/L),
      Primary drinking water standard for **sodium** (160,000 ug/L)
      Secondary drinking water standard for **fluoride** (2,000 ug/L),
      Secondary drinking water standard for **sulfate** (250,000 ug/l),

      ii. The outlined above parameters (arsenic, fluoride, sodium, and sulfate) are not the ZOD monitoring parameters - but they should be included in the baseline sampling and then annually following treatment to demonstrate and verify compliance with Chapter 62-528, F.A.C.

   c. For the ZOD parameter: **iron, manganese, and Total Recoverable Petroleum Hydrocarbons (TRPH)** shall be monitored.

   d. If *Provect-IR*® is proposed to be delivered into the aquifer via injection wells, reviewers of Remedial Action Plans should check the box as shown below when filling out the UIC Notification memorandum:
   "☐ *ZOD permission by paragraph* 62-520.310(8)(c), F.A.C., for *reagent chemical species and/or parameter(s) in the fluid to be injected (or re-injected) that exceed secondary groundwater standards. …".*

e. If *Provect-IR®* is proposed to be delivered into the aquifer by means other than injection wells (for example, most excavations [except by large diameter augers], infiltration galleries, trenches, etc.), the UIC Notification memorandum is not required to be filed but monitoring for the UIC parameters is required.

f. Required UIC ZOD compliance for *Provect-IR®* to comply with paragraph 62-520.310(8)(c), F.A.C.: pre-injection dilution at least to 20% by weight.

8. Quarterly monitoring should suffice in most cases. Upon expiration of the time period granted for the ZOD by way of paragraph 62-520.310(8)(c), F.A.C., the concentrations of the above referenced analytes must meet their respective groundwater standards or their site-specific background values, whichever is less stringent, or appropriate controls are put in place to allow conditional closure under Rule 62-780.680, F.A.C.

    i. **Iron** and **manganese** are secondary drinking water pollutants with the following standards: Fe = 300 ug/L and manganese = 50 ug/L.
    ii. **TRPH** has the following minimum-criteria based groundwater cleanup target level (GCTL): TRPH = 5,000 ug/L.

9. Utilization of wells: If a remediation site has sufficient monitoring wells, then the Division of Waste Management has no objection to the use of some existing monitoring wells for the injection of *Provect-IR®* However, no "designated" monitoring well, dedicated to the tracking of remediation progress (by sampling) shall be used to apply *Provect-IR®* Nor shall wells be used for the injection of *Provect-IR®* as dedicated wells for tracking remediation progress. This will avoid a premature conclusion that the site meets cleanup goals. By making sure that designated tracking wells are not used for treatment, there will be more assurance that the treatment process has permeated the entire site and that it did not remain localized to the area immediately surrounding each injection well.

10. Baseline Sampling: Baseline sampling (prior to any injection) for the ZOD monitoring parameters (and the impurities) is not required but is strongly recommended. The baseline sampling data is very useful for evaluating when the aquifer has returned to the pre-injection conditions. Analyses for **arsenic, fluoride, iron, manganese, sodium, sulfate, and TRPH** must be included in the baseline sampling.

11. Three categories of groundwater monitoring:

    a. Active remediation monitoring for a cleanup site's contaminants of concern: During the period of active remediation, groundwater shall be monitored in accordance with the requirements of the approved RAP as set forth in Rule 62-780.700, F.A.C.

    b. Post Active Remediation Monitoring for a cleanup site's contaminants of concern: At least one (1) year of quarterly post remediation groundwater monitoring for the contaminants of concern shall be conducted at a minimum of two (2) wells: one located in the area of highest contamination, the other at the downgradient edge of the contamination plume, pursuant to Rule 62-780.750, F.A.C.

c. Quarterly monitoring of the UIC zone of discharge: When *Provect-IR®* is utilized, in order to comply with paragraph 62-520.310(8)(c), F.A.C., the ZOD shall be *Provect-IR® monitored* for **iron, manganese, and TRPH** as discussed in paragraph 7c above.

d. Annual monitoring for **arsenic, fluoride, iron, manganese, sodium, sulfate, and TRPH** treatment to demonstrate and verify compliance with Chapter 62-528, F.A.C., as discussed in paragraph 7b above.

12. Injection operations:

a. Avoidance of migration: For injection-type in-situ aquifer remediation projects, injection of *Provect-IR®* shall be performed in such a way and at such a rate and volume that no migration of *Provect-IR®* (beyond the ZOD) or the contaminants of concern in the aquifer, or surface water, results, pursuant to subsection 62-528.630(3), F.A.C.

b. Underground Injection Control operating permit: Although an operating permit is not required for aquifer remediation wells pursuant to paragraphs 62-528.640(1)(b) and (c), F.A.C., since no movement of the contamination plume is expected to accompany the treatment process, the Department requests that the information items listed in paragraph 62-528.640(1)(b), F.A.C., be considered and included in Remedial Action Plan proposals as a matter of good and thorough design practice. Briefly summarized, they are the quality of water in the aquifer, quality of the injected fluid, existing and potential uses of the affected aquifer, and well construction details.

13. Abandonment of wells: Upon issuance of a Site Rehabilitation Completion Order or a declaration of "No Further Action", injection wells shall be abandoned pursuant to Rule 62-528.645, F.A.C. The Underground Injection Control Section of the Department shall be notified so that the injection wells can be removed from the inventory-tracking list.