

FINAL

SPRING 2023 LONG-TERM MONITORING EVENT 21 REPORT

**FORMER ATLAS “D” MISSILE SITE 4
F.E. WARREN AIR FORCE BASE, WYOMING
FUDS ID: B08WY0467**



April 2024

United States Army Corps of Engineers
Omaha District



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APRIL 2024

Prepared for:



United States Army Corps of Engineers
Contract W912DY-16-D-0026, TO W9128F19F0192

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Project No. 60613342

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List of Acronyms

µg/L	micrograms per liter
µS/cm	microSiemens per centimeter
°C	degrees Celsius
%	percent
Amec	Amec Foster Wheeler Environment & Infrastructure, Inc.
amsl	above mean sea level
bgs	below ground surface
CBOPU	Cheyenne Board of Public Utilities
DCE	dichloroethene
DO	dissolved oxygen
DoD	Department of Defense
Eurofins	Eurofins Environmental Testing Laboratories, Inc.
FUDS	Formerly Used Defense Site
GAC	granular activated carbon
GSA	General Services Administration
IDW	investigation-derived waste
J	estimated
LSB	Launch and Service Building
LTM	Long-Term Monitoring
MCL	maximum contaminant level
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolt
No.	number
NTU	nephelometric turbidity unit
ORP	oxygen-reduction potential
PA/SI	Preliminary Assessment/Site Investigation
PDB	passive diffusion bag
RI	Remedial Investigation
RMC	RMC Consultants, Inc.
RMC+SoundEarth	RMC+SoundEarth Joint Venture LLC
RP-1	Rocket Propellant-1
RPD	relative percent difference
RSL	regional screening level
Site 4	Former Atlas “D” Missile Site 4
SOP	standard operating procedure

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TCRA	time-critical removal action
TCE	trichloroethene
UFP-QAPP	Uniform Federal Policy – Quality Assurance Project Plan
URS	URS Group, Inc.
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WDEQ	Wyoming Department of Environmental Quality
VOC	volatile organic compound
WRF	White River Formation
ZVI	zero-valent iron

URS Group, Inc. (URS) has prepared this report to provide a summary of the sampling results from the Spring 2023 Long-Term Monitoring (LTM) Event 21 at the Former Atlas “D” Missile Site 4 (Site 4), F.E. Warren Air Force Base, Laramie County, Wyoming. This work is being conducted for the United States Army Corps of Engineers (USACE) - Omaha District, under Contract Number (No.) W912DY-16-D-0026, Task Order W9128F19F0192. Site 4 is a Formerly Used Defense Site (FUDS) (Identification #B08WY0467), previously under the command of F.E. Warren Air Force Base. The USACE - Omaha District is managing the environmental program that addresses contamination that is a result of former activity at the site.

1.1 PURPOSE AND SCOPE

The purpose of this report is to document field activities performed by URS and Na Ali'i Consulting and Sales, LLC from May to June 2023 in support of the Spring 2023 LTM Event 21 at Site 4. This document also presents the analytical sample results. The scope of the Spring 2023 LTM Event 21 included collecting the following samples as identified in the LTM and Performance Monitoring Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) (URS 2020a):

- Groundwater samples from site monitoring wells, municipal wells, stock wells, irrigation wells, and industrial wells, and
- Surface water and sediment samples at 4 co-located locations.

The results of the sampling data will be used to further refine the volatile organic compound (VOC) contaminant plume and continue monitoring contaminant trends and migration, particularly where potential human-health exposure is possible. Residential wells located along Otto Road, as well as subsurface vapor ports, are sampled annually in the fall of each year, and thus are not included as part of this LTM event. Surface water and sediment samples are collected at four locations to ascertain water quality and assess potential contaminant impacts at one location along Lone Tree Creek, one location at Otto Spring, and at influent and effluent locations in the Belvoir-Borie stock pond.

1.2 SITE BACKGROUND

1.2.1 Location

Site 4, located in Laramie County, Wyoming, is approximately two miles south of Interstate 80 and approximately 18 miles west of the city of Cheyenne (**Figure 1-1**). The site covers approximately 700 acres owned by the city of Cheyenne and is a small portion of the Belvoir Ranch. Site 4 housed three Atlas “D” missiles in three Launch and Service Buildings (LSBs). The one-square-mile area around the former missile site is the source area, also known as Area A, of the trichloroethene (TCE) contamination. Other areas downgradient of Area A have been investigated and identified as containing contamination. These areas include the Transition Area, a 12-square-mile area that extends eastward from Area A; Area B, a 30-square-mile area

east of the Cow Camp well (Cow Camp No. 1) and includes the Borie Well Field; and the Expanded Study Area, an area east and southeast of Area B (**Figure 1-2**).

1.2.2 Site History

The land comprising Site 4 was acquired by the United States Air Force by purchase and condemnation between 1959 and 1962, during which time it was developed for use as a missile facility for the housing, readiness, and potential launch of Atlas “D” missiles armed with high-yield nuclear warheads.

The property was one of four Atlas “D” missile sites and nine Atlas “E” missile sites operated by F.E. Warren Air Force Base in Colorado, Nebraska, and Wyoming. In 1965, the site was excised to the General Services Administration (GSA) for disposal due to phase-out of Atlas “D” missiles in favor of the solid-fuel Minuteman Intercontinental Ballistic Missiles. In early 1967, 338 acres of fee and easements were conveyed by quitclaim deed to Southern Scrap Iron and Metal Company of St. Louis, Missouri. That property was subsequently sold to the Belvoir Grazing Association of Ault, Colorado. The GSA sold the remaining property to Belvoir Grazing and Timnath Farms in January 1976. The site was acquired by the City of Cheyenne and Cheyenne Board of Public Utilities (CBOPU) in 2003 (RMC Consultants, Inc. [RMC]+SoundEarth Joint Venture LLC [RMC+SoundEarth] 2020).

Readiness exercises were periodically conducted while Site 4 was in operation. The Atlas “D” missile was a liquid-fueled rocket that used Rocket Propellant-1 (RP-1) for fuel and liquid oxygen as the oxidizer. During readiness exercises conducted at each of the three LSBs, the Atlas “D” missiles were fueled with RP-1 and defueled, and the RP-1 was pumped back into an underground storage tank. TCE was used to flush the rocket fuel tanks, engines, and/or liquid oxygen lines after the missiles were defueled to clean them of residual RP-1. The spent TCE was then discharged to a concrete flame pit (constructed to direct the missile exhaust away from the immediate launch area) as either a high-concentration dissolved phase or pure-phase product. Liquid from these pits drained to unlined waste channels adjacent to the LSBs (approximately 350 feet long and 20 to 30 feet deep) located on the western end of each building and terminated in unlined earthen burnout pits. These burnout pits were approximately 150 feet by 200 feet at the top, tapering to 100 feet by 150 feet at 30 feet below grade. Runoff originating in the flame pits traveled along the waste channels to the burnout pits, where it infiltrated into the soil. In addition to TCE, RP-1 and liquid oxygen coalesced to form a highly unstable and explosive gel that was washed from the missiles with water into the flame pits and subsequently into the burnout pits.

The quantity of released waste at Site 4 is not known, as the number of readiness exercises that occurred at Site 4 was not recorded (USACE 2003). The 2003 Site 4 Final Expanded Site Inspection (USACE 2003) estimates approximately 25 gallons of TCE was used to flush and clean the missile components during each readiness exercise that was conducted. A later report includes estimates of 25 to 300 gallons of TCE per exercise and 2 to 6 exercises each year (RMC 2009c). Given a 3-year operational period for the site, estimates of volume of TCE used range from 450 to 16,200 gallons (150 to 5,400 gallons per LSB).

Infiltration of TCE through the soil has resulted in contamination beneath and downgradient of the former missile site. Groundwater flow direction in the area is from west to east. TCE has been detected in soil and groundwater at Site 4, as well as in CBOPU municipal wells as far as 12 miles downgradient of the site. TCE was first detected in June 1998 at the Weber Number 1 well (0.9 micrograms per liter [$\mu\text{g/L}$]). Since then, TCE has been detected above the United States Environmental Protection Agency (USEPA) drinking water maximum contaminant level (MCL) of 5 $\mu\text{g/L}$ in groundwater beneath Site 4 and in the downgradient area. USACE has installed water treatment systems at two residences where domestic wells are contaminated with TCE, as well as a large treatment system at the City of Cheyenne's R.L. Sherrard Water Treatment Plant. USACE is responsible for the ongoing operation and maintenance of the residential and R.L. Sherrard treatment systems (RMC+SoundEarth 2020).

1.2.3 Previous Investigations

The USACE is the lead federal agency with responsibility for addressing environmental contamination issues at FUDS properties such as Site 4. The USACE Omaha District, working in coordination with the Wyoming Department of Environmental Quality (WDEQ) and the USEPA, has completed numerous investigations at Site 4 since 2002.

Several investigations have been performed at Site 4 and in the surrounding area. TCE was first detected in June 1998 at the Weber No. 1 well. The WDEQ initiated a groundwater sampling and analysis program in the Site 4 area in 2002 and prepared a Preliminary Assessment/Site Investigation (PA/SI) (LT Environmental, Inc. 2002). Also, in 2002, the USACE Omaha District implemented an Interim Response Action to provide an alternate well and water supply for a stock-watering system located near the former missile site. Following the PA/SI, the USACE installed eight monitoring wells at the site and initiated a groundwater monitoring program; additional monitoring wells were installed in subsequent investigations.

A Focused Feasibility Study that evaluated various remedial options for the aquifer contamination at Site 4 and the Belvoir Ranch was prepared in 2009 (RMC 2009a). In the same year, a time-critical removal action (TCRA) was implemented to provide treatment for two domestic wells and one municipal well located on Otto Road, about seven miles downgradient of the former missile site (RMC 2009b). The following year a LTM program for area wells was initiated. In 2011, another TCRA was implemented to provide treatment to the municipal wells of the CBOPU Borie Well Field groundwater supply and to the Sherard Water Treatment Plant for the City of Cheyenne, Wyoming (designed by McMillen in 2011).

The United States Geological Survey prepared a geologic/hydrogeologic characterization report in 2013 for the Ogallala and White River Formation (WRF) as encountered in a deep borehole located on the Belvoir Ranch. A Data Synthesis, Evaluation, and Interpretation task was initiated by the USACE in 2014 to compile and assess all relevant geologic and hydrogeologic information and data for Site 4 (Amec Foster Wheeler Environment & Infrastructure, Inc. [Amec]/Bay West, LLC 2017). Additional source-area Remedial Investigation (RI) field work was initiated in December 2015 with the recording of a single reflective seismic line approximately one mile long immediately downgradient of the former missile site

(RMC+SoundEarth, LLC 2016). The most recent site-specific investigations performed prior to the 2017 RI drilling and well installation work were two geophysical surveys conducted in May and June 2017. An Airborne Electromagnetic survey was conducted by Amec and Aqua Geo Frameworks under contract to RMC, focusing on the Expanded Study Area at the east end of the site (Amec 2017).

A comprehensive area-wide RI was conducted at Site 4 by RMC+SoundEarth, LLC (2020). Due to the large size of Site 4, the site was divided, from west to east, into Area A, where the source area is located, the Transition Area, Area B, and the Expanded Study Area. The primary contaminant at the site was TCE, which was found in soil, groundwater, soil vapor, and surface water at the site. The investigation was completed over a five-year period and included the collection of data of sufficient quantity and quality to determine the extent and magnitude of contamination across the site, evaluate the geologic and hydrogeologic characteristics and contaminant transport mechanisms, and assess potential human health and ecological risks. The human health risk assessment evaluated the potential adverse effects of site contamination on human health based on the information collected from Site 4 during the site-wide RI. Of the chemicals of potential concern identified during the human health risk assessment, TCE was the only chemical of concern identified in groundwater for potable water use. TCE migration from soil vapor to indoor air and migration from groundwater to indoor air are also exposure pathways exhibiting excess risk.

The RI included the following recommendations: 1) Move rapidly into the Comprehensive Environmental Response, Compensation, and Liability Act feasibility study phase for selecting remedial strategies to address contamination exhibiting unacceptable risk or degradation of natural resources. Work should include pilot studies to evaluate potential source-area remedial technologies and streamline full-scale treatment design and implementation of source-area contaminant remediation; 2) Installation of additional wells at strategic locations to define TCE concentrations exceeding 1,000 µg/L to refine the data and improve well placement; 3) Include any newly installed wells into the LTM program and continue monitoring contaminant trends and migration, particularly where potential human-health exposure is possible; 4) Define vertical extent of TCE contamination within the Intercept Transect Area; 5) Continue to compile and refine water-level data in new and existing wells for evaluating vertical gradients within the WRF.

The RI identified groundwater as the primary medium of concern at Site 4 because it is a current and future source of public drinking water and suggested a preliminary remediation goal of the federal MCL for TCE of 5 µg/L established under the Safe Drinking Water Act to be protective of public drinking water sources.

A pilot study with two in situ remediation technologies was conducted at the source area (Area A) in 2020 (URS 2021b). In situ treatments via injection of potassium permanganate and zero-valent iron (ZVI) were selected to test remediation of source area contamination at LSB 1 and LSB 2, respectively. A pilot study Pump, Treat, Inject System with one re-injection well was also installed in 2021 near the western edge of Area B. The system incorporated one existing extraction well.

Additionally, seven nested monitoring wells were installed (MW104, MW105, MW106, MW107, MW54B, MW84B, and MW92B) in 2020 and 2021 as part of the data gaps investigation and other plume refinement activities to define the extent of TCE contamination more accurately at the site (URS 2021a, URS 2022a).

1.2.4 Geology

The Site 4 Study Area is underlain by two primary geologic units: the late Miocene-early Pliocene Ogallala and the upper Eocene-lower Oligocene WRF (RMC+SoundEarth 2020). These units are separated by a disconformity and have a regional dip of one to five degrees to the east-northeast. The Ogallala is a primarily alluvial sedimentary unit representing deposition by alluvial fans originating from the Laramie Range located west of the study area, which transitions to braided streams to the east. The regional composition of the Ogallala is well to poorly sorted, fine to very coarse-grained sandstones and conglomerates, siltstones, and minor beds of claystones, volcanic ash, and limestones. This unit pinches out just west of Area A but thickens to the east to greater than 200 feet in Area B and the Expanded Study Area.

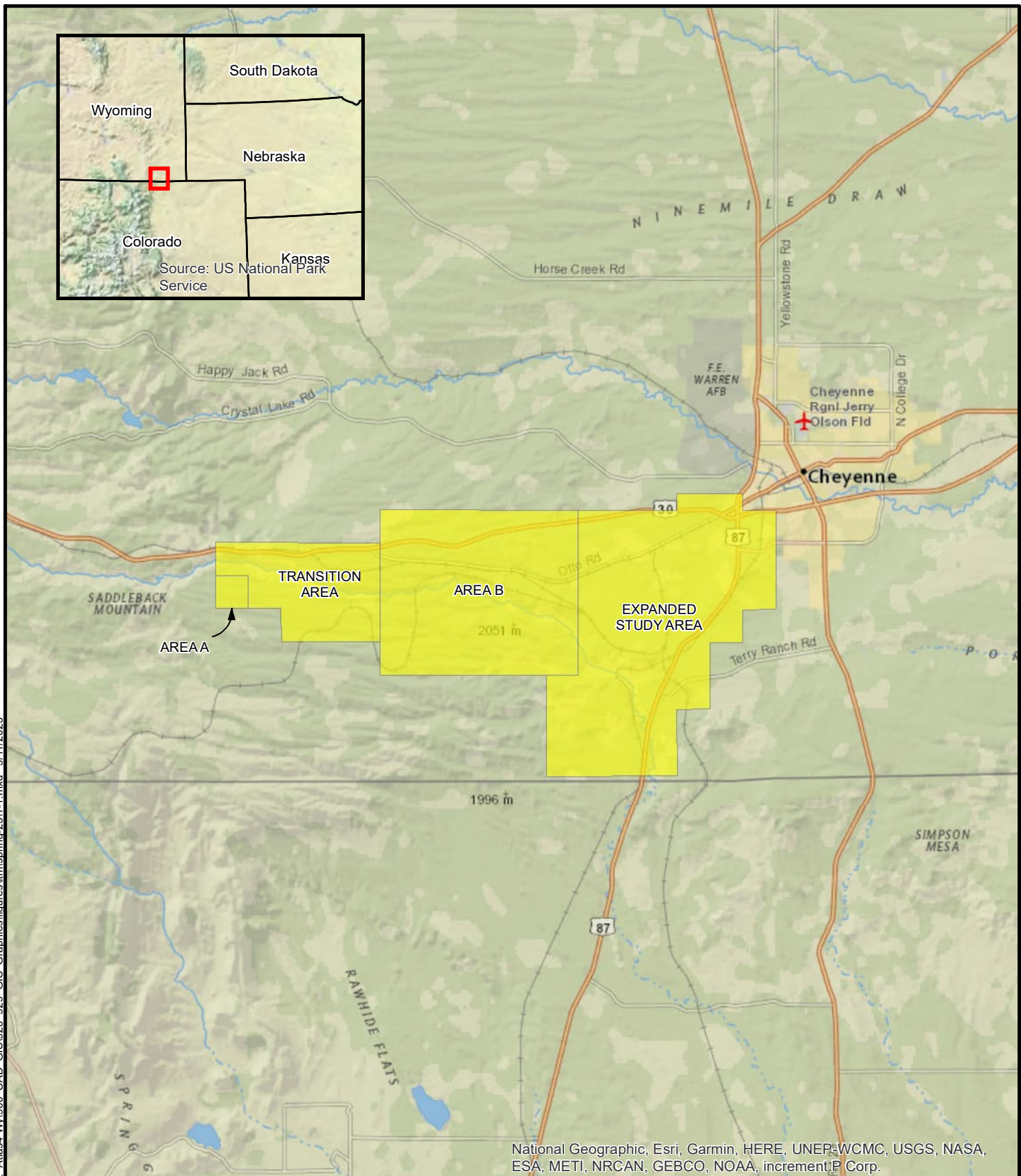
The WRF, which underlies the Ogallala, is composed of two members: the Brule and the Chadron. There is some inconsistency in the literature on the classification of the WRF and its members. Some publications refer to the WRF as a formation and the Brule and Chadron as members, while others elevate the WRF to a group with the Brule and Chadron classified as formations. This report refers to the WRF as a formation and the Brule and Chadron its constituent members. As a whole, the WRF is predominantly composed of fine-grained rocks with a high percentage of volcanic ash. The Brule Member is primarily composed of siltstones, mudstones, and volcanic glass with minor amounts of sandstones and conglomerates. The underlying Chadron Member is generally coarser-grained and is composed of siltstones, claystones, and conglomerates.

1.2.5 Hydrogeology

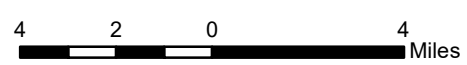
In general terms, two aquifers are potentially present in the study area: the High Plains aquifer and the Chadron aquifer. In the study area, the Ogallala and the Brule Member of the WRF are the potential host units for the High Plains aquifer – a vast, fairly shallow aquifer underlying most of Nebraska and smaller portions of Wyoming, South Dakota, Colorado, Kansas, the Oklahoma panhandle, New Mexico, and northern Texas. The Brule generally possesses low intrinsic permeability and is only included in the High Plains aquifer where it locally has secondary porosity, such as fractures or solution openings. The low permeability areas of the Brule act as the lower confining unit of the High Plains aquifer. Where the Brule is a confining unit, the underlying Chadron is considered a separate aquifer.

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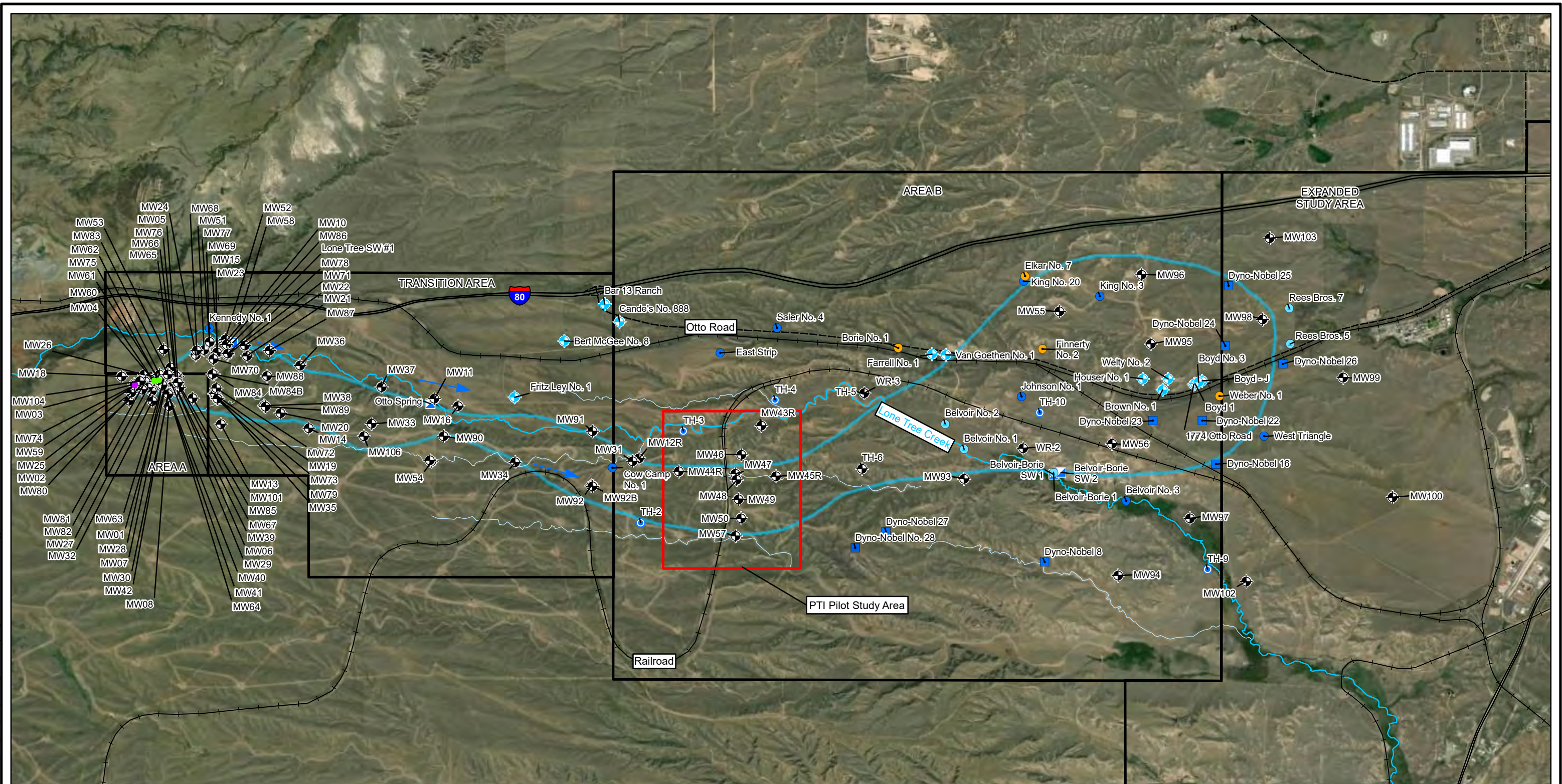


LTM = Long-Term Monitoring



<div>Site Location Map</div> <div>Spring 2023 LTM Event 21</div> <div>Former Atlas "D" Missile Site 4</div> <div>F.E. Warren Air Force Base, WY</div>			
Drawn By: DPG		Date: 9/11/2023	
Checked By: RRM		Project No: 60613342	
		Revision: 0	
		Figure 1-1	

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Locator Map

Legend

- Monitoring Well
- Industrial Well
- Irrigation Well
- Municipal Well
- Stock Well
- Test Hole Well
- Surface Water/Sediment Location
- Domestic Well
- ZVI Injection Pilot Study Area
- KMnO₄ Injection Pilot Study Area
- Road
- Railroad Tracks
- Perennial Creek
- Ephemeral Creek
- Groundwater Flow
- Spring 2023 Plume 5 µg/L

LTM = long-term monitoring
PTI = Pump, Treat, and Inject
ZVI = zero valent iron

Horizontal Datum:
NAD_1983_StatePlane_Wyoming_East_FIPS_4901_Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri

5,000 2,500 0 5,000 Feet

Study Area Details
Spring 2023 LTM Event 21
Former Atlas "D" Missile Site 4
F.E. Warren Air Force Base, WY

Drawn By: DPG	Date: 3/4/2024	Project No: 60613342	Figure 1-2
Checked By: IBK	Revision: 0		

The following sections describe field activities associated with the Spring 2023 LTM Event 21. These activities included water level measurements, groundwater sampling, and surface water/sediment sampling. Daily Quality Control Reports are included in **Appendix A**.

With the exception of variances noted in **Section 2.4**, all activities were completed in accordance with the requirements outlined in the Final LTM and Performance Monitoring UFP-QAPP, Addendum 1 (URS 2020a).

2.1 WATER LEVEL MEASUREMENTS

An initial round of static water levels was measured between 10 and 12 May 2023. Water levels were recorded at Site 4 wells where measurement access was readily available and well pumps or other apparatus (i.e., stock, domestic, or industrial wells) were not present. Sixty-eight of the locations (MW43R through MW107) are nested monitoring wells where water level measurements were recorded at multiple depths. A total of 243 water level measurements were recorded at 106 well locations and 7 test hole wells. None of the stock tank wells and production wells allow access for water level measurement devices. A summary of water level elevation data is provided in **Table 2-1**.

Monitoring well screens for Site 4 wells were evaluated according to whether they represent the elevation of the water table or a piezometric surface contour. **Figure 2-1** and **Figure 2-2** illustrate the water table elevation and piezometric surface contour maps, respectively.

Groundwater elevations from wells completed in the Ogallala Formation ranged from a high of 7,199.18 feet above mean sea level (amsl) at MW104-135 in Area A to a low of 6,249.17 feet amsl at MW100-270 in the Expanded Study Area. Groundwater elevations from wells completed in the WRF ranged from a high of 7,213.75 feet amsl at MW18 in Area A to a low of 6,131.10 feet amsl at MW97-266 in Area B. Groundwater flow across Site 4 is from west to east. The average hydraulic gradient in the water table and potentiometric surfaces in Area A and the Transition Area during the Spring 2023 LTM Event 21 was 0.025 feet per foot (between MW18 and MW91-195) and 0.025 feet per foot (between MW25 and MW91-313), respectively. The average hydraulic gradient in the water table and potentiometric surfaces in Area B during the Spring 2023 Event 21 was 0.006 feet per foot (between MW91-195 and MW93-71) and 0.008 feet per foot (between MW91-313 and MW97-107), respectively.

2.2 SAMPLE COLLECTION AND ANALYSIS

Field personnel performed the Spring 2023 LTM Event 21 sampling activities between 11 May 2023 and 6 June 2023. The Spring 2023 LTM Event 21 included groundwater, surface water, and sediment sample collection in accordance with the LTM and Performance Monitoring UFP-QAPP (URS 2020a) and the Site-Wide UFP-QAPP (URS 2020b). A sample summary is shown on **Table 2-2**.

2.2.1 Groundwater Sample Collection

A total of 272 groundwater samples were collected from 123 locations during the Spring 2023 Event 21, as shown below:

- 97 monitoring well locations
 - 29 single monitoring wells (MW01, MW03 through MW07, MW10, MW13, MW15, MW19 through MW22, MW24 through MW34, and MW36 through MW40)
 - 68 nested monitoring wells (MW43R, MW44R, MW45R, MW46 through MW54, MW54B, MW55 through MW84, MW84B, MW85 through MW92, MW92B, and MW93 through MW107)
- 3 test hole wells (TH-2, TH-5, and TH-9)
- 8 industrial wells, 4 municipal wells, and 11 stock or irrigation wells.

The test hole and nested monitoring well locations have discrete, multi-interval sampling depths (e.g., 214 samples collected from 68 nested wells and 4 samples collected from 3 test holes).

Table 2-2 presents a summary of the Spring 2023 Event 21 samples, including the analyses and sample dates for each sample.

All wells were sampled via passive diffusion bags (PDBs) or purged of stagnant well casing water prior to sample collection per the standard operating procedures (SOPs) approved in the Final Site-Wide UFP-QAPP (URS 2020b). PDBs are ideal for sampling wells where purging and sampling with a pump is difficult. Many wells at Site 4 fall into this category for several reasons: depth, lack of parameter stability, and dewatering being the most prevalent. Multiple wells across the site see water at depths exceeding 200 feet below top of casing or are screened in very low permeability areas. Such circumstances can make it difficult to pump water to the surface conventionally without risking damage to equipment or dewatering the well. For wells sampled with conventional methods, standard field water-quality parameters (dissolved oxygen [DO], pH, specific conductance, oxidation-reduction potential [ORP], temperature, and turbidity) were measured and recorded on groundwater sample collection field sheets included in **Appendix B**. All groundwater samples were analyzed for VOCs by USEPA Method 8260D. As would be expected on such a large heterogeneous site, purging techniques vary due to the individual characteristics of each well, the material screened, and the aquifer; however, the objective to obtain representative formation waters was achieved for the Spring 2023 LTM Event 21. Groundwater samples were collected using the general protocol discussed below to ensure representative formation water was sampled and analyzed.

If sampled via conventional methods (Grundfos Redi-Flo 2 or Geotech 1.66 Bladder Pump):

- When a steady pumping water level was sustained, and water quality parameters stabilized over three consecutive readings.
- When a steady pumping water level was sustained, and the well was pumped continuously for a maximum of two hours.

- When a well did not produce enough water to maintain a steady pumping water level and the water was evacuated to the top of the well screen (i.e., all stagnant water had been removed), as soon as two cycles of pumping and recovery were completed.
- If sampled via PDB method:
- At least two weeks must pass since initial deployment of PDB for a representative sample of the formation (two weeks is minimum deployment period to allow for diffusion between formation water and the PDB). All PDBs sampled were deployed during the Fall 2022 LTM Event 20.
- The PDB and protective polyethylene mesh cover were examined for biofilm or iron coating, and for tears in the membrane. The condition of the PDB was noted in the field logbook.
- After sample collection, the PDB was replaced with a new PDB, pre-filled with analyte-free deionized water, placed inside the polyethylene mesh cover, then secured to polyethylene rope, and placed back in corresponding well at same depth.

Using the above sampling methodology, representative formation water was obtained during the Spring 2023 LTM Event 21. Any variances from the SOPs for groundwater sample collection are discussed in **Section 2.4**. The samples collected were submitted for off-site laboratory analysis. Groundwater samples were transported under chain-of-custody procedures to Eurofins Environmental Testing Laboratories, Inc. (Eurofins) in Arvada, Colorado, for analysis. Field quality control samples included duplicate samples (1 per 10 field samples), matrix spike/matrix spike duplicate (MS/MSD) pairs (1 per 20 field samples), and trip blanks (1 per sample cooler). Analytical results were reviewed and verified per the Final Site-Wide UFP-QAPP (URS 2020b) and UFP-QAPP Addendum 3 (URS 2023) to ensure all sample results were valid and usable for the project objectives. The Data Usability Summary and associated Data Review Reports for the Spring 2023 LTM Event 21 are included as **Appendix C**. Lab reports are included in **Appendix D**.

2.2.2 Surface Water Sample Collection

Four surface water samples were collected at Lone Tree Creek near the abandoned Department of Defense (DoD) Hall Well, at Otto Spring, and the water entrance and exit points to the stock/irrigation pond at the Belvoir-Borie No. 1 well location (see **Figure 1-2**). Criteria used to select surface water sampling locations include the following:

- Lone Tree Creek near the former DoD Hall Well: Samples were collected from this location to assess potential contaminant impacts to surface water immediately downgradient of the source area.
- Otto Spring: This location is approximately the mid-point between the source area and the leading edge of the plume. Surface water was sampled at this location to evaluate potential contaminant impacts at this mid-point location.
- Belvoir-Borie No. 1 well/stock pond: Low level TCE has been reported in the Belvoir-Borie No. 1 well. The well is located in Area B side gradient to the interpreted TCE

plume. Surface water was collected from the pond influent flow and pond effluent flow to monitor VOC concentrations in this area.

Surface water samples were collected in accordance with SOP 14 of the Final Site-Wide UFP-QAPP (URS 2020b). A sample transfer container (i.e., a laboratory-supplied volatile organic analysis vial) was used during sample collection, so that the hydrochloric acid preservative would not wash out of the 40-milliliter glass sample vials. A triple rinse using flowing surface water was completed for the transfer container prior to collection of the surface water sample. Rinse water was discarded downstream of the sampling location. Following the triple rinse, the transfer bottle was submerged below the water surface and used to fill the laboratory-supplied sample vials without headspace. Water-quality parameters (DO, pH, specific conductance, ORP, temperature, and turbidity) were measured at each surface water sample location and recorded on surface water sample collection forms (**Appendix B**). All surface water samples were submitted to Eurofins for analysis of VOCs by USEPA Method 8260D. Surface water analytical quality control samples including one duplicate sample and one MS/MSD pair were also collected. Analytical results were reviewed and verified per the Final Site-Wide UFP-QAPP (URS 2020b) and UFP-QAPP Addendum 3 (URS 2023) to ensure all sample results were valid and useable for the project objectives. The Data Usability Summary and associated Data Review Reports for the Spring 2023 LTM Event 21 are included as **Appendix C**. Complete laboratory analytical data reports and chain-of-custody records are provided in **Appendix D**.

2.2.3 Sediment Sample Collection

Four sediment samples were collected from the same locations as the surface water samples, in accordance with SOP 15 of the Final Site-Wide UFP-QAPP (URS 2020b). Sediment samples were collected at Lone Tree Creek near the abandoned DoD Hall Well, at Otto Spring, and from the water entrance and exit points to the stock/irrigation pond at the Belvoir-Borie No. 1 well location (see **Figure 1-2**). All sediment samples were submitted to Eurofins for analysis of VOCs by USEPA Method 8260D. Sediment analytical quality control samples including one duplicate sample and one MS/MSD pair were also collected. Analytical results were reviewed and verified per the Final Site-Wide UFP-QAPP (URS 2020b) to ensure all sample results were valid and usable for the project objectives. The Data Usability Summary and associated Data Review Reports for the Spring 2023 LTM Event 21 are included as **Appendix C**. Complete laboratory analytical data reports and chain-of-custody records are provided in **Appendix D**.

2.2.4 Groundwater Quality Parameters

Stabilized groundwater quality parameters were recorded during groundwater sampling and are presented in **Table 2-3**. The ranges of these parameters are from the final stabilized readings prior to sample collection, listed below:

- pH: 6.88 to 8.24 (average 7.49)
- Temperature: 7.76 to 15.79 degrees Celsius (°C) (average 11.56 °C)

- Conductivity: 205 to 1296 microSiemens per centimeter ($\mu\text{S}/\text{cm}$) (average 329 $\mu\text{S}/\text{cm}$)
- DO: 0.0 to 10.37 milligrams per liter (mg/L) (average 6.06 mg/L)
- Turbidity: 0.02 to 795 nephelometric turbidity units (NTUs) (average 21.55 NTUs)
- ORP: -170.0 to 275.2 millivolts (mV) (average 35.9 mV)

2.3 INVESTIGATION-DERIVED WASTE MANAGEMENT

Investigation-derived waste (IDW) generated during the monitoring event included regular solid waste (e.g., spent nitrile gloves, paper, well tubing) and well purge water from wells with TCE concentrations greater than 5 $\mu\text{g}/\text{L}$ or with unknown concentrations. Purge water (from wells with historical TCE concentrations greater than 5 $\mu\text{g}/\text{L}$) and decontamination water were containerized in a 500-gallon poly tank and treated by granular activated carbon (GAC). Treatment involved transferring water through a bag filter to remove sediments, followed by two portable 500-pound GAC treatment units. Approximately 1,050 gallons of treated purge water, as well as approximately 3,251 gallons of untreated purge water from wells with historical concentrations less than 5 $\mu\text{g}/\text{L}$, were discharged to the ground surface.

GAC treatment samples were collected 13 June 2023 from sample ports located at the influent (prior to treatment), intermediate (following the treatment from primary GAC treatment vessel), and effluent (following treatment through secondary GAC treatment vessel). GAC treatment samples were submitted for VOC analysis.

Solid waste generated during the event was containerized in plastic bags and taken off site and disposed in a permitted landfill.

2.4 VARIANCES TO THE UFP-QAPP

The following variations from the approved Final Site-Wide UFP-QAPP (URS 2020b) occurred during the Spring 2023 LTM Event 21:

- A water level could not be measured at MW12R, MW90-198, MW97-329, and MW99-253 during the synoptic water level measurement round as the wells were dry.
- Water levels could not be measured at MW98-180, MW98-217, and MW98-263 because the wells are artesian.
- Belvoir No. 2 and Saler No. 4 were offline during the sampling event. No samples were collected at these wells.
- Monitoring wells MW12R, MW84-99, MW90-198, MW92-310, MW97-329, and MW99-253 were not sampled due to insufficient water within the well to collect the sample. No PDBs were deployed in these wells.

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TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW01	Area A	WR	7240.65	7242.12	62.32	7179.80	5/11/23
MW02	Area A	WR	7313.78	7316.41	107.34	7209.07	5/11/23
MW03	Area A	WR	7271.90	7274.31	68.89	7205.42	5/11/23
MW04	Area A	WR	7267.90	7270.42	84.36	7186.06	5/11/23
MW05	Area A	WR	7239.90	7242.58	48.91	7193.67	5/11/23
MW06	Area A	WR	7242.70	7245.03	85.42	7159.61	5/12/23
MW07	Area A	WR	7239.60	7242.09	61.90	7180.19	5/11/23
MW08	Area A	WR	7263.53	7265.77	99.92	7165.85	5/12/23
MW10	Transition	Og	7041.10	7043.97	9.46	7034.51	5/10/23
MW11	Transition	Og	6882.39	6885.18	8.22	6876.96	5/10/23
MW12R	Area B	Og	6761.40	6764.93	Dry	Dry	5/10/23
MW13	Transition	WR	7239.90	7242.21	165.09	7077.12	5/10/23
MW14	Transition	WR	7141.98	7144.60	216.13	6928.47	5/10/23
MW15	Transition	WR	7126.90	7129.42	93.32	7036.10	5/10/23
MW16	Transition	WR	6879.46	6881.87	165.74	6716.13	5/10/23
MW18	Area A	WR	7302.90	7305.13	91.38	7213.75	5/11/23
MW19	Transition	WR	7163.70	7166.28	79.20	7087.08	5/10/23
MW20	Transition	WR	7120.30	7122.96	151.74	6971.22	5/10/23
MW21	Transition	WR	7034.50	7036.73	21.74	7014.99	5/10/23
MW22	Transition	Og	7028.40	7030.79	13.60	7017.19	5/10/23
MW23	Transition	WR	7127.91	7130.83	106.53	7024.30	5/10/23
MW24	Transition	WR	7130.10	7132.34	65.87	7066.47	5/10/23
MW25	Area A	WR	7293.00	7295.59	90.05	7205.54	5/11/23
MW26	Area A	WR	7286.50	7289.24	96.00	7193.24	5/11/23
MW27	Area A	WR	7263.70	7266.24	74.65	7191.59	5/11/23
MW28	Area A	WR	7265.60	7268.42	95.04	7173.38	5/10/23
MW29	Area A	Og	7231.50	7233.98	60.22	7173.76	5/12/23
MW30	Area A	WR	7255.30	7258.09	81.11	7176.98	5/12/23
MW31	Area B	WR	6772.40	6775.08	181.75	6593.33	5/10/23
MW32	Area A	Og	7289.69	7292.25	97.41	7194.84	5/12/23
MW33	Transition	Og	7069.50	7072.00	179.17	6892.83	5/11/23
MW34	Transition	WR	6892.00	6893.76	228.91	6664.85	5/10/23
MW35	Transition	WR	7162.84	7165.15	95.50	7069.65	5/10/23
MW36	Transition	Og	6994.40	6996.92	28.63	6968.29	5/10/23
MW37	Transition	Og	6929.90	6932.55	39.26	6893.29	5/10/23
MW38	Transition	WR	7164.58	7167.25	163.49	7003.76	5/10/23
MW39	Area A	WR	7237.00	7239.98	76.13	7163.85	5/12/23
MW40	Area A	WR	7243.70	7246.49	67.88	7178.61	5/12/23
MW41	Area A	Og	7250.30	7245.72	NM ¹	NM ¹	5/12/23
MW42	Area A	WR	7250.30	7252.60	77.77	7174.83	5/12/23
MW43R-242	Area B	Og	6678.20	6680.88	115.38	6565.50	5/10/23
MW43R-262	Area B	Og	6678.20	6680.88	118.00	6562.88	5/10/23
MW44R-207	Area B	Og	6774.70	6777.08	196.15	6580.93	5/10/23
MW44R-242	Area B	Og	6774.70	6777.14	196.28	6580.86	5/10/23
MW44R-308	Area B	WR	6774.70	6777.13	194.72	6582.41	5/10/23
MW45R-252	Area B	Og	6697.40	6700.02	142.38	6557.64	5/10/23

TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW45R-299	Area B	Og	6697.40	6699.93	141.55	6558.38	5/10/23
MW45R-331	Area B	WR	6697.40	6700.00	138.13	6561.87	5/10/23
MW46-300	Area B	Og	6784.90	6787.44	222.24	6565.20	5/10/23
MW46-334	Area B	Og	6784.90	6787.44	220.90	6566.54	5/10/23
MW46-389	Area B	WR	6784.90	6787.06	218.74	6568.32	5/10/23
MW47-239	Area B	Og	6734.30	6736.88	170.57	6566.31	5/10/23
MW47-259	Area B	Og	6734.30	6736.76	170.13	6566.63	5/10/23
MW47-290	Area B	Og	6734.30	6736.67	172.78	6563.89	5/10/23
MW48-225	Area B	Og	6735.27	6737.48	191.75	6545.73	5/10/23
MW48-254	Area B	Og	6734.80	6737.42	172.88	6564.54	5/10/23
MW48-284	Area B	Og	6734.80	6737.32	173.47	6563.85	5/10/23
MW49-286	Area B	Og	6800.20	6802.59	241.41	6561.18	5/10/23
MW49-311	Area B	Og	6800.20	6802.42	241.62	6560.80	5/10/23
MW49-333	Area B	Og	6800.20	6802.20	240.39	6561.81	5/10/23
MW50-250	Area B	Og	6769.90	6772.87	214.56	6558.31	5/10/23
MW50-290	Area B	Og	6769.90	6772.49	211.90	6560.59	5/10/23
MW50-318	Area B	Og	6769.90	6772.31	210.92	6561.39	5/10/23
MW51-80	Transition	Og	7105.80	7108.19	66.80	7041.39	5/11/23
MW51-110	Transition	Og	7105.80	7108.23	66.79	7041.44	5/11/23
MW51-210	Transition	Og	7105.80	7108.17	65.50	7042.67	5/11/23
MW52-25	Transition	Og + WR	7046.60	7049.12	9.81	7039.31	5/10/23
MW52-59	Transition	WR	7046.60	7049.14	1.81	7047.33	5/10/23
MW52-140	Transition	WR	7046.60	7049.19	7.98	7041.21	5/10/23
MW53-95	Transition	WR	7125.30	7127.28	34.20	7093.08	5/10/23
MW53-145	Transition	WR	7125.30	7127.31	34.60	7092.71	5/10/23
MW53-177	Transition	WR	7125.30	7127.29	34.25	7093.04	5/10/23
MW54-222	Transition	Og	6985.80	6988.00	96.78	6891.22	5/11/23
MW54-245	Transition	Og	6985.80	6987.99	96.36	6891.63	5/11/23
MW54-284	Transition	WR	6985.80	6988.02	151.47	6836.55	5/11/23
MW54B-164	Transition	WR	6985.70	6988.25	153.23	6835.02	5/11/23
MW54B-199	Transition	WR	6985.70	6988.12	119.18	6868.94	5/11/23
MW55-250	Area B	Og	6591.30	6594.02	121.02	6473.00	5/10/23
MW55-280	Area B	Og	6591.30	6593.96	125.48	6468.48	5/10/23
MW55-320	Area B	WR	6591.30	6593.94	144.76	6449.18	5/10/23
MW56-203	Area B	Og	6524.90	6527.72	82.58	6445.14	5/10/23
MW56-250	Area B	Og	6524.90	6527.72	78.40	6449.32	5/10/23
MW56-290	Area B	WR	6524.90	6527.79	84.32	6443.47	5/10/23
MW57-211	Area B	Og	6716.35	6718.54	158.64	6559.90	5/10/23
MW57-240	Area B	Og	6716.35	6718.27	158.12	6560.15	5/10/23
MW57-276	Area B	Og	6716.35	6718.07	149.03	6569.04	5/10/23
MW58-124	Transition	Og	7172.27	7174.71	119.49	7055.22	5/10/23
MW58-169	Transition	Og	7172.27	7174.56	141.93	7032.63	5/10/23
MW58-213	Transition	Og	7172.27	7174.43	147.64	7026.79	5/10/23
MW59-74	Area A	WR	7257.67	7260.26	55.56	7204.70	5/11/23
MW59-125	Area A	WR	7257.99	7260.40	56.55	7203.85	5/11/23
MW59-183	Area A	WR	7257.99	7260.24	49.86	7210.38	5/11/23

TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW60-90	Area A	WR	7248.31	7250.81	65.75	7185.06	5/11/23
MW60-146	Area A	WR	7248.31	7250.60	65.40	7185.20	5/11/23
MW60-233	Area A	WR	7248.31	7250.44	65.89	7184.55	5/11/23
MW61-80	Area A	WR	7259.57	7262.35	80.75	7181.60	5/10/23
MW61-107	Area A	WR	7259.57	7261.85	81.45	7180.40	5/10/23
MW61-221	Area A	Og + WR	7259.57	7262.09	80.48	7181.61	5/10/23
MW62-84	Area A	WR	7260.91	7263.23	86.38	7176.85	5/10/23
MW62-158	Area A	WR	7260.91	7263.47	85.94	7177.53	5/10/23
MW62-252	Area A	WR	7260.91	7263.86	87.82	7176.04	5/10/23
MW63-79	Area A	WR	7244.30	7246.90	66.39	7180.51	5/11/23
MW63-143	Area A	WR	7244.30	7246.80	63.34	7183.46	5/12/23
MW63-223	Area A	WR	7244.30	7246.66	60.68	7185.98	5/11/23
MW64-68	Area A	WR	7244.93	7247.44	69.44	7178.00	5/12/23
MW64-122	Area A	WR	7244.93	7247.39	68.42	7178.97	5/12/23
MW65-88	Transition	WR	7208.46	7211.24	72.78	7138.46	5/10/23
MW65-142	Transition	WR	7208.46	7211.15	73.41	7137.74	5/10/23
MW65-208	Transition	WR	7208.46	7211.11	67.16	7143.95	5/10/23
MW66-94	Area A	WR	7245.45	7248.14	87.17	7160.97	5/11/23
MW66-158	Area A	WR	7245.45	7248.05	89.80	7158.25	5/11/23
MW66-205	Area A	Og + WR	7245.45	7247.97	90.59	7157.38	5/11/23
MW67-64	Area A	WR	7223.99	7226.62	63.46	7163.16	5/11/23
MW67-97	Area A	Og	7223.99	7226.52	63.34	7163.18	5/11/23
MW67-233	Area A	WR	7223.99	7226.51	58.60	7167.91	5/11/23
MW68-80	Transition	WR	7136.02	7138.67	79.68	7058.99	5/10/23
MW68-140	Transition	WR	7136.02	7138.54	79.45	7059.09	5/10/23
MW68-185	Transition	WR	7136.02	7138.39	79.33	7059.06	5/10/23
MW69-64	Transition	WR	7075.20	7077.81	37.79	7040.02	5/10/23
MW69-99	Transition	WR	7075.20	7077.63	34.33	7043.30	5/10/23
MW69-164	Transition	WR	7075.20	7077.43	36.39	7041.04	5/10/23
MW70-100	Transition	WR	7133.52	7136.44	97.89	7038.55	5/10/23
MW70-142	Transition	WR	7133.52	7136.48	97.89	7038.59	5/10/23
MW70-244	Transition	WR	7133.52	7136.21	98.83	7037.38	5/10/23
MW71-96	Transition	WR	7114.07	7116.73	86.96	7029.77	5/10/23
MW71-128	Transition	WR	7114.07	7116.83	85.15	7031.68	5/10/23
MW71-205	Transition	WR	7114.07	7116.91	85.64	7031.27	5/10/23
MW72-130	Transition	WR	7215.08	7217.70	133.53	7084.17	5/10/23
MW72-158	Transition	WR	7215.08	7217.64	135.25	7082.39	5/10/23
MW72-205	Transition	WR	7215.08	7217.60	152.56	7065.04	5/10/23
MW73-137	Transition	Og + WR	7195.31	7197.86	102.20	7095.66	5/10/23
MW73-218	Transition	WR	7195.31	7197.89	127.00	7070.89	5/10/23
MW73-243	Transition	WR	7195.31	7197.85	126.84	7071.01	5/10/23
MW74-104	Area A	WR	7257.60	7259.82	54.71	7205.11	5/11/23
MW74-263	Area A	WR	7257.60	7259.86	52.39	7207.47	5/11/23
MW74-359	Area A	WR	7257.60	7259.86	67.16	7192.70	5/11/23
MW75-93	Area A	WR	7259.63	7262.07	80.13	7181.94	5/10/23
MW75-308	Area A	WR	7259.63	7262.04	67.94	7194.10	5/10/23

TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW75-377	Area A	WR	7259.63	7262.06	132.40	7129.66	5/10/23
MW76-87	Area A	Og	7244.24	7246.42	86.00	7160.42	5/11/23
MW76-123	Area A	WR	7244.24	7246.46	90.52	7155.94	5/11/23
MW76-255	Area A	WR	7244.24	7246.50	221.00	7025.50	5/11/23
MW77-40	Transition	WR	7071.82	7074.30	29.24	7045.06	5/10/23
MW77-129	Transition	WR	7071.82	7074.30	29.49	7044.81	5/10/23
MW77-255	Transition	WR	7071.82	7074.26	22.90	7051.36	5/10/23
MW78-112	Transition	WR	7110.30	7112.31	82.53	7029.78	5/10/23
MW78-159	Transition	WR	7110.30	7112.23	82.03	7030.20	5/10/23
MW78-265	Transition	WR	7110.30	7112.13	91.80	7020.33	5/10/23
MW79-127	Transition	Og	7197.40	7199.96	103.50	7096.46	5/10/23
MW79-193	Transition	WR	7197.40	7199.85	127.19	7072.66	5/10/23
MW79-326	Transition	WR	7197.40	7199.69	114.00	7085.69	5/10/23
MW80-128	Area A	WR	7272.30	7275.21	76.44	7198.77	5/11/23
MW80-223	Area A	WR	7272.30	7275.22	77.10	7198.12	5/11/23
MW80-284	Area A	WR	7272.30	7275.29	65.00	7210.29	5/11/23
MW81-100	Area A	WR	7262.47	7264.86	69.55	7195.31	5/11/23
MW81-207	Area A	WR	7262.47	7264.92	67.85	7197.07	5/11/23
MW81-279	Area A	WR	7262.47	7264.89	54.65	7210.24	5/11/23
MW82-83	Area A	WR	7261.90	7264.28	70.38	7193.90	5/11/23
MW82-132	Area A	WR	7261.90	7264.28	70.24	7194.04	5/11/23
MW82-161	Area A	WR	7261.90	7264.30	70.44	7193.86	5/11/23
MW83-88	Area A	Og + WR	7244.18	7246.39	81.86	7164.53	5/10/23
MW83-129	Area A	WR	7244.18	7246.43	92.35	7154.08	5/10/23
MW83-271	Area A	WR	7244.18	7246.43	52.30	7194.13	5/10/23
MW84-99	Transition	WR	7148.03	7150.74	102.88	7047.86	5/10/23
MW84-258	Transition	WR	7148.03	7150.71	16.35	7134.36	5/10/23
MW84-298	Transition	WR	7148.03	7150.72	0.00	7150.72	5/10/23
MW84B-143	Transition	WR	7143.49	7145.65	99.91	7045.74	5/10/23
MW84B-193	Transition	WR	7143.49	7145.51	98.01	7047.50	5/10/23
MW84B-356	Transition	WR	7143.49	7145.28	80.89	7064.39	5/10/23
MW85-92	Area A	Og	7245.98	7248.43	90.93	7157.50	5/12/23
MW85-151	Area A	WR	7245.98	7248.37	87.21	7161.16	5/12/23
MW85-205	Area A	WR	7245.98	7248.37	80.54	7167.83	5/12/23
MW86-53	Transition	WR	7039.54	7041.98	6.79	7035.19	5/10/23
MW86-199	Transition	WR	7039.54	7041.96	10.46	7031.50	5/10/23
MW86-353	Transition	WR	7039.54	7041.94	13.00	7028.94	5/10/23
MW87-82	Transition	Og	7034.50	7037.16	31.90	7005.26	5/10/23
MW87-123	Transition	WR	7034.50	7037.05	34.97	7002.08	5/10/23
MW87-205	Transition	WR	7034.50	7036.97	35.46	7001.51	5/10/23
MW88-133	Transition	WR	7080.60	7083.01	115.08	6967.93	5/10/23
MW88-183	Transition	WR	7080.60	7082.90	114.62	6968.28	5/10/23
MW88-253	Transition	WR	7080.60	7082.76	114.26	6968.50	5/10/23
MW89-178	Transition	Og + WR	7162.40	7164.84	164.49	7000.35	5/10/23
MW89-207	Transition	WR	7162.40	7164.87	163.62	7001.25	5/10/23
MW89-250	Transition	WR	7162.40	7164.81	163.53	7001.28	5/10/23

TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW90-198	Transition	Og	6984.80	6987.30	Dry	Dry	5/10/23
MW90-243	Transition	Og	6984.80	6987.17	241.19	6745.98	5/10/23
MW90-292	Transition	WR	6984.80	6986.96	241.70	6745.26	5/10/23
MW91-195	Transition	Og	6767.90	6770.24	173.70	6596.54	5/10/23
MW91-248	Transition	Og	6767.90	6770.17	172.00	6598.17	5/10/23
MW91-313	Transition	WR	6767.90	6770.07	171.82	6598.25	5/10/23
MW92-310	Transition	Og	6930.30	6933.27	314.40	6618.87	5/10/23
MW92-365	Transition	WR	6930.30	6933.11	315.94	6617.17	5/10/23
MW92-427	Transition	WR	6930.30	6933.04	315.85	6617.19	5/10/23
MW92B-288	Transition	WR	6927.44	6929.73	274.23	6655.50	5/10/23
MW92B-322	Transition	WR	6927.44	6929.54	313.41	6616.13	5/10/23
MW93-71	Area B	Og	6533.80	6536.30	47.22	6489.08	5/10/23
MW93-146	Area B	Og + WR	6533.80	6536.18	48.44	6487.74	5/10/23
MW93-268	Area B	WR	6533.80	6536.10	39.74	6496.36	5/10/23
MW94-175	Area B	Og	6497.00	6499.64	71.10	6428.54	5/10/23
MW94-229	Area B	Og + WR	6497.00	6499.48	65.39	6434.09	5/10/23
MW94-297	Area B	WR	6497.00	6499.38	65.30	6434.08	5/10/23
MW95-165	Area B	Og	6512.75	6515.47	99.40	6416.07	5/10/23
MW95-200	Area B	Og	6512.75	6515.47	93.90	6421.57	5/10/23
MW95-288	Area B	Og	6512.75	6515.47	83.63	6431.84	5/10/23
MW96-194	Area B	Og	6480.40	6483.48	54.38	6429.10	5/10/23
MW96-260	Area B	Og + WR	6480.40	6483.58	53.93	6429.65	5/10/23
MW96-292	Area B	WR	6480.40	6483.71	54.07	6429.64	5/10/23
MW97-107	Area B	Og	6363.60	6366.16	3.59	6362.57	5/10/23
MW97-266	Area B	WR	6363.58	6366.13	235.03	6131.10	5/10/23
MW97-329	Area B	WR	6363.58	6366.17	Dry	Dry	5/10/23
MW98-180	Area B	Og	6374.00	6376.77	NM ²	NM ²	NM ²
MW98-217	Area B	WR	6374.00	6376.58	NM ²	NM ²	NM ²
MW98-263	Area B	WR	6374.00	6376.42	NM ²	NM ²	NM ²
MW99-110	Expanded Study	Og	6338.40	6340.54	14.47	6326.07	5/10/23
MW99-161	Expanded Study	Og	6338.40	6340.45	41.81	6298.64	5/10/23
MW99-253	Expanded Study	WR	6338.40	6340.34	Dry	Dry	5/10/23
MW100-153	Expanded Study	Og	6432.90	6435.41	135.29	6300.12	5/10/23
MW100-270	Expanded Study	Og	6432.90	6435.32	186.15	6249.17	5/10/23
MW100-305	Expanded Study	WR	6432.90	6435.18	186.90	6248.28	5/10/23
MW101-106	Area A	WR	7232.76	7235.31	106.80	7128.51	5/11/23
MW101-138	Area A	WR	7232.76	7235.31	106.19	7129.12	5/11/23
MW101-238	Area A	WR	7232.76	7235.34	105.38	7129.96	5/11/23
MW102-93	Expanded Study	Og	6342.80	6345.17	38.98	6306.19	5/10/23
MW102-127	Expanded Study	Og	6342.80	6345.10	40.79	6304.31	5/10/23
MW102-171	Expanded Study	WR	6342.80	6344.96	144.92	6200.04	5/10/23
MW103-193	Expanded Study	Og	6402.90	6405.37	10.00	6395.37	5/10/23
MW103-242	Expanded Study	Og	6402.90	6405.51	8.94	6396.57	5/10/23
MW103-308	Expanded Study	WR	6402.90	6405.26	8.68	6396.58	5/10/23
MW104-99	Area A	Og	7272.90	7275.29	76.42	7198.87	5/11/23

TABLE 2-1
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER ELEVATIONS
FORMER ATLAS "D" MISSILE SITE 4

Monitoring Well/Test Hole Identification	Area Identification	Aquifer	Ground Surface Elevation (NAVD88) (ft amsl)	Top of Casing Elevation (NAVD88) (ft amsl)	Measured Depth to Water (ft btoc)	Water Elevation (ft amsl)	Date
MW104-135	Area A	Og	7272.90	7275.03	75.85	7199.18	5/11/23
MW104-178	Area A	Og	7272.90	7274.94	76.00	7198.94	5/11/23
MW105-93	Transition	WR	7272.50	7274.93	77.90	7197.03	5/11/23
MW105-143	Transition	WR	7272.50	7274.87	77.68	7197.19	5/11/23
MW105-188	Transition	WR	7272.50	7274.79	77.57	7197.22	5/11/23
MW106-230	Transition	WR	7093.01	7095.16	203.05	6892.11	5/10/23
MW106-272	Transition	WR	7093.01	7095.00	202.46	6892.54	5/10/23
MW106-316	Transition	WR	7093.01	7094.76	202.32	6892.44	5/10/23
MW107-249	Area B	Og	6683.90	6686.48	175.33	6511.15	5/10/23
MW107-310	Area B	Og	6683.90	6686.48	159.20	6527.28	5/10/23
MW107-355	Area B	Og	6683.90	6686.35	160.79	6525.56	5/10/23
TH-2	Area B	Og	6863.32	6865.37	269.03	6596.34	5/10/23
TH-3	Area B	Og	6715.13	6717.78	138.65	6579.13	5/10/23
TH-4	Area B	Og	6659.73	6661.96	95.49	6566.47	5/10/23
TH-5	Area B	Og	6589.62	6591.71	48.69	6543.02	5/10/23
TH-6	Area B	Og	6687.76	6690.11	168.24	6521.87	5/10/23
TH-9	Area B	Og	6339.06	6340.65	2.01	6338.64	5/10/23
TH-10	Area B	Og	6583.10	6586.00	115.70	6470.30	5/10/23

Notes:

¹ SVE Well

² Artesian well

amsl = above mean sea level

btoc = below top of casing

ft = feet

NM = not measured

NAVD88 = North American Vertical Datum of 1988

Og = Ogallala

SVE = soil vapor extraction

WR = White River

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
Groundwater Samples									
Belvoir No. 1	FEW4-Belvoir No.1-21	5/22/2023	Stock		X		X		
Belvoir No. 2	NS	--	Stock						
Belvoir No. 3	FEW4-Belvoir No. 3-21	5/22/2023	Stock		X	X			FEW4-Belvoir No. 3-FD-21
Belvoir-Borie No. 1	FEW4-BELVOIR-BORIE 1-21	5/19/2023	Stock/Pond		X	X			FEW4-BELVOIR-BORIE 1-FD-21
Borie No. 1	FEW4-Borie No. 1-21	5/22/2023	Municipal		X				
Cow Camp No. 1	FEW4-Cow Camp No. 1-21	5/19/2023	Stock		X				
Duck Creek	FEW4-Duck Creek-21	5/19/2023	Stock		X				
Dyno-Nobel No. 8	FEW4-Dyno-Nobel 8-21	5/18/2023	Industrial		X		X		
Dyno-Nobel No. 16	FEW4-Dyno-Nobel 16-21	5/18/2023	Industrial		X				
Dyno-Nobel No. 22	FEW4-Dyno-Nobel 22-21	5/18/2023	Industrial		X				
Dyno-Nobel No. 23	FEW4-Dyno-Nobel 23-21	5/18/2023	Industrial		X				
Dyno-Nobel No. 24	FEW4-Dyno-Nobel No. 24-21	5/18/2023	Industrial		X	X			FEW4-DYNO-NOBELNO. 24-FD-21
Dyno-Nobel No. 25	FEW4-Dyno-Nobel No. 25-21	5/18/2023	Industrial		X				
Dyno-Nobel No. 26	FEW4-Dyno-Nobel 26-21	5/18/2023	Industrial		X				
Dyno-Nobel No. 27	FEW4-Dyno-Nobel 27-21	5/18/2023	Industrial		X				
East Strip	FEW4-East Strip 1-21	5/12/2023	Stock		X				
Elkar No. 7	FEW4-Elkar No. 7-21	5/22/2023	Municipal		X				
Finnerty No. 2	FEW4-Finnerty No.2-21	5/22/2023	Municipal		X				
Johnson No. 1	FEW4-Johnson No. 1-21	5/16/2023	Stock		X				
Kennedy No. 1	NS	--	Stock						
King No. 3	FEW4-King No. 3-21	5/15/2023	Stock		X				
King No. 20	FEW4-King No.20-21	5/15/2023	Stock		X	X			FEW4-KING NO. 20-FD-21
Rees Bros. No. 5	FEW4-Rees Bros. 5-21	5/18/2023	Stock		X				
Saler No. 4	NS	--	Stock						
TH-2	FEW4-TH-2-21	5/13/2023	Monitoring/Test	X					
TH5-97	FEW4-TH5-97-21	5/13/2023	Monitoring/Test	X					
TH5-205	FEW4-TH5-205-21	5/13/2023	Monitoring/Test	X					
TH9-125	FEW4-TH9-125-21	5/12/2023	Monitoring/Test	X					
Weber No. 1	FEW4-Weber No.1-21	5/22/2023	Municipal		X				

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
West Triangle	FEW4-WEST TRIANGLE-21	5/16/2023	Stock		X				
MW01	FEW4-MW01-21	5/17/2023	Monitoring		X				
	FEW4-MW01-PDB-21	5/17/2023	Monitoring	X					
MW03	FEW4-MW03-21	5/17/2023	Monitoring		X				
MW04	FEW4-MW04-21	5/17/2023	Monitoring		X				
MW05	FEW4-MW05-21	5/16/2023	Monitoring	X					
MW06	FEW4-MW06-21	5/20/2023	Monitoring	X					
MW07	FEW4-MW07-21	5/19/2023	Monitoring	X					
MW10	FEW4-MW10-21	5/16/2023	Monitoring	X					
MW12R	NS	--	Monitoring						
MW13	FEW4-MW13-21	5/20/2023	Monitoring	X					
MW15	FEW4-MW15-21	5/16/2023	Monitoring	X					
MW19	FEW4-MW19-21	5/20/2023	Monitoring	X		X			FEW4-MW19-FD-21
MW20	FEW4-MW20-21	5/20/2023	Monitoring	X					
MW21	FEW4-MW21-21	5/16/2023	Monitoring	X					
MW22	FEW4-MW22-21	5/15/2023	Monitoring	X					
MW24	FEW4-MW24-21	5/17/2023	Monitoring	X					
MW25	FEW4-MW25-21	5/19/2023	Monitoring	X					
MW26	FEW4-MW26-21	5/17/2023	Monitoring	X					
MW27	FEW4-MW27-21	5/19/2023	Monitoring	X					
MW28	FEW4-MW28-21	5/19/2023	Monitoring	X					
MW29	FEW4-MW29-21	5/21/2023	Monitoring	X					
MW30	FEW4-MW30-21	5/21/2023	Monitoring	X					
MW31	FEW4-MW31-21	5/13/2023	Monitoring	X					
MW32	FEW4-MW32-21	5/19/2023	Monitoring	X		X			FEW4-MW32-FD-21
MW33	FEW4-MW33-21	5/14/2023	Monitoring	X		X			FEW4-MW33-FD-21
MW34	FEW4-MW34-21	5/14/2023	Monitoring	X					
MW36	FEW4-MW36-21	5/14/2023	Monitoring	X		X			FEW4-MW36-FD-21
MW37	FEW4-MW37-21	5/14/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW38	FEW4-MW38-21	5/11/2023	Monitoring		X				
	FEW4-MW38-PDB-21	5/11/2023	Monitoring	X					
MW39	FEW4-MW39-21	5/20/2023	Monitoring	X					
MW40	FEW4-MW40-21	5/21/2023	Monitoring	X					
MW43R-242	FEW4-MW43R-242-21	5/12/2023	Monitoring	X					
MW43R-262	FEW4-MW43R-262-21	5/12/2023	Monitoring	X					
MW44R-207	FEW4-MW44R-207-21	5/16/2023	Monitoring		X				
MW44R-242	FEW4-MW44R-242-21	5/18/2023	Monitoring		X		X		
MW44R-308	FEW4-MW44R-308-21	6/2/2023	Monitoring		X				
MW45R-252	FEW4-MW45R-252-21	5/21/2023	Monitoring		X				
MW45R-299	FEW4-MW45R-299-21	5/21/2023	Monitoring		X		X		
	FEW4-MW45R-299-PDB-21	5/21/2023	Monitoring	X					
MW45R-331	FEW4-MW45R-331-21	6/2/2023	Monitoring		X		X		
MW46-300	FEW4-MW46-300-21	5/17/2023	Monitoring		X		X		
MW46-334	FEW4-MW46-334-21	5/17/2023	Monitoring		X				
MW46-389	FEW4-MW46-389-21	5/14/2023	Monitoring		X				
	FEW4-MW46-389-PDB-21	5/14/2023	Monitoring	X					
MW47-239	FEW4-MW47-239-21	5/16/2023	Monitoring		X				
MW47-259	FEW4-MW47-259-21	5/16/2023	Monitoring		X				
MW47-290	FEW4-MW47-290-21	5/16/2023	Monitoring		X		X		
MW48-225	FEW4-MW48-225-21	5/18/2023	Monitoring		X				
MW48-254	FEW4-MW48-254-21	5/17/2023	Monitoring		X				
MW48-284	FEW4-MW48-284-21	5/17/2023	Monitoring		X	X			FEW4-MW48-284-FD-21
MW49-286	FEW4-MW49-286-21	5/20/2023	Monitoring		X		X		
MW49-311	FEW4-MW49-311-21	5/20/2023	Monitoring		X				
MW49-333	FEW4-MW49-333-21	5/20/2023	Monitoring		X				
MW50-250	FEW4-MW50-250-21	5/13/2023	Monitoring	X					
MW50-290	FEW4-MW50-290-21	5/13/2023	Monitoring	X					
MW50-318	FEW4-MW50-318-21	5/13/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW51-80	FEW4-MW51-80-21	5/16/2023	Monitoring	X					
MW51-110	FEW4-MW51-110-21	5/16/2023	Monitoring	X					
MW51-210	FEW4-MW51-210-21	5/22/2023	Monitoring		X				
	FEW4-MW51-210-PDB-21	5/21/2023	Monitoring	X					
MW52-25	FEW4-MW52-25-21	5/15/2023	Monitoring	X					
MW52-59	FEW4-MW52-59-21	5/15/2023	Monitoring	X		X			FEW4-MW52-59-FD-21
MW52-140	FEW4-MW52-140-21	5/15/2023	Monitoring	X					
MW53-95	FEW4-MW53-95-21	5/15/2023	Monitoring	X					
MW53-145	FEW4-MW53-145-21	5/15/2023	Monitoring	X		X			FEW4-MW53-145-FD-21
MW53-177	FEW4-MW53-177-21	5/15/2023	Monitoring	X					
MW54-222	FEW4-MW54-222-21	5/14/2023	Monitoring	X					
MW54-245	FEW4-MW54-245-21	5/14/2023	Monitoring	X					
MW54-284	FEW4-MW54-284-21	5/14/2023	Monitoring	X					
MW54B-164	FEW4-MW54B-164-21	5/12/2023	Monitoring		X				
MW54B-199	FEW4-MW54B-199-21	5/13/2023	Monitoring		X				
MW55-250	FEW4-MW55-250-21	5/15/2023	Monitoring		X		X		
	FEW4-MW55-250-PDB-21	5/15/2023	Monitoring	X					
MW55-280	FEW4-MW55-280-21	5/14/2023	Monitoring	X					
MW55-320	FEW4-MW55-320-21	5/14/2023	Monitoring	X					
MW56-203	FEW4-MW56-203-21	5/14/2023	Monitoring	X					
MW56-250	FEW4-MW56-250-21	5/14/2023	Monitoring	X					
MW56-290	FEW4-MW56-290-21	6/4/2023	Monitoring		X				
	FEW4-MW56-290-PDB-21	6/3/2023	Monitoring	X					
MW57-211	FEW4-MW57-211-21	5/12/2023	Monitoring	X		X			FEW4-MW57-211-FD-21
MW57-240	FEW4-MW57-240-21	5/12/2023	Monitoring	X					
MW57-276	FEW4-MW57-276-21	5/12/2023	Monitoring	X					
MW58-124	FEW4-MW58-124-21	5/15/2023	Monitoring	X					
MW58-169	FEW4-MW58-169-21	5/15/2023	Monitoring	X					
MW58-213	FEW4-MW58-213-21	5/15/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW59-74	FEW4-MW59-74-21	6/4/2023	Monitoring		X			X	
MW59-125	FEW4-MW59-125-21	6/6/2023	Monitoring		X			X	
MW59-183	FEW4-MW59-183-21	5/22/2023	Monitoring		X	X			FEW4-MW59-183-FD-21
	FEW4-MW59-183-PDB-21	5/22/2023	Monitoring	X					
MW60-90	FEW4-MW60-90-21	5/22/2023	Monitoring		X				
MW60-146	FEW4-MW60-146-21	6/4/2023	Monitoring		X				
MW60-233	FEW4-MW60-233-21	5/21/2023	Monitoring		X				
MW61-80	FEW4-MW61-80-21	5/21/2023	Monitoring		X				
MW61-107	FEW4-MW61-107-21	5/15/2023	Monitoring		X				
	FEW4-MW61-107-PDB-21	5/15/2023	Monitoring	X					
MW61-221	FEW4-MW61-221-21	5/21/2023	Monitoring		X				
MW62-84	FEW4-MW62-84-21	5/17/2023	Monitoring	X					
MW62-158	FEW4-MW62-158-21	5/17/2023	Monitoring	X					
MW62-252	FEW4-MW62-252-21	5/17/2023	Monitoring	X					
MW63-79	FEW4-MW63-79-21	5/19/2023	Monitoring	X					
MW63-143	FEW4-MW63-143-21	5/19/2023	Monitoring	X					
MW63-223	FEW4-MW63-223-21	5/19/2023	Monitoring	X					
MW64-68	FEW4-MW64-68-21	5/21/2023	Monitoring	X		X			FEW4-MW64-68-FD-21
MW64-122	FEW4-MW64-122-21	5/21/2023	Monitoring	X					
MW65-88	FEW4-MW65-88-21	5/17/2023	Monitoring	X					
MW65-142	FEW4-MW65-142-21	5/17/2023	Monitoring	X					
MW65-208	FEW4-MW65-208-21	5/17/2023	Monitoring	X					
MW66-94	FEW4-MW66-94-21	5/17/2023	Monitoring	X					
MW66-158	FEW4-MW66-158-21	5/17/2023	Monitoring	X					
MW66-205	FEW4-MW66-205-21	5/17/2023	Monitoring	X					
MW67-64	FEW4-MW67-64-21	5/19/2023	Monitoring	X					
MW67-97	FEW4-MW67-97-21	5/19/2023	Monitoring	X					
MW67-233	FEW4-MW67-233-21	5/19/2023	Monitoring	X					
MW68-80	FEW4-MW68-80-21	5/17/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW68-140	FEW4-MW68-140-21	5/17/2023	Monitoring	X		X			FEW4-MW68-140-FD-21
MW68-185	FEW4-MW68-185-21	5/17/2023	Monitoring	X					
MW69-64	FEW4-MW69-64-21	5/16/2023	Monitoring	X					
MW69-99	FEW4-MW69-99-21	5/16/2023	Monitoring	X					
MW69-164	FEW4-MW69-164-21	5/16/2023	Monitoring	X		X			FEW4-MW69-164-FD-21
MW70-100	FEW4-MW70-100-21	5/17/2023	Monitoring	X					
MW70-142	FEW4-MW70-142-21	5/17/2023	Monitoring	X					
MW70-244	FEW4-MW70-244-21	5/17/2023	Monitoring	X					
MW71-96	FEW4-MW71-96-21	5/16/2023	Monitoring	X					
MW71-128	FEW4-MW71-128-21	5/16/2023	Monitoring	X					
MW71-205	FEW4-MW71-205-21	6/1/2023	Monitoring		X				
	FEW4-MW71-205-PDB-21	5/31/2023	Monitoring	X					
MW72-130	FEW4-MW72-130-21	5/17/2023	Monitoring	X					
MW72-158	FEW4-MW72-158-21	5/17/2023	Monitoring	X					
MW72-205	FEW4-MW72-205-21	5/17/2023	Monitoring	X					
MW73-137	FEW4-MW73-137-21	5/20/2023	Monitoring	X					
MW73-218	FEW4-MW73-218-21	5/20/2023	Monitoring	X					
MW73-243	FEW4-MW73-243-21	5/20/2023	Monitoring	X					
MW74-104	FEW4-MW74-104-21	6/5/2023	Monitoring		X				
MW74-263	FEW4-MW74-263-21	6/5/2023	Monitoring		X				
MW74-359	FEW4-MW74-359-21	6/6/2023	Monitoring		X				
	FEW4-MW74-359-PDB-21	6/6/2023	Monitoring	X					
MW75-93	FEW4-MW75-93-21	5/15/2023	Monitoring		X				
	FEW4-MW75-93-PDB-21	5/15/2023	Monitoring	X					
MW75-308	FEW4-MW75-308-21	6/3/2023	Monitoring		X	X			FEW4-MW75-308-FD-21
MW75-377	FEW4-MW75-377-21	5/14/2023	Monitoring		X				
	FEW4-MW75-377-PDB-21	5/14/2023	Monitoring	X					
MW76-87	FEW4-MW76-87-21	5/19/2023	Monitoring	X					
MW76-123	FEW4-MW76-123-21	5/19/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW76-255	FEW4-MW76-255-21	5/19/2023	Monitoring	X					
MW77-40	FEW4-MW77-40-21	5/16/2023	Monitoring	X					
MW77-129	FEW4-MW77-129-21	5/16/2023	Monitoring	X					
MW77-255	FEW4-MW77-255-21	5/16/2023	Monitoring	X					
MW78-112	FEW4-MW78-112 -21	5/20/2023	Monitoring		X				
	FEW4-MW78-112-PDB-21	5/20/2023	Monitoring	X					
MW78-159	FEW4-MW78-159-21	5/16/2023	Monitoring	X					
MW78-265	FEW4-MW78-265-21	5/16/2023	Monitoring	X		X			FEW4-MW78-265-FD-21
MW79-127	FEW4-MW79-127-21	5/20/2023	Monitoring	X					
MW79-193	FEW4-MW79-193-21	6/1/2023	Monitoring		X				
	FEW4-MW79-193-PDB-21	6/1/2023	Monitoring	X					
MW79-326	FEW4-MW79-326-21	5/20/2023	Monitoring	X					
MW80-128	FEW4-MW80-128-21	5/21/2023	Monitoring	X					
MW80-223	FEW4-MW80-223-21	5/21/2023	Monitoring	X					
MW80-284	FEW4-MW80-284-21	6/2/2023	Monitoring		X				
MW81-100	FEW4-MW81-100-21	5/20/2023	Monitoring		X				
MW81-207	FEW4-MW81-207-21	5/21/2023	Monitoring	X					
MW81-279	FEW4-MW81-279-21	6/3/2023	Monitoring		X				
MW82-83	FEW4-MW82-83-21	5/19/2023	Monitoring	X					
MW82-132	FEW4-MW82-132-21	5/19/2023	Monitoring	X					
MW82-161	FEW4-MW82-161-21	5/19/2023	Monitoring	X					
MW83-88	FEW4-MW83-88-21	5/17/2023	Monitoring	X					
MW83-129	FEW4-MW83-129-21	5/17/2023	Monitoring	X		X			FEW4-MW83-129-FD-21
MW83-271	FEW4-MW83-271-21	5/17/2023	Monitoring	X					
MW84-99	NS	--	Monitoring						
MW84-258	FEW4-MW84-258-21	5/17/2023	Monitoring	X					
MW84-298	FEW4-MW84-298-21	5/15/2023	Monitoring	X					
MW84B-143	FEW4-MW84B-143-21	5/15/2023	Monitoring	X					
MW84B-193	FEW4-MW84B-193-21	5/15/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW84B-356	FEW4-MW84B-356-21	5/15/2023	Monitoring	X					
MW85-92	FEW4-MW85-92-21	5/20/2023	Monitoring	X					
MW85-151	FEW4-MW85-151-21	5/20/2023	Monitoring	X		X			FEW4-MW85-151-FD-21
MW85-205	FEW4-MW85-205-21	5/20/2023	Monitoring	X					
MW86-53	FEW4-MW86-53-21	5/16/2023	Monitoring	X					
MW86-199	FEW4-MW86-199-21	5/16/2023	Monitoring	X					
MW86-353	FEW4-MW86-353-21	5/12/2023	Monitoring		X		X		
	FEW4-MW86-353-PDB-21	5/13/2023	Monitoring	X					
MW87-82	FEW4-MW87-82-21	5/14/2023	Monitoring	X					
MW87-123	FEW4-MW87-123-21	5/14/2023	Monitoring	X					
MW87-205	FEW4-MW87-205-21	5/14/2023	Monitoring	X					
MW88-133	FEW4-MW88-133-21	5/20/2023	Monitoring		X				
	FEW4-MW88-133-PDB-21	5/20/2023	Monitoring	X					
MW88-183	FEW4-MW88-183-21	5/19/2023	Monitoring	X					
MW88-253	FEW4-MW88-253-21	5/19/2023	Monitoring	X		X			FEW4-MW88-253-FD-21
MW89-178	FEW4-MW89-178-21	5/21/2023	Monitoring		X				
	FEW4-MW89-178-PDB-21	5/21/2023	Monitoring	X					
MW89-207	FEW4-MW89-207-21	5/20/2023	Monitoring	X					
MW89-250	FEW4-MW89-250-21	5/20/2023	Monitoring	X					
MW90-198	NS	--	Monitoring						
MW90-243	FEW4-MW90-243-21	5/14/2023	Monitoring	X					
MW90-292	FEW4-MW90-292-21	5/14/2023	Monitoring	X					
MW91-195	FEW4-MW91-195-21	5/14/2023	Monitoring	X					
MW91-248	FEW4-MW91-248-21	5/14/2023	Monitoring	X					
MW91-313	FEW4-MW91-313-21	5/14/2023	Monitoring	X					
MW92-310	NS	--	Monitoring						
MW92-365	FEW4-MW92-365-21	5/14/2023	Monitoring	X					
MW92-427	FEW4-MW92-427-21	5/14/2023	Monitoring	X					

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW92B-288	FEW4-MW92B-288-21	5/16/2023	Monitoring		X	X			FEW4-MW92B-288-FD-21
	FEW4-MW92B-288-PDB-21	5/16/2023	Monitoring	X					
MW92B-322	FEW4-MW92B-322-21	5/16/2023	Monitoring		X				
MW93-71	FEW4-MW93-71-21	5/13/2023	Monitoring	X		X			FEW4-MW93-71-FD-21
MW93-146	FEW4-MW93-146-21	5/13/2023	Monitoring	X					
MW93-268	FEW4-MW93-268-21	5/13/2023	Monitoring	X					
MW94-175	FEW4-MW94-175-21	5/12/2023	Monitoring	X					
MW94-229	FEW4-MW94-229-21	5/12/2023	Monitoring	X					
MW94-297	FEW4-MW94-297-21	5/12/2023	Monitoring	X					
MW95-165	FEW4-MW95-165-21	5/14/2023	Monitoring	X					
MW95-200	FEW4-MW95-200-21	5/14/2023	Monitoring	X					
MW95-288	FEW4-MW95-288-21	5/15/2023	Monitoring		X				
	FEW4-MW95-288-PDB-21	5/15/2023	Monitoring	X					
MW96-194	FEW4-MW96-194-21	5/13/2023	Monitoring	X					
MW96-260	FEW4-MW96-260-21	5/13/2023	Monitoring	X					
MW96-292	FEW4-MW96-292-21	5/13/2023	Monitoring	X					
MW97-107	FEW4-MW97-107-21	5/14/2023	Monitoring		X				
MW97-266	FEW4-MW97-266-21	5/17/2023	Monitoring		X				
	FEW4-MW97-266-PDB-21	5/13/2023	Monitoring	X					
MW97-329	NS	--	Monitoring						
MW98-180	FEW4-MW98-180-21	5/20/2023	Monitoring		X				
MW98-217	FEW4-MW98-217-21	5/20/2023	Monitoring		X				
MW98-263	FEW4-MW98-263-21	5/20/2023	Monitoring		X				
MW99-110	FEW4-MW99-110-21	5/11/2023	Monitoring		X				
MW99-161	FEW4-MW99-161-21	5/13/2023	Monitoring		X				
MW99-253	NS	--	Monitoring						
MW100-153	FEW4-MW100-153-21	5/13/2023	Monitoring		X		X		
MW100-270	FEW4-MW100-270-21	5/12/2023	Monitoring		X				
MW100-305	FEW4-MW100-305-21	5/12/2023	Monitoring		X				

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
MW101-106	FEW4-MW101-106-21	5/20/2023	Monitoring	X					
MW101-138	FEW4-MW101-138-21	5/20/2023	Monitoring	X					
MW101-238	FEW4-MW101-238-21	5/20/2023	Monitoring	X					
MW102-93	FEW4-MW102-93-21	5/13/2023	Monitoring	X					
MW102-127	FEW4-MW102-127-21	5/13/2023	Monitoring	X					
MW102-171	FEW4-MW102-171-21	5/13/2023	Monitoring	X					
MW103-193	FEW4-MW103-193-21	5/11/2023	Monitoring		X				
MW103-242	FEW4-MW103-242-21	5/12/2023	Monitoring		X				
MW103-308	FEW4-MW103-308-21	5/13/2023	Monitoring		X				
MW104-99	FEW4-MW104-99-21	5/15/2023	Monitoring		X				
MW104-135	FEW4-MW104-135-21	5/14/2023	Monitoring		X				
MW104-178	FEW4-MW104-178-21	5/15/2023	Monitoring		X				
MW105-93	FEW4-MW105-93-21	5/16/2023	Monitoring		X				
MW105-143	FEW4-MW105-143-21	5/16/2023	Monitoring		X				
MW105-188	FEW4-MW105-188-21	5/16/2023	Monitoring		X	X			FEW4-MW105-188-FD-21
MW106-230	FEW4-MW106-230-21	5/18/2023	Monitoring		X				
MW106-272	FEW4-MW106-272-21	5/22/2023	Monitoring		X				
MW106-316	FEW4-MW106-316-21	5/21/2023	Monitoring		X				
MW107-249	FEW4-MW107-249-21	5/14/2023	Monitoring		X				
MW107-310	FEW4-MW107-310-21	5/14/2023	Monitoring		X		X		
MW107-355	FEW4-MW107-355-21	5/14/2023	Monitoring		X				
Surface Water Sample Location									
BELVOIRBORIESW1	FEW4-BELVOIRBORIESW1-21	5/17/2023	Surface Water		X		X		
BELVOIRBORIESW2	FEW4-BELVOIRBORIESW2-21	5/17/2023	Surface Water		X				
LONE TREE CREEK	FEW4-LONE TREE CREEK-21	5/17/2023	Surface Water		X				
OTTO SPRING	FEW4-OTTO SPRING-21	5/17/2023	Surface Water		X	X			FEW4-OTTO SPRING-FD-21

TABLE 2-2
SPRING 2023 LONG-TERM MONITORING EVENT 21 SAMPLE SUMMARY
FORMER ATLAS "D" MISSILE SITE 4

Well Identification	Sample Identification ¹	Sample Date	Well Type	PDB VOCs (8260C)	Conventional VOCs (8260C)	Duplicate	MS/MSD	KMnO ₄ Present	Duplicate Sample Identification
Sediment Sample Location									
BELVOIRBORIESE1	FEW4-BELVOIRBORIESE1-21	5/17/2023	Sediment		X		X		
BELVOIRBORIESE2	FEW4-BELVOIRBORIESE2-21	5/17/2023	Sediment		X				
LONE TREE CREEK	FEW4-LONE TREE-SE1-21	5/17/2023	Sediment		X	X			FEW4-LONE TREE-SE1-FD-21
OTTO SPRING	FEW4-OTTO SPRING-SE1-21	5/17/2023	Sediment		X				

Notes:

¹Sample Identification uses the following naming scheme: site identification-well/location identification-sample event.

KMnO₄ = potassium permanganate

MS/MSD = matrix spike/matrix spike duplicate

NS = not sampled

PDB = passive diffusion bag

VOC = volatile organic compound

TABLE 2-3
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER QUALITY PARAMETERS
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification ¹	Sample Collection Date	pH	Temperature (°C)	Conductivity (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
FEW4-Belvoir No.1-21	5/22/2023	7.54	11.35	237	7.70	0.02	64.8
FEW4-Belvoir No. 3-21	5/22/2023	7.47	9.46	254	8.34	0.02	69.4
FEW4-Belvoir-Borie 1-21	5/19/2023	7.33	9.80	275	7.91	0.02	67.8
FEW4-Borie No. 1-21	5/22/2023	7.34	10.47	268	8.13	0.02	68.6
FEW4-Cow Camp No. 1-21	5/19/2023	7.45	10.59	291	8.06	0.02	72.4
FEW4-Duck Creek-21	5/19/2023	7.51	11.24	257	7.54	0.02	58.4
FEW4-Dyno-Nobel 8-21	5/18/2023	7.69	11.20	229	8.15	0.02	53.8
FEW4-Dyno-Nobel 16-21	5/18/2023	7.61	11.72	226	8.00	0.02	53.9
FEW4-Dyno-Nobel 22-21	5/18/2023	7.62	11.78	230	7.82	0.02	56.4
FEW4-Dyno-Nobel 23-21	5/18/2023	7.59	11.27	233	7.95	0.02	57.0
FEW4-Dyno-Nobel No.24-21	5/18/2023	7.65	12.64	253	7.44	0.02	50.1
FEW4-Dyno-Nobel No. 25-21	5/18/2023	7.82	11.95	217	7.80	1.05	47.4
FEW4-Dyno-Nobel 26-21	5/18/2023	7.60	11.27	225	7.98	0.02	51.6
FEW4-Dyno-Nobel 27-21	5/18/2023	7.63	11.07	235	7.91	0.02	53.7
FEW4-East Strip 1-21	5/12/2023	7.76	11.14	380	7.37	NM ²	36.0
FEW4-Elkar No. 7-21	5/22/2023	7.66	10.54	254	8.11	0.02	64.2
FEW4-Finnerty No.2-21	5/22/2023	7.69	10.82	250	8.13	0.77	57.3
FEW4-Johnson No. 1-21	5/16/2023	7.74	10.94	273	10.21	0.32	55.4
FEW4-King No. 3-21	5/15/2023	7.47	10.60	449	8.33	1.78	63.1
FEW4-King No.20-21	5/15/2023	7.70	10.52	284	10.05	0.23	40.6
FEW4-Rees Bros. 5-21	5/18/2023	7.42	11.39	212	7.78	11.10	59.9
FEW4-Weber No.1-21	5/22/2023	7.71	11.51	239	7.80	0.02	57.3
FEW4-WEST TRIANGLE-21	5/16/2023	8.02	10.63	260	7.88	42.40	-14.7
FEW4-MW01-21	5/17/2023	7.24	10.81	341	7.96	5.90	47.3
FEW4-MW03-21	5/17/2023	7.32	10.81	309	7.06	2.11	31.8
FEW4-MW04-21	5/17/2023	7.31	11.80	314	7.19	2.10	38.5
FEW4-MW38-21	5/11/2023	8.24	10.34	253	0.00	31.70	23.7
FEW4-MW44R-207-21	5/16/2023	7.43	13.66	363	7.21	0.02	32.4
FEW4-MW44R-242-21	5/19/2023	7.27	11.79	275	8.14	3.69	57.3
FEW4-MW44R-308-21	6/2/2023	7.19	15.79	300	2.19	1.83	30.1
FEW4-MW45R-252-21	5/21/2023	7.32	11.93	249	7.53	0.20	34.9
FEW4-MW45R-299-21	5/21/2023	7.28	12.02	241	6.59	0.02	57.1
FEW4-MW45R-331-21	6/2/2023	7.24	14.50	416	1.58	0.02	35.5
FEW4-MW46-300-21	5/17/2023	7.33	12.90	236	7.13	0.02	38.3
FEW4-MW46-334-21	5/17/2023	7.18	13.08	241	7.14	1.68	43.8
FEW4-MW46-389-21	5/14/2023	7.97	9.37	328	0.00	9.60	-170.0
FEW4-MW47-239-21	5/16/2023	7.49	12.31	336	8.03	2.72	30.5
FEW4-MW47-259-21	5/16/2023	7.43	12.47	335	7.76	4.20	28.5
FEW4-MW47-290-21	5/16/2023	7.48	12.02	336	7.65	0.68	36.0
FEW4-MW48-225-21	5/19/2023	7.09	12.70	272	7.53	0.02	61.1
FEW4-MW48-254-21	5/17/2023	7.27	12.17	233	8.10	2.37	43.0
FEW4-MW48-284-21	5/17/2023	7.26	12.39	233	8.08	0.02	39.3
FEW4-MW49-286-21	5/20/2023	7.11	14.00	271	7.24	0.20	59.3
FEW4-MW49-311-21	5/20/2023	7.25	13.43	274	7.31	0.02	38.7
FEW4-MW49-333-21	5/20/2023	7.33	14.31	240	6.65	0.02	36.1
FEW4-MW51-210-21	5/22/2023	7.71	10.26	337	4.96	4.60	127.9
FEW4-MW54B-164-21	5/13/2023	7.56	11.95	344	5.02	4.55	24.7
FEW4-MW54B-199-21	5/13/2023	7.71	11.46	320	6.02	0.24	24.7
FEW4-MW55-250-21	5/15/2023	7.38	11.69	239	7.34	0.02	45.5
FEW4-MW56-290-21	6/4/2023	7.19	15.18	392	1.96	45.90	53.7
FEW4-MW59-125-21	6/6/2023	7.35	12.22	415	3.23	56.00	275.2
FEW4-MW59-183-21	5/22/2023	8.05	9.85	281	2.82	0.02	13.8
FEW4-MW60-90-21	5/22/2023	7.26	10.98	325	4.51	66.50	49.4
FEW4-MW60-146-21	6/4/2023	7.39	9.28	289	3.13	41.20	43.4
FEW4-MW60-233-21	5/21/2023	7.47	11.63	296	1.55	0.50	16.4
FEW4-MW61-80-21	5/21/2023	8.23	10.02	205	0.63	572.00	-166.7
FEW4-MW61-107-21	5/15/2023	7.61	9.73	354	0.00	15.10	-165.2
FEW4-MW61-221-21	5/21/2023	7.38	10.55	287	6.78	7.02	38.3
FEW4-MW71-205-21	6/1/2023	7.17	13.61	233	1.98	2.52	40.3

TABLE 2-3
SPRING 2023 LONG-TERM MONITORING EVENT 21 GROUNDWATER QUALITY PARAMETERS
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification ¹	Sample Collection Date	pH	Temperature (°C)	Conductivity (µS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
FEW4-MW74-104-21	6/5/2023	7.26	9.25	397	1.66	6.75	57.4
FEW4-MW74-263-21	6/5/2023	6.91	12.87	1296	1.44	31.90	2.0
FEW4-MW74-359-21	6/6/2023	6.88	14.98	1203	1.41	4.26	16.0
FEW4-MW75-93-21	5/15/2023	7.82	8.62	331	4.75	4.80	129.9
FEW4-MW75-308-21	6/3/2023	7.53	9.90	366	6.93	0.02	69.1
FEW4-MW75-377-21	5/14/2023	7.81	8.49	383	4.34	6.90	64.5
FEW4-MW78-112-21	5/20/2023	7.43	11.32	510	8.06	795.00	74.0
FEW4-MW79-193-21	6/1/2023	6.98	12.68	1168	1.48	15.40	28.6
FEW4-MW80-284-21	6/2/2023	7.31	9.28	288	6.92	0.02	57.1
FEW4-MW81-100-21	5/20/2023	7.26	10.84	337	5.01	54.50	41.1
FEW4-MW81-279-21	6/3/2023	7.40	9.20	350	7.32	0.02	72.7
FEW4-MW86-353-21	5/12/2023	7.67	7.76	472	NM ³	NM ²	-123.1
FEW4-MW88-133-21	5/20/2023	7.18	11.05	216	7.39	0.02	61.5
FEW4-MW89-178-21	5/21/2023	7.92	10.14	277	10.37	23.70	69.5
FEW4-MW92B-288-21	5/16/2023	7.70	10.50	300	10.00	22.40	38.8
FEW4-MW92B-322-21	5/16/2023	7.90	10.90	404	0.05	174.00	-156.1
FEW4-MW95-288-21	5/15/2023	7.35	12.11	229	7.36	0.02	56.6
FEW4-MW97-107-21	5/14/2023	7.77	10.44	322	8.31	0.08	30.2
FEW4-MW97-266-21	5/17/2023	7.72	13.61	583	0.00	25.80	-91.4
FEW4-MW98-180-21	5/20/2023	7.63	11.22	236	7.92	2.01	51.6
FEW4-MW98-217-21	5/20/2023	7.32	11.33	230	8.11	0.73	68.0
FEW4-MW98-263-21	5/20/2023	7.72	11.36	238	7.38	0.12	36.3
FEW4-MW99-110-21	5/11/2023	7.51	10.88	297	7.37	1.92	33.5
FEW4-MW99-161-21	5/13/2023	7.73	11.34	299	6.31	0.02	25.6
FEW4-MW100-153-21	5/13/2023	7.51	14.28	336	5.58	0.02	34.7
FEW4-MW100-270-21	5/12/2023	7.42	13.98	347	6.90	0.02	42.0
FEW4-MW100-305-21	5/12/2023	7.30	13.48	345	6.76	2.33	58.9
FEW4-MW103-193-21	5/11/2023	7.63	11.36	291	7.57	0.02	28.8
FEW4-MW103-242-21	5/12/2023	7.48	11.50	284	7.47	0.43	29.0
FEW4-MW103-308-21	5/13/2023	7.75	12.11	273	1.18	0.02	26.6
FEW4-MW104-99-21	5/15/2023	7.57	11.61	362	6.25	1.54	28.8
FEW4-MW104-135-21	5/14/2023	7.59	11.04	424	4.72	0.41	20.3
FEW4-MW104-178-21	5/15/2023	7.54	12.20	419	2.55	1.27	10.8
FEW4-MW105-93-21	5/16/2023	7.48	11.16	348	5.95	3.22	26.6
FEW4-MW105-143-21	5/16/2023	7.46	10.96	375	4.19	4.51	2.6
FEW4-MW105-188-21	5/16/2023	7.51	12.07	393	2.96	3.13	-26.5
FEW4-MW106-230-21	5/18/2023	7.06	12.42	257	7.02	1.69	49.1
FEW4-MW106-272-21	5/22/2023	7.04	11.57	264	7.34	0.02	53.8
FEW4-MW106-316-21	5/21/2023	7.20	13.24	268	6.53	0.02	24.8
FEW4-MW107-249-21	5/14/2023	7.47	12.60	261	6.56	0.15	45.9
FEW4-MW107-310-21	5/14/2023	7.47	12.65	259	6.35	1.20	56.3
FEW4-MW107-355-21	5/14/2023	7.38	12.46	264	5.99	0.02	59.0

Notes:

¹Sample Identification uses the following naming scheme: site identification-well/location identification-sample event.

²Parameter not measured due to lack of equipment

³Parameter not measured due to malfunction on DO sensor

°C = degrees Celsius

DO = dissolved oxygen

mg/L = milligrams per liter

mS/cm = microSiemens per centimeter

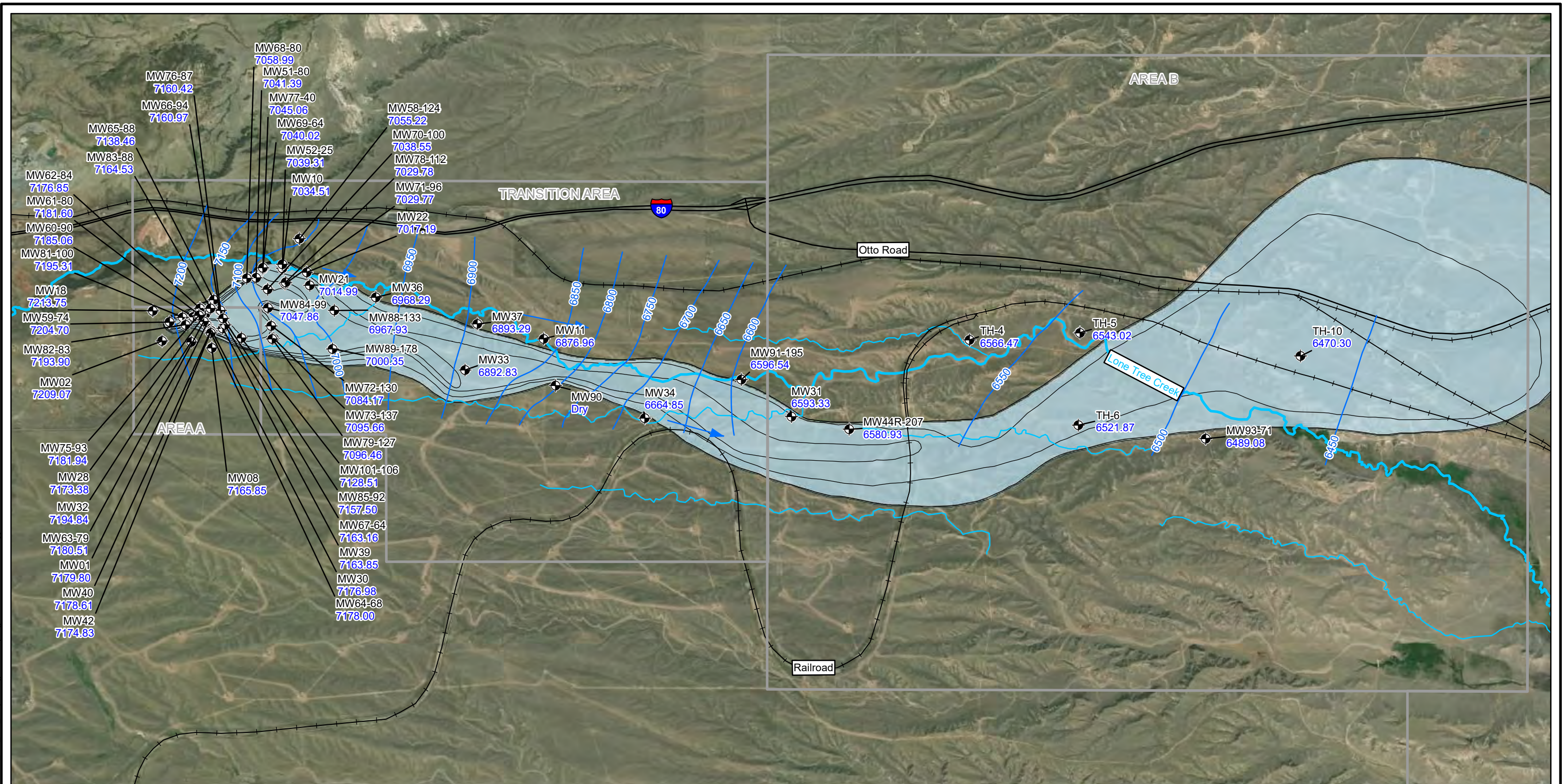
mV = millivolts

NM = not measured

NTU = nephelometric turbidity unit

ORP = oxidation-reduction potential

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Locator Map

Legend

- Monitoring Well with Groundwater Elevation (feet above mean sea level)
- Water Table Surface Contour
- Groundwater Flow
- Railroad Tracks
- Roads
- Perennial Creek
- Ephemeral Creek
- TCE >5 µg/L

LTM = long-term monitoring

Notes:

- 1) Water table elevations are based on measurements taken between 10-12 May 2023.
- 2) Water table contours are based on interpretation between calculated elevations at monitoring wells. Actual subsurface conditions may vary.

Horizontal Datum:
NAD_1983_StatePlane_Wyoming_East_FIPS_4901_Feet

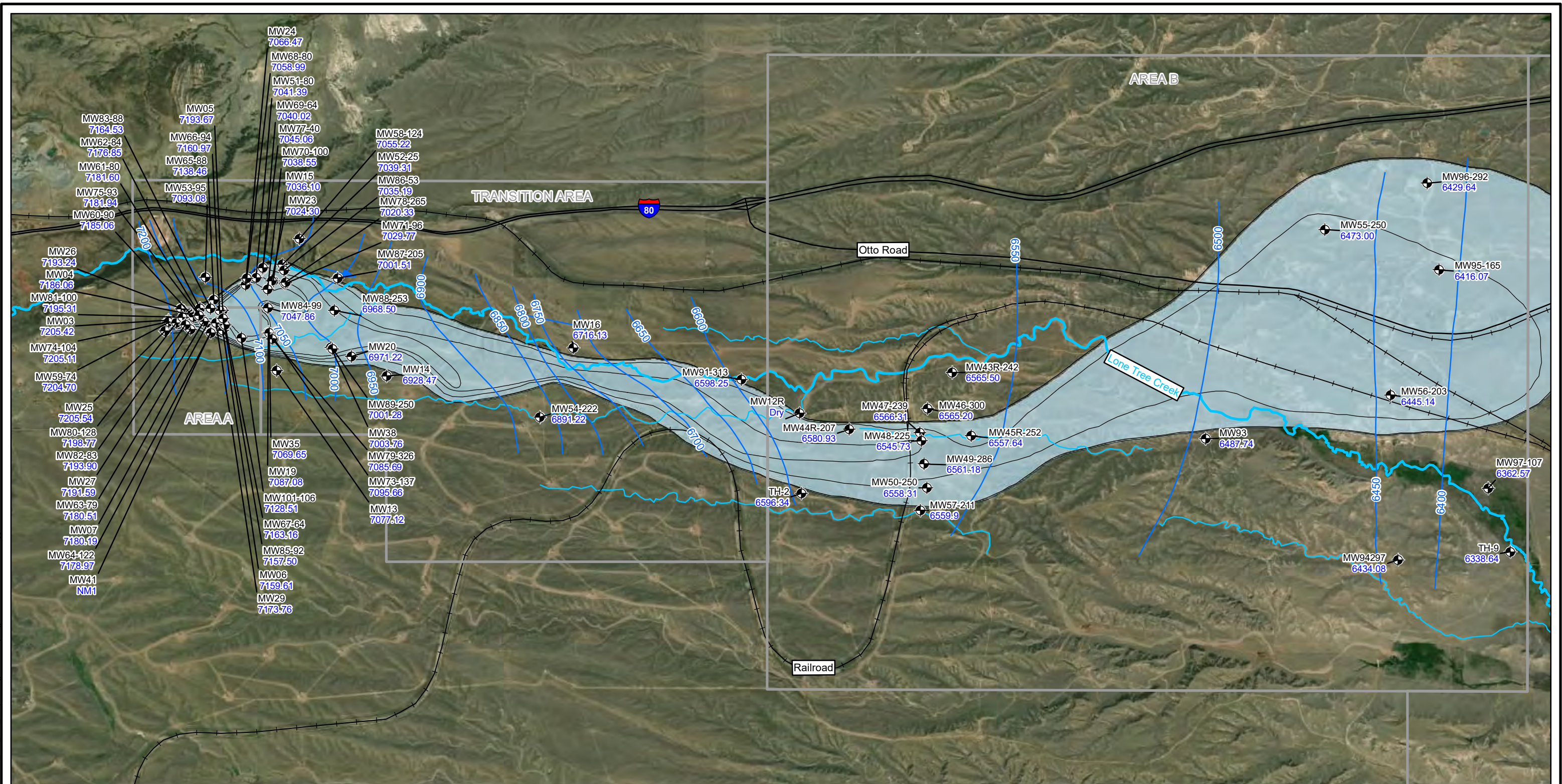
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri

Water Table Elevation Contour Map
Spring 2023 LTM Event 21
Former Atlas "D" Missile Site 4
F.E. Warren Air Force Base, WY

Drawn By: DPG	Date: 3/4/2024	Project No: 60613342	Figure 2-1
Checked By: DRS	Revision: 0		

4,000 2,000 0 4,000 Feet

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Locator Map

Legend

- Monitoring Well with Groundwater Elevation (feet above mean sea level)
- Piezometric Surface Contour
- Groundwater Flow
- Railroad Tracks
- Roads
- Perennial Creek
- Ephemeral Creek
- TCE >5 µg/L

LTM = long-term monitoring

Notes:

- 1) Piezometric elevations are based on measurements taken between 10-12 May 2023.
- 2) Piezometric contours are based on interpretation between calculated elevations at monitoring wells. Actual subsurface conditions may vary.

Horizontal Datum:
NAD_1983_StatePlane_Wyoming_East_FIPS_4901_Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri

Piezometric Surface Contour Map
Spring 2023 LTM Event 21
Former Atlas "D" Missile Site 4
F.E. Warren Air Force Base, WY

Drawn By: DPG	Date: 3/4/2024	Project No: 60613342	Figure 2-2
Checked By: DRS	Revision: 0		

4,000 2,000 0 4,000 Feet

The following section summarizes analytical results for groundwater, surface water, and sediment collected during the Spring 2023 LTM Event 21. VOC detections in groundwater samples are shown in **Table 3-1**. Detections in surface water and sediment samples are shown in **Table 3-2** and **Table 3-3**, respectively.

The Data Usability Summary is included as **Appendix C**. Complete laboratory analytical data reports and chain-of-custody records are provided in **Appendix D**. Some of the results reported above the limit of quantitation have been qualified as estimated (J) due to discrepancies in meeting certain analyte-specific quality control criteria (e.g., surrogate standard recoveries outside the acceptable performance control limits). All analytical results are deemed usable as qualified for the project data quality objectives as described in the Final Site-Wide UFP-QAPP (URS 2020b) and UFP-QAPP Addendum 3 (URS 2023).

3.1 GROUNDWATER SAMPLES

3.1.1 Trichloroethene

TCE and *cis*-1,2-dichloroethene (DCE) have been consistently detected in groundwater at Site 4 during this and previous LTM events. TCE was detected in 170 of the 272 (63 percent [%]) groundwater samples analyzed for VOCs and was at concentrations greater than the USEPA MCL (5 µg/L) in 126 groundwater samples (46%). The highest concentration of TCE was reported in Area A well MW59-74 at 190,000 µg/L. MW59 is located in the flame pit of LSB 1. Fifty-four samples collected from wells located in Area A and the western portion of the Transition Area exhibited relatively high TCE concentrations (i.e., greater than 100 µg/L) including samples from MW01, MW03, MW04, MW06, MW07, MW19, MW21, MW24, MW28, MW29, MW30, MW59, MW60, MW61, MW63, MW66, MW67, MW69, MW70, MW71, MW72, MW73, MW74, MW75, MW76, MW78, MW79, MW80, MW81, MW82, MW83, MW85, MW89, MW101, MW105, and MW106.

The current TCE concentrations in groundwater in Area A and the Transition Area are shown in **Figure 3-1**. The current TCE concentrations in Area B and the Expanded Study Area are shown in **Figure 3-2**.

3.1.2 *cis*-1,2-Dichloroethene

cis-1,2-DCE was detected in 49 of the 272 groundwater samples analyzed (18%), with concentrations up to 2,200 µg/L at MW60-90. This detection rate is somewhat lower than in the Fall 2022 LTM Event 20 (25%), though with a higher maximum concentration than Event 20 (470 J µg/L). *cis*-1,2-DCE was reported at concentrations greater than the USEPA MCL (70 µg/L) in five samples (2%). Three of the four sample locations exhibiting *cis*-1,2-DCE concentrations above the MCL are located within the ZVI pilot study area at MW60-90, MW60-146, and MW61-107 (conventional and PDB samples). The heightened presence of *cis*-1,2-DCE indicates reducing conditions have been achieved within the ZVI pilot study area and TCE is being effectively reduced to its daughter product *cis*-1,2-DCE.

3.1.3 Other Compounds

Seven additional VOCs were detected in groundwater samples (**Table 3-1**). The concentrations of the detected VOCs were each below their respective MCL or USEPA regional screening level (RSL). Historically, carbon tetrachloride, 1,1,2-trichloroethane and tetrachloroethene were found above their respective MCL in wells that also have very high concentrations of TCE, especially MW59-74. New laboratory procedures have the samples being analyzed only at the dilutions necessary to quantify the contaminants of concern (TCE and *cis*-1,2-DCE). At these dilutions, it is often impossible to detect and quantify these other compounds, so their concentrations from samples collected at high-concentration TCE wells during the Spring 2023 LTM Event 21 are unknown. These compounds were not identified as contaminants of concern in the Area-Wide RI Report (RMC+SoundEarth 2020).

3.2 SURFACE WATER SAMPLES

TCE was detected in two of the four surface water samples collected during the Spring 2023 LTM Event 21: the Belvoir-Borie 1 stock pond influent and Lone Tree Creek. TCE was reported at 3.4 µg/L in sample FEW4-BELVOIRBORIESW1-21 collected from the water influent to the stock/irrigation pond. The groundwater sample collected from the Belvoir-Borie No. 1 well, which discharges directly into the adjacent stock/irrigation pond, detected TCE at 4.9 µg/L. TCE was detected at a trace concentration (0.38 J µg/L) below the LOQ in surface water sampled at the Lone Tree Creek location. TCE was not detected in the effluent Belvoir-Borie sample, nor in the Otto Spring surface water sample. This contrasts with the Fall 2022 LTM Event 20, where the surface water sample from Otto Spring had a TCE concentration of 9.5 µg/L, which was predicted to be an anomaly.

No other VOCs were detected at the four surface water sample locations. Surface water analytical results for the Spring 2023 LTM Event 21 are presented in **Table 3-2**. TCE concentrations and the interpreted plume area and extent are shown on **Figure 3-1** and **Figure 3-2**.

3.3 SEDIMENT SAMPLES

TCE was not detected in the four sediment samples collected during the Spring 2023 LTM Event 21. Small amounts of carbon disulfide and toluene were detected at estimated concentrations near or below their respective LOQs, with the exception of toluene detected at 10 µg/L at Belvoir-Borie stock pond effluent. However, these results were both below their respective soil to groundwater RSL and residential soil RSL. No other VOCs were detected in the sediment samples collected at Lone Tree Creek, Belvoir-Borie stock pond influent, Belvoir-Borie stock pond effluent, and Otto Spring locations (**Table 3-3**).

3.4 PDB COMPARISON

Approximately 10% of monitoring wells were sampled with both conventional and PDB methods concurrently during the Spring 2023 LTM Event 21. Twenty-one sample pairs were collected at monitoring wells MW01, MW38, MW45R-299, MW46-389, MW51-210, MW55-250, MW56-290, MW59-183, MW61-107, MW71-205, MW74-359, MW75-93, MW75-377, MW78-112, MW79-193, MW86-353, MW88-133, MW89-178, MW92B-288, MW95-288, and MW97-266. TCE was used as the main constituent for comparison as it is the primary chemical of concern for the site. Results were compared using relative percent difference (RPD) between the conventional and PDB results and compared to historical trends. The equation for calculating Relative Percent Difference (RPD) is as follows:

$$RPD = \frac{|R_1 - R_2|}{\left(\frac{R_1 + R_2}{2}\right)}$$

Where R1 uses a conventionally collected sample 1 (TCE ug/L), and R2 is a PDB collected sample 2 (TCE ug/L). Note the order of samples input into the equation is irrelevant as long as absolute values are calculated. Comparison results are included in **Appendix E**.

3.4.1 Low TCE Concentrations

TCE results from the eight low TCE concentration wells and the historical trend charts are shown in Table E-1 in Appendix E. Overall TCE results were comparable (i.e., RPD less than 30%) between the PDB sampling method and conventional sampling methods for MW46-389, MW51-210, MW71-205, and MW75-377. It is important to note that these comparable results are from wells that were reported nondetect for TCE in both PDB and conventional samples.

When concentrations are very low it is difficult to use RPD to indicate if PDB and conventional sample results are similar because changes in even 2 µg/L can indicate a large RPD. For instance, TCE concentrations at MW45R-299 were 1.1 µg/L in the PDB sample and 4 µg/L in the conventional sample, resulting in a 114% RPD. Similarly, the RPD between the PDB and conventional results at MW74-359 was also very high despite the actual numeric difference being relatively low. TCE concentrations also deviated at MW56-290 and MW59-183 where PDB sample methods had a result of 5.6 µg/L and 11 J µg/L, respectively, and conventional sample methods had a result of 1.1 µg/L and 2.8 J µg/L, respectively. Notably, the PDB samples detected TCE at concentrations higher than the MCL of 5 µg/L, while both conventional results were lower than the MCL.

3.4.2 Mid-Level TCE Concentrations

TCE results from the six mid-level TCE concentration wells and the historical trend charts are shown in **Table E-2**. Overall TCE results were within 30% RPD between the PDB sampling method and conventional sampling methods for MW55-250 and MW92B-288. MW01 saw a RPD of 42% this event, with PDB and conventional results at 78 µg/L and 120 µg/L, respectively. In MW88-133, conventional and PDB spring 2023 results were 100 µg/L and

37 µg/L, respectively, resulting in an RPD of 92%. Conventional sampling method TCE results in the last four semiannual events at this well have ranged from 94 µg/L to 110 µg/L while PDB TCE results have ranged from 30 µg/L to 37 µg/L. MW88-133 PDB sample results consistently show a low bias relative to the conventionally obtained samples. In MW79-193, the RPD in past comparisons has been around 21-24%, with the PDB sample consistently having higher concentrations of TCE than its conventional counterpart. Likewise with this event, the PDB result was of a higher concentration (14 µg/L) than the conventional sample (7.6 µg/L). This yielded a RPD of 59%, though the numerical difference is consistent with previous events.

In MW95-288, conventional and PDB spring 2023 results were 12 µg/L and 3.1 µg/L, respectively, resulting in an RPD of 118%. This relationship is consistent with previous event comparisons, with conventional sampling method TCE results ranging from 13 J µg/L to 21 µg/L and PDB results ranging from 2.9 µg/L to 3.6 µg/L. The PDB result shows a low bias to past conventional sampling results.

URS recommends MW01, MW88-133 and MW95-288 to be installed with PDBs set at high, mid, and low depths within the well screen to determine definitely what depth best corresponds to the conventional sampling method.

3.4.3 High TCE Concentrations

TCE results from the four high TCE concentration wells and the historical trend charts are shown in **Table E-3**. TCE results were within 30% RPD between the PDB sampling method and conventional sampling methods for MW61-107 and MW78-112. In MW75-93, spring 2023 conventional and PDB results were 3,400 µg/L and 4,700 µg/L, respectively, resulting in an RPD of 32% — close to the acceptable cutoff of 30%. Conventional sampling method TCE results in the last four semiannual events have ranged from 3,000 µg/L to 3,500 J µg/L. The PDB method consistently yields a higher (4300 µg/L to 4700 µg/L) and thus more conservative result for MW75-93 when compared with the conventional sampling method. URS recommends MW75-93 be installed with PDBs set at high, mid, and low depths within the well screen to determine definitely what depth best corresponds to the conventional sampling method.

In MW89-178, spring 2023 conventional and PDB results were 220 J µg/L and 47 µg/L, respectively, resulting in an RPD of 79%. Conventional sampling method TCE results in the last four semiannual events have ranged from 190 J µg/L to 220 µg/L. The PDB TCE results (45 µg/L to 67 µg/L) reported for this location shows a low bias to past conventional sampling results.

3.4.4 Conclusions

Continued side by side evaluation of conventional and PDB results were completed at monitoring wells MW56-290, MW88-133, MW95-288, and MW89-178 per recommendations in the Final PDB Report (URS 2022b). All PDB samples were collected in accordance with the Final PDB Report (URS 2022b). It was suggested in previous LTM reports that varying the depth of PDB placement in wells could be used to capture higher and more representative TCE

concentrations. This was done for five wells (MW01, MW56-290, MW66-205, MW88-133, and MW95-288) during the Spring 2022 LTM Event 19, with the PDBs being moved to higher in the well screen. However, this idea was not expanded upon for the Fall 2022 LTM event due to delays in receiving the laboratory analysis in time for commencement of Fall 2022 LTM field activities. A direct comparison for approximately 10% of monitoring wells sampled during the Spring 2023 LTM Event 21 was completed in the sections above. The results of this comparison do vary. Omitting the TCE nondetect wells, comparisons at lower TCE concentration wells tend to struggle to demonstrate comparability given the large effect that small differences in sample results will have on the relative differences. Higher concentration wells do tend to be more consistent in this regard, though several, such as MW88-133 and MW89-178, show large and consistent relative differences in TCE concentration.

For monitoring wells MW01, MW75-93, MW88-133, and MW95-288, URS recommends installing PDBs at high, mid, and low depths in the well screens to determine what depths best correspond to conventional sampling results.

3.5 INVESTIGATION-DERIVED WASTE SAMPLES

GAC treatment samples were collected at the influent (prior to treatment), intermediate (following the treatment from GAC #1), and effluent (following treatment through GAC #2) sample ports and submitted for VOC analysis. GAC performance samples for the Spring 2023 LTM Event 21 were collected on 13 June 2023. The influent sample reported a concentration of TCE of 0.65 J µg/L. VOCs were not detected in the intermediate or effluent sample, indicating the IDW water was fully treated prior to disposal.

The IDW analytical data are included in the Laboratory Analytical Data Reports in **Appendix D**.

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				BELVOIR NO. 1						BELVOIR NO.3						BELVOIR-BORIE 1						BORIE NO. 1					
FIELD IDENTIFICATION ¹				FEW4-BELVOIR NO. 1-21						FEW4-BELVOIR NO. 3-21						FEW4-BELVOIR-BORIE 1-21						FEW4-BORIE NO. 1-21					
DATE COLLECTED				22-May-23						22-May-23						19-May-23						22-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	11.0		0.300	0.400	1.00	1	1.90		0.300	0.400	1.00	1	4.90		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event.

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				COW CAMP NO. 1						DUCKCREEK STOCK						DYNO-NOBEL NO. 8						DYNO-NOBEL NO. 16					
FIELD IDENTIFICATION ¹				FEW4-COW CAMP NO. 1-21						FEW4-DUCKCREEK STOCK-21						FEW4-DYNO-NOBEL 8-21						FEW4-DYNO-NOBEL 16-21					
DATE COLLECTED				19-May-23						19-May-23						18-May-23						18-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	13.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	4.70		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				DYNO-NOBEL NO. 22						DYNO-NOBEL NO. 23						DYNO-NOBEL NO. 24						DYNO-NOBELNO.25					
FIELD IDENTIFICATION ¹				FEW4-DYNO-NOBEL 22-21						FEW4-DYNO-NOBEL 23-21						FEW4-DYNO-NOBELNO.24-21						FEW4-DYNO-NOBELNO.25-21					
DATE COLLECTED				18-May-23						18-May-23						18-May-23						18-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	20.0		0.300	0.400	1.00	1	14.0		0.300	0.400	1.00	1	8.20		0.300	0.400	1.00	1	7.90		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				DYNO-NOBEL NO. 26						DYNO-NOBEL NO. 27						EAST STRIP 1						ELKAR NO. 7					
FIELD IDENTIFICATION ¹				FEW4-DYNO-NOBEL 26-21						FEW4-DYNO-NOBEL 27-21						FEW4-EAST STRIP 1-21						FEW4-ELKAR NO. 7-21					
DATE COLLECTED				18-May-23						18-May-23						12-May-23						22-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4.40		0.300	0.400	1.00	1	3.50		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.840	J	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				FINNERTY NO. 2						JOHNSON NO. 1						KING NO. 3						KING NO. 20					
FIELD IDENTIFICATION ¹				FEW4-FINNERTY NO. 2-21						FEW4-JOHNSON NO. 1-21						FEW4-KING No. 3-21						FEW4-KING No. 20-21					
DATE COLLECTED				22-May-23						16-May-23						15-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	19.0		0.300	0.400	1.00	1	14.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	4.50		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				REES BROS. NO. 5						TH-2						TH5-97						TH5-205					
FIELD IDENTIFICATION ¹				FEW4-REES BROS. 5-21						FEW4-TH2-21						FEW4-TH5-97-21						FEW4-TH5-205-21					
DATE COLLECTED				18-May-23						13-May-23						13-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	3.80		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.680	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				TH9-125						WEBER NO. 1						WEST TRIANGLE						MW01					
FIELD IDENTIFICATION ¹				FEW4-TH9-125-21						FEW4-WEBER NO. 1-21						FEW4-WEST TRIANGLE-21						FEW4-MW01-21					
DATE COLLECTED				12-May-23						22-May-23						16-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.560	J	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	22.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	120		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW01						MW03						MW04						MW05					
FIELD IDENTIFICATION ¹				FEW4-MW01-PDB-21						FEW4-MW03-21						FEW4-MW04-21						FEW4-MW05-21					
DATE COLLECTED				17-May-23						17-May-23						17-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4	3.20	U	1.10	3.20	4.00	4	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4	2.00	U	1.60	2.00	4.00	4	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4	3.20	U	1.70	3.20	4.00	4	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	10.0		1.30	1.60	4.00	4	12.0		1.30	1.60	4.00	4	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4	3.20	U	1.40	3.20	8.00	4	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4	3.20	U	1.60	3.20	4.00	4	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4	2.00	U	1.50	2.00	4.00	4	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	78.0		0.300	0.400	1.00	1	460		1.20	1.60	4.00	4	600		1.20	1.60	4.00	4	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4	4.00	U	2.00	4.00	8.00	4	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW06						MW07						MW10						MW13					
FIELD IDENTIFICATION ¹				FEW4-MW06-21						FEW4-MW07-21						FEW4-MW10-21						FEW4-MW13-21					
DATE COLLECTED				20-May-23						19-May-23						16-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.380	J	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	79.0		0.300	0.400	1.00	1	100		0.300	0.400	1.00	1	55.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW15						MW19						MW20						MW21					
FIELD IDENTIFICATION ¹				FEW4-MW15-21						FEW4-MW19-21						FEW4-MW20-21						FEW4-MW21-21					
DATE COLLECTED				16-May-23						20-May-23						20-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	8.00	U	2.70	8.00	10.0	10	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	5.00	U	3.90	5.00	10.0	10	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	8.00	U	4.20	8.00	10.0	10	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	4.00	U	3.20	4.00	10.0	10	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	8.00	U	3.60	8.00	20.0	10	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	8.00	U	4.00	8.00	10.0	10	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	5.00	U	3.70	5.00	10.0	10	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	17.0		0.300	0.400	1.00	1	630		3.00	4.00	10.0	10	42.0		0.300	0.400	1.00	1	110		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	10.0	U	5.10	10.0	20.0	10	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW22						MW24						MW25						MW26					
FIELD IDENTIFICATION ¹				FEW4-MW22-21						FEW4-MW24-21						FEW4-MW25-21						FEW4-MW26-21					
DATE COLLECTED				15-May-23						17-May-23						19-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	8.00	U	2.70	8.00	10.0	10	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	5.00	U	3.90	5.00	10.0	10	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	8.00	U	4.20	8.00	10.0	10	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	4.00	U	3.20	4.00	10.0	10	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	8.00	U	3.60	8.00	20.0	10	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	8.00	U	4.00	8.00	10.0	10	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	5.00	U	3.70	5.00	10.0	10	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	1200		3.00	4.00	10.0	10	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	10.0	U	5.10	10.0	20.0	10	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW27						MW28						MW29						MW30					
FIELD IDENTIFICATION ¹				FEW4-MW27-21						FEW4-MW28-21						FEW4-MW29-21						FEW4-MW30-21					
DATE COLLECTED				19-May-23						19-May-23						21-May-23						21-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	80.0	U	27.0	80.0	100	100	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	50.0	U	39.0	50.0	100	100	0.500	U	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	80.0	U	42.0	80.0	100	100	0.800	U	0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	40.0	U	32.0	40.0	100	100	0.840	J	0.320	0.400	1.00	1	1.60	U	1.30	1.60	4.00	4
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	80.0	U	36.0	80.0	200	100	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	80.0	U	40.0	80.0	100	100	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	50.0	U	37.0	50.0	100	100	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4
Trichloroethene (TCE)	190000	170 / 272	5	0.730	J	0.300	0.400	1.00	1	5000		30.0	40.0	100	100	130		0.300	0.400	1.00	1	350		1.20	1.60	4.00	4
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	100	U	51.0	100	200	100	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW31						MW32						MW33						MW34					
FIELD IDENTIFICATION ¹				FEW4-MW31-21						FEW4-MW32-21						FEW4-MW33-21						FEW4-MW34-21					
DATE COLLECTED				13-May-23						19-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	1.30		0.320	0.400	1.00	1	0.720	J	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	27.0		0.300	0.400	1.00	1	0.670	J	0.300	0.400	1.00	1	97.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW36						MW37						MW38						MW38					
FIELD IDENTIFICATION ¹				FEW4-MW36-21						FEW4-MW37-21						FEW4-MW38-21						FEW4-MW38-PDB-21					
DATE COLLECTED				14-May-23						14-May-23						11-May-23						11-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.430	J	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	160		0.300	0.400	1.00	1	2.50		0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW39						MW40						MW43R-242						MW43R-262					
FIELD IDENTIFICATION ¹				FEW4-MW39-21						FEW4-MW40-21						FEW4-MW43R-242-21						FEW4-MW43R-262-21					
DATE COLLECTED				20-May-23						21-May-23						12-May-23						12-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	26.0		0.300	0.400	1.00	1	31.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW44R-207						MW44R-242						MW44R-308						MW45R-252					
FIELD IDENTIFICATION ¹				FEW4-MW44R-207-21						FEW4-MW44R-242-21						FEW4-MW44R-308-21						FEW4-MW45R-252-21					
DATE COLLECTED				16-May-23						19-May-23						02-Jun-23						21-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	29.0		0.300	0.400	1.00	1	17.0		0.300	0.400	1.00	1	2.10		0.300	0.400	1.00	1	6.40		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW45R-299						MW45R-299						MW45R-331						MW46-300					
FIELD IDENTIFICATION ¹				FEW4-MW45R-299-21						FEW4-MW45R-299-PDB-21						FEW4-MW45R-331-21						FEW4-MW46-300-21					
DATE COLLECTED				21-May-23						21-May-23						02-Jun-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4.00		0.300	0.400	1.00	1	1.10		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	1.10		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW46-334						MW46-389						MW46-389						MW47-239					
FIELD IDENTIFICATION ¹				FEW4-MW46-334-21						FEW4-MW46-389-21						FEW4-MW46-389-PDB-21						FEW4-MW47-239-21					
DATE COLLECTED				17-May-23						14-May-23						14-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	19.0	J	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW47-259						MW47-290						MW48-225						MW48-254					
FIELD IDENTIFICATION ¹				FEW4-MW47-259-21						FEW4-MW47-290-21						FEW4-MW48-225-21						FEW4-MW48-254-21					
DATE COLLECTED				16-May-23						16-May-23						19-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	18.0		0.300	0.400	1.00	1	6.20	J	0.300	0.400	1.00	1	40.0		0.300	0.400	1.00	1	20.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW48-284						MW49-286						MW49-311						MW49-333					
FIELD IDENTIFICATION ¹				FEW4-MW48-284-21						FEW4-MW49-286-21						FEW4-MW49-311-21						FEW4-MW49-333-21					
DATE COLLECTED				17-May-23						20-May-23						20-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	19.0		0.300	0.400	1.00	1	20.0		0.300	0.400	1.00	1	19.0		0.300	0.400	1.00	1	18.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW50-250						MW50-290						MW50-318						MW51-80					
FIELD IDENTIFICATION ¹				FEW4-MW50-250-21						FEW4-MW50-290-21						FEW4-MW50-318-21						FEW4-MW51-80-21					
DATE COLLECTED				13-May-23						13-May-23						13-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	8.00	U	2.70	8.00	10.0	10
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	5.00	U	3.90	5.00	10.0	10
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	8.00	U	4.20	8.00	10.0	10
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	4.00	U	3.20	4.00	10.0	10
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	8.00	U	3.60	8.00	20.0	10
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	8.00	U	4.00	8.00	10.0	10
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	5.00	U	3.70	5.00	10.0	10
Trichloroethene (TCE)	190000	170 / 272	5	2.90		0.300	0.400	1.00	1	5.80		0.300	0.400	1.00	1	0.790	J	0.300	0.400	1.00	1	580		3.00	4.00	10.0	10
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	10.0	U	5.10	10.0	20.0	10

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW51-110						MW51-210						MW51-210						MW52-25					
FIELD IDENTIFICATION ¹				FEW4-MW51-110-21						FEW4-MW51-210-21						FEW4-MW51-210-PDB-21						FEW4-MW52-25-21					
DATE COLLECTED				16-May-23						22-May-23						21-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.60		0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.410	J	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4.90		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	38.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW52-59						MW52-140						MW53-95						MW53-145					
FIELD IDENTIFICATION ¹				FEW4-MW52-59-21						FEW4-MW52-140-21						FEW4-MW53-95-21						FEW4-MW53-145-21					
DATE COLLECTED				15-May-23						15-May-23						15-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	51.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW53-177						MW54-222						MW54-245						MW54-284					
FIELD IDENTIFICATION ¹				FEW4-MW53-177-21						FEW4-MW54-222-21						FEW4-MW54-245-21						FEW4-MW54-284-21					
DATE COLLECTED				15-May-23						14-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW54B-164						MW54B-199						MW55-250						MW55-250					
FIELD IDENTIFICATION ¹				FEW4-MW54B-164-21						FEW4-MW54B-199-21						FEW4-MW55-250-21						FEW4-MW55-250-PDB-21					
DATE COLLECTED				13-May-23						13-May-23						15-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	17.0		0.300	0.400	1.00	1	16.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW55-280						MW55-320						MW56-203						MW56-250					
FIELD IDENTIFICATION ¹				FEW4-MW55-280-21						FEW4-MW55-320-21						FEW4-MW56-203-21						FEW4-MW56-250-21					
DATE COLLECTED				14-May-23						14-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	14.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	19.0		0.300	0.400	1.00	1	9.90		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW56-290						MW56-290						MW57-211						MW57-240					
FIELD IDENTIFICATION ¹				FEW4-MW56-290-21						FEW4-MW56-290-PDB-21						FEW4-MW57-211-21						FEW4-MW57-240-21					
DATE COLLECTED				04-Jun-23						03-Jun-23						12-May-23						12-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.420	J	0.320	0.400	1.00	1	1.40		0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	1.10		0.300	0.400	1.00	1	5.60		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW57-276						MW58-124						MW58-169						MW58-213					
FIELD IDENTIFICATION ¹				FEW4-MW57-276-21						FEW4-MW58-124-21						FEW4-MW58-169-21						FEW4-MW58-213-21					
DATE COLLECTED				12-May-23						15-May-23						15-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW59-74						MW59-125						MW59-183						MW59-183					
FIELD IDENTIFICATION ¹				FEW4-MW59-74-21						FEW4-MW59-125-21						FEW4-MW59-183-21						FEW4-MW59-183-PDB-21					
DATE COLLECTED				04-Jun-23						06-Jun-23						22-May-23						22-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MD	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	3200	U	1100	3200	4000	400	80.0	U	27.0	80.0	100	100	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	2000	U	1600	2000	4000	400	50.0	U	39.0	50.0	100	100	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	3200	U	1700	3200	4000	400	80.0	U	42.0	80.0	100	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	1600	U	1300	1600	4000	400	39.0	J	32.0	40.0	100	100	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	3200	U	1400	3200	8000	400	80.0	U	36.0	80.0	200	100	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	3200	U	1600	3200	4000	400	80.0	U	40.0	80.0	100	100	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	2000	U	1500	2000	4000	400	50.0	U	37.0	50.0	100	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	190000		1200	1600	4000	400	1100		30.0	40.0	100	100	2.80		0.300	0.400	1.00	1	11.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	4000	U	2000	4000	8000	4000	100	U	51.0	100	200	100	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW60-90						MW60-146						MW60-233						MW61-80					
FIELD IDENTIFICATION ¹				FEW4-MW60-90-21						FEW4-MW60-146-21						FEW4-MW60-233-21						FEW4-MW61-80-21					
DATE COLLECTED				22-May-23						04-Jun-23						21-May-23						21-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	160	U	54.0	160	200	200	160	U	54.0	160	200	200	0.800	U	0.270	0.800	1.00	1	16.0	U	5.40	16.0	20.0	20
1,4-Dichlorobenzene	0.79 J	2 / 272	75	100	U	78.0	100	200	200	100	U	78.0	100	200	200	0.500	U	0.390	0.500	1.00	1	10.0	U	7.80	10.0	20.0	20
Chlorobenzene	2.3	7 / 272	100	160	U	84.0	160	200	200	160	U	84.0	160	200	200	0.800	U	0.420	0.800	1.00	1	16.0	U	8.40	16.0	20.0	20
cis-1,2-Dichloroethene	2200	49 / 272	70	770		64.0	80.0	200	200	2200		64.0	80.0	200	200	0.400	U	0.320	0.400	1.00	1	29.0		6.40	8.00	20.0	20
m,p-Xylene	0.98 J	2 / 272	10000 ^b	160	U	71.0	160	400	200	160	U	71.0	160	400	200	0.800	U	0.360	0.800	2.00	1	16.0	U	7.10	16.0	40.0	20
Tetrachloroethene (PCE)	1 J	2 / 272	5	160	U	81.0	160	200	200	160	U	81.0	160	200	200	0.800	U	0.400	0.800	1.00	1	16.0	U	8.10	16.0	20.0	20
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	100	U	74.0	100	200	200	100	U	74.0	100	200	200	0.500	U	0.370	0.500	1.00	1	10.0	U	7.40	10.0	20.0	20
Trichloroethene (TCE)	190000	170 / 272	5	28000		60.0	80.0	200	200	35000		60.0	80.0	200	200	85.0		0.300	0.400	1.00	1	1400		6.00	8.00	20.0	20
Vinyl chloride	0.64 J	1 / 272	2	200	U	100	200	400	200	200	U	100	200	400	200	1.00	U	0.510	1.00	2.00	1	20.0	U	10.0	20.0	40.0	20

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW61-107						MW61-107						MW61-221						MW62-84					
FIELD IDENTIFICATION ¹				FEW4-MW61-107-21						FEW4-MW61-107-PDB-21						FEW4-MW61-221-21						FEW4-MW62-84-21					
DATE COLLECTED				15-May-23						15-May-23						21-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	80.0	U	27.0	80.0	100	100	80.0	U	27.0	80.0	100	100	4.00	U	1.40	4.00	5.00	5	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	50.0	U	39.0	50.0	100	100	50.0	U	39.0	50.0	100	100	2.50	U	1.90	2.50	5.00	5	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	80.0	U	42.0	80.0	100	100	80.0	U	42.0	80.0	100	100	4.00	U	2.10	4.00	5.00	5	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	210		32.0	40.0	100	100	300		32.0	40.0	100	100	2.50	J	1.60	2.00	5.00	5	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	80.0	U	36.0	80.0	200	100	80.0	U	36.0	80.0	200	100	4.00	U	1.80	4.00	10.0	5	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	80.0	U	40.0	80.0	100	100	80.0	U	40.0	80.0	100	100	4.00	U	2.00	4.00	5.00	5	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	50.0	U	37.0	50.0	100	100	50.0	U	37.0	50.0	100	100	2.50	U	1.80	2.50	5.00	5	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4600		30.0	40.0	100	100	4900		30.0	40.0	100	100	380		1.50	2.00	5.00	5	14.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	100	U	51.0	100	200	100	100	U	51.0	100	200	100	5.00	U	2.50	5.00	10.0	5	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

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LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW62-158						MW62-252						MW63-79						MW63-143					
FIELD IDENTIFICATION ¹				FEW4-MW62-158-21						FEW4-MW62-252-21						FEW4-MW63-79-21						FEW4-MW63-143-21					
DATE COLLECTED				17-May-23						17-May-23						19-May-23						19-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.450	J	0.320	0.400	1.00	1	0.720	J	0.640	0.800	2.00	2
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	1.60	U	0.810	1.60	2.00	2
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2
Trichloroethene (TCE)	190000	170 / 272	5	56.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	110		0.300	0.400	1.00	1	170		0.600	0.800	2.00	2
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW63-223						MW64-68						MW64-122						MW65-88					
FIELD IDENTIFICATION ¹				FEW4-MW63-223-21						FEW4-MW64-68-21						FEW4-MW64-122-21						FEW4-MW65-88-21					
DATE COLLECTED				19-May-23						21-May-23						21-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	1.90		0.300	0.400	1.00	1	0.440	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW65-142						MW65-208						MW66-94						MW66-158					
FIELD IDENTIFICATION ¹				FEW4-MW65-142-21						FEW4-MW65-208-21						FEW4-MW66-94-21						FEW4-MW66-158-21					
DATE COLLECTED				17-May-23						17-May-23						17-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	32.0	U	11.0	32.0	40.0	40
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	20.0	U	16.0	20.0	40.0	40
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	32.0	U	17.0	32.0	40.0	40
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	86.0		13.0	16.0	40.0	40
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	32.0	U	14.0	32.0	80.0	40
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	32.0	U	16.0	32.0	40.0	40
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	20.0	U	15.0	20.0	40.0	40
Trichloroethene (TCE)	190000	170 / 272	5	19.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	160		0.300	0.400	1.00	1	3300		12.0	16.0	40.0	40
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	40.0	U	20.0	40.0	80.0	40

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW66-205						MW67-64						MW67-97						MW67-233					
FIELD IDENTIFICATION ¹				FEW4-MW66-205-21						FEW4-MW67-64-21						FEW4-MW67-97-21						FEW4-MW67-233-21					
DATE COLLECTED				17-May-23						19-May-23						19-May-23						19-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	16.0	U	5.40	16.0	20.0	20	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	10.0	U	7.80	10.0	20.0	20	0.500	U	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	16.0	U	8.40	16.0	20.0	20	0.800	U	0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	7.10	J	6.40	8.00	20.0	20	0.500	J	0.320	0.400	1.00	1	1.40	J	1.30	1.60	4.00	4	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	16.0	U	7.10	16.0	40.0	20	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	16.0	U	8.10	16.0	20.0	20	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	10.0	U	7.40	10.0	20.0	20	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	1700		6.00	8.00	20.0	20	76.0		0.300	0.400	1.00	1	350		1.20	1.60	4.00	4	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	20.0	U	10.0	20.0	40.0	20	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW68-80						MW68-140						MW68-185						MW69-64					
FIELD IDENTIFICATION ¹				FEW4-MW68-80-21						FEW4-MW68-140-21						FEW4-MW68-185-21						FEW4-MW69-64-21					
DATE COLLECTED				17-May-23						17-May-23						17-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.800	U	0.640	0.800	2.00	2
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	1.60	U	0.810	1.60	2.00	2
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2
Trichloroethene (TCE)	190000	170 / 272	5	17.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	170		0.600	0.800	2.00	2
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW69-99						MW69-164						MW70-100						MW70-142					
FIELD IDENTIFICATION ¹				FEW4-MW69-99-21						FEW4-MW69-164-21						FEW4-MW70-100-21						FEW4-MW70-142-21					
DATE COLLECTED				16-May-23						16-May-23						17-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	3.20	U	1.10	3.20	4.00	4	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	2.00	U	1.60	2.00	4.00	4	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	3.20	U	1.70	3.20	4.00	4	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	1.60	U	1.30	1.60	4.00	4	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	3.20	U	1.40	3.20	8.00	4	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	3.20	U	1.60	3.20	4.00	4	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	2.00	U	1.50	2.00	4.00	4	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	290		1.20	1.60	4.00	4	7.90		0.300	0.400	1.00	1	96.0		0.300	0.400	1.00	1	0.430	J	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	4.00	U	2.00	4.00	8.00	4	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW70-244						MW71-96						MW71-128						MW71-205					
FIELD IDENTIFICATION ¹				FEW4-MW70-244-21						FEW4-MW71-96-21						FEW4-MW71-128-21						FEW4-MW71-205-21					
DATE COLLECTED				17-May-23						16-May-23						16-May-23						01-Jun-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	16.0	U	5.40	16.0	20.0	20	8.00	U	2.70	8.00	10.0	10	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	10.0	U	7.80	10.0	20.0	20	5.00	U	3.90	5.00	10.0	10	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	16.0	U	8.40	16.0	20.0	20	8.00	U	4.20	8.00	10.0	10	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	8.00	U	6.40	8.00	20.0	20	4.00	U	3.20	4.00	10.0	10	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	16.0	U	7.10	16.0	40.0	20	8.00	U	3.60	8.00	20.0	10	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	16.0	U	8.10	16.0	20.0	20	8.00	U	4.00	8.00	10.0	10	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	10.0	U	7.40	10.0	20.0	20	5.00	U	3.70	5.00	10.0	10	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	810		6.00	8.00	20.0	20	360		3.00	4.00	10.0	10	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	20.0	U	10.0	20.0	40.0	20	10.0	U	5.10	10.0	20.0	10	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW71-205						MW72-130						MW72-158						MW72-205					
FIELD IDENTIFICATION ¹				FEW4-MW71-205-PDB-21						FEW4-MW72-130-21						FEW4-MW72-158-21						FEW4-MW72-205-21					
DATE COLLECTED				31-May-23						17-May-23						17-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.620	J	0.320	0.400	1.00	1	1.40		0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	180	J	1.20	1.60	4.00	4	9.90		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW73-137						MW73-218						MW73-243						MW74-104					
FIELD IDENTIFICATION ¹				FEW4-MW73-137-21						FEW4-MW73-218-21						FEW4-MW73-243-21						FEW4-MW74-104-21					
DATE COLLECTED				20-May-23						20-May-23						20-May-23						05-Jun-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.870	J	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	1.00		0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	17.0		0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	270		1.20	1.60	4.00	4	0.400	U	0.300	0.400	1.00	1	0.450	J	0.300	0.400	1.00	1	2000		6.00	8.00	20.0	20
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW74-263						MW74-359						MW74-359						MW75-93					
FIELD IDENTIFICATION ¹				FEW4-MW74-263-21						FEW4-MW74-359-21						FEW4-MW74-359-PDB-21						FEW4-MW75-93-21					
DATE COLLECTED				05-Jun-23						06-Jun-23						06-Jun-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	80.0	U	27.0	80.0	100	100
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	50.0	U	39.0	50.0	100	100
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	80.0	U	42.0	80.0	100	100
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	40.0	U	32.0	40.0	100	100
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	80.0	U	36.0	80.0	200	100
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	80.0	U	40.0	80.0	100	100
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	50.0	U	37.0	50.0	100	100
Trichloroethene (TCE)	190000	170 / 272	5	0.810	J	0.300	0.400	1.00	1	1.10		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	3400		30.0	40.0	100	100
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	100	U	51.0	100	200	100

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW75-93						MW75-308						MW75-377						MW75-377					
FIELD IDENTIFICATION ¹				FEW4-MW75-93-PDB-21						FEW4-MW75-308-21						FEW4-MW75-377-21						FEW4-MW75-377-PDB-21					
DATE COLLECTED				15-May-23						03-Jun-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	80.0	U	27.0	80.0	100	100	0.800	U	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	50.0	U	39.0	50.0	100	100	0.500	U	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	80.0	U	42.0	80.0	100	100	0.800	U	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	40.0	U	32.0	40.0	100	100	0.400	U	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	80.0	U	36.0	80.0	200	100	0.800	U	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	80.0	U	40.0	80.0	100	100	0.800	U	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	50.0	U	37.0	50.0	100	100	0.500	U	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4700		30.0	40.0	100	100	0.400	U	0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	100	U	51.0	100	200	100	1.00	U	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW76-87						MW76-123						MW76-255						MW77-40					
FIELD IDENTIFICATION ¹				FEW4-MW76-87-21						FEW4-MW76-123-21						FEW4-MW76-255-21						FEW4-MW77-40-21					
DATE COLLECTED				19-May-23						19-May-23						19-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	1.60	U	0.540	1.60	2.00	2	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	1.00	U	0.780	1.00	2.00	2	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	1.60	U	0.840	1.60	2.00	2	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.800	U	0.640	0.800	2.00	2	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	1.60	U	0.710	1.60	4.00	2	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	1.60	U	0.810	1.60	2.00	2	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	1.00	U	0.740	1.00	2.00	2	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	170		0.600	0.800	2.00	2	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	66.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	2.00	U	1.00	2.00	4.00	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

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µg/L = micrograms per liter

DF = dilution factor

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U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW77-129						MW77-255						MW78-112						MW78-112					
FIELD IDENTIFICATION ¹				FEW4-MW77-129-21						FEW4-MW77-255-21						FEW4-MW78-112-21						FEW4-MW78-112-PDB-21					
DATE COLLECTED				16-May-23						16-May-23						20-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2	1.60	U	0.540	1.60	2.00	2
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2	1.00	U	0.780	1.00	2.00	2
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2	1.60	U	0.840	1.60	2.00	2
cis-1,2-Dichloroethene	2200	49 / 272	70	2.30		0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.20	J	0.640	0.800	2.00	2	1.50	J	0.640	0.800	2.00	2
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2	1.60	U	0.710	1.60	4.00	2
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	1.00	J	0.810	1.60	2.00	2	1.60	U	0.810	1.60	2.00	2
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2	1.00	U	0.740	1.00	2.00	2
Trichloroethene (TCE)	190000	170 / 272	5	14.0		0.300	0.400	1.00	1	0.330	J	0.300	0.400	1.00	1	240		0.600	0.800	2.00	2	260		0.600	0.800	2.00	2
Vinyl chloride	0.64 J	1 / 272	2	0.640	J	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2	2.00	U	1.00	2.00	4.00	2

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW78-159						MW78-265						MW79-127						MW79-193					
FIELD IDENTIFICATION ¹				FEW4-MW78-159-21						FEW4-MW78-265-21						FEW4-MW79-127-21						FEW4-MW79-193-21					
DATE COLLECTED				16-May-23						16-May-23						20-May-23						01-Jun-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.30	J	0.640	0.800	2.00	2	2.30		0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.850	J	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	1.60	U	0.810	1.60	2.00	2	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4.40		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	290		0.600	0.800	2.00	2	7.60		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW79-193						MW79-326						MW80-128						MW80-223					
FIELD IDENTIFICATION ¹				FEW4-MW79-193-PDB-21						FEW4-MW79-326-21						FEW4-MW80-128-21						FEW4-MW80-223-21					
DATE COLLECTED				01-Jun-23						20-May-23						21-May-23						21-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	320	U	110	320	400	400	80.0	U	27.0	80.0	100	100
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	200	U	160	200	400	400	50.0	U	39.0	50.0	100	100
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	320	U	170	320	400	400	80.0	U	42.0	80.0	100	100
cis-1,2-Dichloroethene	2200	49 / 272	70	3.00		0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	160	U	130	160	400	400	40.0	U	32.0	40.0	100	100
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	320	U	140	320	800	400	80.0	U	36.0	80.0	200	100
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	320	U	160	320	400	400	80.0	U	40.0	80.0	100	100
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	200	U	150	200	400	400	50.0	U	37.0	50.0	100	100
Trichloroethene (TCE)	190000	170 / 272	5	14.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	53000		120	160	400	400	10000		30.0	40.0	100	100
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	400	U	200	400	800	400	100	U	51.0	100	200	100

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW80-284						MW81-100						MW81-207						MW81-279					
FIELD IDENTIFICATION ¹				FEW4-MW80-284-21						FEW4-MW81-100-21						FEW4-MW81-207-21						FEW4-MW81-279-21					
DATE COLLECTED				02-Jun-23						20-May-23						21-May-23						03-Jun-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	32.0	U	11.0	32.0	40.0	40	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	20.0	U	16.0	20.0	40.0	40	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	32.0	U	17.0	32.0	40.0	40	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	1.70		0.320	0.400	1.00	1	16.0	U	13.0	16.0	40.0	40	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	32.0	U	14.0	32.0	80.0	40	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	32.0	U	16.0	32.0	40.0	40	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	20.0	U	15.0	20.0	40.0	40	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	270		1.50	2.00	5.00	5	1800		12.0	16.0	40.0	40	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	40.0	U	20.0	40.0	80.0	40	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW82-83						MW82-132						MW82-161						MW83-88					
FIELD IDENTIFICATION ¹				FEW4-MW82-83-21						FEW4-MW82-132-21						FEW4-MW82-161-21						FEW4-MW83-88-21					
DATE COLLECTED				19-May-23						19-May-23						19-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	1.60		0.320	0.400	1.00	1	3.10	J	1.30	1.60	4.00	4	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	140		0.300	0.400	1.00	1	340		1.20	1.60	4.00	4	12.0		0.300	0.400	1.00	1	56.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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LOD = limit of detection

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW83-129						MW83-271						MW84-258						MW84-298					
FIELD IDENTIFICATION ¹				FEW4-MW83-129-21						FEW4-MW83-271-21						FEW4-MW84-258-21						FEW4-MW84-298-21					
DATE COLLECTED				17-May-23						17-May-23						15-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	40.0	U	14.0	40.0	50.0	50	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	25.0	U	19.0	25.0	50.0	50	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	40.0	U	21.0	40.0	50.0	50	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	20.0	U	16.0	20.0	50.0	50	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	40.0	U	18.0	40.0	100	50	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	40.0	U	20.0	40.0	50.0	50	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	25.0	U	18.0	25.0	50.0	50	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	4100		15.0	20.0	50.0	50	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	50.0	U	25.0	50.0	100	50	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW84B-143						MW84B-193						MW84B-356						MW85-92					
FIELD IDENTIFICATION ¹				FEW4-MW84B-143-21						FEW4-MW84B-193-21						FEW4-MW84B-356-21						FEW4-MW85-92-21					
DATE COLLECTED				15-May-23						15-May-23						15-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	16.0	U	5.40	16.0	20.0	20
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	10.0	U	7.80	10.0	20.0	20
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	16.0	U	8.40	16.0	20.0	20
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	7.20	J	6.40	8.00	20.0	20
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	16.0	U	7.10	16.0	40.0	20
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	16.0	U	8.10	16.0	20.0	20
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	10.0	U	7.40	10.0	20.0	20
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	1600		6.00	8.00	20.0	20
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	20.0	U	10.0	20.0	40.0	20

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW85-151						MW85-205						MW86-53						MW86-199					
FIELD IDENTIFICATION ¹				FEW4-MW85-151-21						FEW4-MW85-205-21						FEW4-MW86-53-21						FEW4-MW86-199-21					
DATE COLLECTED				20-May-23						20-May-23						16-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.50		0.320	0.400	1.00	1	0.470	J	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.370	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	68.0		0.300	0.400	1.00	1	3.60		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW86-353						MW86-353						MW87-82						MW87-123					
FIELD IDENTIFICATION ¹				FEW4-MW86-353-21						FEW4-MW86-353-PDB-21						FEW4-MW87-82-21						FEW4-MW87-123-21					
DATE COLLECTED				12-May-23						12-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	2.40		0.300	0.400	1.00	1	3.50		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW87-205						MW88-133						MW88-133						MW88-183					
FIELD IDENTIFICATION ¹				FEW4-MW87-205-21						FEW4-MW88-133-21						FEW4-MW88-133-PDB-21						FEW4-MW88-183-21					
DATE COLLECTED				14-May-23						20-May-23						20-May-23						19-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.760	J	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	100		0.300	0.400	1.00	1	37.0		0.300	0.400	1.00	1	6.20		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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µg/L = micrograms per liter

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW88-253						MW89-178						MW89-178						MW89-207					
FIELD IDENTIFICATION ¹				FEW4-MW88-253-21						FEW4-MW89-178-21						FEW4-MW89-178-PDB-21						FEW4-MW89-207-21					
DATE COLLECTED				19-May-23						21-May-23						21-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	UJ	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	UJ	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	UJ	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	UJ	0.320	0.400	1.00	1	1.00	J	0.640	0.800	2.00	2	0.350	J	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	UJ	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	UJ	0.400	0.800	1.00	1	1.60	U	0.810	1.60	2.00	2	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	UJ	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	UJ	0.300	0.400	1.00	1	220		0.600	0.800	2.00	2	47.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	UJ	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW89-250						MW90-243						MW90-292						MW91-195					
FIELD IDENTIFICATION ¹				FEW4-MW89-250-21						FEW4-MW90-243-21						FEW4-MW90-292-21						FEW4-MW91-195-21					
DATE COLLECTED				20-May-23						14-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	UJ	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	UJ	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	UJ	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	UJ	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	UJ	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	UJ	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	UJ	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	UJ	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	UJ	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW91-248						MW91-313						MW92-365						MW92-427					
FIELD IDENTIFICATION ¹				FEW4-MW91-248-21						FEW4-MW91-313-21						FEW4-MW92-365-21						FEW4-MW92-427-21					
DATE COLLECTED				14-May-23						14-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.80		0.320	0.400	1.00	1	1.10		0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.970	J	0.360	0.800	2.00	1	0.980	J	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.630	J	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	22.0		0.300	0.400	1.00	1	18.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW92B-288						MW92B-288						MW92B-322						MW93-71					
FIELD IDENTIFICATION ¹				FEW4-MW92B-288-21						FEW4-MW92B-288-PDB-21						FEW4-MW92B-322-21						FEW4-MW93-71-21					
DATE COLLECTED				16-May-23						16-May-23						16-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	60.0		0.300	0.400	1.00	1	66.0		0.300	0.400	1.00	1	2.70		0.300	0.400	1.00	1	4.40		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW93-146						MW93-268						MW94-175						MW94-229					
FIELD IDENTIFICATION ¹				FEW4-MW93-146-21						FEW4-MW93-268-21						FEW4-MW94-175-21						FEW4-MW94-229-21					
DATE COLLECTED				13-May-23						13-May-23						12-May-23						12-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.650	J	0.420	0.800	1.00	1	0.820	J	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	2.20		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW94-297						MW95-165						MW95-200						MW95-288					
FIELD IDENTIFICATION ¹				FEW4-MW94-297-21						FEW4-MW95-165-21						FEW4-MW95-200-21						FEW4-MW95-288-21					
DATE COLLECTED				12-May-23						14-May-23						14-May-23						15-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	1.00		0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	12.0		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW95-288						MW96-194						MW96-260						MW96-292					
FIELD IDENTIFICATION ¹				FEW4-MW95-288-PDB-21						FEW4-MW96-194-21						FEW4-MW96-260-21						FEW4-MW96-292-21					
DATE COLLECTED				15-May-23						13-May-23						13-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	3.10		0.300	0.400	1.00	1	0.920	J	0.300	0.400	1.00	1	15.0		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW97-107						MW97-266						MW97-266						MW98-180					
FIELD IDENTIFICATION ¹				FEW4-MW97-107-21						FEW4-MW97-266-21						FEW4-MW97-266-PDB-21						FEW4-MW98-180-21					
DATE COLLECTED				14-May-23						17-May-23						13-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.580	J	0.300	0.400	1.00	1	5.40		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW98-217						MW98-263						MW99-110						MW99-161					
FIELD IDENTIFICATION ¹				FEW4-MW98-217-21						FEW4-MW98-263-21						FEW4-MW99-110-21						FEW4-MW99-161-21					
DATE COLLECTED				20-May-23						20-May-23						11-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	5.90		0.300	0.400	1.00	1	5.70		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW100-153						MW100-270						MW100-305						MW101-106					
FIELD IDENTIFICATION ¹				FEW4-MW100-153-21						FEW4-MW100-270-21						FEW4-MW100-305-21						FEW4-MW101-106-21					
DATE COLLECTED				13-May-23						12-May-23						12-May-23						20-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.610	J	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	1.30		0.420	0.800	1.00	1	1.70		0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	1.60	U	1.30	1.60	4.00	4
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	290		1.20	1.60	4.00	4
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW101-138						MW101-238						MW102-93						MW102-127					
FIELD IDENTIFICATION ¹				FEW4-MW101-138-21						FEW4-MW101-238-21						FEW4-MW102-93-21						FEW4-MW102-127-21					
DATE COLLECTED				20-May-23						20-May-23						13-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	8.00	U	2.70	8.00	10.0	10	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	5.00	U	3.90	5.00	10.0	10	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	8.00	U	4.20	8.00	10.0	10	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	4.00	U	3.20	4.00	10.0	10	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	8.00	U	3.60	8.00	20.0	10	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	8.00	U	4.00	8.00	10.0	10	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	5.00	U	3.70	5.00	10.0	10	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	730		3.00	4.00	10.0	10	0.750	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	10.0	U	5.10	10.0	20.0	10	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

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DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW102-171						MW103-193						MW103-242						MW103-308					
FIELD IDENTIFICATION ¹				FEW4-MW102-171-21						FEW4-MW103-193-21						FEW4-MW103-242-21						FEW4-MW103-308-21					
DATE COLLECTED				13-May-23						11-May-23						12-May-23						13-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.790	J	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	2.30		0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	0.400	U	0.300	0.400	1.00	1	0.580	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

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^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MDL = method detection limit

RSL = regional screening level

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TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW104-99						MW104-135						MW104-178						MW105-93					
FIELD IDENTIFICATION ¹				FEW4-MW104-99-21						FEW4-MW104-135-21						FEW4-MW104-178-21						FEW4-MW105-93-21					
DATE COLLECTED				15-May-23						14-May-23						15-May-23						16-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	3.20	U	1.10	3.20	4.00	4
1,4-Dichlorobenzene	0.79 J	2 / 272	75	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	2.00	U	1.60	2.00	4.00	4
Chlorobenzene	2.3	7 / 272	100	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	3.20	U	1.70	3.20	4.00	4
cis-1,2-Dichloroethene	2200	49 / 272	70	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	3.00	J	1.30	1.60	4.00	4
m,p-Xylene	0.98 J	2 / 272	10000 ^b	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	3.20	U	1.40	3.20	8.00	4
Tetrachloroethene (PCE)	1 J	2 / 272	5	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	3.20	U	1.60	3.20	4.00	4
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	2.00	U	1.50	2.00	4.00	4
Trichloroethene (TCE)	190000	170 / 272	5	9.40		0.300	0.400	1.00	1	4.30		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	150		1.20	1.60	4.00	4
Vinyl chloride	0.64 J	1 / 272	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	4.00	U	2.00	4.00	8.00	4

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

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MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW105-143						MW105-188						MW106-230						MW106-272					
FIELD IDENTIFICATION ¹				FEW4-MW105-143-21						FEW4-MW105-188-21						FEW4-MW106-230-21						FEW4-MW106-272-21					
DATE COLLECTED				16-May-23						16-May-23						18-May-23						22-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	1.60	U	0.540	1.60	2.00	2	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	1.60	U	0.540	1.60	2.00	2
1,4-Dichlorobenzene	0.79 J	2 / 272	75	1.00	U	0.780	1.00	2.00	2	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	1.00	U	0.780	1.00	2.00	2
Chlorobenzene	2.3	7 / 272	100	1.60	U	0.840	1.60	2.00	2	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	1.60	U	0.840	1.60	2.00	2
cis-1,2-Dichloroethene	2200	49 / 272	70	0.760	J	0.640	0.800	2.00	2	0.400	U	0.320	0.400	1.00	1	1.90		0.320	0.400	1.00	1	1.40	J	0.640	0.800	2.00	2
m,p-Xylene	0.98 J	2 / 272	10000 ^b	1.60	U	0.710	1.60	4.00	2	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	1.60	U	0.710	1.60	4.00	2
Tetrachloroethene (PCE)	1 J	2 / 272	5	1.60	U	0.810	1.60	2.00	2	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	1.60	U	0.810	1.60	2.00	2
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	1.00	U	0.740	1.00	2.00	2	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	1.00	U	0.740	1.00	2.00	2
Trichloroethene (TCE)	190000	170 / 272	5	120		0.600	0.800	2.00	2	0.400	U	0.300	0.400	1.00	1	160		0.300	0.400	1.00	1	200		0.600	0.800	2.00	2
Vinyl chloride	0.64 J	1 / 272	2	2.00	U	1.00	2.00	4.00	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	2.00	U	1.00	2.00	4.00	2

Notes:
Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-1
SUMMARY OF DETECTED VOC ANALYTES IN GROUNDWATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				MW106-316						MW107-249						MW107-310						MW107-355					
FIELD IDENTIFICATION ¹				FEW4-MW106-316-21						FEW4-MW107-249-21						FEW4-MW107-310-21						FEW4-MW107-355-21					
DATE COLLECTED				21-May-23						14-May-23						14-May-23						14-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
1,1,2-Trichloroethane	0.87 J	1 / 272	5	1.60	U	0.540	1.60	2.00	2	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1	0.800	U	0.270	0.800	1.00	1
1,4-Dichlorobenzene	0.79 J	2 / 272	75	1.00	U	0.780	1.00	2.00	2	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1	0.500	U	0.390	0.500	1.00	1
Chlorobenzene	2.3	7 / 272	100	1.60	U	0.840	1.60	2.00	2	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1	0.800	U	0.420	0.800	1.00	1
cis-1,2-Dichloroethene	2200	49 / 272	70	1.10	J	0.640	0.800	2.00	2	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1	0.400	U	0.320	0.400	1.00	1
m,p-Xylene	0.98 J	2 / 272	10000 ^b	1.60	U	0.710	1.60	4.00	2	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1	0.800	U	0.360	0.800	2.00	1
Tetrachloroethene (PCE)	1 J	2 / 272	5	1.60	U	0.810	1.60	2.00	2	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1	0.800	U	0.400	0.800	1.00	1
trans-1,2-Dichloroethene	0.63 J	2 / 272	100	1.00	U	0.740	1.00	2.00	2	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1	0.500	U	0.370	0.500	1.00	1
Trichloroethene (TCE)	190000	170 / 272	5	210		0.600	0.800	2.00	2	12.0		0.300	0.400	1.00	1	3.60	J	0.300	0.400	1.00	1	1.10		0.300	0.400	1.00	1
Vinyl chloride	0.64 J	1 / 272	2	2.00	U	1.00	2.00	4.00	2	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1	1.00	U	0.510	1.00	2.00	1

Notes:

Shaded results exceed the MCL; for analytes without MCLs, the results were screened against the RSL.

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

^b As total xylenes

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

RSL = regional screening level

U = nondetect

UJ = estimated nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-2
SUMMARY OF DETECTED VOC ANALYTES IN SURFACE WATER SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION				BELVOIRBORIESW1						BELVOIRBORIESW2						LONE TREE CREEK						OTTO SPRING					
FIELD IDENTIFICATION ¹				FEW4-BELVOIRBORIESW1-21						FEW4-BELVOIRBORIESW2-21						FEW4-LONE TREE CREEK-21						FEW4-OTTO SPRING-21					
DATE COLLECTED				17-May-23						17-May-23						17-May-23						17-May-23					
	Maximum	Frequency	MCL ^a	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/L)																											
Trichloroethene (TCE)	3.4	2 / 4	5	3.40		0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1	0.380	J	0.300	0.400	1.00	1	0.400	U	0.300	0.400	1.00	1

Notes:

Bold analytes are site chemicals of concern.

¹Field Identification uses the following naming scheme: site identification-well identification-sample event.

^a Based on USEPA Drinking Water Standards and Health Advisories (USEPA 2018)

µg/L = micrograms per liter

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

MCL = maximum contaminant level

MDL = method detection limit

U = nondetect

USEPA = United States Environmental Protection Agency

TABLE 3-3
SUMMARY OF DETECTED VOC ANALYTES IN SEDIMENT SAMPLES DURING SPRING 2023 LONG-TERM MONITORING EVENT 21
FORMER ATLAS "D" MISSILE SITE 4

LOCATION IDENTIFICATION			USEPA RSL Soil to Groundwater	USEPA RSL Residential Soil	BELVOIRBORIESE1						BELVOIRBORIESE2						LONE TREE-SE1						OTTO SPRING-SE1					
FIELD IDENTIFICATION ¹					FEW4-BELVOIRBORIESE1-21						FEW4-BELVOIRBORIESE2-21						FEW4-LONE TREE-SE1-21						FEW4-OTTO SPRING-SE1-21					
DATE COLLECTED					17-May-23						17-May-23						17-May-23						17-May-23					
	Maximum	Frequency			Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF	Result	Flag	DL/MDL	LOD	LOQ	DF
VOLATILE ORGANIC COMPOUNDS (µg/kg)																												
Carbon disulfide	4.3	2 / 4	240	770,000	3.2	U	1.3	3.2	3.9	1	4.3	J	1.2	3	3.7	1	1.9	J	1.7	4.1	5.1	1	4.1	U	1.7	4.1	5.1	1
Toluene	10	4 / 4	760	4,900,000	0.85	J	0.18	0.63	3.9	1	10		0.17	0.59	3.7	1	1.2	J	0.23	0.81	5.1	1	0.75	J	0.23	0.82	5.1	1

Notes:

¹Field Identification uses the following naming scheme: site identification-well identification-sample event.

µg/kg = micrograms per kilogram

DF = dilution factor

DL = detection limit

J = estimated

LOD = limit of detection

LOQ = limit of quantitation

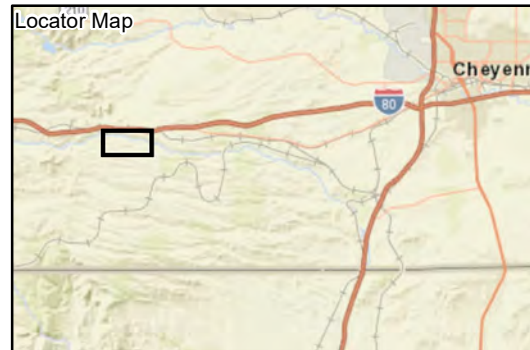
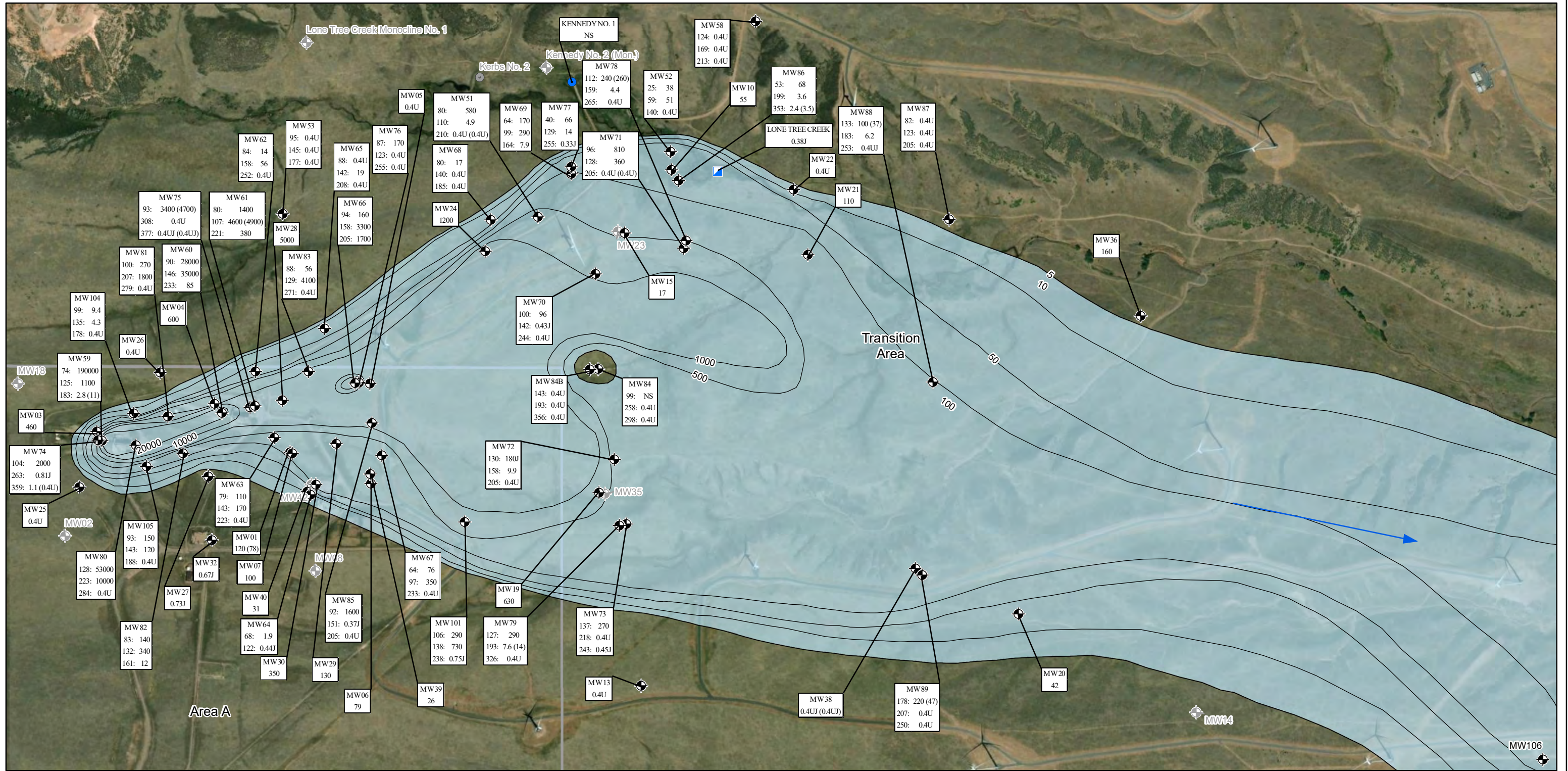
MDL = method detection limit

RSL = regional screening level

U = nondetect

USEPA = United States Environmental Protection Agency

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Legend

- Monitoring Well Included for Sampling
- Well not Sampled
- Stock Well
- Surface Water/Sediment Location
- Groundwater Flow
- TCE >5 µg/L

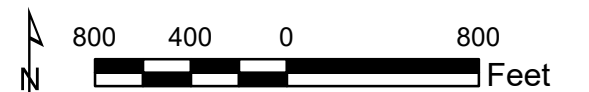
µg/L = micrograms per liter
J = estimated
LTM = Long-Term Monitoring
NS = not sampled
TCE = trichloroethene
U = nondetect

Notes:

- Results shown are TCE concentrations (µg/L) from the Spring 2023 event.
- Isoconcentrations are based on vertical and horizontal interpretations. Contours may show higher interpreted concentrations than well analytical results if higher concentrations are interpreted to pass over or below the screen interval.
- TCE data shown in parentheses are sample data from PDBs.

Horizontal Datum:
NAD_1983_StatePlane_Wyoming_East_FIPS_4901_Feet

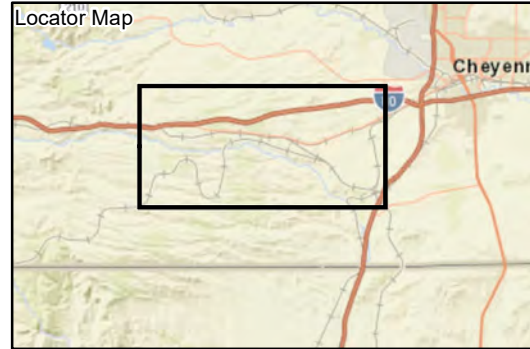
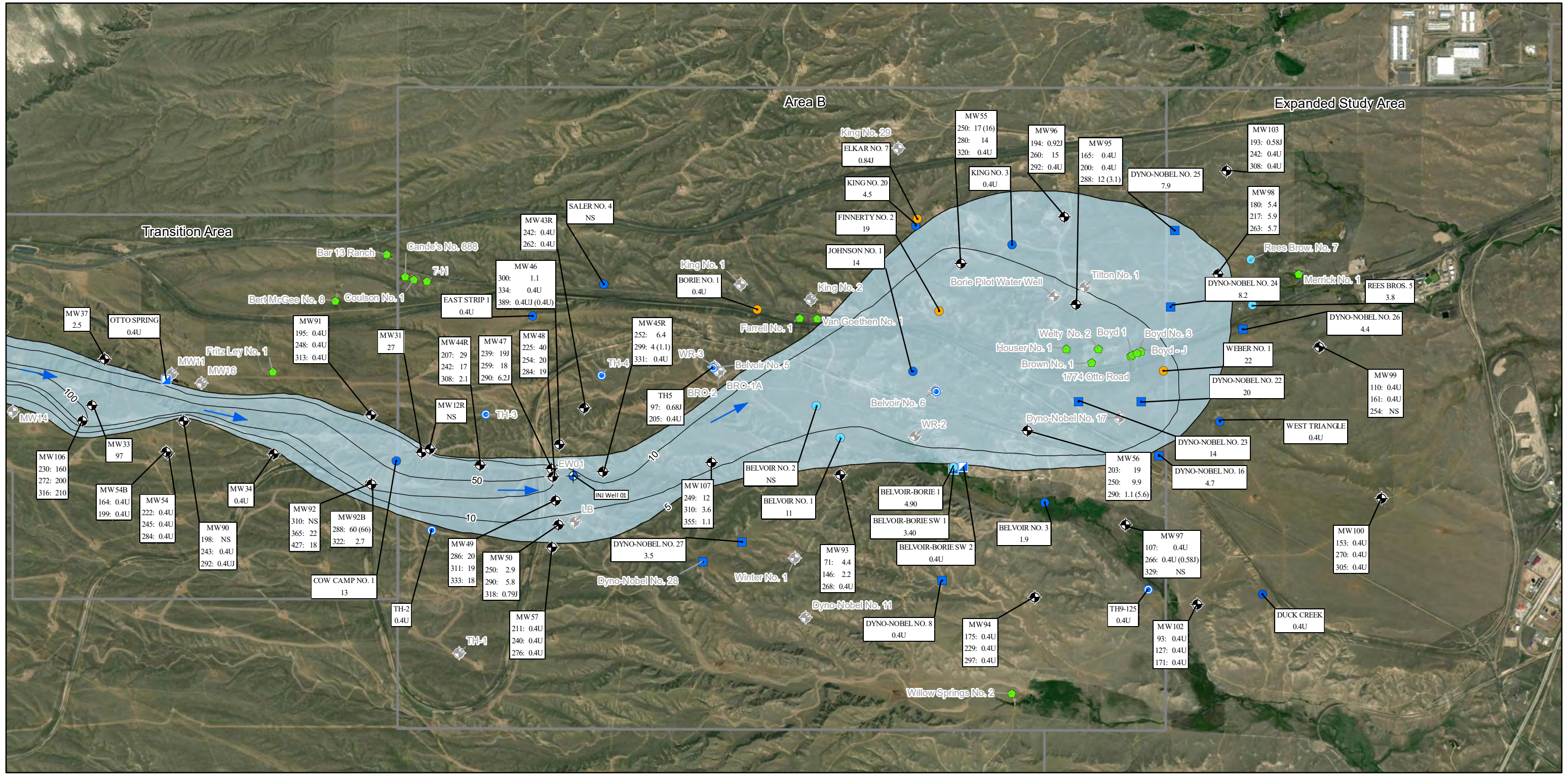
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri



TCE Concentrations in Groundwater within Area A and the Transition Area Spring 2023 LTM Event 21 Former Atlas "D" Missile Site 4 F.E. Warren Air Force Base, WY

Drawn By: DPG	Date: 3/4/2024	Project No: 60613342	Figure 3-1
Checked By: IBK	Revision: 0		

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Legend

- Monitoring Well Included for Sampling
- Well not Sampled
- Industrial Well
- Irrigation Well
- Municipal Well
- Stock Well
- Test Hole
- Surface Water/Sediment Location

- Domestic Well
- Groundwater Flow
- TCE >5 µg/L

µg/L = micrograms per liter
J = estimated
LTM = Long-Term Monitoring
NS = not sampled
TCE = trichloroethene
U = nondetect

Notes:

- Results shown are TCE concentrations (µg/L) from the Spring 2023 event.
- Isoconcentrations are based on vertical and horizontal interpretations. Contours may show higher interpreted concentrations than well analytical results if higher concentrations are interpreted to pass over or below the screen interval.
- TCE data shown in parentheses are sample data from PDBs.

Horizontal Datum:
NAD_1983_StatePlane_Wyoming_East_FIPS_4901_Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri



TCE Concentrations in Groundwater within the Transition Area, Area B, and the Expanded Study Area
Spring 2023 LTM Event 21
Former Atlas "D" Missile Site 4
F.E. Warren Air Force Base, WY

Drawn By:	Date:	Project No:	Figure 3-2
DPG	3/4/2024	60613342	
Checked By:	Revision:		
IBK	0		

4.1 DATA REVIEW PROCESS

Analytical data from Eurofins of Arvada, Colorado was reviewed and verified in accordance with the Final Site-Wide UFP-QAPP (URS 2020b) and UFP-QAPP Addendum 3 (URS 2023), DoD Quality Systems Manual (DoD 2019), and technical judgment.

4.2 ANALYTICAL RESULTS VERIFICATION

Data verification has been documented in Automated Data Review Detail Reports and data validation has been documented in Data Validation Reports included in **Appendix C**.

4.3 OVERALL CHEMICAL DATA ASSESSMENT

The data usability assessment is included in **Appendix C**. With assigned qualifiers, there are no recommended limitations on use of the data collected during the Spring 2023 LTM Event 21.

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This Spring 2023 LTM Event 21 was completed in accordance with the Final Long-Term Monitoring and Performance Monitoring UFP-QAPP, Addendum 1 (URS 2020a), except as noted in **Section 2.4**. LTM results will be used to update the site database in support of assessing the groundwater contaminant plume configuration, contaminant trends, and mobility; identifying possible data gaps; updating the baseline human health risk assessment as needed; and to provide data for completion of the site-wide feasibility study.

Results from the Spring 2023 LTM Event 21 show TCE concentrations to be generally stable to declining in all areas. The monitoring wells located on the distal end of the plume, especially in the most downgradient wells MW99, MW100, and MW103, remain nondetect. No significant changes in groundwater elevation or water quality were noted during the Spring 2023 LTM Event 21.

Groundwater, residential, surface water, sediment, and subsurface vapor samples will continue to be collected in accordance with the Long-Term Monitoring and Performance Monitoring UFP-QAPP, Addendum 1 (URS 2020a). Based on the result of the PDB study, it is recommended that sampling with PDBs proceed during the fall 2023 sampling event in accordance with the PDB Report (URS 2022b).

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- URS. 2020b. Site-Wide Uniform Federal Policy – Quality Assurance Project Plan. Former Atlas “D” Missile Site 4, Wyoming. August.
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- USACE. 2006. Final Remedial Investigation Report, Former Atlas D Missile Site 4, Laramie County, Wyoming, F.E. Warren Air Force Base. 2006.
- United States Department of Defense (DoD). 2019. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.3. May.

Date: 5/10/2023

Location: Cheyenne, Wyoming

Weather: 55°F, Overcast, Scattered rain

USACE PM: Erin Stewart

URS PM: Tom Wohlford

URS Project No.: 60613342

Contract/DO: W912DY-16-D-0026/W9128F19F0192

PERSONNEL:

Name	Company
Brian Shiffermiller	URS
Kat Gerdes	URS
Kam Daehling	URS
Natalie Demuth	URS
Ben Robbins	Na Ali'i
Jay Henderson	Na Ali'i
Harman Guraya	Na Ali'i

FIELD INSTALLATIONS:

[illegible]

EQUIPMENT:

Description	Description
4 Trucks	
4 Heron WL meters	

ENVIRONMENTAL SAMPLES COLLECTED:

Sample ID Nos.	Analytes
None	

Brief Description of Work Performed:

Took inventory of equipment and performed bottle count. Started recording site-wide static water levels, which will be completed tomorrow (5/11).

Health and Safety Levels/Activities:

Level D, Daily Safety Tailgate Meeting

Problems Encountered and Corrective Action taken:

Due to recent heavy rains, the hay and alfalfa pastures may be soggy east of Karl's house. Will be careful when accessing nearby wells; stick to two-tracks and/or wait for area to dry out.

Changes from Workplan:

NA

Remarks/Visitors:

13 new wind turbines are being installed at Belvoir Ranch and a new network of roads are present near Karl's house. The newly graded roads have large soil berms on either side which may make accessing some wells difficult. If we have any access issues Karl can contact Ronnie with Blattner Energy to get someone to level out berms for access.

Signature: Brian Shiffermiller

Date: 5/11/2023

Weather: 55°F, Overcast, Scattered rain

URS PM: Tom Wohlford

Contract/DO: W912DY-16-D-0026/W9128F19F0192

FIELD INSTALLATIONS:

[illegible]**ENVIRONMENTAL SAMPLES COLLECTED:**

Sample ID Nos.	Analytes
FEW4-MW38-PDB-21	VOCs (8260c)
FEW4-MW38-21	VOCs (8260c)
FEW4-MW103-193-21	VOCs (8260c)
FEW4-MW99-110-21	VOCs (8260c)

Site-wide static water levels were completed today and 3 groundwater samples were collected, including a comparison sample. MW99-253 will not get sampled due to the well being dry.

Level D, Daily Safety Tailgate Meeting

Due to recent heavy rains, the hay and alfalfa pastures may be soggy east of Karl's house. Will be careful when accessing nearby wells; stick to two-tracks and/or wait for area to dry out.

NA

13 new wind turbines are being installed at Belvoir Ranch and a new network of roads are present near Karl's house. The newly graded roads have large soil berms on either side which may make accessing some wells difficult. If we have any access issues Karl can contact Ronnie with Blattner Energy to get someone to level out berms for access.

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Date: 5/12/2023

Weather: 50°F, Overcast, Windy, Rain showers

URS PM: Tom Wohlford

Contract/DO: W912DY-16-D-0026/W9128F19F0192

FIELD INSTALLATIONS:

EQUIPMENT: _____ **ENVIRONMENTAL SAMPLES COLLECTED:** _____

Brief Description of Work Performed:

Health and Safety Levels/Activities:**Problems Encountered and Corrective Action taken:**

Changes from Workplan:

Remarks/Visitors:

Signature: Brian Shiffermiller

PROJECT NAME:	<u>Atlas D Missile Site 4-LTM</u>	Date:	<u>5/13/2023</u>
Location:	<u>Cheyenne, Wyoming</u>	Weather:	<u>50°F, Overcast, Rain</u>
USACE PM:	<u>Erin Stewart</u>	URS PM:	<u>Tom Wohlford</u>
URS Project No.:	<u>60613342</u>	Contract/DO:	<u>W912DY-16-D-0026/W9128F19F0192</u>

PERSONNEL:

Name	Company	ID Nos.	Drilled From:	Drilled To:
Brian Shiffermiller	URS	NA	NA	NA
Kat Gerdes	URS			
Kam Daehling	URS			
Natalie Demuth	URS			
Ben Robbins	Na Ali'i			
Jay Henderson	Na Ali'i			
Harman Guraya	Na Ali'i			
Joe Mastromarchi	Na Ali'i			

FIELD INSTALLATIONS:

EQUIPMENT:

Description	Description	Sample ID Nos.	Analytes
4 Trucks		FEW4-MW96-292-21	VOCs (8260c)
4 Heron WL meters		FEW4-MW96-260-21	VOCs (8260c)
3 Hanna WQ meters		FEW4-MW96-194-21	VOCs (8260c)
3 Geotech turbidity meters		FEW4-MW102-171-21	VOCs (8260c)
1 Redi Flo pump		FEW4-MW102-127-21	VOCs (8260c)
2 pump controllers		FEW4-MW102-93-21	VOCs (8260c)
1 QED bladder pump		FEW4-MW93-268-21	VOCs (8260c)
1 MP10H controller		FEW4-MW93-146-21	VOCs (8260c)
		FEW4-MW93-71-21	VOCs (8260c)
		FEW4-TH5-97-21	VOCs (8260c)
		FEW4-TH5-205-21	VOCs (8260c)
		FEW4-TH2-21	VOCs (8260c)
		FEW4-MW93-71-FD-21	VOCs (8260c)
		FEW4-MW50-250-21	VOCs (8260c)
		FEW4-MW50-318-21	VOCs (8260c)
		FEW4-MW50-290-21	VOCs (8260c)
		FEW4-MW31-21	VOCs (8260c)
		FEW4-MW97-266-PDB-21	VOCs (8260c)
		FEW4-MW99-161-21	VOCs (8260c)
		FEW4-MW54B-164-21	VOCs (8260c)
		FEW4-MW54B-199-21	VOCs (8260c)
		FEW4-MW46-389-PDB-21	VOCs (8260c)
		FEW4-MW46-389-21	VOCs (8260c)
		FEW4-MW100-153-21	VOCs (8260c)
		FEW4-MW100-153-MS-21	VOCs (8260c)
		FEW4-MW100-153-MSD-21	VOCs (8260c)
		FEW4-MW103-308-21	VOCs (8260c)

ENVIRONMENTAL SAMPLES COLLECTED:

Brief Description of Work Performed:

Collected 23 groundwater samples, one field duplicate, one MS/MSD and two comparison samples. MW12R will not sampled due to an insufficient water column. Onsite 0800 and Offsite 1630

Health and Safety Levels/Activities:

Level D, Daily Safety Tailgate Meeting

Problems Encountered and Corrective Action taken:

Due to recent heavy rains, the hay and alfalfa pastures may be soggy east of Karl's house. Will be careful when accessing nearby wells; stick to two-tracks and/or wait for area to dry out.

Changes from Workplan:

NA

Remarks/Visitors:

None.

Signature: Brian Shiffermiller

PERSONNEL:		FIELD INSTALLATIONS:		
Name	Company	ID Nos.	Drilled From:	Drilled To:
Brian Shiffermiller	URS	NA	NA	NA
Kat Gerdes	URS			
Kam Daehling	URS			
Natalie Demuth	URS			
Ben Robbins	Na Ali'i			
Jay Henderson	Na Ali'i			
Harman Guraya	Na Ali'i			
Joe Mastromarchi	Na Ali'i			

<p>Brief Description of Work Performed:</p> <p>Collected 31 groundwater samples, two field duplicate, one MS/MSD and two comparison samples. MW90-198 and MW92-310 will not be sampled due to an insufficient water column.</p> <p>Onsite 0800 and Offsite 1630</p>
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Problems Encountered and Corrective Action taken:
Due to recent heavy rains, the hay and alfalfa pastures may be soggy east of Karl's house. Will be careful when accessing nearby wells; stick to two-tracks and/or wait for area to dry out.

Remarks/Visitors:
None.

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PERSONNEL:		FIELD INSTALLATIONS:		
Name	Company	ID Nos.	Drilled From:	Drilled To:
Brian Shiffermiller	URS	NA	NA	NA
Kat Gerdes	URS			
Kam Daehling	URS			
Natalie Demuth	URS			
Ben Robbins	Na Ali'i			
Jay Henderson	Na Ali'i			
Harman Guraya	Na Ali'i			
Joe Mastromarchi	Na Ali'i			

Brief Description of Work Performed:
Collected 29 groundwater samples, 4 field duplicates, one MS/MSD, and one comparison sample.
One cooler was shipped to euro fins (COC #230516 1)
Onsite 0800 and Offsite 1700

Problems Encountered and Corrective Action taken:
None.

<p>Remarks/Visitors:</p> <p>None.</p>
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PROJECT NAME:	Atlas D Missile Site 4-LTM	Date:	5/17/2023	
Location:	Cheyenne, Wyoming	Weather:	70°F, Partly cloudy, Windy	
USACE PM:	Erin Stewart	URS PM:	Tom Wohlford	
URS Project No.:	60613342	Contract/DO:	W912DY-16-D-0026/W9128F19F0192	

PERSONNEL:		FIELD INSTALLATIONS:		
Name	Company	ID Nos.	Drilled From:	Drilled To:
Brian Shiffermiller	URS	NA	NA	NA
Kat Gerdes	URS			
Kam Dachling	URS			
Natalie Demuth	URS			
Ben Robbins	Na Ali'i			
Jay Henderson	Na Ali'i			
Harman Guraya	Na Ali'i			
Joe Mastromarchi	Na Ali'i			

EQUIPMENT:		ENVIRONMENTAL SAMPLES COLLECTED:	
Description	Description	Sample ID Nos.	Analytes
4 Trucks		FEW4-MW97-266-21	VOCs (8260c)
4 Heron WL meters		FEW4-BELVOIRBORIESW2-21	VOCs (8260c)
3 Hanna WQ meters		FEW4-BELVOIRBORIESE2-21	VOCs (8260c), moisture
3 Geotech turbidity meters		FEW4-BELVOIRBORIESW1-21	VOCs (8260c)
2 Redi Flo pumps		FEW4-BELVOIRBORIESW1-MS-21	VOCs (8260c)
3 pump controllers		FEW4-BELVOIRBORIESW1-MSD-21	VOCs (8260c)
1 QED bladder pump		FEW4-BELVOIRBORIESE1-21	VOCs (8260c), moisture
1 MP10H controller		FEW4-BELVOIRBORIESE1-MS-21	VOCs (8260c)
1 3' Geotech bladder pump		FEW4-BELVOIRBORIESE1-MSD-21	VOCs (8260c)
		FEW4-OTTO SPRING-21	VOCs (8260c)
		FEW4-OTTO SPRING-FD-21	VOCs (8260c)
		FEW4-OTTO SPRING-SE1-21	VOCs (8260c), moisture
		FEW4-LONE TREE-21	VOCs (8260c)
		FEW4-LONE TREE-SE1-21	VOCs (8260c), moisture
		FEW4-LONE TREE-SE1-FD-21	VOCs (8260c), moisture
		FEW4-MW03-21	VOCs (8260c)
		FEW4-MW04-21	VOCs (8260c)
		FEW4-MW01-PDB-21	VOCs (8260c)
		FEW4-MW01-21	VOCs (8260c)
		FEW4-MW68-185-21	VOCs (8260c)
		FEW4-MW68-80-21	VOCs (8260c)
		FEW4-MW68-140-21	VOCs (8260c)
		FEW4-MW68-140-FD-21	VOCs (8260c)
		FEW4-MW24-21	VOCs (8260c)
		FEW4-MW65-88-21	VOCs (8260c)
		FEW4-MW65-208-21	VOCs (8260c)
		FEW4-MW65-142-21	VOCs (8260c)
		FEW4-MW70-244-21	VOCs (8260c)
		FEW4-MW70-142-21	VOCs (8260c)
		FEW4-MW70-100-21	VOCs (8260c)
		FEW4-MW72-205-21	VOCs (8260c)
		FEW4-MW72-158-21	VOCs (8260c)
		FEW4-MW72-130-21	VOCs (8260c)
		FEW4-MW83-88-21	VOCs (8260c)
		FEW4-MW83-271-21	VOCs (8260c)
		FEW4-MW83-129-21	VOCs (8260c)
		FEW4-MW83-129-FD-21	VOCs (8260c)
		FEW4-MW62-252-21	VOCs (8260c)
		FEW4-MW62-158-21	VOCs (8260c)
		FEW4-MW62-84-21	VOCs (8260c)
		FEW4-MW26-21	VOCs (8260c)
		FEW4-MW66-94-21	VOCs (8260c)
		FEW4-MW66-205-21	VOCs (8260c)
		FEW4-MW66-158-21	VOCs (8260c)
		FEW4-MW46-334-21	VOCs (8260c)
		FEW4-MW46-300-21	VOCs (8260c)
		FEW4-MW46-300-MS-21	VOCs (8260c)
		FEW4-MW46-300-MSD-21	VOCs (8260c)
		FEW4-MW48-284-21	VOCs (8260c)
		FEW4-MW48-284-FD-21	VOCs (8260c)
		FEW4-MW48-254-21	VOCs (8260c)

Brief Description of Work Performed:	
Collected 31 groundwater samples, five field duplicates, three MS/MSD's, one comparison sample, four sediment samples, and four surface water samples. One cooler was shipped to euro fins (COC #230516 1)	
Onsite 0800 and Offsite 1700	

Health and Safety Levels/Activities:	
Level D, Daily Safety Tailgate Meeting	

Problems Encountered and Corrective Action taken:	
None.	

Changes from Workplan:	
NA	

Remarks/Visitors:	
None.	

Signature:	Brian Shiffermiller
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Date: 5/18/2023
Weather: 55°F, Overcast, Severe thunderstorms
URS PM: Tom Wohlford
Contract/DO: W912DY-16-D-0026/W9128F19F0192

FIELD INSTALLATIONS:

EQUIPMENT:		ENVIRONMENTAL SAMPLES COLLECTED:	
Description	Description	Sample ID Nos.	Analytes
4 Trucks		FEW4-MW106-230-21	VOCs (8260c)
4 Heron WL meters		FEW4-REES BROS. 5-21	VOCs (8260c)
3 Hanna WQ meters		FEW4-DYNO-NOBELNO. 25-21	VOCs (8260c)
3 Geotech turbidity meters		FEW4-DYNO-NOBELNO. 24-21	VOCs (8260c)
2 Redi Flo pumps		FEW4-DYNO-NOBELNO. 24-FD-21	VOCs (8260c)
3 pump controllers		FEW4-DYNO-NOBEL 18-21	VOCs (8260c)
1 QED bladder pump		FEW4-DYNO-NOBEL 18-MS-21	VOCs (8260c)
1 MP10H controller		FEW4-DYNO-NOBEL 18-MSD-21	VOCs (8260c)
1 3' Geotech bladder pump		FEW4-DYNO-NOBEL 27-21	VOCs (8260c)
		FEW4-DYNO-NOBEL 16-21	VOCs (8260c)
		FEW4-DYNO-NOBEL 22-21	VOCs (8260c)
		FEW4-DYNO-NOBEL 26-21	VOCs (8260c)
		FEW4-DYNO-NOBEL 23-21	VOCs (8260c)

Collected 10 groundwater samples, one field duplicate, and one MS/MSD.
Two coolers were shipped to Eurofins (COC #230517_1 & #230517_2)
Onsite 0800 and Offsite 1300

Level D, Daily Safety Tailgate Meeting

Due to severe thunderstorms in the afternoon work onsite was cut short.

	g	f
NA		

None.

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Date: 5/19/2023
Weather: 55°F, Cloudy
URS PM: Tom Wohlford
Contract/DO: W912DY-16-D-0026/W9128F19F0192

FIELD INSTALLATIONS:

Name	Company	ID Nos.	Drilled From:	Drilled To:
Brian Shiffermiller	URS	NA	NA	NA
Kat Gerdes	URS			
Kam Dachling	URS			
Natalie Demuth	URS			
Ben Robbins	Na Ali'i			
Jay Henderson	Na Ali'i			
Harman Guraya	Na Ali'i			

ENVIRONMENTAL SAMPLES COLLECTED:

Description	Description	Sample ID Nos.	Analytes
4 Trucks		FEW4-MW48-225-21	VOCs (8260c)
4 Heron WL meters		FEW4-MW44R-242-21	VOCs (8260c)
3 Hanna WQ meters		FEW4-MW44R-242-MS-21	VOCs (8260c)
3 Geotech turbidity meters		FEW4-MW44R-242-MSD-21	VOCs (8260c)
2 Redi Flo pumps		FEW4-BELVOIR-BORIE 1-21	VOCs (8260c)
3 pump controllers		FEW4-BELVOIR-BORIE 1-FD-21	VOCs (8260c)
1 QED bladder pump		FEW4-DUCK CREEK-21	VOCs (8260c)
1 MP10H controller		FEW4-COW CAMP NO.1-21	VOCs (8260c)
1 3' Geotech bladder pump		FEW4-MW88-253-21	VOCs (8260c)
		FEW4-MW88-253-FD-21	VOCs (8260c)
		FEW4-MW88-183-21	VOCs (8260c)
		FEW4-MW76-255-21	VOCs (8260c)
		FEW4-MW76-123-21	VOCs (8260c)
		FEW4-MW76-87-21	VOCs (8260c)
		FEW4-MW63-223-21	VOCs (8260c)
		FEW4-MW63-79-21	VOCs (8260c)
		FEW4-MW63-143-21	VOCs (8260c)
		FEW4-MW07-21	VOCs (8260c)
		FEW4-MW32-21	VOCs (8260c)
		FEW4-MW32-FD-21	VOCs (8260c)
		FEW4-MW25-21	VOCs (8260c)
		FEW4-MW82-83-21	VOCs (8260c)
		FEW4-MW82-161-21	VOCs (8260c)
		FEW4-MW82-132-21	VOCs (8260c)
		FEW4-MW27-21	VOCs (8260c)
		FEW4-MW28-21	VOCs (8260c)
		FEW4-MW67-233-21	VOCs (8260c)
		FEW4-MW67-64-21	VOCs (8260c)
		FEW4-MW67-97-21	VOCs (8260c)

Collected 24 groundwater samples, three field duplicates, and one MS/MSD.
Two coolers were shipped to Eurofins (COC #230518 1 & #230519 1)
Onsite 0800 and Offsite 1430

Level D, Daily Safety Tailgate Meeting

None

NA	U	X

None.

Signature: Brian Shiffermiller

PERSONNEL:

EQUIPMENT:

Brief Description of Work Performed:

Health and Safety Levels/Activities:**Problems Encountered and Corrective Action taken:**

Changes from Workplan:

Remarks/Visitors:

Signature: Brian Shiffermiller

[illegible]

Brief Description of Work Performed:
Collected 1 comparison sample, MW71-205 was dewatered twice today via a Redi Flo pump and the parent sample (FEW4-MW71-205-21) will be sampled tomorrow morning.
Onsite 0800 and Offsite 1530

Problems Encountered and Corrective Action taken:

None

Remarks/Visitors:
None.

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[illegible]

Brief Description of Work Performed:
Collected 2 groundwater samples and 1 comparison sample.
Onsite 0800 and Offsite 1600

Problems Encountered and Corrective Action taken: None

<p>Remarks/Visitors:</p> <p>None.</p>
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[illegible]

Brief Description of Work Performed:
Collected 3 groundwater samples and 1 MS/MSD.
Onsite 0800 and Offsite 1500

Problems Encountered and Corrective Action taken:

None

<p>Remarks/Visitors:</p> <p>None.</p>
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[illegible]

Brief Description of Work Performed:
Collected 2 groundwater samples, 1 comparison sample, and 1 field duplicate.
Onsite 0800 and Offsite 1600

Problems Encountered and Corrective Action taken: None
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<p>Remarks/Visitors:</p> <p>None.</p>
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[illegible]

Brief Description of Work Performed:
Collected 2 groundwater samples. Escorted Rob and Steve to PTI shed. One cooler was shipped to Eurofins.
Onsite 0800 and Offsite 1730

Problems Encountered and Corrective Action taken:

None

<p>Remarks/Visitors:</p> <p>None.</p>
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[illegible]

Brief Description of Work Performed:
Began treating IDW through GAC trailer and started performing some site cleanup tasks. One cooler was driven to Eurofins last Wednesday (6/7).
Onsite 0800 and Offsite 1530

Problems Encountered and Corrective Action taken:

None

Remarks/Visitors:
None.

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[illegible]

Brief Description of Work Performed:
Completed treating IDW through GAC trailer (\approx 1,050 gallons treated total). Will complete site cleanup tasks tomorrow (6/14) and ship IDW samples as well.
Onsite 0800 and Offsite 1530

Problems Encountered and Corrective Action taken:

None

Remarks/Visitors:
None.

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GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers

Project #: 60613342

Site: Atlas Site 4

Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-BELVOIR NO.1-21
Date:	5/22/2023 11:15:00 AM
Well ID:	FEW4-BELVOIR NO.1
Location Type:	Stock Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/22/2023 11:05:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	NM
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/22/2023 11:05:00 AM
End Date and Time:	5/22/2023 11:14:00 AM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet
Sample Method:	Tap/faucet
Notes:	

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:08 AM	630	1890	1890	--	11.47	236	7.67	7.67	60.2	0.02
11:11 AM	630	1890	3780	--	11.42	237	7.66	7.66	61.9	0.22
11:14 AM	630	1890	5670	--	11.35	237	7.7	7.54	64.8	0.02



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-BELVOIR NO. 2-21	Date:	5/22/2023 10:30:00 AM
Well ID:	FEW4-BELVOIR NO. 2	Location Type:	Stock Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well not operating according to Cory with Wyoming BOPU, no sample collected		

Water Level

Date:	5/22/2023 10:30:00 AM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:	Well not operating according to Cory with Wyoming BOPU		

Purge Information

Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-BELVOIR NO. 3-21	Date:	5/22/2023 10:45:00 AM
Well ID:	FEW4-BELVOIR NO. 3	Location Type:	Stock Well
Duplicate ID:	FEW4-Belvoir No. 3-FD-21	Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/22/2023 10:28:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 10:35:00 AM	End Date and Time:	5/22/2023 10:44:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:38 AM	100	100	100	--	9.53	247	8.51	7.64	66	0.02
10:41 AM	100	100	200	--	9.49	251	8.39	7.52	68.6	0.02
10:44 AM	100	100	300	--	9.46	254	8.34	7.47	69.4	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-BELVOIR-BORIE 1-21	Date:	5/19/2023 9:02:00 AM
Well ID:	FEW4-BELVOIR-BORIE 1	Location Type:	Stock Well
Duplicate ID:	FEW4-BELVOIR-BORIE 1-FD-21	Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/19/2023 8:42:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:	Stock well		

Purge Information

Begin Date and Time:	5/19/2023 8:44:00 AM	End Date and Time:	5/19/2023 9:13:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8:50 AM	--	--	--	--	9.81	273	7.91	6.99	70.7	0.02
8:55 AM	--	--	--	--	9.8	275	7.91	7.33	67.8	0.02
9:00 AM	--	--	--	--	9.78	275	7.92	7.47	64.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-BORIE NO. 1-21	Date:	5/22/2023 8:47:00 AM
Well ID:	FEW4-BORIE NO. 1	Location Type:	Municipal
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/22/2023 8:34:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 8:40:00 AM	End Date and Time:	5/22/2023 8:46:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8:42 AM	2.5	5	5	--	10.62	269	8	7.13	77.4	2.48
8:44 AM	2.5	5	10	--	10.6	268	8.02	7.27	71.2	0.02
8:46 AM	2.5	5	15	--	10.47	268	8.13	7.34	68.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-COW CAMP NO. 1-21	Date:	5/19/2023 11:13:00 AM
Well ID:	FEW4-COW CAMP NO. 1	Location Type:	Stock Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/19/2023 10:35:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:	Stock well		

Purge Information

Begin Date and Time:	5/19/2023 10:59:00 AM	End Date and Time:	5/19/2023 11:11:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:01 AM	--	--	--	--	10.71	277	7.33	7.45	61.3	1.56
11:06 AM	--	--	--	--	10.71	277	7.9	7.42	69.7	0.02
11:11 AM	--	--	--	--	10.59	291	8.06	7.45	72.4	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-DUCK CREEK-21	Date:	5/19/2023 9:57:00 AM
Well ID:	FEW4-DUCK CREEK	Location Type:	Stock Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/19/2023 9:35:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:	Stock well		

Purge Information			
Begin Date and Time:	5/19/2023 9:42:00 AM	End Date and Time:	5/19/2023 9:54:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:44 AM	--	--	--	--	11.15	256	7.17	7.55	53.8	0.02
9:49 AM	--	--	--	--	11.22	256	7.44	7.51	57.6	0.02
9:54 AM	--	--	--	--	11.24	257	7.54	7.51	58.4	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-DYNO-NOBEL 16-21
Date:	5/18/2023 11:29:00 AM
Well ID:	FEW4-DYNO-NOBEL 16
Location Type:	Industrial
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/18/2023 11:12:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	NM
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/18/2023 11:16:00 AM
End Date and Time:	5/18/2023 11:26:00 AM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet
Sample Method:	Tap/faucet
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:16 AM	97.7	0	0	--	11.83	227	8.18	7.66	54.4	0.02
11:21 AM	97.7	488.5	488.5	--	11.72	228	8.06	7.62	53.9	0.02
11:26 AM	97.7	488.5	977	--	11.72	226	8	7.61	53.9	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information				
Sample ID:	FEW4-DYNO-NOBEL 22-21		Date:	5/18/2023 11:51:00 AM
Well ID:	FEW4-DYNO-NOBEL 22		Location Type:	Industrial
Duplicate ID:			Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X			
Analysis:	VOC (8260C)			
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC	
Comments:				

Water Level				
Date:	5/18/2023 11:36:00 AM		Measured Well Depth:	NM
Is Well Dry?	No		Depth to DNAPL:	NE
Depth to Water:	NM		Depth to LNAPL:	NE
Notes:				

Purge Information				
Begin Date and Time:	5/18/2023 11:40:00 AM		End Date and Time:	5/18/2023 11:50:00 AM
Initial Pump Depth:	Not Recorded		Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet		Sample Method:	Tap/faucet
Notes:				

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:40 AM	148	0	0	--	12.08	230	7.79	7.54	57.4	10.9
11:45 AM	148	740	740	--	11.75	230	7.85	7.6	56.9	0.56
11:50 AM	148	740	1480	--	11.78	230	7.82	7.62	56.4	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information				
Sample ID:	FEW4-DYNO-NOBEL 23-21		Date:	5/18/2023 12:42:00 PM
Well ID:	FEW4-DYNO-NOBEL 23		Location Type:	Industrial
Duplicate ID:			Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X			
Analysis:	VOC (8260C)			
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC	
Comments:				

Water Level				
Date:	5/18/2023 12:27:00 PM		Measured Well Depth:	NM
Is Well Dry?	No		Depth to DNAPL:	NE
Depth to Water:	NM		Depth to LNAPL:	NE
Notes:				

Purge Information				
Begin Date and Time:	5/18/2023 12:31:00 PM		End Date and Time:	5/18/2023 12:41:00 PM
Initial Pump Depth:	Not Recorded		Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet		Sample Method:	Tap/faucet
Notes:				

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:31 PM	197	0	0	--	12.64	233	7.81	7.78	52.8	0.02
12:36 PM	197	985	985	--	11.4	233	7.94	7.63	55.9	0.02
12:41 PM	197	985	1970	--	11.27	233	7.95	7.59	57	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information				
Sample ID:	FEW4-DYNO-NOBEL 26-21		Date:	5/18/2023 12:16:00 PM
Well ID:	FEW4-DYNO-NOBEL 26		Location Type:	Industrial
Duplicate ID:			Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X			
Analysis:	VOC (8260C)			
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC	
Comments:				

Water Level				
Date:	5/18/2023 12:00:00 PM		Measured Well Depth:	NM
Is Well Dry?	No		Depth to DNAPL:	NE
Depth to Water:	NM		Depth to LNAPL:	NE
Notes:				

Purge Information				
Begin Date and Time:	5/18/2023 12:04:00 PM		End Date and Time:	5/18/2023 12:14:00 PM
Initial Pump Depth:	Not Recorded		Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet		Sample Method:	Tap/faucet
Notes:				

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:04 PM	152.53	0	0	-	11.33	225	8	7.64	52.8	0.02
12:09 PM	152.53	762.65	762.65	--	11.31	225	8	7.64	51.4	0.02
12:14 PM	152.53	762.65	1525.3	--	11.27	225	7.98	7.6	51.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-DYNO-NOBEL 27-21	Date:	5/18/2023 10:48:00 AM
Well ID:	FEW4-DYNO-NOBEL 27	Location Type:	Industrial
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/18/2023 10:33:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/18/2023 10:37:00 AM	End Date and Time:	5/18/2023 11:47:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:37 AM	198	0	0	--	11.44	235	8.17	7.83	53.4	9.06
10:42 AM	198	990	990	--	11.17	235	8.05	7.66	53.9	0.02
10:47 AM	198	990	1980	--	11.07	235	7.91	7.63	53.7	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information				
Sample ID:	FEW4-DYNO-NOBEL 8-21		Date:	5/18/2023 10:12:00 AM
Well ID:	FEW4-DYNO-NOBEL 8		Location Type:	Industrial
Duplicate ID:			Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X			
Analysis:	VOC (8260C)			
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC	
Comments:				

Water Level			
Date:	5/18/2023 9:45:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/18/2023 9:58:00 AM	End Date and Time:	5/18/2023 10:08:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:58 AM	146.5	0	0	-	11.98	229	7.99	7.76	56.7	0.02
10:03 AM	146.5	732.5	732.5	--	11.95	229	7.98	7.69	53.6	0.2
10:08 AM	146.5	732.5	1465	--	11.2	229	8.15	7.69	53.8	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-DYNO-NOBELNO.24-21	Date:	5/18/2023 9:23:00 AM
Well ID:	FEW4-DYNO-NOBELNO.24	Location Type:	Industrial
Duplicate ID:	FEW4-DYNO-NOBELNO.24-FD-21	Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/18/2023 9:05:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/18/2023 9:10:00 AM	End Date and Time:	5/18/2023 9:20:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:10 AM	96	0	0	--	13.24	253	7.63	7.77	46.8	0.02
9:15 AM	96	480	480	--	12.7	253	7.57	7.68	49.6	0.02
9:20 AM	96	480	960	--	12.64	253	7.44	7.65	50.1	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-DYNO-NOBELNO.25-21	Date:	5/18/2023 8:53:00 AM
Well ID:	FEW4-DYNO-NOBELNO.25	Location Type:	Industrial
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/18/2023 8:35:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/18/2023 8:39:00 AM	End Date and Time:	5/18/2023 8:49:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8:39 AM	198	0	0	--	12.17	114	7.9	7.75	37.7	7.12
8:44 AM	198	990	990	--	11.96	217	7.82	7.77	45.5	0.21
8:49 AM	198	990	1980	--	11.95	217	7.8	7.82	47.4	1.05

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-EAST STRIP 1-21	Date:	5/12/2023 1:22:00 PM
Well ID:	FEW4-EAST STRIP 1	Location Type:	Stock Well
Duplicate ID:		Sampler:	JM JH
Equipment:	Water Quality Meter: Hanna Pen # U108258X; Water Level Meter: Heron Dipper-T # 4846_7		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/12/2023 1:05:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:	Stock Well		

Purge Information

Begin Date and Time:	5/12/2023 1:05:00 PM	End Date and Time:	5/13/2023 1:15:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:05 PM	2	10	10	--	10.97	389	7.45	7.83	45.2	--
1:10 PM	2	10	20	--	11.11	388	7.39	7.77	39.2	--
1:15 PM	2	10	30	--	11.14	380	7.37	7.76	36	--

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-ELKAR NO. 7-21
Date:	5/22/2023 10:09:00 AM
Well ID:	FEW4-ELKAR NO. 7
Location Type:	Municipal
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/22/2023 10:00:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	NM
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/22/2023 10:03:00 AM
End Date and Time:	5/22/2023 10:08:00 AM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet
Sample Method:	Tap/faucet
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:06 AM	5	5	5	--	10.65	254	8.07	7.73	61.6	0.02
10:07 AM	5	5	10	--	10.72	254	8.07	7.69	62.5	0.02
10:08 AM	5	5	15	--	10.54	254	8.11	7.66	64.2	0.02



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-FINNERTY NO. 2-21	Date:	5/22/2023 9:15:00 AM
Well ID:	FEW4-FINNERTY NO. 2	Location Type:	Municipal
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/22/2023 9:00:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 9:05:00 AM	End Date and Time:	5/22/2023 9:14:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:07 AM	2.5	5	5	--	10.85	248	8.03	7.49	59.2	1.45
9:12 AM	1	5	10	--	10.98	250	8.07	7.62	57.9	1.62
9:14 AM	2.5	5	15	--	10.82	250	8.13	7.69	57.3	0.77

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-JOHNSON NO. 1-21	Date:	5/16/2023 3:45:00 PM
Well ID:	FEW4-JOHNSON NO. 1	Location Type:	Stock Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/16/2023 2:50:00 PM	Measured Well Depth:	0.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 3:23:00 PM	End Date and Time:	5/16/2023 3:43:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3:28 PM	4	20	20	--	10.87	273	10.74	7.75	33.8	0.67
3:33 PM	4	20	40	--	10.97	274	10.42	7.54	57.9	0.28
3:38 PM	4	20	60	--	10.93	274	10.35	7.64	57.1	0.4
3:43 PM	4	20	80	--	10.94	273	10.21	7.74	55.4	0.32

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-KING NO. 20-21
Well ID:	FEW4-KING NO. 20
Duplicate ID:	FEW4-KING NO. 20-FD-21
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/15/2023 3:12:00 PM
Is Well Dry?	No
Depth to Water:	NM
Notes:	Stock well

Purge Information	
Begin Date and Time:	5/15/2023 3:12:00 PM
Initial Pump Depth:	Not Recorded
Purge Method:	Tap/faucet
End Date and Time:	5/15/2023 3:32:00 PM
Final Pump Depth:	Not Recorded
Sample Method:	Tap/faucet
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3:17 PM	--	--	--	--	10.35	285	--	7.36	38.9	--
3:23 PM	--	--	--	--	10.46	283	10.08	7.49	44.2	0.47
3:27 PM	--	--	--	--	10.5	284	10.06	7.62	42.1	0.26
3:32 PM	--	--	--	--	10.52	284	10.05	7.7	40.6	0.23

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-KING NO. 3-21
Date:	5/15/2023 4:15:00 PM
Well ID:	FEW4-KING NO. 3
Location Type:	Stock Well
Duplicate ID:	
Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/15/2023 3:56:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	NM
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 3:56:00 PM
End Date and Time:	5/15/2023 4:11:00 PM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet
Sample Method:	Tap/faucet
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3:56 PM	10	--	--	--	10.41	456	8.37	7.63	61.2	--
4:01 PM	10	50	50	--	10.51	455	8.44	7.32	73.2	0.86
4:06 PM	10	50	100	--	10.56	452	8.19	7.39	68.3	1.8
4:11 PM	10	50	150	--	10.6	449	8.33	7.47	63.1	1.78

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW01-21	Date:	5/17/2023 2:38:00 PM
Well ID:	FEW4-MW01	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/17/2023 1:34:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	62.39 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 2:15:00 PM	End Date and Time:	5/17/2023 2:35:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:17 PM	0.5	1	1	68.92	10.4	357	7.52	7.5	66	220
2:19 PM	0.5	1	2	69.75	11.08	353	7.89	7.38	47.6	105
2:21 PM	0.5	1	3	69.75	11.04	347	7.94	7.3	47	39.6
2:22 PM	1	1	4	69.8	11.16	346	7.94	7.27	47.6	26.6
2:24 PM	0.5	1	5	69.995	11.04	345	7.94	7.23	49.2	16.4
2:26 PM	0.5	1	6	69.99	11.14	345	7.92	7.2	49.5	12.3
2:28 PM	0.5	1	7	70.03	11.14	344	7.93	7.17	49.4	9.69
2:32 PM	0.5	2	9	70.02	10.95	343	7.95	7.22	48.7	5.58
2:35 PM	0.67	2	11	70.1	10.81	341	7.96	7.24	47.3	5.9

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW01-PDB-21	Date:	5/17/2023 1:40:00 PM
Well ID:	FEW4-MW01-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 1:34:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	62.39 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 1:40:00 PM	End Date and Time:	5/17/2023 1:40:00 PM
Initial Pump Depth:	74.0	Final Pump Depth:	74.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW03-21	Date:	5/17/2023 10:38:00 AM
Well ID:	FEW4-MW03	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/17/2023 9:15:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	69.22 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 9:42:00 AM	End Date and Time:	5/17/2023 10:35:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	RediFlo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:49 AM	0.71	5	5	81.8	10.18	302	7.05	7.14	53.1	3.58
9:57 AM	0.63	5	10	81.65	10.38	307	7.02	6.94	61.6	1.54
10:04 AM	0.71	5	15	81.7	10.49	308	7.06	7.02	54	1.29
10:12 AM	0.63	5	20	81.6	10.57	308	7.08	7.18	42.8	1.18
10:20 AM	0.63	5	25	81.46	10.69	309	7.06	7.27	36.7	1.05
10:27 AM	0.71	5	30	81.41	10.77	308	7.06	7.3	33.4	0.39
10:35 AM	0.63	5	35	81.43	10.81	309	7.06	7.32	31.8	2.11

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW04-21	Date:	5/17/2023 12:37:00 PM
Well ID:	FEW4-MW04	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/17/2023 11:15:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	85.40 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 11:44:00 AM	End Date and Time:	5/17/2023 12:31:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	RediFlo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:55 AM	0.36	4	4	95.85	11.5	315	6.45	7.25	48.5	9.6
12:04 PM	0.44	4	8	98.62	11.79	314	6.81	7.17	47.1	9.16
12:12 PM	0.5	4	12	98.58	11.79	316	7.01	7.23	42.1	4.71
12:21 PM	0.44	4	16	98.54	11.62	314	7.12	7.29	39.3	3.79
12:31 PM	0.4	4	20	98.53	11.8	314	7.19	7.31	38.5	2.1

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW05-21	Date:	5/16/2023 1:00:00 PM
Well ID:	FEW4-MW05	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/16/2023 12:53:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	48.98 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 1:00:00 PM	End Date and Time:	5/16/2023 1:00:00 PM
Initial Pump Depth:	260.0	Final Pump Depth:	260.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW06-21
Date:	5/20/2023 2:12:00 PM
Well ID:	FEW4-MW06
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 2:06:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	85.55 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 2:12:00 PM
End Date and Time:	5/20/2023 2:12:00 PM
Initial Pump Depth:	125.0
Final Pump Depth:	125.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW07-21	Date:	5/19/2023 11:27:00 AM
Well ID:	FEW4-MW07	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 11:22:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	62.92 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 11:27:00 AM	End Date and Time:	5/19/2023 11:27:00 AM
Initial Pump Depth:	105.0	Final Pump Depth:	105.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW10-21
Date:	5/16/2023 10:45:00 AM
Well ID:	FEW4-MW10
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 10:37:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	6.72 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 10:45:00 AM
End Date and Time:	5/16/2023 10:45:00 AM
Initial Pump Depth:	30.0
Final Pump Depth:	30.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW12R-21	Date:	5/13/2023 1:48:00 PM
Well ID:	FEW4-MW12R	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well was dry, no sample collected		

Water Level			
Date:	5/13/2023 1:48:00 PM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:	Insufficient water column to sample		

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW13-21	Date: 5/20/2023 12:08:00 PM
Well ID: FEW4-MW13	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/20/2023 12:03:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 165.25 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/20/2023 12:08:00 PM	End Date and Time: 5/20/2023 12:08:00 PM
Initial Pump Depth: 213.0	Final Pump Depth: 213.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW15-21	Date: 5/16/2023 12:45:00 PM
Well ID: FEW4-MW15	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/16/2023 12:32:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 93.36 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/16/2023 12:45:00 PM	End Date and Time: 5/16/2023 12:45:00 PM
Initial Pump Depth: 142.0	Final Pump Depth: 142.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW19-21
Date:	5/20/2023 1:26:00 PM
Well ID:	FEW4-MW19
Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW19-FD-21
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 1:17:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	79.31 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 1:26:00 PM
End Date and Time:	5/20/2023 1:26:00 PM
Initial Pump Depth:	122.0
Final Pump Depth:	122.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW20-21
Date:	5/20/2023 11:33:00 AM
Well ID:	FEW4-MW20
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 11:22:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	152.03 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 11:33:00 AM
End Date and Time:	5/20/2023 11:33:00 AM
Initial Pump Depth:	260.0
Final Pump Depth:	260.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW21-21	Date: 5/16/2023 11:23:00 AM
Well ID: FEW4-MW21	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/16/2023 11:16:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 20.84 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/16/2023 11:23:00 AM	End Date and Time: 5/16/2023 11:23:00 AM
Initial Pump Depth: 43.0	Final Pump Depth: 43.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW22-21	Date: 5/15/2023 11:41:00 AM
Well ID: FEW4-MW22	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/15/2023 11:37:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 13.13 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/15/2023 11:41:00 AM	End Date and Time: 5/15/2023 11:41:00 AM
Initial Pump Depth: 16.0	Final Pump Depth: 16.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW24-21
Date:	5/17/2023 12:00:00 PM
Well ID:	FEW4-MW24
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/17/2023 11:55:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	65.86 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/17/2023 12:00:00 PM
End Date and Time:	5/17/2023 12:00:00 PM
Initial Pump Depth:	131.0
Final Pump Depth:	131.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW25-21
Date:	5/19/2023 12:00:00 PM
Well ID:	FEW4-MW25
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/19/2023 11:54:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	90.34 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/19/2023 12:00:00 PM
End Date and Time:	5/19/2023 12:00:00 PM
Initial Pump Depth:	158.0
Final Pump Depth:	158.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW26-21	Date: 5/17/2023 3:27:00 PM
Well ID: FEW4-MW26	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/17/2023 3:14:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 95.96 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/17/2023 3:27:00 PM	End Date and Time: 5/17/2023 3:27:00 PM
Initial Pump Depth: 222.0	Final Pump Depth: 222.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW27-21	Date: 5/19/2023 1:01:00 PM
Well ID: FEW4-MW27	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/19/2023 12:56:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 74.89 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/19/2023 1:01:00 PM	End Date and Time: 5/19/2023 1:01:00 PM
Initial Pump Depth: 128.0	Final Pump Depth: 128.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW28-21	Date:	5/19/2023 1:13:00 PM
Well ID:	FEW4-MW28	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 1:08:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	95.17 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 1:13:00 PM	End Date and Time:	5/19/2023 1:13:00 PM
Initial Pump Depth:	125.0	Final Pump Depth:	125.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW29-21
Date:	5/21/2023 9:44:00 AM
Well ID:	FEW4-MW29
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/21/2023 9:36:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	61.23 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 9:44:00 AM
End Date and Time:	5/21/2023 9:44:00 AM
Initial Pump Depth:	104.0
Final Pump Depth:	104.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW30-21	Date: 5/21/2023 9:28:00 AM
Well ID: FEW4-MW30	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/21/2023 9:23:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 81.03 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/21/2023 9:28:00 AM	End Date and Time: 5/21/2023 9:28:00 AM
Initial Pump Depth: 111.0	Final Pump Depth: 111.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW31-21	Date: 5/13/2023 1:40:00 PM
Well ID: FEW4-MW31	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 1:29:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 182.19 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 1:40:00 PM	End Date and Time: 5/13/2023 1:40:00 PM
Initial Pump Depth: 206.0	Final Pump Depth: 206.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW32-21	Date: 5/19/2023 11:42:00 AM
Well ID: FEW4-MW32	Location Type: Monitoring Well
Duplicate ID: FEW4-MW32-FD-21	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/19/2023 11:37:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 97.78 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/19/2023 11:42:00 AM	End Date and Time: 5/19/2023 11:42:00 AM
Initial Pump Depth: 111.2	Final Pump Depth: 111.2
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW33-21	Date:	5/14/2023 2:08:00 PM
Well ID:	FEW4-MW33	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW33-FD-21	Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/14/2023 1:56:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	179.31 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 2:08:00 PM	End Date and Time:	5/14/2023 2:08:00 PM
Initial Pump Depth:	194.0	Final Pump Depth:	194.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW34-21	Date:	5/14/2023 12:13:00 AM
Well ID:	FEW4-MW34	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 12:04:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	229.28 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 12:13:00 AM	End Date and Time:	5/14/2023 12:13:00 AM
Initial Pump Depth:	235.0	Final Pump Depth:	235.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW36-21	Date: 5/14/2023 4:30:00 PM
Well ID: FEW4-MW36	Location Type: Monitoring Well
Duplicate ID: FEW4-MW36-FD-21	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/14/2023 4:24:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 20.92 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/14/2023 4:30:00 PM	End Date and Time: 5/14/2023 4:30:00 PM
Initial Pump Depth: 40.0	Final Pump Depth: 40.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW37-21	Date:	5/14/2023 4:12:00 PM
Well ID:	FEW4-MW37	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 4:05:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	20.92 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 4:12:00 PM	End Date and Time:	5/14/2023 4:12:00 PM
Initial Pump Depth:	41.0	Final Pump Depth:	41.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW38-21	Date:	5/11/2023 5:13:00 PM
Well ID:	FEW4-MW38	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	NaAlii
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Pump failed to purge water at 11:51 AM, pulled pump to troubleshoot. Pump began working again at 12:39 PM, purged until 12:53 PM when the pump stopped working again. Continued to troubleshoot until pump began working again at 1:48 PM.		

Water Level

Date:	5/11/2023 9:47:00 AM	Measured Well Depth:	339.30 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	163.41 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/11/2023 11:21:00 AM	End Date and Time:	5/11/2023 3:08:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:26 AM	20	20	100	163.86	10.07	273	6.03	8.33	53.5	17.3
11:31 AM	20	100	200	164.04	10.06	277	5.73	8.47	51.5	11.2
11:36 AM	20	100	300	163.98	10.35	271	8.51	8.36	54.9	19.4
11:41 AM	20	100	400	164.02	10.45	261	6.63	8.03	64.7	31.9
11:46 AM	20	100	500	164.04	10.39	255	6.26	7.85	68.5	47.2
11:53 AM	20	100	600	162.83	12.15	255	4.9	7.7	59.5	24.7
12:45 PM	20	100	1800	163.05	10	251	5.09	7.69	65.1	17.9
1:53 PM	20	100	1900	162.83	12.15	255	4.9	7.7	59.5	24.7
1:58 PM	20	100	2000	163.51	12.12	255	3.45	7.8	53.9	43
2:03 PM	20	100	2100	163.94	11.77	255	6.49	8.03	48.1	124

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:08 PM	20	100	2200	163.94	11.3	255	1.3	8.12	42.5	140
2:13 PM	20	100	2300	163.91	11.4	254	1.27	8.15	36.6	108
2:18 PM	20	100	2400	163.85	11.38	252	0	8.17	32.9	91.5
2:23 PM	20	100	2500	163.75	11.56	255	0	8.17	31.6	76.5
2:28 PM	20	100	2600	163.82	11.69	256	0	8.19	30.3	67.9
2:33 PM	20	100	2700	164.2	11.53	255	0	8.21	28	63.4
2:38 PM	20	100	2800	164.11	11.65	254	0	8.22	26.6	54.8
2:43 PM	20	100	2900	164.11	11.64	255	0	8.22	25.7	45.3
2:48 PM	20	100	3000	164.16	11.58	254	0	8.24	23.4	42
2:53 PM	20	100	3100	164.16	11.58	254	0	8.24	23.4	42
2:58 PM	0.8	100	3200	164.27	11.25	254	0	8.25	23	35.2
3:03 PM	20	100	3300	164.38	10.7	254	0	8.22	24.4	34.8
3:08 PM	20	100	3400	164.48	10.34	253	0	8.24	23.7	31.7

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW38-PDB-21
Date:	5/11/2023 10:07:00 AM
Well ID:	FEW4-MW38-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	NaAlii
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/11/2023 9:47:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	163.41 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/11/2023 10:07:00 AM
End Date and Time:	5/11/2023 10:07:00 AM
Initial Pump Depth:	332.0
Final Pump Depth:	332.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW39-21	Date: 5/20/2023 2:22:00 PM
Well ID: FEW4-MW39	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/20/2023 2:17:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 76.20 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/20/2023 2:22:00 PM	End Date and Time: 5/20/2023 2:22:00 PM
Initial Pump Depth: 101.0	Final Pump Depth: 101.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW40-21
Date:	5/21/2023 8:50:00 AM
Well ID:	FEW4-MW40
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/21/2023 8:40:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	65.74 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 8:50:00 AM
End Date and Time:	5/21/2023 8:50:00 AM
Initial Pump Depth:	90.0
Final Pump Depth:	90.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW43R-242-21
Well ID:	FEW4-MW43R-242
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/12/2023 12:15:00 PM
Is Well Dry?	No
Depth to Water:	114.32 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/12/2023 12:34:00 PM
Initial Pump Depth:	245.0
Purge Method:	--
End Date and Time:	5/12/2023 12:34:00 PM
Final Pump Depth:	245.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW43R-262-21
Well ID:	FEW4-MW43R-262
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/12/2023 12:15:00 AM
Is Well Dry?	No
Depth to Water:	118.16 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/12/2023 12:23:00 PM
Initial Pump Depth:	265.0
Purge Method:	--
End Date and Time:	5/12/2023 12:23:00 PM
Final Pump Depth:	265.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW44R-207-21	Date:	5/16/2023 2:45:00 PM
Well ID:	FEW4-MW44R-207	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 2:05:00 PM	Measured Well Depth:	214.62 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	196.07 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 2:05:00 PM	End Date and Time:	5/16/2023 2:42:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:27 PM	0	0	0	196.5	11.37	361	7.21	7.56	48.2	88.7
2:30 PM	0.5	1.5	1.5	196.55	11.12	361	7.31	7.54	45.9	37.4
2:33 PM	0.5	1.5	3	196.56	12.72	362	7.19	7.46	34	21.6
2:36 PM	0.5	1.5	4.5	196.57	13.9	363	7.18	7.43	32.6	3.29
2:39 PM	0.5	1.5	6	196.58	13.83	363	7.18	7.43	33.3	0.02
2:42 PM	0.5	1.5	7.5	196.58	13.66	363	7.21	7.43	32.4	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW44R-242-21	Date:	5/19/2023 11:56:00 AM
Well ID:	FEW4-MW44R-242	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/19/2023 10:10:00 AM	Measured Well Depth:	249.78 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	197.58 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 11:15:00 AM	End Date and Time:	5/19/2023 11:51:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:20 AM	1	5	5	198.12	11.52	251	7.88	7.23	48.7	280
11:25 AM	1	5	10	198.15	11.72	273	7.99	7.23	46.4	110
11:28 AM	1.67	5	15	198.13	11.77	259	8.03	7.24	52.6	25.6
11:31 AM	1.67	5	20	198.12	11.81	262	8.05	7.25	55.7	2.91
11:35 AM	1.25	5	25	198.1	11.82	260	8.08	7.26	57	0.83
11:38 AM	1.67	5	30	198.1	11.88	258	8.11	7.26	57.4	0.2
11:44 AM	0.83	5	35	198.1	11.83	276	8.12	7.27	57.5	9.88
11:48 AM	1.25	5	40	198.1	11.78	277	8.14	7.27	57.8	1.19
11:51 AM	1.67	5	45	198.1	11.79	275	8.14	7.27	57.3	3.69

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW44R-308-21	Date:	6/2/2023 11:30:00 AM
Well ID:	FEW4-MW44R-308	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	6/2/2023 10:03:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	195.50 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	6/2/2023 10:23:00 AM	End Date and Time:	6/2/2023 11:24:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:29 AM	0.83	5	5	228.59	12.41	304	1.44	6.93	25.8	5.21
10:36 AM	0.71	5	10	242.48	13.63	304	1.36	6.94	27.1	5.96
10:43 AM	0.71	5	15	250.55	14.6	300	1.39	6.95	30.4	4.15
10:52 AM	0.56	5	20	256.9	15.23	299	1.42	6.97	33.4	4.24
11:00 AM	0.63	5	25	261.52	15.49	300	1.43	7.02	32.4	4.96
11:08 AM	0.63	5	30	264.5	15.39	300	1.7	7.11	28.9	3.47
11:16 AM	0.63	5	35	266.9	15.75	299	2.11	7.17	29.4	2.19
11:24 AM	0.63	5	40	268.83	15.79	300	2.19	7.19	30.1	1.83

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW45R-252-21	Date:	5/21/2023 11:46:00 AM
Well ID:	FEW4-MW45R-252	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/21/2023 10:55:00 AM	Measured Well Depth:	260.20 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	142.60 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/21/2023 11:12:00 AM	End Date and Time:	5/21/2023 11:44:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:15 AM	1.67	5	5	143.34	11.52	253	6.35	7.45	44.1	168
11:20 AM	1	5	10	144.3	11.84	250	7.14	7.42	36	19.5
11:25 AM	1	5	15	144.4	11.87	250	7.29	7.38	32.8	6.49
11:29 AM	1.25	5	20	144.45	11.88	249	7.37	7.35	31.8	2.88
11:33 AM	1.25	5	25	144.45	11.92	249	7.42	7.32	34.4	0.02
11:36 AM	1.67	5	30	144.45	11.91	249	7.47	7.32	34.1	0.02
11:40 AM	1.25	5	35	144.43	11.93	249	7.51	7.32	34.9	0.02
11:44 AM	1.25	5	40	144.43	11.93	249	7.53	7.32	34.9	0.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW45R-299-21	Date:	5/21/2023 9:59:00 AM
Well ID:	FEW4-MW45R-299	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/21/2023 8:10:00 AM	Measured Well Depth:	308.21 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	141.74 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 9:23:00 AM	End Date and Time:	5/21/2023 9:55:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:29 AM	1.67	10	10	143.44	11.79	241	6.56	7.41	56.8	0.56
9:34 AM	2	10	20	143.48	11.9	241	6.56	7.31	59.4	0.02
9:39 AM	2	10	30	143.5	11.93	241	6.58	7.26	60	0.02
9:45 AM	1.67	10	40	143.53	11.96	241	6.59	7.25	59.2	0.02
9:50 AM	2	10	50	143.54	11.99	241	6.59	7.26	57.7	0.02
9:55 AM	2	10	60	143.55	12.02	241	6.59	7.28	57.1	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW45R-299-PDB-21
Date:	5/21/2023 8:27:00 AM
Well ID:	FEW4-MW45R-299-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/21/2023 8:10:00 AM
Measured Well Depth:	308.21 ft
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	141.74 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 8:27:00 AM
End Date and Time:	5/21/2023 8:27:00 AM
Initial Pump Depth:	303.0
Final Pump Depth:	303.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW45R-331-21	Date:	6/2/2023 9:10:00 AM
Well ID:	FEW4-MW45R-331	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Began to purge well on 5/31, well was dewatered at 12:30 PM. Returned the next day on 6/1 purge again. Well was dewatered froa second tim,e at 12:04 PM on 6/1. Come back on 6/2 to sample well as the well had recharged greater than 80% of it's well volume and had been dewatered twice.		

Water Level			
Date:	5/31/2023 11:17:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	138.27 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/31/2023 11:56:00 AM	End Date and Time:	6/1/2023 12:05:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
5/31/2023										
12:03 PM	0.71	5	5	175.35	12.33	285	1.48	7.22	4.3	0.02
12:10 PM	0.71	5	10	203.02	13.28	287	1.42	7.07	19.1	0.96
12:18 PM	0.63	5	15	238.05	14.08	288	1.37	6.97	31.9	1.04
12:25 PM	0.71	5	20	247.7	15.02	289	1.36	6.97	33.5	2.69
12:30 PM	0.4	2	22	262.1	--	--	--	--	--	--
6/1/2023										
11:39 AM	5.4	27	27	170.1	11.26	422	1.49	7.25	44.6	0.02
11:45 AM	0.83	5	32	195	12.18	420	1.45	7.22	36.9	0.02
11:50 AM	1	5	37	220.48	12.93	417	1.48	7.22	32.5	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:57 AM	0.71	5	42	244.66	13.37	417	1.64	7.23	34.8	0.32
12:04 PM	0.71	5	47	266.48	14.5	416	1.58	7.24	35.5	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW46-300-21	Date:	5/17/2023 11:28:00 AM
Well ID:	FEW4-MW46-300	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/17/2023 10:37:00 AM	Measured Well Depth:	304.95 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	222.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 10:54:00 AM	End Date and Time:	5/17/2023 11:26:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:01 AM	0.71	5	5	223.43	13.29	229	6.74	7.44	37.5	15.1
11:06 AM	1	5	10	223.72	13.08	234	7.02	7.38	40.4	4.42
11:11 AM	1	5	15	223.75	12.93	235	7.08	7.35	40.9	0.02
11:16 AM	1	5	20	223.75	12.89	236	7.11	7.33	40.6	0.02
11:21 AM	1	5	25	223.75	12.87	236	7.12	7.33	39.9	0.02
11:26 AM	1	5	30	223.75	12.9	236	7.13	7.33	38.3	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW46-334-21	Date:	5/17/2023 10:02:00 AM
Well ID:	FEW4-MW46-334	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/17/2023 8:55:00 AM	Measured Well Depth:	344.46 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	220.90 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 9:19:00 AM	End Date and Time:	5/17/2023 9:55:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:26 AM	0.71	5	5	221.15	13.15	240	6.43	7.08	56.2	0.02
9:31 AM	1	5	10	221.18	12.93	241	6.96	7.12	55.9	0.02
9:36 AM	1	5	15	221.17	12.89	240	7.04	7.12	55.3	0.02
9:41 AM	1	5	20	221.17	12.98	241	7.08	7.13	53.4	8.02
9:46 AM	1	5	25	221.18	12.99	241	7.11	7.1	50.9	9.2
9:51 AM	1	5	30	221.18	13.05	241	7.11	7.1	48.5	3.56
9:55 AM	1.25	5	35	221.18	13.02	241	7.13	7.13	45.8	1.57
10:00 AM	1	5	40	221.18	13.08	241	7.14	7.18	43.8	1.68

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW46-389-21	Date:	5/14/2023 11:55:00 AM
Well ID:	FEW4-MW46-389	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/14/2023 10:30:00 AM	Measured Well Depth:	393.88 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	218.81 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 10:59:00 AM	End Date and Time:	5/14/2023 11:49:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:04 AM	70	350	350	213.75	9.4	301	6.99	8.04	109.7	12.5
11:09 AM	70	350	700	208.5	9.41	300	7.00	8.14	103.4	16.1
11:14 AM	120	600	1300	209.7	9.36	315	11.52	8.05	57.2	16.6
11:19 AM	100	500	1800	--	9.23	324	6.91	7.78	-10.3	9.0
11:24 AM	100	500	2300	212.62	9.16	329	2.71	7.7	-70.6	7.8
11:29 AM	140	700	3000	213.35	9.18	328	0.00	7.75	-114.5	8.55
11:34 AM	100	500	3500	213.6	9.19	329	0.00	7.8	-143.5	8.8
11:39 AM	100	500	4000	214.6	9.32	329	0.00	7.89	-161.2	9.8
11:44 AM	100	500	4500	215.8	9.39	329	0.00	7.93	-169.7	9.3
11:49 AM	100	500	5000	217.4	9.37	328	0.00	7.97	-170	9.6



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW46-389-PDB-21	Date:	5/14/2023 9:42:00 AM
Well ID:	FEW4-MW46-389-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 9:30:00 AM	Measured Well Depth:	393.88 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	218.81 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 9:42:00 AM	End Date and Time:	5/14/2023 9:42:00 AM
Initial Pump Depth:	388.0	Final Pump Depth:	388.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW47-239-21	Date:	5/16/2023 1:36:00 PM
Well ID:	FEW4-MW47-239	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 11:40:00 AM	Measured Well Depth:	244.25 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	170.65 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 11:57:00 AM	End Date and Time:	5/16/2023 12:29:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:01 PM	1.25	5	5	179.6	12.11	338	7.85	7.51	45.2	42.3
12:05 PM	1.25	5	10	178.25	12.32	338	7.83	7.51	42.7	57
12:10 PM	1	5	15	177.6	12.38	336	7.85	7.51	37.7	115
12:13 PM	1.67	5	20	177.5	12.47	336	7.9	7.5	33.3	80.8
12:17 PM	1.25	5	25	177.75	12.46	336	7.94	7.49	31.9	35.6
12:22 PM	1	5	30	178	12.43	336	7.98	7.49	31.1	13.2
12:25 PM	1.67	5	35	178.3	12.37	336	8.01	7.49	30.9	6.18
12:29 PM	1.25	5	40	180.45	12.31	336	8.02	7.49	30.6	3.98
12:33 PM	1.25	5	45	180.45	12.31	336	8.03	7.49	30.5	2.72

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW47-259-21	Date:	5/16/2023 11:09:00 AM
Well ID:	FEW4-MW47-259	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 10:00:00 AM	Measured Well Depth:	269.33 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	170.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 10:21:00 AM	End Date and Time:	5/16/2023 11:06:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:28 AM	0.71	5	5	170.48	12.18	335	7.69	7.65	26.5	50.3
10:33 AM	1	5	10	170.45	12.34	335	7.72	7.56	26.6	26.4
10:38 AM	1	5	15	170.45	12.41	335	7.73	7.48	28.6	19.5
10:44 AM	0.83	5	20	170.48	12.42	335	7.74	7.42	29.9	15.8
10:50 AM	0.83	5	25	170.48	12.5	335	7.73	7.4	30.1	10.9
10:55 AM	1	5	30	170.48	12.51	335	7.74	7.41	30.2	7.9
11:02 AM	0.71	5	35	170.48	12.55	335	7.73	7.42	29.3	5.12
11:06 AM	1.25	5	40	170.48	12.47	335	7.76	7.43	28.5	4.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW47-290-21	Date:	5/16/2023 9:21:00 AM
Well ID:	FEW4-MW47-290	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 8:20:00 AM	Measured Well Depth:	294.94 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	172.91 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 8:49:00 AM	End Date and Time:	5/16/2023 9:17:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8:54 AM	1	5	5	173.95	11.88	336	7.67	7.54	47.6	2.34
8:57 AM	1.67	5	10	173.99	11.97	336	7.69	7.48	43.7	0.02
9:01 AM	1.25	5	15	174.02	11.98	336	7.68	7.45	41.7	0.02
9:04 AM	1.67	5	20	174.05	12	336	7.67	7.44	39.4	0.02
9:08 AM	1.25	5	25	174.05	12.02	336	7.66	7.45	37.7	0.02
9:11 AM	1.67	5	30	174.05	12.03	336	7.65	7.46	36.3	0.1
9:14 AM	1.67	5	35	174.05	12.03	336	7.65	7.47	36.1	0.23
9:17 AM	1.67	5	40	174.05	12.02	336	7.65	7.48	36	0.68

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW48-225-21	Date:	5/19/2023 9:48:00 AM
Well ID:	FEW4-MW48-225	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/19/2023 9:05:00 AM	Measured Well Depth:	229.51 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	191.97 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 9:29:00 AM	End Date and Time:	5/19/2023 9:47:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:30 AM	2.5	2.5	2.5	193.32	12.16	273	7.48	7.11	55.4	168
9:34 AM	0.63	2.5	5	193.4	12.61	272	7.52	7.09	53.4	43.1
9:38 AM	0.63	2.5	7.5	193.45	12.75	272	7.52	7.08	55.8	11.7
9:41 AM	0.83	2.5	10	193.48	12.71	272	7.52	7.08	59	3.7
9:44 AM	0.83	2.5	12.5	193.49	12.71	272	7.54	7.08	60.4	1.59
9:47 AM	0.83	2.5	15	193.51	12.7	272	7.53	7.09	61.1	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW48-254-21	Date:	5/17/2023 2:37:00 PM
Well ID:	FEW4-MW48-254	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/17/2023 1:40:00 PM	Measured Well Depth:	264.25 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	173.90 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 2:05:00 PM	End Date and Time:	5/17/2023 2:33:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:10 PM	1	5	5	174.05	12.28	233	7.89	7.36	46.5	95.7
2:15 PM	1	5	10	174.75	12.77	233	8.02	7.36	46.5	54.2
2:20 PM	1	5	15	174.75	12.24	233	8.09	7.3	42.2	41.4
2:24 PM	1.25	5	20	174.75	12.15	233	8.09	7.29	42.1	21
2:27 PM	1.67	5	25	174.8	12.18	233	8.1	7.28	41.9	6.44
2:30 PM	1.67	5	30	174.83	12.15	233	8.11	7.27	43.4	2.63
2:33 PM	1.67	5	35	174.8	12.17	233	8.1	7.27	43	2.37

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW48-284-21	Date:	5/17/2023 1:15:00 PM
Well ID:	FEW4-MW48-284	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW48-284-FD-21	Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/17/2023 12:10:00 PM	Measured Well Depth:	289.45 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	173.60 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 12:35:00 PM	End Date and Time:	5/17/2023 1:11:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:40 PM	1	5	5	176.5	12.15	233	8.04	7.29	44.6	68
12:45 PM	1	5	10	176.8	12.27	233	8.06	7.31	41.1	12.4
12:50 PM	1	5	15	176.8	12.22	233	8.1	7.28	41.8	4.54
12:54 PM	1.25	5	20	176.85	12.23	233	8.08	7.26	42.2	2.51
12:59 PM	1	5	25	176.58	12.31	233	8.08	7.25	41.8	2.51
1:03 PM	1.25	5	30	176.55	12.39	233	8.07	7.26	41	0.02
1:07 PM	1.25	5	35	176.55	12.38	233	8.06	7.26	39.5	0.02
1:11 PM	1.25	5	40	176.55	12.39	233	8.08	7.26	39.3	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW49-286-21	Date:	5/20/2023 10:29:00 AM
Well ID:	FEW4-MW49-286	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/20/2023 8:35:00 AM	Measured Well Depth:	291.19 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	241.66 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/20/2023 9:58:00 AM	End Date and Time:	5/20/2023 10:25:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:03 AM	0.5	2.5	2.5	242.53	12.8	274	7.18	7.07	59.1	234
10:07 AM	0.63	2.5	5	242.55	14.6	271	7.11	7.1	58	85.9
10:10 AM	0.83	2.5	7.5	242.53	14.22	273	7.09	7.09	62.3	26.8
10:14 AM	0.63	2.5	10	242.53	14.18	272	7.18	7.09	63.3	13.1
10:18 AM	0.63	2.5	12.5	242.53	14.12	271	7.21	7.09	62.6	6.47
10:22 AM	0.63	2.5	15	242.55	14	273	7.24	7.1	60.6	1.4
10:25 AM	0.83	2.5	17.5	242.55	14	271	7.24	7.11	59.3	0.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW49-311-21	Date:	5/20/2023 12:00:00 PM
Well ID:	FEW4-MW49-311	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/20/2023 11:04:00 AM	Measured Well Depth:	316.02 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	241.87 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/20/2023 11:31:00 AM	End Date and Time:	5/20/2023 11:57:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:36 AM	1	5	5	241.01	13.12	269	7.03	7.37	38.1	1.27
11:42 AM	0.83	5	10	241	13.26	267	7.29	7.32	38	0.02
11:47 AM	1	5	15	241	13.33	273	7.28	7.31	36.6	0.02
11:52 AM	1	5	20	241	13.42	274	7.31	7.25	37.7	0.02
11:57 AM	1	5	25	241	13.43	274	7.31	7.25	38.7	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW49-333-21	Date:	5/20/2023 2:14:00 PM
Well ID:	FEW4-MW49-333	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/20/2023 12:31:00 PM	Measured Well Depth:	338.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	240.64 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/20/2023 1:32:00 PM	End Date and Time:	5/20/2023 2:12:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:40 PM	0.63	5	5	43.21	14.45	233	6.17	7.43	37.4	0.41
1:45 PM	1	5	10	243.11	14.4	232	6.3	7.39	38.7	0.02
1:50 PM	1	5	15	243.18	14.29	236	6.42	7.36	38	0.02
1:56 PM	0.83	5	20	243.18	14.37	237	6.5	7.34	36.8	0.02
2:01 PM	1	5	25	243.11	14.55	238	6.54	7.33	36.1	0.02
2:07 PM	0.83	5	30	243.42	14.21	239	6.63	7.33	36.6	0.02
2:12 PM	1	5	35	243.42	14.31	240	6.65	7.33	36.1	0.02



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW50-250-21	Date:	5/13/2023 12:27:00 PM
Well ID:	FEW4-MW50-250	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 12:20:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	214.99 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 12:27:00 PM	End Date and Time:	5/13/2023 12:27:00 PM
Initial Pump Depth:	255.0	Final Pump Depth:	255.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW50-290-21	Date: 5/13/2023 12:55:00 PM
Well ID: FEW4-MW50-290	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 12:45:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 212.34 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 12:55:00 PM	End Date and Time: 5/13/2023 12:55:00 PM
Initial Pump Depth: 290.0	Final Pump Depth: 290.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW50-318-21	Date: 5/13/2023 12:37:00 PM
Well ID: FEW4-MW50-318	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 12:35:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 211.27 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 12:37:00 PM	End Date and Time: 5/13/2023 12:37:00 PM
Initial Pump Depth: 318.0	Final Pump Depth: 318.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW51-110-21
Well ID:	FEW4-MW51-110
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 1:09:00 PM
Is Well Dry?	No
Depth to Water:	66.78 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 1:18:00 PM
Initial Pump Depth:	112.5
Purge Method:	--
End Date and Time:	5/16/2023 1:18:00 PM
Final Pump Depth:	112.5
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW51-210-21
Well ID:	FEW4-MW51-210
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	DO probe not working during purging. Well was dewatered below the screen level at 12:36 PM on 5/21/23. Field teams bailed the rest of the water from the well at 1:30 PM. Field teams returned on 5/22/23 and was sampled.

Water Level	
Date:	5/21/2023 11:16:00 AM
Is Well Dry?	No
Depth to Water:	66.27 ft
Measured Well Depth:	217.87 ft
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 12:12:00 PM
Initial Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump
End Date and Time:	5/22/2023 8:52:00 AM
Final Pump Depth:	Not Recorded
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
5/21/2023										
12:14 PM	1	2	2	--	9.95	329	--	7.51	-112.3	0.79
12:17 PM	1	3	5	--	10.53	330	--	7.66	-124.5	1.16
12:24 PM	0.71	5	10	--	11.28	330	--	7.65	-102	1.48
12:31 PM	0.71	5	15	--	12.06	331	--	7.62	-89.1	1.1
12:36 PM	1	5	20	--	12.47	332	--	7.59	-76.7	1.97
1:30 PM	0.07	4	24	207.63	11.11	337	--	7.99	-121.3	49.9
5/22/2023										
8:52 AM	0	0.25	24.25	128	10.26	337	4.96	7.71	127.9	4.6

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW51-210-PDB-21	Date:	5/21/2023 11:40:00 PM
Well ID:	FEW4-MW51-210-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/21/2023 11:40:00 PM	Measured Well Depth:	217.87 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	66.27 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 11:40:00 PM	End Date and Time:	5/21/2023 11:40:00 PM
Initial Pump Depth:	212.7	Final Pump Depth:	212.7
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW51-80-21	Date:	5/16/2023 1:24:00 PM
Well ID:	FEW4-MW51-80	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 1:09:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	66.82 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 1:24:00 PM	End Date and Time:	5/16/2023 1:24:00 PM
Initial Pump Depth:	83.0	Final Pump Depth:	83.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW52-140-21	Date:	5/15/2023 2:18:00 PM
Well ID:	FEW4-MW52-140	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 2:14:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	7.80 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 2:18:00 PM	End Date and Time:	5/15/2023 2:18:00 PM
Initial Pump Depth:	142.0	Final Pump Depth:	142.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW52-25-21
Date:	5/15/2023 2:26:00 PM
Well ID:	FEW4-MW52-25
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 2:25:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	9.59 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 2:26:00 PM
End Date and Time:	5/15/2023 2:26:00 PM
Initial Pump Depth:	27.6
Final Pump Depth:	27.6
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW52-59-21	Date:	5/15/2023 2:35:00 PM
Well ID:	FEW4-MW52-59	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW52-59-FD-21	Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 2:32:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	1.46 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 2:35:00 PM	End Date and Time:	5/15/2023 2:35:00 PM
Initial Pump Depth:	62.7	Final Pump Depth:	62.7
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW53-145-21	Date:	5/15/2023 12:25:00 PM
Well ID:	FEW4-MW53-145	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW53-145-FD-21	Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 12:25:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	34.41 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 12:25:00 PM	End Date and Time:	5/15/2023 12:25:00 PM
Initial Pump Depth:	147.2	Final Pump Depth:	147.2
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW53-177-21	Date:	5/15/2023 12:00:00 PM
Well ID:	FEW4-MW53-177	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 11:53:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	34.06 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 12:00:00 PM	End Date and Time:	5/15/2023 12:00:00 PM
Initial Pump Depth:	179.2	Final Pump Depth:	179.2
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW53-95-21	Date: 5/15/2023 12:10:00 PM
Well ID: FEW4-MW53-95	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/15/2023 12:07:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 34.03 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/15/2023 12:10:00 PM	End Date and Time: 5/15/2023 12:10:00 PM
Initial Pump Depth: 97.0	Final Pump Depth: 97.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW54-222-21	Date: 5/14/2023 1:44:00 PM
Well ID: FEW4-MW54-222	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/14/2023 1:10:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 96.84 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/14/2023 1:44:00 PM	End Date and Time: 5/14/2023 1:44:00 PM
Initial Pump Depth: 224.0	Final Pump Depth: 224.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW54-245-21	Date:	5/14/2023 1:35:00 PM
Well ID:	FEW4-MW54-245	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 1:10:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	96.42 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 1:35:00 PM	End Date and Time:	5/14/2023 1:35:00 PM
Initial Pump Depth:	248.0	Final Pump Depth:	248.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW54-284-21
Date:	5/14/2023 1:23:00 PM
Well ID:	FEW4-MW54-284
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/14/2023 1:10:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	151.66 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/14/2023 1:23:00 PM
End Date and Time:	5/14/2023 1:23:00 PM
Initial Pump Depth:	286.0
Final Pump Depth:	286.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW54B-164-21	Date:	5/13/2023 1:24:00 PM
Well ID:	FEW4-MW54B-164	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/13/2023 12:01:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	153.31 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 1:05:00 PM	End Date and Time:	5/13/2023 1:22:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:06 PM	2	2	2	157.35	12.25	348	4.55	7.7	24.8	105
1:09 PM	0.67	2	4	157.65	11.76	344	4.52	7.62	23.4	49
1:10 PM	2	2	6	157.1	11.74	344	5.37	7.6	23.7	37
1:13 PM	0.67	2	8	156.98	12	345	5.02	7.55	24.3	18.8
1:15 PM	1	2	10	156.99	11.96	344	5.05	7.53	24.8	11.9
1:17 PM	1	2	12	157	11.96	344	4.95	7.52	24.9	8.34
1:20 PM	0.67	2	14	157	11.96	343	4.99	7.53	24.9	5.43
1:22 PM	1	2	16	157	11.95	344	5.02	7.56	24.7	4.55

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW54B-199-21	Date:	5/13/2023 2:50:00 PM
Well ID:	FEW4-MW54B-199	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/13/2023 1:45:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	119.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 2:13:00 PM	End Date and Time:	5/13/2023 2:47:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:19 PM	0.83	5	5	123.25	11.33	320	6.07	7.71	29.1	0.79
2:25 PM	0.83	5	10	123.35	11.39	321	6.07	7.66	30.9	0.18
2:31 PM	0.83	5	15	123.65	11.41	320	6.06	7.68	28.3	0.02
2:36 PM	1	5	20	123.7	11.43	320	6.04	7.7	26.3	0.02
2:41 PM	1	5	25	123.5	11.43	320	6.05	7.72	24.9	0.02
2:47 PM	0.83	5	30	123.55	11.46	320	6.02	7.71	24.7	0.24

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW55-250-21	Date:	5/15/2023 3:01:00 PM
Well ID:	FEW4-MW55-250	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/15/2023 12:15:00 PM	Measured Well Depth:	258.94 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	120.94 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/15/2023 2:19:00 PM	End Date and Time:	5/15/2023 2:56:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:23 PM	1.25	5	5	124.09	11.33	238	6.38	7.36	51.3	28.9
2:27 PM	1.25	5	10	124.9	11.68	239	7.11	7.35	52.4	8.06
2:32 PM	1	5	15	124.82	11.6	239	7.19	7.34	54.8	2.95
2:35 PM	1.67	5	20	124.88	11.67	239	7.23	7.33	55.2	0.37
2:40 PM	1	5	25	124.87	11.66	239	7.29	7.34	53.9	0.32
2:44 PM	1.25	5	30	124.86	11.67	239	7.3	7.35	51.2	0.02
2:48 PM	1.25	5	35	124.85	11.69	239	7.33	7.36	48.5	0.02
2:52 PM	1.25	5	40	124.87	11.69	239	7.34	7.37	46.6	0.02
2:56 PM	1.25	5	45	124.87	11.69	239	7.34	7.38	45.5	0.02



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW55-250-PDB-21	Date:	5/15/2023 2:16:00 PM
Well ID:	FEW4-MW55-250-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 12:14:00 PM	Measured Well Depth:	258.94 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	120.94 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 2:16:00 PM	End Date and Time:	5/15/2023 2:16:00 PM
Initial Pump Depth:	250.4	Final Pump Depth:	250.4
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW55-280-21	Date:	5/14/2023 10:00:00 AM
Well ID:	FEW4-MW55-280	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 9:33:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	25.37 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 10:00:00 AM	End Date and Time:	5/14/2023 10:00:00 AM
Initial Pump Depth:	283.9	Final Pump Depth:	283.9
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW55-320-21	Date:	5/14/2023 9:48:00 AM
Well ID:	FEW4-MW55-320	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 9:33:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	147.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 9:48:00 AM	End Date and Time:	5/14/2023 9:48:00 AM
Initial Pump Depth:	323.3	Final Pump Depth:	323.3
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW56-203-21	Date:	5/14/2023 10:35:00 AM
Well ID:	FEW4-MW56-203	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 10:35:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.55 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 10:35:00 AM	End Date and Time:	5/14/2023 10:35:00 AM
Initial Pump Depth:	205.0	Final Pump Depth:	205.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW56-250-21	Date:	5/14/2023 10:50:00 AM
Well ID:	FEW4-MW56-250	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 10:50:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	78.65 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 10:50:00 AM	End Date and Time:	5/14/2023 10:50:00 AM
Initial Pump Depth:	254.0	Final Pump Depth:	254.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW56-290-21	Date:	6/4/2023 12:45:00 PM
Well ID:	FEW4-MW56-290	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well was dewatered to pump at 3:16 PM. Came back on 6/4/23 to collect sample.		

Water Level			
Date:	6/3/2023 1:59:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	78.22 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	6/3/2023 2:20:00 PM	End Date and Time:	6/3/2023 3:16:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:26 PM	0.83	5	5	105.11	10.93	388	1.5	7.37	45.1	0.33
2:34 PM	0.63	5	10	--	12.04	388	1.44	7.19	45.1	0.02
2:44 PM	0.5	5	15	--	12.07	388	1.44	7.14	44.3	0.1
2:50 PM	0.83	5	20	--	12.79	388	1.42	7.14	43.5	0.51
2:57 PM	0.71	5	25	--	13.5	388	1.4	7.15	44.3	3.57
3:04 PM	0.71	5	30	--	14.01	390	1.53	7.16	49.1	28.3
3:14 PM	0.5	5	35	--	15.18	392	1.96	7.19	53.7	45.9

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW56-290-PDB-21
Well ID:	FEW4-MW56-290-PDB
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	6/3/2023 1:45:00 PM
Is Well Dry?	No
Depth to Water:	78.22 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/3/2023 1:50:00 PM
Initial Pump Depth:	290.0
Purge Method:	--
End Date and Time:	6/3/2023 1:50:00 PM
Final Pump Depth:	290.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW57-211-21	Date:	5/12/2023 11:46:00 AM
Well ID:	FEW4-MW57-211	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW57-211-FD-21	Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/12/2023 11:03:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	158.81 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 11:46:00 AM	End Date and Time:	5/12/2023 11:46:00 AM
Initial Pump Depth:	211.0	Final Pump Depth:	211.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW57-240-21	Date: 5/12/2023 11:31:00 AM
Well ID: FEW4-MW57-240	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/12/2023 11:03:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 157.24 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/12/2023 11:31:00 AM	End Date and Time: 5/12/2023 11:31:00 AM
Initial Pump Depth: 240.0	Final Pump Depth: 240.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW57-276-21
Well ID:	FEW4-MW57-276
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/12/2023 11:03:00 AM
Is Well Dry?	No
Depth to Water:	148.94 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/12/2023 11:15:00 AM
Initial Pump Depth:	276.0
Purge Method:	--
End Date and Time:	5/12/2023 11:15:00 AM
Final Pump Depth:	276.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW58-124-21	Date:	5/15/2023 11:26:00 AM
Well ID:	FEW4-MW58-124	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 11:23:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	119.60 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 11:26:00 AM	End Date and Time:	5/15/2023 11:26:00 AM
Initial Pump Depth:	125.0	Final Pump Depth:	125.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW58-169-21
Well ID:	FEW4-MW58-169
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 11:15:00 AM
Is Well Dry?	No
Depth to Water:	142.15 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 11:18:00 AM
Initial Pump Depth:	168.8
Purge Method:	--
End Date and Time:	5/15/2023 11:18:00 AM
Final Pump Depth:	168.8
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW58-213-21	Date:	5/15/2023 10:50:00 AM
Well ID:	FEW4-MW58-213	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 10:48:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	147.78 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 10:50:00 AM	End Date and Time:	5/15/2023 10:50:00 AM
Initial Pump Depth:	213.5	Final Pump Depth:	213.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW59-125-21	Date:	6/6/2023 12:23:00 PM
Well ID:	FEW4-MW59-125	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Water was brownish pink to pink in color		

Water Level

Date:	6/6/2023 11:15:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	56.49 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	6/6/2023 11:28:00 AM	End Date and Time:	6/6/2023 12:18:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:45 AM	0.24	4	4	66.2	13.51	382	2.3	7.39	81.1	175
11:51 AM	0.67	4	8	75.15	12.1	369	2.81	7.46	84	318
11:57 AM	0.67	4	12	78.93	11.94	362	2.79	7.41	92.1	324
12:04 PM	0.57	4	16	79.09	12.22	380	2.59	7.37	181.4	141
12:11 PM	0.57	4	20	79.43	12.22	401	3	7.35	243.6	115
12:18 PM	0.57	4	24	79.2	12.22	415	3.23	7.35	275.2	56

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW59-183-21	Date:	5/22/2023 1:58:00 PM
Well ID:	FEW4-MW59-183	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW59-183-FD-21	Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U112911X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	No turbidity meter until 1:24 PM		

Water Level

Date:	5/22/2023 11:30:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	49.91 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 12:08:00 AM	End Date and Time:	5/22/2023 1:54:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:14 PM	0.01	5	5	64.45	9.08	285	1.16	7.6	31.2	--
12:20 PM	0.83	5	10	65.1	9.45	265	1.09	7.54	-6.8	--
12:27 PM	0.71	5	15	65.25	9.55	251	1.11	7.51	-3.5	--
12:33 PM	0.83	5	20	65.31	9.57	243	3.97	7.48	-0.2	--
12:41 PM	0.63	5	25	65.53	9.67	236	4.81	7.5	0.1	--
12:48 PM	0.71	5	30	65.58	9.59	236	2.22	7.56	-3.3	--
12:56 PM	0.63	5	35	65.62	9.7	251	1.35	7.71	-6.8	--
1:03 PM	0.71	5	40	65.71	9.75	263	2.03	7.83	-5.4	--
1:10 PM	0.71	5	45	65.73	9.75	271	4.07	7.96	-0.5	--
1:18 PM	0.63	5	50	65.71	9.75	276	1.96	8.04	7.7	--
1:24 PM	0.83	5	55	65.84	9.77	278	1.8	8.07	10.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:32 PM	0.63	5	60	65.82	9.75	280	2.11	8.09	13.1	0.02
1:40 PM	0.63	5	65	65.82	9.74	280	2.4	8.09	14.2	0.02
1:46 PM	0.83	5	70	65.82	9.66	281	2.65	8.07	14.3	0.02
1:54 PM	0.63	5	75	65.86	9.85	281	2.82	8.05	13.8	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW59-183-PDB-21
Well ID:	FEW4-MW59-183-PDB
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U112911X; Water Level Meter: Heron Dipper-T # U90292X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/22/2023 11:00:00 AM
Is Well Dry?	No
Depth to Water:	49.91 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/22/2023 11:28:00 AM
Initial Pump Depth:	183.0
Purge Method:	--
End Date and Time:	5/22/2023 11:28:00 AM
Final Pump Depth:	183.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW59-74-21	Date:	6/4/2023 3:10:00 PM
Well ID:	FEW4-MW59-74	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	No water quality parameters we collected during bailing to prevent damage to the probes.		

Water Level

Date:	6/4/2023 2:35:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	55.70 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	6/4/2023 2:45:00 PM	End Date and Time:	6/4/2023 3:05:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Bailer
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW60-146-21	Date:	6/4/2023 11:35:00 AM
Well ID:	FEW4-MW60-146	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Depth to water was not recorded while purging as well was bailed.		

Water Level

Date:	6/4/2023 8:42:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	65.31 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	6/4/2023 8:50:00 AM	End Date and Time:	6/4/2023 11:30:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Bailer
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:20 AM	0.17	5	5	--	10.2	270	2.82	7.2	70.7	22.6
9:56 AM	0.14	5	10	--	9.11	302	3.61	7.09	57.7	26.6
10:17 AM	0.24	5	15	--	9.25	296	3.02	7.23	48.6	21.2
10:49 AM	0.16	5	20	--	9.91	304	3.07	7.22	46.3	21.6
11:17 AM	0.18	5	25	--	9.58	306	3.58	7.32	46.1	39.8
11:30 AM	0.23	3	28	--	9.28	289	3.13	7.39	43.4	41.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW60-233-21	Date:	5/21/2023 2:06:00 PM
Well ID:	FEW4-MW60-233	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/21/2023 11:48:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	70.28 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/21/2023 12:07:00 PM	End Date and Time:	5/21/2023 2:04:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:15 PM	0.63	5	5	83.5	10.28	295	1.7	7.46	37.7	3.47
12:25 PM	0.5	5	10	90.35	10.96	296	1.44	7.24	43.7	4.01
12:35 PM	0.5	5	15	95.55	11.01	296	1.56	7.24	42.4	1.06
12:45 PM	0.5	5	20	100.6	10.82	297	5.61	7.35	33.6	0.02
12:57 PM	0.42	5	25	102.85	11.35	296	1.47	7.41	28.9	1.03
1:07 PM	0.5	5	30	107.6	11.42	296	2.29	7.44	21.4	1.65
1:15 PM	0.63	5	35	111.95	11.24	296	1.51	7.46	16.8	1.5
1:23 PM	0.63	5	40	114.25	11.36	296	3.74	7.46	18.8	1.64
1:31 PM	0.63	5	45	117.32	11.42	296	2.18	7.48	15.2	2.26
1:40 PM	0.56	5	50	119.85	11.37	296	1.5	7.48	16.1	0.54
1:48 PM	0.63	5	55	121.9	11.51	296	1.5	7.48	15.6	3.36

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:56 PM	0.63	5	60	123	11.56	296	1.54	7.48	17.3	1.23
2:04 PM	0.63	5	65	124.41	11.63	296	1.55	7.47	16.4	0.5

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW60-90-21	Date:	5/22/2023 2:17:00 PM
Well ID:	FEW4-MW60-90	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/22/2023 1:27:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	65.65 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 1:33:00 PM	End Date and Time:	5/22/2023 2:13:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	2 well volume with bailer	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:41 PM	0.25	2	2	71.37	11.45	308	3.83	7.71	34.7	25.2
1:49 PM	0.25	2	4	73.94	10.43	323	4.4	7.38	40.9	39.1
1:56 PM	0.29	2	6	75.28	10.1	325	4.07	7.23	46.3	51.6
2:04 PM	0.25	2	8	75.8	9.69	328	5.02	7.12	47.9	64.9
2:13 PM	0.22	2	10	75.65	10.98	325	4.51	7.26	49.4	66.5

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW61-107-21	Date:	5/15/2023 2:00:00 PM
Well ID:	FEW4-MW61-107	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/15/2023 11:45:00 AM	Measured Well Depth:	112.11 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.10 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/15/2023 11:57:00 AM	End Date and Time:	5/15/2023 1:57:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:02 PM	140	700	700	81.9	9.72	328	8.03	7.72	104.7	32.4
12:07 PM	120	600	1300	82.4	9.56	346	1.47	7.52	36.6	40.1
12:12 PM	80	400	1700	82.4	9.48	348	0.00	7.42	8.8	35.9
12:18 PM	83.33	500	2200	82.88	9.25	349	0.00	7.4	-26.8	38.2
12:22 PM	125	500	2700	83.2	9.07	350	0.00	7.44	-60.6	44.0
12:27 PM	100	500	3200	83.4	9.04	352	0.00	7.51	-84.9	58.8
12:32 PM	100	500	3700	83.6	8.99	353	0.00	7.54	-107.8	62.3
12:37 PM	60	300	4000	83.7	8.96	354	0.00	7.53	-118.6	60.2
12:42 PM	140	700	4700	83.8	8.98	355	0.00	7.54	-130.2	56.0
12:47 PM	120	600	5300	83.8	9.07	355	0.00	7.57	-139.1	53.2
12:52 PM	100	500	5800	84	9.2	355	0.00	7.56	-144	52.3

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:57 PM	100	500	6300	84.1	9.03	355	0.00	7.56	-148	43.0
1:02 PM	100	500	6800	84.1	8.98	354	0.00	7.54	-150.3	38.2
1:07 PM	120	600	7400	84.2	8.99	354	0.00	7.57	-154.4	34.1
1:12 PM	120	600	8000	84.3	9.01	354	0.00	7.57	-157	35.2
1:17 PM	80	400	8400	84.3	9.22	354	0.00	7.62	-160.8	28.3
1:22 PM	120	600	9000	84.4	9.56	354	0.00	7.6	-162.2	26.3
1:27 PM	100	500	9500	84.3	9.85	354	0.00	7.59	-163	25.8
1:32 PM	100	500	10000	84.3	9.55	354	0.00	7.59	-163.2	22.0
1:37 PM	140	700	10700	84.2	9.52	353	0.00	7.61	-164.5	19.5
1:42 PM	100	500	11200	84.4	9.6	354	0.00	7.62	-165.7	17.7
1:47 PM	120	600	11800	84.2	9.73	353	0.00	7.61	-166.2	17.5
1:52 PM	140	700	12500	84.3	9.74	353	0.00	7.62	-165.8	14.9
1:57 PM	100	500	13000	84.5	9.73	354	0.00	7.61	-165.2	15.1



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW61-107-PDB-21	Date:	5/15/2023 11:40:00 AM
Well ID:	FEW4-MW61-107-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 11:30:00 AM	Measured Well Depth:	112.11 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.10 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 11:40:00 AM	End Date and Time:	5/15/2023 11:40:00 AM
Initial Pump Depth:	107.0	Final Pump Depth:	107.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW61-221-21	Date:	5/21/2023 10:58:00 AM
Well ID:	FEW4-MW61-221	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/21/2023 9:45:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.08 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/21/2023 9:57:00 AM	End Date and Time:	5/21/2023 10:57:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:02 AM	1	5	5	90.39	10.16	287	6.38	6.95	77.7	29.5
10:08 AM	0.83	5	10	91.52	10.22	287	6.21	6.99	66	12.3
10:14 AM	0.83	5	15	91.9	10.14	287	5.94	7.14	53.9	7.18
10:19 AM	1	5	20	92.2	10.35	287	5.76	7.22	47.5	4.24
10:24 AM	1	5	25	92.4	10.4	287	5.62	7.26	43.8	5.68
10:30 AM	0.83	5	30	92.61	10.49	286	5.77	7.29	41.8	5.68
10:35 AM	1	5	35	92.94	10.48	285	6.05	7.32	41	11.2
10:40 AM	1	5	40	93.22	10.51	286	6.26	7.34	39.9	10.3
10:45 AM	1	5	45	93.37	10.55	285	6.47	7.35	39	8.58
10:51 AM	0.83	5	50	94.45	10.51	286	6.64	7.37	38.6	7.02
10:57 AM	0.83	5	55	93.45	10.55	287	6.78	7.38	38.3	7.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW61-80-21	Date:	5/21/2023 4:18:00 PM
Well ID:	FEW4-MW61-80	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/21/2023 3:50:00 PM	Measured Well Depth:	87.01 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.39 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 3:55:00 PM	End Date and Time:	5/21/2023 4:04:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
4:00 PM	0.1	0.5	0.5	--	11.24	197	0.49	8.31	-149.7	999
4:04 PM	0.13	0.5	1	--	10.02	205	0.63	8.23	-166.7	572
4:08 PM	0.125	0.5	1.5	--	10.03	211	0.76	8.22	-159.1	999
4:15 PM	0.071	0.5	2	--	10.27	211	1.57	8.3	-150.2	999

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW62-158-21	Date:	5/17/2023 3:02:00 PM
Well ID:	FEW4-MW62-158	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 2:45:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	85.94 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 3:02:00 PM	End Date and Time:	5/17/2023 3:02:00 PM
Initial Pump Depth:	153.0	Final Pump Depth:	153.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW62-252-21	Date:	5/17/2023 2:53:00 PM
Well ID:	FEW4-MW62-252	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 2:45:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	87.77 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 2:53:00 PM	End Date and Time:	5/17/2023 2:53:00 PM
Initial Pump Depth:	252.2	Final Pump Depth:	252.2
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW62-84-21	Date:	5/17/2023 3:10:00 PM
Well ID:	FEW4-MW62-84	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 2:45:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	86.39 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 3:10:00 PM	End Date and Time:	5/17/2023 3:10:00 PM
Initial Pump Depth:	88.8	Final Pump Depth:	88.8
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW63-143-21	Date:	5/19/2023 11:11:00 AM
Well ID:	FEW4-MW63-143	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 11:07:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	66.40 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 11:11:00 AM	End Date and Time:	5/19/2023 11:11:00 AM
Initial Pump Depth:	142.7	Final Pump Depth:	142.7
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW63-223-21	Date:	5/19/2023 10:56:00 AM
Well ID:	FEW4-MW63-223	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 10:48:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	60.72 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 10:56:00 AM	End Date and Time:	5/19/2023 10:56:00 AM
Initial Pump Depth:	222.8	Final Pump Depth:	222.8
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW63-79-21	Date:	5/19/2023 11:04:00 AM
Well ID:	FEW4-MW63-79	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/19/2023 11:01:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	66.47 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/19/2023 11:04:00 AM	End Date and Time:	5/19/2023 11:04:00 AM
Initial Pump Depth:	79.5	Final Pump Depth:	79.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW64-122-21	Date: 5/21/2023 9:00:00 AM
Well ID: FEW4-MW64-122	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/21/2023 8:56:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 68.40 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/21/2023 9:00:00 AM	End Date and Time: 5/21/2023 9:00:00 AM
Initial Pump Depth: 122.0	Final Pump Depth: 122.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW64-68-21
Well ID:	FEW4-MW64-68
Duplicate ID:	FEW4-MW64-68-FD-21
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/21/2023 9:03:00 AM
Is Well Dry?	No
Depth to Water:	68.87 ft
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 9:08:00 AM
Initial Pump Depth:	72.0
Purge Method:	--
End Date and Time:	5/21/2023 9:08:00 AM
Final Pump Depth:	72.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW65-142-21	Date: 5/17/2023 12:37:00 PM
Well ID: FEW4-MW65-142	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/17/2023 12:10:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 73.31 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/17/2023 12:37:00 PM	End Date and Time: 5/17/2023 12:37:00 PM
Initial Pump Depth: 142.8	Final Pump Depth: 142.8
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW65-208-21	Date:	5/17/2023 12:30:00 PM
Well ID:	FEW4-MW65-208	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 12:10:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	67.16 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 12:30:00 PM	End Date and Time:	5/17/2023 12:30:00 PM
Initial Pump Depth:	208.0	Final Pump Depth:	208.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW65-88-21	Date:	5/17/2023 12:17:00 PM
Well ID:	FEW4-MW65-88	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 12:10:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	72.73 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 12:17:00 PM	End Date and Time:	5/17/2023 12:17:00 PM
Initial Pump Depth:	87.6	Final Pump Depth:	87.6
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW66-158-21	Date:	5/17/2023 4:02:00 PM
Well ID:	FEW4-MW66-158	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 3:33:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	90.84 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 4:02:00 PM	End Date and Time:	5/17/2023 4:02:00 PM
Initial Pump Depth:	153.0	Final Pump Depth:	153.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW66-205-21	Date:	5/17/2023 3:53:00 PM
Well ID:	FEW4-MW66-205	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 3:33:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	90.60 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 3:53:00 PM	End Date and Time:	5/17/2023 3:53:00 PM
Initial Pump Depth:	200.0	Final Pump Depth:	200.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW66-94-21	Date:	5/17/2023 3:47:00 PM
Well ID:	FEW4-MW66-94	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 3:33:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	87.22 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 3:47:00 PM	End Date and Time:	5/17/2023 3:47:00 PM
Initial Pump Depth:	94.7	Final Pump Depth:	94.7
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW67-233-21
Date:	5/19/2023 1:25:00 PM
Well ID:	FEW4-MW67-233
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/19/2023 1:21:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	58.68 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/19/2023 1:25:00 PM
End Date and Time:	5/19/2023 1:25:00 PM
Initial Pump Depth:	233.0
Final Pump Depth:	233.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW67-64-21
Well ID:	FEW4-MW67-64
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/19/2023 1:30:00 PM
Is Well Dry?	No
Depth to Water:	63.55 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/19/2023 1:33:00 PM
Initial Pump Depth:	66.0
Purge Method:	--
End Date and Time:	5/19/2023 1:33:00 PM
Final Pump Depth:	66.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW67-97-21	Date:	5/19/2023 1:43:00 PM
Well ID:	FEW4-MW67-97	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 1:37:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	63.91 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 1:43:00 PM	End Date and Time:	5/19/2023 1:43:00 PM
Initial Pump Depth:	97.0	Final Pump Depth:	97.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW68-140-21	Date:	5/17/2023 11:43:00 AM
Well ID:	FEW4-MW68-140	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW68-140-FD-21	Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 11:18:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	79.18 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 11:43:00 AM	End Date and Time:	5/17/2023 11:43:00 AM
Initial Pump Depth:	140.5	Final Pump Depth:	140.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW68-185-21	Date:	5/17/2023 11:27:00 AM
Well ID:	FEW4-MW68-185	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 11:18:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	79.04 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 11:27:00 AM	End Date and Time:	5/17/2023 11:27:00 AM
Initial Pump Depth:	185.5	Final Pump Depth:	185.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW68-80-21	Date:	5/17/2023 11:36:00 AM
Well ID:	FEW4-MW68-80	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 11:18:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	80.44 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 11:36:00 AM	End Date and Time:	5/17/2023 11:36:00 AM
Initial Pump Depth:	83.7	Final Pump Depth:	83.7
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW69-164-21	Date:	5/16/2023 1:37:00 PM
Well ID:	FEW4-MW69-164	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW69-164-FD-21	Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 1:30:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	36.32 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 1:37:00 PM	End Date and Time:	5/16/2023 1:37:00 PM
Initial Pump Depth:	163.0	Final Pump Depth:	163.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW69-64-21
Date:	5/16/2023 1:40:00 PM
Well ID:	FEW4-MW69-64
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 1:30:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	37.70 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 1:40:00 PM
End Date and Time:	5/16/2023 1:40:00 PM
Initial Pump Depth:	63.5
Final Pump Depth:	63.5
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW69-99-21	Date:	5/16/2023 1:50:00 PM
Well ID:	FEW4-MW69-99	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/16/2023 1:30:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	34.19 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 1:50:00 PM	End Date and Time:	5/16/2023 1:50:00 PM
Initial Pump Depth:	98.6	Final Pump Depth:	98.6
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW70-100-21	Date:	5/17/2023 1:11:00 PM
Well ID:	FEW4-MW70-100	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 12:47:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	97.86 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 1:11:00 PM	End Date and Time:	5/17/2023 1:11:00 PM
Initial Pump Depth:	102.8	Final Pump Depth:	102.8
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW70-142-21	Date:	5/17/2023 1:03:00 PM
Well ID:	FEW4-MW70-142	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 12:47:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	97.88 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 1:03:00 PM	End Date and Time:	5/17/2023 1:03:00 PM
Initial Pump Depth:	142.3	Final Pump Depth:	142.3
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW70-244-21	Date: 5/17/2023 4:52:00 PM
Well ID: FEW4-MW70-244	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/17/2023 12:47:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 98.83 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/17/2023 4:52:00 PM	End Date and Time: 5/17/2023 4:52:00 PM
Initial Pump Depth: 243.6	Final Pump Depth: 243.6
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW71-128-21
Well ID:	FEW4-MW71-128
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 12:06:00 PM
Is Well Dry?	No
Depth to Water:	85.39 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 12:26:00 PM
Initial Pump Depth:	128.0
Purge Method:	--
End Date and Time:	5/16/2023 12:26:00 PM
Final Pump Depth:	128.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW71-205-21	Date: 6/1/2023 9:21:00 AM
Well ID: FEW4-MW71-205	Location Type: Monitoring Well
Duplicate ID:	Sampler: BS TM
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Well was dewatered at 10:31 AM, waited for well to recharge 80%. Returned and resumed purging at 1:30 PM. The pump stopped working at 1:40 PM due to a generator failure. Resumed purging at 2:02 PM. Well dewatered again at 2:10 PM. Came back to well on 6/1 and sampled well as well was dewatered twice the previous day.	

Water Level	
Date: 5/31/2023 9:29:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 86.12 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/31/2023 10:02:00 AM	End Date and Time: 5/31/2023 2:10:00 PM
Initial Pump Depth: Not Recorded	Final Pump Depth: Not Recorded
Purge Method: Rediflo w/ check valve	Sample Method: Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:08 AM	0.83	5	5	118.75	10.99	223	1.48	7.21	42.9	5.09
10:15 AM	0.71	5	10	147.72	12.03	224	1.48	7.13	47.1	9.05
10:22 AM	0.71	5	15	165.9	12.87	226	1.94	7.03	47.8	22
10:27 AM	1	5	20	187.02	13.54	227	2.63	6.98	50.8	12.8
10:31 AM	0.63	2.5	22.5	--	--	--	--	--	--	--
1:30 PM	0	0	22.5	--	--	--	--	--	--	--
1:35 PM	1	5	27.5	137.08	11.04	228	2.3	7.26	56.4	2.23
1:40 PM	0.6	3	30.5	--	--	--	--	--	--	--
2:02 PM	0.23	5	35.5	159.41	11.92	230	2.14	7.14	47.3	2.5
2:08 PM	0.83	5	40.5	159.41	13.61	233	1.98	7.17	40.3	2.52

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW71-205-PDB-21
Date:	5/31/2023 9:22:00 AM
Well ID:	FEW4-MW71-205-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/31/2023 9:08:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	86.12 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/31/2023 9:22:00 AM
End Date and Time:	5/31/2023 9:22:00 AM
Initial Pump Depth:	205.0
Final Pump Depth:	205.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW71-96-21
Well ID:	FEW4-MW71-96
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 12:06:00 PM
Is Well Dry?	No
Depth to Water:	87.32 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 12:19:00 PM
Initial Pump Depth:	95.0
Purge Method:	--
End Date and Time:	5/16/2023 12:19:00 PM
Final Pump Depth:	95.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW72-130-21	Date:	5/17/2023 1:55:00 PM
Well ID:	FEW4-MW72-130	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 1:30:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	133.38 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 1:55:00 PM	End Date and Time:	5/17/2023 1:55:00 PM
Initial Pump Depth:	134.0	Final Pump Depth:	134.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW72-158-21	Date: 5/17/2023 1:46:00 PM
Well ID: FEW4-MW72-158	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/17/2023 1:30:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 135.29 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/17/2023 1:46:00 PM	End Date and Time: 5/17/2023 1:46:00 PM
Initial Pump Depth: 158.0	Final Pump Depth: 158.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW72-205-21
Date:	5/17/2023 1:38:00 PM
Well ID:	FEW4-MW72-205
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/17/2023 1:30:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	155.54 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/17/2023 1:38:00 PM
End Date and Time:	5/17/2023 1:38:00 PM
Initial Pump Depth:	205.0
Final Pump Depth:	205.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW73-137-21	Date: 5/20/2023 1:00:00 PM
Well ID: FEW4-MW73-137	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/20/2023 12:59:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 102.32 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/20/2023 1:00:00 PM	End Date and Time: 5/20/2023 1:00:00 PM
Initial Pump Depth: 137.0	Final Pump Depth: 137.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW73-218-21
Well ID:	FEW4-MW73-218
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 12:49:00 PM
Is Well Dry?	No
Depth to Water:	127.11 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 12:54:00 PM
Initial Pump Depth:	213.0
Purge Method:	--
End Date and Time:	5/20/2023 12:54:00 PM
Final Pump Depth:	213.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW73-243-21	Date:	5/20/2023 12:41:00 PM
Well ID:	FEW4-MW73-243	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/20/2023 12:41:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	126.95 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/20/2023 12:41:00 PM	End Date and Time:	5/20/2023 12:41:00 PM
Initial Pump Depth:	243.0	Final Pump Depth:	243.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW74-104-21
Date:	6/5/2023 11:37:00 AM
Well ID:	FEW4-MW74-104
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Well dewatered to pump at 10:49 AM. Waited for well to recharge to 80%. Well recharged enough by 11:11 AM. Well dewatered for a second time at 11:19 AM. Well recharged to 80% of volume by 11:35 AM.

Water Level	
Date:	6/5/2023 10:03:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	54.65 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/5/2023 10:21:00 AM
End Date and Time:	6/5/2023 11:19:00 AM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:27 AM	0.67	4	4	71.15	9.26	401	1.52	7.03	77.5	34.6
10:32 AM	0.8	4	8	78.95	9.46	401	1.56	7.01	77	24.4
10:38 AM	0.67	4	12	83.05	9.72	400	1.54	7.08	73	13.8
10:43 AM	0.8	4	16	87.1	9.57	400	1.38	7.15	69.5	9.02
10:48 AM	0.8	4	20	90.62	9.58	398	1.36	7.18	67.2	6.88
11:11 AM	3.43	24	24	75.12	9.01	394	1.66	7.24	57.6	1.78
11:15 AM	1	4	28	83.72	9.25	397	1.66	7.26	57.4	6.75

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW74-263-21
Well ID:	FEW4-MW74-263
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Water was blueish gray in color. Well dewatered at 1:37 PM. Well historically does not recover in 24 hours. Collected sample per SOP.

Water Level	
Date:	6/5/2023 12:20:00 PM
Is Well Dry?	No
Depth to Water:	52.89 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/5/2023 12:44:00 PM
Initial Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve
End Date and Time:	6/5/2023 1:37:00 PM
Final Pump Depth:	Not Recorded
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:47 PM	1.67	5	5	83.09	9.01	1271	1.51	6.94	-11.5	29.2
12:52 PM	1	5	10	107.03	9.43	1266	1.47	6.9	-7.9	26.3
12:58 PM	0.83	5	15	132	9.8	1267	1.45	6.87	-6.5	20.5
1:06 PM	0.63	5	20	156.38	10.44	1266	1.43	6.88	-5.3	21.6
1:13 PM	0.71	5	25	181.64	10.95	1284	1.41	6.88	-3.2	22.9
1:21 PM	0.63	5	30	207.96	12.05	1290	1.43	6.88	-0.4	27.6
1:30 PM	0.56	5	35	232	12.87	1296	1.44	6.91	2	31.9

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW74-359-21	Date:	6/6/2023 1:15:00 PM
Well ID:	FEW4-MW74-359	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well was dewatered to pump at 10:42 AM. Well does not historically recharge in 24 hours. Returned at 12:45 PM to remove 2 gallons (>1 casing volume) then collected sample.		

Water Level

Date:	6/6/2023 9:08:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	69.25 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	6/6/2023 9:28:00 AM	End Date and Time:	6/6/2023 10:42:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo with check valve	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:44 AM	0.63	10	10	119.2	10.15	1192	1.47	6.82	24.3	1.27
10:03 AM	0.53	10	20	172.7	11.38	1196	1.42	6.77	24.3	1.03
10:21 AM	0.56	10	30	223.95	13.13	1199	1.38	6.84	18.6	2.68
10:37 AM	0.63	10	40	--	14.98	1203	1.41	6.88	16	4.26

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW74-359-PDB-21
Date:	6/6/2023 8:55:00 AM
Well ID:	FEW4-MW74-359-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	6/6/2023 8:44:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	69.25 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/6/2023 8:55:00 AM
End Date and Time:	6/6/2023 8:55:00 AM
Initial Pump Depth:	359.0
Final Pump Depth:	359.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW75-308-21	Date:	6/3/2023 10:35:00 AM
Well ID:	FEW4-MW75-308	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW75-308-FD-21	Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	6/3/2023 8:41:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	68.20 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	6/3/2023 9:10:00 AM	End Date and Time:	6/3/2023 10:32:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:19 AM	1.11	10	10	75.3	9.38	373	4.77	7.46	79.4	0.35
9:27 AM	1.25	10	20	76.5	9.53	370	6.1	7.42	79.9	0.02
9:36 AM	1.11	10	30	77.14	9.61	369	6.36	7.45	77.1	0.02
9:45 AM	1.11	10	40	77.59	9.61	369	6.54	7.49	74.2	0.02
9:54 AM	1.11	10	50	78.03	9.67	369	6.64	7.51	72.4	0.02
10:03 AM	1.11	10	60	78.32	9.72	367	6.78	7.52	71.4	0.02
10:13 AM	1	10	70	78.38	9.81	367	6.88	7.51	71.4	0.02
10:23 AM	1	10	80	78.66	9.85	366	6.8	7.52	70.1	0.02
10:32 AM	1.11	10	90	78.88	9.9	366	6.93	7.53	69.1	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW75-377-21	Date:	5/14/2023 3:25:00 PM
Well ID:	FEW4-MW75-377	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/14/2023 12:52:00 PM	Measured Well Depth:	377.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	132.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 1:55:00 PM	End Date and Time:	5/14/2023 3:15:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:00 PM	70	350	350	111.5	9.46	376	8.09	8.28	42.3	1.1
2:05 PM	20	100	450	107.6	9.37	377	8.14	8.22	49.6	0.75
2:10 PM	110	550	1000	107.6	8.92	376	11.16	8.29	46.1	23.4
2:15 PM	200	1000	2000	104.6	8.99	376	9.25	8	55.6	39.1
2:20 PM	80	400	2400	106.2	9.03	377	7.9	7.93	57.5	31.2
2:25 PM	120	600	3000	105.3	8.88	377	6.63	7.85	61.2	28.6
2:30 PM	120	600	3600	105.6	8.99	378	6.01	7.87	57.9	22.2
2:35 PM	120	600	4200	103.9	8.97	379	5.73	7.85	57.3	21.3
2:40 PM	140	700	4900	105.9	8.85	378	5.37	7.83	60.7	17.3
2:45 PM	140	700	5600	106	8.81	380	5	7.82	61.1	13.1
2:50 PM	120	600	6200	105.5	8.78	380	4.93	7.83	61.5	11.8

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:55 PM	120	600	6800	103.8	8.68	380	4.81	7.83	61	10.2
3:00 PM	180	900	7700	103.1	8.57	380	4.61	7.83	62.4	10.9
3:05 PM	100	500	8200	105.9	8.5	380	4.75	7.82	64	9.73
3:11 PM	116.67	700	8900	105.1	8.53	383	4.59	7.88	62	7.5
3:15 PM	175	700	9600	105.1	8.49	383	4.34	7.81	64.5	6.9

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW75-377-PDB-21	Date:	5/14/2023 12:53:00 PM
Well ID:	FEW4-MW75-377-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 12:53:00 PM	Measured Well Depth:	377.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	132.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 12:53:00 PM	End Date and Time:	5/14/2023 12:53:00 PM
Initial Pump Depth:	377.0	Final Pump Depth:	377.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW75-93-21
Date:	5/15/2023 11:05:00 AM
Well ID:	FEW4-MW75-93
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/15/2023 9:30:00 AM
Measured Well Depth:	97.84 ft
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	80.10 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 10:00:00 AM
End Date and Time:	5/15/2023 11:00:00 AM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Rediflo
Sample Method:	Rediflo
Notes:	

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:05 AM	160	800	800	80.36	8.6	336	7.88	7.73	139.4	386
10:10 AM	160	800	1600	80.55	8.55	334	7.21	7.77	132	108
10:15 AM	160	800	2400	80.55	8.59	333	7.03	7.78	131	42
10:20 AM	160	800	3200	80.55	8.67	332	6.87	7.78	130.6	25.8
10:25 AM	160	800	4000	80.57	8.68	332	6.72	7.8	129.2	14.5
10:30 AM	80	400	4400	80.57	8.68	332	6.49	7.79	130.3	11.4
10:35 AM	80	400	4800	80.5	8.64	332	6.41	7.79	130.7	9.16
10:40 AM	160	800	5600	80.5	8.63	331	6.19	7.8	132.1	8.22
10:45 AM	160	800	6400	80.5	8.55	331	5.73	7.8	132.5	6.98
10:50 AM	180	900	7300	80.4	8.73	331	5.25	7.8	131.2	6.1
10:55 AM	140	700	8000	80.4	8.68	331	4.98	7.81	130.6	5.7
11:00 AM	100	500	8500	80.6	8.62	331	4.75	7.82	129.9	4.8

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers

Project #: 60613342

Site: Atlas Site 4

Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW75-93-PDB-21
Date:	5/15/2023 9:33:00 AM
Well ID:	FEW4-MW75-93-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 9:30:00 AM
Measured Well Depth:	97.84 ft
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	80.10 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 9:33:00 AM
End Date and Time:	5/15/2023 9:33:00 AM
Initial Pump Depth:	92.0
Final Pump Depth:	92.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW76-123-21	Date:	5/19/2023 10:29:00 AM
Well ID:	FEW4-MW76-123	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/19/2023 10:26:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	90.63 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/19/2023 10:29:00 AM	End Date and Time:	5/19/2023 10:29:00 AM
Initial Pump Depth:	123.0	Final Pump Depth:	123.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW76-255-21	Date:	5/19/2023 10:20:00 AM
Well ID:	FEW4-MW76-255	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 10:11:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	122.43 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 10:20:00 AM	End Date and Time:	5/19/2023 10:20:00 AM
Initial Pump Depth:	254.4	Final Pump Depth:	254.4
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW76-87-21	Date:	5/19/2023 10:35:00 AM
Well ID:	FEW4-MW76-87	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/19/2023 10:33:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	86.16 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/19/2023 10:35:00 AM	End Date and Time:	5/19/2023 10:35:00 AM
Initial Pump Depth:	88.4	Final Pump Depth:	88.4
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW77-129-21	Date:	5/16/2023 2:22:00 PM
Well ID:	FEW4-MW77-129	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/16/2023 2:08:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	29.18 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 2:22:00 PM	End Date and Time:	5/16/2023 2:22:00 PM
Initial Pump Depth:	129.0	Final Pump Depth:	129.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW77-255-21	Date:	5/16/2023 2:33:00 PM
Well ID:	FEW4-MW77-255	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 2:08:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	22.63 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 2:33:00 PM	End Date and Time:	5/16/2023 2:33:00 PM
Initial Pump Depth:	254.0	Final Pump Depth:	254.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW77-40-21	Date:	5/16/2023 2:15:00 PM
Well ID:	FEW4-MW77-40	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 2:08:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	28.93 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 2:15:00 PM	End Date and Time:	5/16/2023 2:15:00 PM
Initial Pump Depth:	40.0	Final Pump Depth:	40.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW78-112-21	Date:	5/20/2023 10:57:00 AM
Well ID:	FEW4-MW78-112	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/20/2023 10:17:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	82.97 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:00 AM	0.2	2	2	94.5	10.32	525	4.55	7.42	179.2	7.3
10:08 AM	0.25	2	4	103.5	10.02	510	6.32	7.44	161	17.3
10:20 AM	0.17	2	6	107.57	10.05	519	3.81	7.4	149.2	188
10:29 AM	0.22	2	8	107.21	10.54	503	4.49	7.41	131.3	293
10:42 AM	0.15	2	10	109.44	10.34	522	3.55	7.48	108	451
10:53 AM	0.18	2	12	110.84	11.32	510	8.06	7.43	74	795

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW78-112-PDB-21
Date:	5/20/2023 8:49:00 AM
Well ID:	FEW4-MW78-112-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 8:40:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	82.97 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 8:49:00 AM
End Date and Time:	5/20/2023 8:49:00 AM
Initial Pump Depth:	112.6
Final Pump Depth:	112.6
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW78-159-21
Well ID:	FEW4-MW78-159
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 11:36:00 AM
Is Well Dry?	No
Depth to Water:	82.35 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 11:47:00 AM
Initial Pump Depth:	159.0
Purge Method:	--
End Date and Time:	5/16/2023 11:47:00 AM
Final Pump Depth:	159.0
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW78-265-21	Date:	5/16/2023 11:55:00 AM
Well ID:	FEW4-MW78-265	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW78-265-FD-21	Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 11:36:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	91.83 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 11:55:00 AM	End Date and Time:	5/16/2023 11:55:00 AM
Initial Pump Depth:	265.0	Final Pump Depth:	265.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW79-127-21
Well ID:	FEW4-MW79-127
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 12:32:00 PM
Is Well Dry?	No
Depth to Water:	103.66 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 12:35:00 PM
Initial Pump Depth:	127.0
Purge Method:	--
End Date and Time:	5/20/2023 12:35:00 PM
Final Pump Depth:	127.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW79-193-21
Well ID:	FEW4-MW79-193
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Well was dewatered at 10:56 AM, waited for 80% recharge. Well was recharged by 1:06 PM, began purging again. Well dewatered for a second time at 1:20 PM. Well recharged >80% by 2:27 PM, so well was sampled.

Water Level	
Date:	6/1/2023 10:22:00 AM
Is Well Dry?	No
Depth to Water:	127.22 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/1/2023 10:41:00 AM
Initial Pump Depth:	Not Recorded
Purge Method:	Rediflo 2x volume
End Date and Time:	6/1/2023 2:27:00 PM
Final Pump Depth:	Not Recorded
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:43 AM	1.25	2.5	2.5	147.08	11.06	978	1.48	7.02	-26.3	8.3
10:46 AM	0.83	2.5	5	158.65	11.4	991	1.44	7.03	-3.6	10.7
10:51 AM	0.8	4	9	173.2	12.21	1082	1.42	6.98	12.1	27.6
10:56 AM	0.6	3	12	--	--	--	--	--	--	--
1:11 PM	3.4	17	17	163.38	11.29	1152	1.47	7.02	30	16.4
1:18 PM	0.71	5	22	178.96	12.68	1168	1.48	6.98	28.6	15.4

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW79-193-PDB-21
Date:	6/1/2023 10:15:00 AM
Well ID:	FEW4-MW79-193-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	6/1/2023 10:03:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	127.22 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/1/2023 10:15:00 AM
End Date and Time:	6/1/2023 10:15:00 AM
Initial Pump Depth:	193.0
Final Pump Depth:	193.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW79-326-21	Date:	5/20/2023 12:27:00 PM
Well ID:	FEW4-MW79-326	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/20/2023 12:20:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	113.94 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/20/2023 12:27:00 PM	End Date and Time:	5/20/2023 12:27:00 PM
Initial Pump Depth:	326.0	Final Pump Depth:	326.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW80-128-21	Date:	5/21/2023 10:25:00 AM
Well ID:	FEW4-MW80-128	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/21/2023 10:16:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	76.50 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 10:25:00 AM	End Date and Time:	5/21/2023 10:25:00 AM
Initial Pump Depth:	128.0	Final Pump Depth:	128.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW80-223-21	Date: 5/21/2023 10:16:00 AM
Well ID: FEW4-MW80-223	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/21/2023 10:09:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 77.15 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/21/2023 10:16:00 AM	End Date and Time: 5/21/2023 10:16:00 AM
Initial Pump Depth: 222.0	Final Pump Depth: 222.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW80-284-21	Date:	6/2/2023 1:50:00 PM
Well ID:	FEW4-MW80-284	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	6/2/2023 12:25:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	65.13 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	6/2/2023 12:41:00 PM	End Date and Time:	6/2/2023 1:47:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:49 PM	1.25	10	10	65.97	9.06	287	6.71	7.31	61.2	20.1
12:58 PM	1.11	10	20	66.3	9.13	286	6.75	7.23	64.5	9.34
1:07 PM	1.11	10	30	66.22	9.17	287	6.81	7.21	64.8	2.1
1:16 PM	1.11	10	40	66.42	9.33	287	6.85	7.18	64.7	0.78
1:24 PM	1.25	10	50	66.5	9.24	288	6.87	7.26	62	0.02
1:34 PM	1	10	60	66.6	9.23	288	6.9	7.29	58.9	0.02
1:43 PM	1.11	10	70	66.7	9.25	288	6.92	7.29	57.6	0.3
1:47 PM	1.25	5	75	66.77	9.28	288	6.92	7.31	57.1	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW81-100-21
Well ID:	FEW4-MW81-100
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Well dewatered at 10:08 AM, waited to recharge to 80% casing volume. Well recharged at 10:22 AM, resumed purging. Water dewatered for the second time at 11:01 AM. Waited for well to recharge again, then sampled.

Water Level	
Date:	5/20/2023 8:40:00 AM
Is Well Dry?	No
Depth to Water:	70.18 ft
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 9:36:00 AM
Initial Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:39 AM	0.67	2	2	82.3	9.83	308	3.12	6.79	74.6	28
9:43 AM	0.5	2	4	83.45	10.75	315	3.16	6.91	71.4	69.1
9:46 AM	0.67	2	6	85.68	10.93	316	3.6	6.96	69.3	82.3
9:50 AM	0.5	2	8	87.1	11.33	317	3.76	7.01	64.2	114
9:55 AM	0.4	2	10	89.35	10.87	321	3.69	7.1	58.6	54.9
9:57 AM	1	2	12	91.21	10.82	322	3.61	7.13	55.5	38.7
10:01 AM	0.5	2	14	92.67	10.83	326	3.61	7.15	52.5	19.3
10:03 AM	1	2	16	92.93	10.47	326	3.78	7.18	51.5	69.1
10:06 AM	0.67	2	18	94.21	10.38	323	4.09	7.21	49.9	218
10:27 AM	0.1	2	20	83.68	9.7	333	4.22	7.34	55.5	13.3
10:30 AM	0.67	2	22	86.62	10.55	333	5.12	7.28	51.4	16.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:33 AM	0.67	2	24	88.43	11	332	5.08	7.25	47.9	33.2
10:37 AM	0.5	2	26	89.37	11.28	333	4.96	7.24	45.3	20.8
10:41 AM	0.5	2	28	90	11.27	329	4.81	7.25	43	9.95
10:44 AM	0.67	2	30	91.25	11.03	333	5.04	7.26	42.8	7.74
10:50 AM	0.33	2	32	91.71	11.17	333	4.67	7.28	40.9	5.56
10:53 AM	0.67	2	34	91.95	11.21	328	4.69	7.28	40.4	3.97
10:56 AM	0.67	2	36	92.9	10.86	329	5.08	7.27	41.3	22.4
10:59 AM	0.67	2	38	93.6	10.84	337	5.01	7.26	41.1	54.5

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW81-207-21
Well ID:	FEW4-MW81-207
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/21/2023 9:55:00 AM
Is Well Dry?	No
Depth to Water:	67.81 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/21/2023 10:02:00 AM
Initial Pump Depth:	207.0
Purge Method:	--
End Date and Time:	5/21/2023 10:02:00 AM
Final Pump Depth:	207.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW81-279-21
Date:	6/3/2023 12:50:00 PM
Well ID:	FEW4-MW81-279
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	BS TM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	6/3/2023 11:24:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	54.78 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	6/3/2023 11:38:00 AM
End Date and Time:	6/3/2023 12:47:00 PM
Initial Pump Depth:	Not Recorded
Final Pump Depth:	Not Recorded
Purge Method:	Rediflo
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:46 AM	1.25	10	10	56.22	9.04	352	7.26	7.46	76.2	32
11:54 AM	1.25	10	20	56.7	9.1	351	7.29	7.37	78.2	5.9
12:03 PM	1.11	10	30	57.03	9.12	351	7.3	7.33	79	2.03
12:11 PM	1.25	10	40	57.24	9.13	351	7.32	7.33	78.5	0.28
12:19 PM	1.25	10	50	57.45	9.18	351	7.32	7.33	76.9	0.02
12:28 PM	1.11	10	60	57.6	9.21	351	7.31	7.36	74.7	0.02
12:37 PM	1.11	10	70	57.75	9.22	351	7.31	7.38	73.7	0.02
12:47 PM	1	10	80	57.95	9.2	350	7.32	7.4	72.7	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW82-132-21	Date: 5/19/2023 12:46:00 PM
Well ID: FEW4-MW82-132	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/19/2023 12:40:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 70.56 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/19/2023 12:46:00 PM	End Date and Time: 5/19/2023 12:46:00 PM
Initial Pump Depth: 132.0	Final Pump Depth: 132.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW82-161-21
Date:	5/19/2023 12:38:00 PM
Well ID:	FEW4-MW82-161
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/19/2023 12:31:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	70.69 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/19/2023 12:38:00 PM
End Date and Time:	5/19/2023 12:38:00 PM
Initial Pump Depth:	161.2
Final Pump Depth:	161.2
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW82-83-21
Date:	5/19/2023 12:27:00 PM
Well ID:	FEW4-MW82-83
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/19/2023 12:23:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	70.62 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/19/2023 12:27:00 PM
End Date and Time:	5/19/2023 12:27:00 PM
Initial Pump Depth:	83.0
Final Pump Depth:	83.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW83-129-21	Date:	5/17/2023 2:33:00 PM
Well ID:	FEW4-MW83-129	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW83-129-FD-21	Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 2:06:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	92.32 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 2:33:00 PM	End Date and Time:	5/17/2023 2:33:00 PM
Initial Pump Depth:	128.6	Final Pump Depth:	128.6
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW83-271-21	Date:	5/17/2023 2:23:00 PM
Well ID:	FEW4-MW83-271	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/17/2023 2:17:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	52.27 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/17/2023 2:23:00 PM	End Date and Time:	5/17/2023 2:23:00 PM
Initial Pump Depth:	270.5	Final Pump Depth:	270.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW83-88-21	Date:	5/17/2023 2:13:00 PM
Well ID:	FEW4-MW83-88	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/17/2023 2:06:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	81.82 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 2:13:00 PM	End Date and Time:	5/17/2023 2:13:00 PM
Initial Pump Depth:	88.0	Final Pump Depth:	88.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW84-258-21
Date:	5/15/2023 1:04:00 PM
Well ID:	FEW4-MW84-258
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 12:58:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	16.56 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 1:04:00 PM
End Date and Time:	5/15/2023 1:04:00 PM
Initial Pump Depth:	258.0
Final Pump Depth:	258.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW84-298-21	Date:	5/15/2023 12:51:00 PM
Well ID:	FEW4-MW84-298	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 12:36:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 12:51:00 PM	End Date and Time:	5/15/2023 12:51:00 PM
Initial Pump Depth:	298.0	Final Pump Depth:	298.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW84-99-21	Date:	5/15/2023 1:10:00 PM
Well ID:	FEW4-MW84-99	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well is dry, no sample collected		

Water Level			
Date:	5/15/2023 1:09:00 PM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW84B-143-21	Date:	5/15/2023 1:50:00 PM
Well ID:	FEW4-MW84B-143	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/15/2023 1:48:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	100.40 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/15/2023 1:50:00 PM	End Date and Time:	5/15/2023 1:50:00 PM
Initial Pump Depth:	143.0	Final Pump Depth:	143.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW84B-193-21
Date:	5/15/2023 2:00:00 PM
Well ID:	FEW4-MW84B-193
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 1:58:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	98.09 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 2:00:00 PM
End Date and Time:	5/15/2023 2:00:00 PM
Initial Pump Depth:	193.0
Final Pump Depth:	193.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW84B-356-21
Well ID:	FEW4-MW84B-356
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/15/2023 1:32:00 PM
Is Well Dry?	No
Depth to Water:	80.92 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/15/2023 1:38:00 PM
Initial Pump Depth:	356.0
Purge Method:	--
End Date and Time:	5/15/2023 1:38:00 PM
Final Pump Depth:	356.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW85-151-21	Date:	5/20/2023 2:40:00 PM
Well ID:	FEW4-MW85-151	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW85-151-FD-21	Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/20/2023 2:36:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	87.31 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/20/2023 2:40:00 PM	End Date and Time:	5/20/2023 2:40:00 PM
Initial Pump Depth:	151.0	Final Pump Depth:	151.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW85-205-21
Well ID:	FEW4-MW85-205
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 2:29:00 PM
Is Well Dry?	No
Depth to Water:	80.67 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 2:33:00 PM
Initial Pump Depth:	203.0
Purge Method:	--
End Date and Time:	5/20/2023 2:33:00 PM
Final Pump Depth:	203.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW85-92-21
Date:	5/20/2023 2:50:00 PM
Well ID:	FEW4-MW85-92
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 2:46:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	91.03 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 2:50:00 PM
End Date and Time:	5/20/2023 2:50:00 PM
Initial Pump Depth:	93.0
Final Pump Depth:	93.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW86-199-21
Well ID:	FEW4-MW86-199
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 10:53:00 AM
Is Well Dry?	No
Depth to Water:	10.43 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 11:08:00 AM
Initial Pump Depth:	199.1
Purge Method:	--
End Date and Time:	5/16/2023 11:08:00 AM
Final Pump Depth:	199.1
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW86-353-21	Date:	5/12/2023 11:31:00 AM
Well ID:	FEW4-MW86-353	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	MS/MSD Collected. DO probe stoped responding at 11:12 AM. Turbidity meter not available during sampling.		

Water Level			
Date:	5/12/2023 10:23:00 AM	Measured Well Depth:	337.49 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	14.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/12/2023 10:32:00 AM	End Date and Time:	5/13/2023 11:17:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:37 AM	0.52	750	750	14.3	7.79	470	7.62	8.48	152.4	--
10:42 AM	50	250	1000	14.3	7.83	467	8.17	7.96	127.6	--
10:47 AM	120	600	1600	14.3	7.74	463	7.44	8.13	23.9	--
10:52 AM	80	400	2000	14.3	7.77	468	5.33	7.78	-69.8	--
10:57 AM	80	400	2400	14.3	7.62	470	4.2	7.72	-104.7	--
11:02 AM	90	450	2850	14.3	7.68	471	3.33	7.67	-117.5	--
11:07 AM	90	450	3300	14.3	7.69	473	2.64	7.66	-121.5	--
11:12 AM	85	425	3725	14.3	7.63	473	--	7.65	-122.7	--
11:17 AM	85	425	4150	14.3	7.65	472	--	7.68	-123.6	--
11:22 AM	2	10	4160	15.2	7.76	472	--	7.67	-123.1	--



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW86-353-PDB-21	Date:	5/13/2023 9:55:00 PM
Well ID:	FEW4-MW86-353-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	NaAlii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846_7		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/12/2023 9:47:00 AM	Measured Well Depth:	337.49 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	14.30 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 9:55:00 PM	End Date and Time:	5/13/2023 9:55:00 PM
Initial Pump Depth:	352.4	Final Pump Depth:	352.4
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW86-53-21	Date:	5/16/2023 11:00:00 AM
Well ID:	FEW4-MW86-53	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/16/2023 10:53:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	6.72 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 11:00:00 AM	End Date and Time:	5/16/2023 11:00:00 AM
Initial Pump Depth:	53.3	Final Pump Depth:	53.3
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW87-123-21	Date:	5/14/2023 3:45:00 PM
Well ID:	FEW4-MW87-123	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 3:45:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	34.96 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 3:45:00 PM	End Date and Time:	5/14/2023 3:45:00 PM
Initial Pump Depth:	122.8	Final Pump Depth:	122.8
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW87-205-21	Date:	5/14/2023 3:35:00 PM
Well ID:	FEW4-MW87-205	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/14/2023 3:27:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	35.54 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 3:35:00 PM	End Date and Time:	5/14/2023 3:35:00 PM
Initial Pump Depth:	205.6	Final Pump Depth:	205.6
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW87-82-21
Date:	5/14/2023 3:47:00 PM
Well ID:	FEW4-MW87-82
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/14/2023 3:27:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	31.65 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/14/2023 3:47:00 PM
End Date and Time:	5/14/2023 3:47:00 PM
Initial Pump Depth:	84.7
Final Pump Depth:	84.7
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW88-133-21	Date:	5/20/2023 12:38:00 PM
Well ID:	FEW4-MW88-133	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/20/2023 11:52:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	115.02 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/20/2023 12:25:00 PM	End Date and Time:	5/20/2023 12:36:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:27 PM	1	2	2	118.83	10.92	217	7.08	7.3	64.8	4.76
12:28 PM	2	2	4	118.6	11	216	7.31	7.08	60.7	1.43
12:31 PM	0.67	2	6	118.54	11.01	217	7.38	7.21	59.4	0.02
12:33 PM	1	2	8	118.59	11.03	216	7.38	7.2	60.1	0.02
12:36 PM	0.67	2	10	118.59	11.05	216	7.39	7.18	61.5	0.02



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW88-133-PDB-21	Date:	5/20/2023 11:50:00 AM
Well ID:	FEW4-MW88-133-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/20/2023 11:50:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	115.02 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/20/2023 11:50:00 AM	End Date and Time:	5/20/2023 11:50:00 AM
Initial Pump Depth:	128.0	Final Pump Depth:	128.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW88-183-21	Date: 5/20/2023 12:38:00 PM
Well ID: FEW4-MW88-183	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/19/2023 9:56:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 135.20 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/20/2023 12:38:00 PM	End Date and Time: 5/20/2023 12:38:00 PM
Initial Pump Depth: 182.8	Final Pump Depth: 182.8
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW88-253-21	Date:	5/19/2023 9:47:00 AM
Well ID:	FEW4-MW88-253	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW88-253-FD-21	Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/19/2023 9:40:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	152.57 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/19/2023 9:47:00 AM	End Date and Time:	5/19/2023 9:47:00 AM
Initial Pump Depth:	253.2	Final Pump Depth:	253.2
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW89-178-21	Date:	5/21/2023 3:07:00 PM
Well ID:	FEW4-MW89-178	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/21/2023 2:13:00 PM	Measured Well Depth:	182.84 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	164.55 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 2:13:00 PM	End Date and Time:	5/21/2023 3:02:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:23 PM	0.15	1.5	1.5	--	11.61	279	10.49	8.02	63.8	3.61
2:40 PM	0.09	1.5	3	--	10.4	279	10.24	7.94	65.7	18.8
2:50 PM	0.15	1.5	4.5	--	9.93	282	10.11	7.89	69	33.2
3:02 PM	0.13	1.5	6	--	10.14	277	10.37	7.92	69.5	23.7

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW89-178-PDB-21	Date:	5/21/2023 2:05:00 PM
Well ID:	FEW4-MW89-178-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/21/2023 2:00:00 PM	Measured Well Depth:	182.84 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	164.55 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 2:05:00 PM	End Date and Time:	5/21/2023 2:05:00 PM
Initial Pump Depth:	178.0	Final Pump Depth:	178.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW89-207-21
Well ID:	FEW4-MW89-207
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 11:52:00 AM
Is Well Dry?	No
Depth to Water:	163.81 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 11:57:00 AM
Initial Pump Depth:	207.0
Purge Method:	--
End Date and Time:	5/20/2023 11:57:00 AM
Final Pump Depth:	207.0
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW89-250-21
Date:	5/20/2023 11:47:00 AM
Well ID:	FEW4-MW89-250
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 11:41:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	163.73 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 11:47:00 AM
End Date and Time:	5/20/2023 11:47:00 AM
Initial Pump Depth:	250.0
Final Pump Depth:	250.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW90-198-21	Date:	5/14/2023 12:21:00 PM
Well ID:	FEW4-MW90-198	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Insufficient water to collect sample.		

Water Level			
Date:	5/14/2023 12:21:00 AM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:	Insufficient water to collect sample.		

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW90-243-21	Date:	5/14/2023 12:50:00 PM
Well ID:	FEW4-MW90-243	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/14/2023 12:21:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	241.69 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 12:50:00 PM	End Date and Time:	5/14/2023 12:50:00 PM
Initial Pump Depth:	243.5	Final Pump Depth:	243.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW90-292-21
Date:	5/14/2023 12:38:00 PM
Well ID:	FEW4-MW90-292
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/14/2023 12:21:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	262.02 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/14/2023 12:38:00 PM
End Date and Time:	5/14/2023 12:38:00 PM
Initial Pump Depth:	292.0
Final Pump Depth:	292.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW91-195-21
Date:	5/14/2023 3:12:00 PM
Well ID:	FEW4-MW91-195
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/14/2023 2:52:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	174.30 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/14/2023 3:12:00 PM
End Date and Time:	5/14/2023 3:12:00 PM
Initial Pump Depth:	194.4
Final Pump Depth:	194.4
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW91-248-21	Date:	5/14/2023 3:04:00 PM
Well ID:	FEW4-MW91-248	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 2:52:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	172.34 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 3:04:00 PM	End Date and Time:	5/14/2023 3:04:00 PM
Initial Pump Depth:	246.8	Final Pump Depth:	246.8
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW91-313-21	Date:	5/14/2023 2:52:00 PM
Well ID:	FEW4-MW91-313	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 2:52:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	172.13 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 2:52:00 PM	End Date and Time:	5/14/2023 2:52:00 PM
Initial Pump Depth:	313.2	Final Pump Depth:	313.2
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW92-310-21	Date:	5/14/2023 11:27:00 AM
Well ID:	FEW4-MW92-310	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well dry, no sample collected		

Water Level			
Date:	5/14/2023 11:26:00 AM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW92-365-21	Date:	5/14/2023 11:52:00 AM
Well ID:	FEW4-MW92-365	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 11:26:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	315.94 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 11:52:00 AM	End Date and Time:	5/14/2023 11:52:00 AM
Initial Pump Depth:	365.0	Final Pump Depth:	365.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW92-427-21	Date:	5/14/2023 11:38:00 AM
Well ID:	FEW4-MW92-427	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 11:38:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	315.85 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 11:38:00 AM	End Date and Time:	5/14/2023 11:38:00 AM
Initial Pump Depth:	425.0	Final Pump Depth:	425.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW92B-288-21	Date:	5/16/2023 2:00:00 PM
Well ID:	FEW4-MW92B-288	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW92B-288-FD-21	Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/16/2023 12:40:00 AM	Measured Well Depth:	293.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	274.10 ft	Depth to LNAPL:	NE
Notes:	Casing volume 3.21 gal		

Purge Information

Begin Date and Time:	5/16/2023 1:00:00 PM	End Date and Time:	5/16/2023 1:59:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Bailer
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:00 PM	--	0.25	0.25	--	11.9	297	9.5	7	23.2	2.8
1:07 PM	0.11	0.75	1	--	11.8	298	9.7	7.6	35	8.8
1:13 PM	0.17	1	2	--	10.6	298	10.1	7.6	36.9	13.3
1:25 PM	0.08	1	3	--	10.6	300	9.9	7.8	32.6	15.4
1:35 PM	0.1	1	4	--	10.4	300	10.1	7.9	31.5	19.6
1:44 PM	0.11	1	5	--	10.4	301	10.2	7.85	30.2	15.5
1:55 PM	0.09	1	6	--	10.5	301	9.8	7.8	30.6	21.3
1:59 PM	0.25	1	7	--	10.5	300	10	7.7	38.8	22.4

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW92B-288-PDB-21
Date:	5/16/2023 12:45:00 PM
Well ID:	FEW4-MW92B-288-PDB
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/16/2023 11:55:00 AM
Measured Well Depth:	293.00 ft
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	274.10 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/16/2023 12:45:00 PM
End Date and Time:	5/16/2023 12:45:00 PM
Initial Pump Depth:	287.5
Final Pump Depth:	287.5
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW92B-322-21	Date:	5/16/2023 11:25:00 AM
Well ID:	FEW4-MW92B-322	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well bailed so water level was not recorded while purging		

Water Level

Date:	5/16/2023 9:40:00 AM	Measured Well Depth:	332.20 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	313.45 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 10:03:00 AM	End Date and Time:	5/16/2023 11:21:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ bailer	Sample Method:	Bailer
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:03 AM	--	0.5	0.5	--	11.11	412	0	9.41	-129.9	--
10:22 AM	0.04	0.7	1.2	--	10.6	415	0.2	7.7	-154.4	220
10:32 AM	0.08	0.8	2	--	10.7	413	0.52	7.6	-143.9	149
10:41 AM	0.11	1	3	--	10.8	414	0.42	7.8	-143.4	115
10:50 AM	0.11	1	4	--	10.8	415	0.12	7.7	-146.5	158
11:02 AM	0.08	1	5	--	10.7	413	0.5	7.8	-154.4	164
11:15 AM	0.08	1	6	--	10.8	409	0.22	7.8	-152.3	166
11:21 AM	0.08	0.5	6.5	--	10.9	404	0.05	7.9	-156.1	174



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW93-146-21	Date:	5/13/2023 10:55:00 AM
Well ID:	FEW4-MW93-146	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 10:52:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	47.85 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 10:55:00 AM	End Date and Time:	5/13/2023 10:55:00 AM
Initial Pump Depth:	146.0	Final Pump Depth:	146.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW93-268-21	Date:	5/13/2023 10:48:00 AM
Well ID:	FEW4-MW93-268	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 10:40:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	40.20 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 10:48:00 AM	End Date and Time:	5/13/2023 10:48:00 AM
Initial Pump Depth:	268.0	Final Pump Depth:	268.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW93-71-21	Date:	5/13/2023 11:06:00 AM
Well ID:	FEW4-MW93-71	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW93-71-FD-21	Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 11:02:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	47.11 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 11:06:00 AM	End Date and Time:	5/13/2023 11:06:00 AM
Initial Pump Depth:	71.0	Final Pump Depth:	71.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW94-175-21	Date: 5/12/2023 1:40:00 PM
Well ID: FEW4-MW94-175	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/12/2023 12:58:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 71.03 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/12/2023 1:40:00 PM	End Date and Time: 5/12/2023 1:40:00 PM
Initial Pump Depth: 175.0	Final Pump Depth: 175.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW94-229-21	Date:	5/12/2023 1:25:00 PM
Well ID:	FEW4-MW94-229	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/12/2023 12:58:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	64.78 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 1:25:00 PM	End Date and Time:	5/12/2023 1:25:00 PM
Initial Pump Depth:	229.0	Final Pump Depth:	229.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW94-297-21
Date:	5/12/2023 1:10:00 PM
Well ID:	FEW4-MW94-297
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/12/2023 12:58:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	64.72 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/12/2023 1:10:00 PM
End Date and Time:	5/12/2023 1:10:00 PM
Initial Pump Depth:	297.0
Final Pump Depth:	297.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW95-165-21	Date: 5/14/2023 9:00:00 AM
Well ID: FEW4-MW95-165	Location Type: Monitoring Well
Duplicate ID:	Sampler: AtlasUser@naalii
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/14/2023 8:17:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 98.56 ft	Depth to LNAPL: NE
Notes: Significant tangling in PDB line prevented SWL measurement prior to its removal, so SWL was taken after.	

Purge Information	
Begin Date and Time: 5/14/2023 9:00:00 AM	End Date and Time: 5/14/2023 9:00:00 AM
Initial Pump Depth: 164.6	Final Pump Depth: 164.6
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW95-200-21	Date:	5/14/2023 8:32:00 AM
Well ID:	FEW4-MW95-200	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Kat Gerdes
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/14/2023 8:17:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	92.79 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 8:32:00 AM	End Date and Time:	5/14/2023 8:32:00 AM
Initial Pump Depth:	201.1	Final Pump Depth:	201.1
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information					
Sample ID:	FEW4-MW95-288-21		Date:	5/15/2023 10:19:00 AM	
Well ID:	FEW4-MW95-288		Location Type:	Monitoring Well	
Duplicate ID:			Sampler:	KG KD	
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T				
Analysis:	VOC (8260C)				
Bottle type:	3 x 40 mL VOA		Preservative(s):	4degC	
Comments:					

Water Level					
Date:	5/15/2023 8:55:00 AM		Measured Well Depth:	292.52 ft	
Is Well Dry?	No		Depth to DNAPL:	NE	
Depth to Water:	82.61 ft		Depth to LNAPL:	NE	
Notes:					

Purge Information					
Begin Date and Time:	5/15/2023 9:30:00 AM		End Date and Time:	5/15/2023 10:17:00 AM	
Initial Pump Depth:	Not Recorded		Final Pump Depth:	Not Recorded	
Purge Method:	Rediflo		Sample Method:	Low Flow	
Notes:					

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:37 AM	1.43	10	10	83.5	11.56	225	7.28	7.24	68.3	0.02
9:44 AM	1.43	10	20	83.55	11.72	227	7.31	7.22	67.9	0.02
9:51 AM	1.43	10	30	83.55	11.81	228	7.33	7.22	66	0.2
9:57 AM	1.67	10	40	83.5	11.9	228	7.34	7.26	63	0.02
10:04 AM	1.43	10	50	83.5	11.96	229	7.36	7.3	59.8	0.02
10:11 AM	1.43	10	60	83.45	12.08	229	7.35	7.33	57.4	0.02
10:17 AM	1.67	10	70	83.45	12.11	229	7.36	7.35	56.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW95-288-PDB-21	Date:	5/15/2023 9:04:00 AM
Well ID:	FEW4-MW95-288-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/15/2023 8:55:00 AM	Measured Well Depth:	292.52 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	82.61 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 9:04:00 AM	End Date and Time:	5/15/2023 9:04:00 AM
Initial Pump Depth:	284.0	Final Pump Depth:	284.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW96-194-21	Date: 5/13/2023 9:10:00 AM
Well ID: FEW4-MW96-194	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 8:59:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 53.22 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 9:10:00 AM	End Date and Time: 5/13/2023 9:10:00 AM
Initial Pump Depth: 193.5	Final Pump Depth: 193.5
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW96-260-21	Date:	5/13/2023 8:55:00 AM
Well ID:	FEW4-MW96-260	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 8:47:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	52.73 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 8:55:00 AM	End Date and Time:	5/13/2023 8:55:00 AM
Initial Pump Depth:	259.5	Final Pump Depth:	259.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW96-292-21
Date:	5/13/2023 8:40:00 AM
Well ID:	FEW4-MW96-292
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/13/2023 8:35:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	53.72 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/13/2023 8:40:00 AM
End Date and Time:	5/13/2023 8:40:00 AM
Initial Pump Depth:	292.0
Final Pump Depth:	292.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW97-107-21	Date:	5/14/2023 1:10:00 PM
Well ID:	FEW4-MW97-107	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/14/2023 10:58:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	2.88 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 11:15:00 AM	End Date and Time:	5/14/2023 12:06:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:20 AM	1	5	5	8.51	10.15	323	8.25	7.45	43.7	312
11:27 AM	0.71	5	10	9.05	10.27	321	8.24	7.54	40	136
11:33 AM	0.83	5	15	9.2	10.33	322	8.25	7.65	33.7	32.3
11:40 AM	0.71	5	20	9.33	10.39	322	8.27	7.71	31.1	9.51
11:46 AM	0.83	5	25	9.4	10.4	321	8.29	7.75	30.1	4.24
11:53 AM	0.71	5	30	9.41	10.39	320	8.31	7.76	30.1	2.79
12:00 PM	0.71	5	35	9.41	10.45	323	8.3	7.76	30	1.18
12:06 PM	0.83	5	40	9.44	10.44	322	8.31	7.77	30.2	0.08

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW97-266-21	Date:	5/17/2023 11:20:00 AM
Well ID:	FEW4-MW97-266	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/17/2023 9:25:00 AM	Measured Well Depth:	271.05 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	235.50 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/17/2023 10:17:00 AM	End Date and Time:	5/17/2023 11:17:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (mL/min)	Individual volume purged (mL)	Cumulative volume purged (mL)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:22 AM	100	500	500	--	14.22	548	0.74	7.91	73.4	102
10:27 AM	50	250	750	--	13.35	560	0	7.81	332	65.1
10:32 AM	70	350	1100	--	13.79	565	0	7.78	-1.9	58
10:37 AM	120	600	1700	--	13.01	558	0	7.82	-27.8	44.9
10:42 AM	40	200	1900	--	13.58	559	0	7.78	-41.7	37.2
10:47 AM	40	200	2100	--	12.78	565	0	7.8	-51.1	38.1
10:53 AM	75	450	2550	--	12.61	571	0	7.76	-66.1	30.7
10:57 AM	75	300	2850	--	12.74	577	0	7.73	-72.9	29.8
11:02 AM	100	500	3350	--	13.61	577	0	7.74	-79.9	30
11:07 AM	60	300	3650	--	13.87	582	0	7.71	-83.6	26.7
11:12 AM	70	350	4000	--	14	581	0	7.71	-88.9	24.8
11:17 AM	100	500	4500	--	13.61	583	0	7.72	-91.4	25.8

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers

Project #: 60613342

Site: Atlas Site 4

Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW97-266-PDB-21	Date:	5/13/2023 8:54:00 AM
Well ID:	FEW4-MW97-266-PDB	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 8:53:00 AM	Measured Well Depth:	271.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	25.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 8:54:00 AM	End Date and Time:	5/13/2023 8:54:00 AM
Initial Pump Depth:	265.5	Final Pump Depth:	265.5
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW97-329-21	Date:	5/17/2023 11:47:00 AM
Well ID:	FEW4-MW97-329	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well dry. No sample was collected		

Water Level

Date:	5/17/2023 11:47:00 AM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW98-180-21	Date:	5/20/2023 3:29:00 PM
Well ID:	FEW4-MW98-180	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/20/2023 2:52:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/20/2023 2:52:00 PM	End Date and Time:	5/20/2023 3:27:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:55 PM	5	15	15	--	10.41	236	8.08	7.63	52.4	5.17
3:00 PM	3	15	30	--	11.11	236	7.94	7.64	51.4	181
3:06 PM	2.5	15	45	--	11.2	236	7.92	7.64	51.6	39.6
3:10 PM	3.75	15	60	--	11.21	236	7.9	7.63	51.6	13.4
3:15 PM	3	15	75	--	11.19	236	7.97	7.62	51.6	7.39
3:20 PM	3	15	90	--	11.22	236	7.93	7.62	51.5	2.84
3:25 PM	3	15	105	--	11.22	236	7.92	7.63	51.6	2.01

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW98-217-21
Well ID:	FEW4-MW98-217
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	

Water Level	
Date:	5/20/2023 1:45:00 PM
Is Well Dry?	No
Depth to Water:	0.00 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 1:50:00 PM
Initial Pump Depth:	Not Recorded
Purge Method:	Rediflo
End Date and Time:	5/20/2023 2:04:00 PM
Final Pump Depth:	Not Recorded
Sample Method:	Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:54 PM	60	240	240	--	11.33	231	8.05	7.35	65.2	3.16
2:00 PM	20	120	360	--	11.33	231	8.02	7.29	69.9	0.82
2:04 PM	15	60	420	--	11.33	230	8.11	7.32	68	0.73

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW98-263-21	Date:	5/20/2023 4:26:00 PM
Well ID:	FEW4-MW98-263	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/20/2023 3:31:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/20/2023 3:36:00 PM	End Date and Time:	5/20/2023 4:25:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3:40 PM	2.5	10	10	--	10.3	237	6.05	7.62	49	0.02
3:45 PM	2	10	20	--	10.93	237	6.66	7.59	48.8	0.02
3:50 PM	2	10	30	--	11.33	272	4.7	7.6	40	2.48
3:55 PM	2	10	40	--	11.37	295	4.11	7.64	-4	0.13
4:00 PM	2	10	50	--	11.37	284	4.12	7.64	9.9	0.87
4:05 PM	2	10	60	--	11.35	254	4.54	7.65	24.4	0.12
4:10 PM	2	10	70	--	11.33	241	6.33	7.73	32.9	0.21
4:15 PM	2	10	80	--	11.33	240	7.19	7.74	35.6	0.35
4:20 PM	2	10	90	--	11.35	239	7.3	7.73	36.1	0.02
4:25 PM	2	10	100	--	11.36	238	7.38	7.72	36.3	0.12

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW99-110-21	Date:	5/11/2023 3:42:00 PM
Well ID:	FEW4-MW99-110	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/11/2023 2:53:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	14.36 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/11/2023 3:05:00 PM	End Date and Time:	5/11/2023 3:40:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
3:11 PM	0.83	5	5	17.01	10.83	298	7.34	7.31	45.4	24.6
3:17 PM	0.83	5	10	17.54	10.86	297	7.37	7.25	48.2	7.25
3:21 PM	1.25	5	15	17.91	10.87	299	7.37	7.36	41.8	2.8
3:26 PM	1	5	20	18.1	10.87	298	7.36	7.44	37.1	1.69
3:31 PM	1	5	25	18.2	10.88	298	7.37	7.47	35.3	1.14
3:35 PM	1.25	5	30	18.26	10.88	297	7.37	7.49	34.2	0.67
3:40 PM	1	5	35	18.32	10.88	297	7.37	7.51	33.5	1.92

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW99-161-21	Date:	5/13/2023 11:02:00 AM
Well ID:	FEW4-MW99-161	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/13/2023 10:00:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	41.74 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/13/2023 10:16:00 AM	End Date and Time:	5/13/2023 11:00:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:21 AM	1	5	5	45.78	11.21	298	5.51	7.38	31.2	54.1
10:26 AM	1	5	10	45.98	11.28	300	5.78	7.48	32.3	23.4
10:31 AM	1	5	15	46.1	11.38	299	5.8	7.55	28.5	11.9
10:36 AM	1	5	20	46.2	11.29	300	5.93	7.66	27	5.82
10:40 AM	1.25	5	25	46.28	11.37	299	6.02	7.63	29.1	2.45
10:45 AM	1	5	30	46.2	11.3	300	6.13	7.67	28.1	1.32
10:50 AM	1	5	35	46.24	11.31	300	6.24	7.69	26.9	7.29
10:55 AM	1	5	40	46.28	11.33	300	6.26	7.73	26	0.97
11:00 AM	1	5	45	46.3	11.34	299	6.31	7.73	25.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW99-253-21	Date:	5/11/2023 2:50:00 PM
Well ID:	FEW4-MW99-253	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Insufficient water column. Unable to sample. Well is dry.		

Water Level			
Date:	5/11/2023 2:48:00 PM	Measured Well Depth:	NM
Is Well Dry?	Yes	Depth to DNAPL:	NE
Depth to Water:	NE	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	--	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	--	Sample Method:	--
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW100-153-21	Date:	5/13/2023 12:33:00 PM
Well ID:	FEW4-MW100-153	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Well was dewatered at 10:12 AM, at 11:15 AM well recovered enough water to begin purging again. Well dewatered again at 11:34 AM and recharged enough for sample collection at 12:33 PM.		

Water Level

Date:	5/13/2023 9:22:00 AM	Measured Well Depth:	160.61 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	135.38 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 9:36:00 AM	End Date and Time:	5/13/2023 11:34:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	RediFlo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:36 AM	0	0	0	141.62	10.91	346	4.28	7.32	58.5	52.7
9:40 AM	0.5	2	2	144.38	12.83	347	3.84	7.29	45.7	28.9
9:46 AM	0.33	2	4	144.8	13.82	354	3.5	7.34	43.2	21.3
9:51 AM	0.4	2	6	144.98	14.5	360	3.15	7.43	31	17.6
9:56 AM	0.4	2	8	145.33	14.68	357	3.19	7.46	27.6	5.96
10:00 AM	0.5	2	10	146.1	14.85	353	3.25	7.5	25.2	1.32
10:03 AM	0.67	2	12	146.78	13.8	350	3.43	7.5	28.9	0.02
10:07 AM	0.5	2	14	147.55	13.99	347	3.64	7.49	28.9	0.02
10:12 AM	0.3	1.5	15.5	148	--	--	--	--	--	--
11:15 AM	0.01	0.5	16	141.48	11.13	334	4.54	7.6	57.2	1.3
11:18 AM	0	0	16	144.6	11.56	320	5.74	7.58	51.1	0.91

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:20 AM	2	4	20	145.21	12.81	326	5.43	7.55	34.7	0.02
11:24 AM	0.5	2	22	145.83	13.64	331	5.3	7.54	33.9	3.24
11:28 AM	0.5	2	24	146.75	14.05	334	5.47	7.53	34.4	0.02
11:32 AM	0.5	2	26	146.5	14.28	336	5.58	7.51	34.7	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW100-270-21	Date:	5/12/2023 2:10:00 PM
Well ID:	FEW4-MW100-270	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Kat Gerdes
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/12/2023 1:06:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	186.40 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 1:13:00 PM	End Date and Time:	5/12/2023 2:06:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	RediFlo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:13 PM	-	-	-	187.8	11.18	346	6.79	7.54	54	8.71
1:22 PM	0.56	5	5	190.11	14.59	346	6.9	7.41	34.8	13.4
1:31 PM	0.56	5	10	190.35	13.81	346	6.92	7.4	48.5	6.15
1:40 PM	0.56	5	15	90.44	13.92	347	6.9	7.41	49	0.87
1:49 PM	0.56	5	20	190.5	13.95	346	6.91	7.41	44.4	0.02
1:57 PM	0.63	5	25	191.17	14.05	346	6.9	7.42	43.8	0.02
2:06 PM	0.56	5	30	191.28	13.98	347	6.9	7.42	42	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW100-305-21	Date:	5/12/2023 11:25:00 PM
Well ID:	FEW4-MW100-305	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Kat Gerdes
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/12/2023 9:22:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	186.54 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 10:20:00 AM	End Date and Time:	5/12/2023 11:22:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	RediFlo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:20 AM	-	-	-	195.9	10.56	348	6.15	7.02	72.1	6.11
10:30 AM	0.5	5	5	196.5	12.75	349	5.97	6.93	62.8	0.77
10:37 AM	0.71	5	10	204.03	13.51	350	5.66	6.95	64.4	1.68
10:44 AM	0.71	5	15	204.6	13.23	349	6.07	7.05	66.9	0.02
10:52 AM	0.63	5	20	204.75	13.34	349	6.2	7.15	64.9	0.95
10:59 AM	0.71	5	25	204.86	13.33	349	6.25	7.21	62.7	2.84
11:07 AM	0.63	5	30	204.76	13.32	347	6.48	7.25	60.9	1.71
11:14 AM	0.71	5	35	204.82	13.47	346	6.65	7.28	59.6	2.07
11:22 AM	0.63	5	40	204.85	13.48	345	6.76	7.3	58.9	2.33

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW101-106-21
Date:	5/20/2023 1:49:00 PM
Well ID:	FEW4-MW101-106
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 1:42:00 PM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	105.90 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 1:49:00 PM
End Date and Time:	5/20/2023 1:49:00 PM
Initial Pump Depth:	107.5
Final Pump Depth:	107.5
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW101-138-21	Date: 5/20/2023 2:00:00 PM
Well ID: FEW4-MW101-138	Location Type: Monitoring Well
Duplicate ID:	Sampler: HG BR
Equipment: Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/20/2023 1:55:00 PM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 106.30 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/20/2023 2:00:00 PM	End Date and Time: 5/20/2023 2:00:00 PM
Initial Pump Depth: 138.0	Final Pump Depth: 138.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW101-238-21
Well ID:	FEW4-MW101-238
Duplicate ID:	
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/20/2023 1:35:00 PM
Is Well Dry?	No
Depth to Water:	106.52 ft
Measured Well Depth:	NM
Depth to DNAPL:	NE
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/20/2023 1:42:00 PM
Initial Pump Depth:	237.5
Purge Method:	--
End Date and Time:	5/20/2023 1:42:00 PM
Final Pump Depth:	237.5
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID:	FEW4-MW102-127-21
Date:	5/13/2023 10:00:00 AM
Well ID:	FEW4-MW102-127
Location Type:	Monitoring Well
Duplicate ID:	
Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X
Analysis:	VOC (8260C)
Bottle type:	3 x 40 mL VOA
Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected

Water Level	
Date:	5/13/2023 9:57:00 AM
Measured Well Depth:	NM
Is Well Dry?	No
Depth to DNAPL:	NE
Depth to Water:	40.57 ft
Depth to LNAPL:	NE
Notes:	

Purge Information	
Begin Date and Time:	5/13/2023 10:00:00 AM
End Date and Time:	5/13/2023 10:00:00 AM
Initial Pump Depth:	127.0
Final Pump Depth:	127.0
Purge Method:	--
Sample Method:	Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW102-171-21	Date:	5/13/2023 9:50:00 AM
Well ID:	FEW4-MW102-171	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/13/2023 9:42:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	144.98 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/13/2023 9:50:00 AM	End Date and Time:	5/13/2023 9:50:00 AM
Initial Pump Depth:	171.0	Final Pump Depth:	171.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW102-93-21	Date: 5/13/2023 10:11:00 AM
Well ID: FEW4-MW102-93	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 10:09:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 39.78 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 10:11:00 AM	End Date and Time: 5/13/2023 10:11:00 AM
Initial Pump Depth: 93.0	Final Pump Depth: 93.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW103-193-21	Date:	5/11/2023 12:02:00 PM
Well ID:	FEW4-MW103-193	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/11/2023 10:16:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	9.63 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/11/2023 10:46:00 AM	End Date and Time:	5/11/2023 12:00:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:50 AM	1.25	5	5	12.15	11.18	299	7.57	7.25	44.9	12.6
10:55 AM	1	5	10	11.75	11.22	299	7.59	7.39	38.4	3.06
11:01 AM	0.83	5	15	11.3	11.2	295	7.58	7.49	33	0.63
11:07 AM	0.83	5	20	11.3	11.22	295	7.52	7.55	30.5	0.59
11:14 AM	0.71	5	25	11.27	11.25	295	7.58	7.58	29.7	0.02
11:20 AM	0.83	5	30	11.5	11.3	295	7.57	7.61	29.4	0.02
11:25 AM	1	5	35	11.5	11.3	295	7.57	7.62	29.8	0.02
11:30 AM	1	5	40	11.52	11.3	293	7.57	7.63	30.3	0.17
11:37 AM	0.71	5	45	11.5	11.32	292	7.58	7.62	30.1	0.94
11:42 AM	1	5	50	11.5	11.33	292	7.58	7.63	29.7	0.08
11:48 AM	0.83	5	55	11.5	11.35	291	7.57	7.63	29.7	0.62

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
11:54 AM	0.83	5	60	11.5	11.37	291	7.57	7.62	29.1	0.02
12:00 PM	0.83	5	65	11.5	11.36	291	7.57	7.63	28.8	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW103-242-21	Date:	5/12/2023 1:13:00 PM
Well ID:	FEW4-MW103-242	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/12/2023 11:30:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	10.40 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 12:03:00 PM	End Date and Time:	5/12/2023 1:09:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:09 PM	1.67	10	10	10.5	11.08	284	7.47	7.36	39.4	45.9
12:19 PM	1	10	20	10.61	11.25	283	7.45	7.5	31	11.2
12:27 PM	1.25	10	30	10.64	11.34	285	7.46	7.5	30	2.53
12:35 PM	1.25	10	40	10.62	11.39	283	7.46	7.5	30	1.58
12:44 PM	1.11	10	50	10.65	11.49	283	7.45	7.5	29.8	0.02
12:52 PM	1.25	10	60	10.65	11.59	284	7.45	7.5	29.3	0.09
1:00 PM	1.25	10	70	10.65	11.51	284	7.46	7.48	29.3	0.02
1:09 PM	1.11	10	80	10.68	11.5	284	7.47	7.48	29	0.43

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW103-308-21	Date:	5/13/2023 3:57:00 PM
Well ID:	FEW4-MW103-308	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/13/2023 1:40:00 PM	Measured Well Depth:	317.81 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	10.54 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/13/2023 2:25:00 PM	End Date and Time:	5/13/2023 3:53:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
2:32 PM	1.43	10	10	24.1	11.57	263	0.98	7.65	27.6	1.2
2:42 PM	1	10	20	28.2	11.9	270	0.97	7.71	27.8	0.49
2:51 PM	1.11	10	30	28.25	11.96	294	0.95	7.72	28.8	226
2:59 PM	1.25	10	40	28.32	11.58	309	0.94	8.01	26	117
3:08 PM	1.11	10	50	28.36	12.05	279	0.93	8.11	24.5	55.1
3:18 PM	1	10	60	28.4	12.17	265	0.93	8.01	24.9	26
3:28 PM	1	10	70	28.41	12.11	263	0.93	7.9	25.3	9.32
3:32 PM	2.5	10	80	28.45	12.09	269	0.92	7.83	25.8	3.58
3:43 PM	0.91	10	90	28.45	12.02	273	0.93	7.78	26.7	0.83
3:53 PM	1	10	100	28.45	12.11	273	1.18	7.75	26.6	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW104-135-21	Date:	5/14/2023 3:06:00 PM
Well ID:	FEW4-MW104-135	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/14/2023 1:05:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	76.35 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 1:38:00 PM	End Date and Time:	5/14/2023 3:02:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:46 PM	0.63	5	5	95.02	10.4	402	2	7.4	28.1	97.8
1:55 PM	0.56	5	10	99.81	11.02	397	3.08	7.43	18.2	114
2:02 PM	0.71	5	15	102.9	10.75	398	3.24	7.51	21.7	22
2:13 PM	0.45	5	20	102.55	11.15	404	3.87	7.55	19.9	7.08
2:23 PM	0.5	5	25	102.61	11.12	408	4.09	7.57	19.6	2.43
2:33 PM	0.5	5	30	102.35	11.36	415	4.4	7.56	19.5	0.35
2:43 PM	0.5	5	35	102.5	11.2	422	4.46	7.58	18.7	0.02
2:53 PM	0.5	5	40	102.2	11.06	423	4.75	7.58	19.4	0.02
3:02 PM	0.55	5	45	102.25	11.04	424	4.72	7.59	20.3	0.41



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW104-178-21	Date:	5/15/2023 11:31:00 AM
Well ID:	FEW4-MW104-178	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/15/2023 9:25:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	76.23 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 9:50:00 AM	End Date and Time:	5/15/2023 11:28:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:58 AM	0.63	5	5	106.45	9.72	413	1.48	7.43	17.2	8.84
10:14 AM	0.31	5	10	113.2	10.48	447	1.4	7.52	-8.4	59.01
10:25 AM	0.45	5	15	124.41	11.31	433	1.4	7.5	5.5	18.6
10:37 AM	0.42	5	20	130.19	11.68	436	1.55	7.51	5.4	4.99
10:51 AM	0.36	5	25	131.51	12.03	435	1.78	7.51	5.2	2.37
11:04 AM	0.38	5	30	135.35	12.13	421	2.06	7.52	12	1.75
11:17 AM	0.38	5	35	137.9	12.2	422	2.34	7.52	10.7	1.61
11:28 AM	0.45	5	40	140.6	12.2	419	2.55	7.54	10.8	1.27

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW104-99-21	Date:	5/15/2023 12:56:00 PM
Well ID:	FEW4-MW104-99	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/15/2023 11:51:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	77.20 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/15/2023 12:09:00 PM	End Date and Time:	5/15/2023 12:55:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:12 PM	0.67	2	2	86.6	9.69	365	5.75	7.56	27.4	55.1
12:17 PM	0.4	2	4	87.2	11.43	369	6.46	7.51	25.9	114
12:23 PM	0.33	2	6	87.57	11.88	370	6.57	7.57	23.5	94.5
12:28 PM	0.4	2	8	87.82	11.57	370	6.56	7.61	23	40.1
12:36 PM	0.25	2	10	87.35	11.91	368	6.72	7.6	26.6	43.2
12:39 PM	0.67	2	12	90.79	11.08	369	6.36	7.59	26.4	12.6
12:45 PM	0.33	2	14	89.6	11.74	359	6.31	7.56	27.2	4.41
12:49 PM	0.5	2	16	89.48	11.68	359	6.3	7.56	28.5	4.11
12:55 PM	0.33	2	18	89.4	11.61	362	6.25	7.57	28.8	1.54

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW105-143-21	Date:	5/16/2023 1:13:00 PM
Well ID:	FEW4-MW105-143	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 12:15:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	78.47 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 12:16:00 PM	End Date and Time:	5/16/2023 1:10:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
12:25 PM	0.56	5	5	86.8	11.46	377	2.13	7.38	26	240
12:33 PM	0.63	5	10	87.21	10.95	376	2.98	7.33	11.1	68.5
12:42 PM	0.55	5	15	87.3	11.31	374	3.5	7.34	8.2	22.5
12:50 PM	0.625	5	20	87.4	10.8	372	3.87	7.42	4.7	10.7
12:58 PM	0.63	5	25	89.6	10.84	372	4.08	7.43	3.5	6.57
1:04 PM	0.83	5	30	89.6	10.83	373	4.2	7.46	3.1	8.2
1:10 PM	0.83	5	35	89.6	10.96	375	4.19	7.46	2.6	4.51

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW105-188-21	Date:	5/16/2023 11:25:00 AM
Well ID:	FEW4-MW105-188	Location Type:	Monitoring Well
Duplicate ID:	FEW4-MW105-188-FD-21	Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/16/2023 9:15:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	77.65 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 9:40:00 AM	End Date and Time:	5/16/2023 11:22:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:50 AM	0.5	5	5	102.05	10.64	388	1.44	7.17	11.6	47.2
9:59 AM	0.56	5	10	113.85	11.03	389	1.59	7.25	-2.3	55.1
10:10 AM	0.45	5	15	118.9	11.91	387	2.15	7.44	-20.5	67.2
10:20 AM	0.5	5	20	122.23	11.66	382	2.32	7.5	-19.6	47.1
10:35 AM	0.33	5	25	125.62	11.81	385	2.64	7.54	-25.3	21.2
10:44 AM	0.56	5	30	128.61	11.88	386	2.72	7.55	-24.9	8.66
10:55 AM	0.45	5	35	132.6	11.96	390	2.77	7.55	-26.5	5.88
11:03 AM	0.63	5	40	134.63	11.95	392	2.68	7.54	-24.4	6.34
11:12 AM	0.56	5	45	134.9	12.12	395	2.93	7.54	-28.7	5.31
11:22 AM	0.5	5	50	137	12.07	393	2.96	7.51	-26.5	3.13

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW105-93-21	Date:	5/16/2023 2:25:00 PM
Well ID:	FEW4-MW105-93	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	ND BS
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/16/2023 1:15:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	77.95 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/16/2023 1:45:00 PM	End Date and Time:	5/16/2023 2:22:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	3 well vol w/ pump	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:47 PM	0.5	1	1	80.26	10.57	351	6.73	7.62	43	444
1:49 PM	0.5	1	2	80.3	11.37	363	5.82	7.54	38.1	259
1:51 PM	0.5	1	3	80.33	11.44	363	5.3	7.45	35.7	137
1:56 PM	0.2	1	4	81.76	11.3	356	6.01	7.5	38.6	103
1:58 PM	0.5	1	5	81	11.05	360	4.9	7.39	38.2	49.6
1:59 PM	1	1	6	80.75	10.86	359	5.01	7.41	37.9	36.9
2:03 PM	0.5	2	8	80.6	11.14	358	5.27	7.31	37.4	16.1
2:07 PM	0.5	2	10	80.55	11.42	352	5.56	7.28	37.4	9.1
2:10 PM	0.67	2	12	80.6	11.45	347	5.67	7.3	35.1	3.72
2:14 PM	0.5	2	14	80.68	11.2	349	5.73	7.45	30.9	3.28
2:17 PM	0.67	2	16	80.66	11.32	346	5.84	7.44	28.9	2.73
2:22 PM	0.4	2	18	80.62	11.16	348	5.95	7.48	26.6	3.22

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-MW106-230-21	Date: 5/18/2023 9:34:00 AM
Well ID: FEW4-MW106-230	Location Type: Monitoring Well
Duplicate ID:	Sampler: ND BS
Equipment: Water Quality Meter: Hanna Pen # U112905X; Water Level Meter: Heron Dipper-T # U90292X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments:	

Water Level	
Date: 5/18/2023 8:35:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 203.10 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/18/2023 9:02:00 AM	End Date and Time: 5/18/2023 9:31:00 AM
Initial Pump Depth: Not Recorded	Final Pump Depth: Not Recorded
Purge Method: 3 well vol w/ pump	Sample Method: Low Flow
Notes:	

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (pH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:06 AM	0.63	2.5	2.5	203.31	11.6	258	7.02	7.03	50.5	493
9:10 AM	0.63	2.5	5	203.43	13	258	7.01	6.99	42.9	191
9:12 AM	1.25	2.5	7.5	203.46	12.5	259	7.1	7	49.3	47.4
9:15 AM	0.83	2.5	10	203.46	12.15	258	7.12	7	52.5	24.2
9:19 AM	0.63	2.5	12.5	203.41	12.07	258	7.1	7	50.6	19.7
9:21 AM	1.25	2.5	15	203.43	12.36	258	7.07	7	48.3	12.6
9:25 AM	0.63	2.5	17.5	203.4	12.39	258	7.04	7.02	49.2	5.07
9:27 AM	1.25	2.5	20	203.44	12.4	258	7.04	7.04	49.1	4.09
9:31 AM	0.63	2.5	22.5	203.4	12.42	257	7.02	7.06	49.1	1.69

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW106-272-21	Date:	5/22/2023 9:40:00 AM
Well ID:	FEW4-MW106-272	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/22/2023 8:30:00 AM	Measured Well Depth:	276.31 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	202.36 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/22/2023 9:15:00 AM	End Date and Time:	5/22/2023 9:38:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:18 AM	1.67	5	5	203.4	11.14	265	7.4	7.12	61.5	151
9:22 AM	1.25	5	10	203.41	11.47	264	7.36	7.09	55.7	27.5
9:26 AM	1.25	5	15	203.41	11.51	265	7.32	7.07	54.9	12.8
9:32 AM	0.83	5	20	203.41	11.55	265	7.3	7.04	54.5	3.02
9:35 AM	1.67	5	25	203.42	11.55	264	7.31	7.03	54	1.82
9:38 AM	1.67	5	30	203.42	11.57	264	7.34	7.04	53.8	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW106-316-21	Date:	5/21/2023 2:25:00 PM
Well ID:	FEW4-MW106-316	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/21/2023 12:54:00 PM	Measured Well Depth:	325.97 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	202.28 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/21/2023 1:18:00 PM	End Date and Time:	5/21/2023 2:21:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:26 PM	0.63	5	5	211.3	11.64	268	2.34	7.14	32.5	0.02
1:33 PM	0.71	5	10	211.27	12.86	270	5.23	7.18	28.1	0.02
1:41 PM	0.63	5	15	211.35	13.09	270	5.5	7.18	27.6	0.02
1:49 PM	0.63	5	20	211.54	13.19	269	5.65	7.18	26.5	0.02
1:57 PM	0.63	5	25	211.63	13.13	269	5.82	7.19	25.9	0.02
2:06 PM	0.56	5	30	211.73	13.27	268	6.09	7.19	25.6	0.02
2:13 PM	0.71	5	35	211.68	13.34	267	6.35	7.19	25.5	0.02
2:21 PM	0.63	5	40	211.69	13.24	268	6.53	7.2	24.8	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW107-249-21	Date:	5/14/2023 1:36:00 PM
Well ID:	FEW4-MW107-249	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/14/2023 12:40:00 PM	Measured Well Depth:	249.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	175.73 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 1:11:00 PM	End Date and Time:	5/14/2023 1:34:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
1:16 PM	1	5	5	177.24	12.56	261	6.54	7.44	37	24.4
1:21 PM	1	5	10	177.27	12.47	261	6.57	7.45	42.5	6.81
1:25 PM	1.25	5	15	177.28	12.52	261	6.57	7.46	44	2.92
1:29 PM	1.25	5	20	177.27	12.56	261	6.57	7.46	45.4	1.98
1:34 PM	1	5	25	177.23	12.6	261	6.56	7.47	45.9	0.15

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-MW107-310-21	Date:	5/14/2023 11:35:00 AM
Well ID:	FEW4-MW107-310	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/14/2023 10:25:00 AM	Measured Well Depth:	315.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	159.73 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/14/2023 10:40:00 AM	End Date and Time:	5/14/2023 11:30:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
10:56 AM	0.63	10	10	173.55	12.29	259	6.25	7.42	49.5	5.75
11:05 AM	1.11	10	20	174.88	12.45	259	6.35	7.45	53.3	2.6
11:13 AM	1.25	10	30	175.35	12.49	259	6.3	7.46	55.1	0.68
11:22 AM	1.11	10	40	175.6	12.53	259	6.36	7.46	55.9	0.1
11:30 AM	1.25	10	50	175.8	12.65	259	6.35	7.47	56.3	1.2

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-MW107-355-21	Date:	5/14/2023 10:05:00 AM
Well ID:	FEW4-MW107-355	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	KG KD
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Heron Dipper-T # U105244x		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level			
Date:	5/14/2023 8:50:00 AM	Measured Well Depth:	360.12 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	161.26 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/14/2023 9:10:00 AM	End Date and Time:	5/14/2023 9:59:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Rediflo	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:20 AM	1	10	10	162.6	12.11	305	3.85	7.05	62	0.06
9:27 AM	1.43	10	20	162.69	12.23	270	5.56	7.17	65.4	0.02
9:36 AM	1.11	10	30	162.72	12.3	266	5.83	7.24	64.6	0.02
9:44 AM	1.25	10	40	162.75	12.39	265	5.92	7.3	62.7	0.02
9:52 AM	1.25	10	50	162.75	12.39	264	5.98	7.35	60.7	0.02
9:59 AM	1.43	10	60	162.75	12.46	264	5.99	7.38	59	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information				
Sample ID:	FEW4-REES BROS. 5-21		Date:	5/18/2023 8:18:00 AM
Well ID:	FEW4-REES BROS. 5		Location Type:	Stock Well
Duplicate ID:			Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X			
Analysis:	VOC (8260C)			
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC	
Comments:				

Water Level			
Date:	5/18/2023 8:00:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes: WL not measured			

Purge Information			
Begin Date and Time:	5/18/2023 8:02:00 AM	End Date and Time:	5/18/2023 8:15:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Tap/faucet
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
8:03 AM	15	15	15	--	11.14	218	7.71	7.26	68	42.5
8:04 AM	25	25	40	--	11.24	218	8.02	7.21	66.4	40.4
8:09 AM	16	80	120	--	11.34	209	7.52	7.29	64.3	14.2
8:15 AM	21.67	130	250	--	11.39	212	7.78	7.42	59.9	11.1

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-SALER NO. 4-21	Date:	5/19/2023 12:15:00 PM
Well ID:	FEW4-SALER NO. 4	Location Type:	Stock Well
Duplicate ID:		Sampler:	ND BS JH
Equipment:	Water Quality Meter: Hanna Pen # U105767X; Water Level Meter: Heron Dipper-T # U90292X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Stock well; pump does not turn on. No sample was collected		

Water Level			
Date:	5/19/2023 12:12:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	NM	Depth to LNAPL:	NE
Notes:	Stock well		

Purge Information			
Begin Date and Time:	5/19/2023 12:12:00 PM	End Date and Time:	--
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	--
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information			
Sample ID:	FEW4-TH-2-21	Date:	5/13/2023 1:20:00 PM
Well ID:	FEW4-TH-2	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level			
Date:	5/13/2023 1:12:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	269.47 ft	Depth to LNAPL:	NE
Notes:			

Purge Information			
Begin Date and Time:	5/13/2023 1:20:00 PM	End Date and Time:	5/13/2023 1:20:00 PM
Initial Pump Depth:	282.0	Final Pump Depth:	282.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-TH-5-205-21	Date:	5/13/2023 12:00:00 PM
Well ID:	FEW4-TH-5-205	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	Harman Guraya
Equipment:	Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/13/2023 11:45:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	48.76 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/13/2023 12:00:00 PM	End Date and Time:	5/13/2023 12:00:00 PM
Initial Pump Depth:	205.0	Final Pump Depth:	205.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information	
Sample ID: FEW4-TH-5-97-21	Date: 5/13/2023 11:58:00 AM
Well ID: FEW4-TH-5-97	Location Type: Monitoring Well
Duplicate ID:	Sampler: Harman Guraya
Equipment: Water Quality Meter: Hanna Pen; Water Level Meter: Solinst 101 # U111843X	
Analysis: VOC (8260C)	
Bottle type: 3 x 40 mL VOA	Preservative(s): 4degC
Comments: Sample collected by passive diffusion bag, no water quality parameters collected	

Water Level	
Date: 5/13/2023 11:45:00 AM	Measured Well Depth: NM
Is Well Dry? No	Depth to DNAPL: NE
Depth to Water: 48.76 ft	Depth to LNAPL: NE
Notes:	

Purge Information	
Begin Date and Time: 5/13/2023 11:58:00 AM	End Date and Time: 5/13/2023 11:58:00 AM
Initial Pump Depth: 97.0	Final Pump Depth: 97.0
Purge Method: --	Sample Method: Passive Diffusion Bag
Notes:	



GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-TH-9-125-21	Date:	5/12/2023 2:20:00 PM
Well ID:	FEW4-TH-9-125	Location Type:	Monitoring Well
Duplicate ID:		Sampler:	AtlasUser@naalii
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:	Sample collected by passive diffusion bag, no water quality parameters collected		

Water Level

Date:	5/12/2023 2:15:00 PM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	1.84 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/12/2023 2:20:00 PM	End Date and Time:	5/12/2023 2:20:00 PM
Initial Pump Depth:	125.0	Final Pump Depth:	125.0
Purge Method:	--	Sample Method:	Passive Diffusion Bag
Notes:			

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-WEBER NO. 1-21	Date:	5/22/2023 9:45:00 AM
Well ID:	FEW4-WEBER NO. 1	Location Type:	Municipal
Duplicate ID:		Sampler:	HG BR
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Solinst 101 # U111843X		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/22/2023 9:29:00 AM	Measured Well Depth:	NM
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/22/2023 9:33:00 AM	End Date and Time:	5/22/2023 9:44:00 AM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
9:36 AM	1.67	5	5	--	11.55	236	7.51	7.76	56.8	1.93
9:40 AM	1.25	5	10	--	11.55	239	7.69	7.73	57.2	0.02
9:44 AM	1.25	5	15	--	11.51	239	7.8	7.71	57.3	0.02

GROUNDWATER SAMPLE COLLECTION FIELD SHEET

Client: US Army Corp of Engineers
Site: Atlas Site 4

Project #: 60613342
Event: FEW4-Event 21

Sample Information

Sample ID:	FEW4-WEST TRIANGLE-21	Date:	5/16/2023 4:48:00 PM
Well ID:	FEW4-WEST TRIANGLE	Location Type:	Stock Well
Duplicate ID:		Sampler:	JH, JM
Equipment:	Water Quality Meter: Hanna Pen # U106117X; Water Level Meter: Heron Dipper-T # 4846-T		
Analysis:	VOC (8260C)		
Bottle type:	3 x 40 mL VOA	Preservative(s):	4degC
Comments:			

Water Level

Date:	5/16/2023 4:14:00 PM	Measured Well Depth:	0.00 ft
Is Well Dry?	No	Depth to DNAPL:	NE
Depth to Water:	0.00 ft	Depth to LNAPL:	NE
Notes:			

Purge Information

Begin Date and Time:	5/16/2023 4:21:00 PM	End Date and Time:	5/16/2023 4:46:00 PM
Initial Pump Depth:	Not Recorded	Final Pump Depth:	Not Recorded
Purge Method:	Tap/faucet	Sample Method:	Low Flow
Notes:			

Time	Purge Rate (gal/min)	Individual volume purged (gal)	Cumulative volume purged (gal)	Depth to Water (ft)	Temperature (deg C)	Specific Conductance (us/cm)	Dissolved Oxygen (mg/L)	pH (PH)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
4:22 PM	30	30	30	--	10.27	249	6.4	7.89	64.2	51.3
4:26 PM	7.5	30	60	--	10.2	245	7.35	7.77	22.5	9.3
4:31 PM	6	30	90	--	10.01	157	0.78	8.43	-150.7	11.1
4:36 PM	6	30	120	--	10.17	198	4.38	7.97	-110	21.9
4:41 PM	6	30	150	--	10.4	240	7.13	8.01	-61.1	35.4
4:46 PM	6	30	180	--	10.63	260	7.88	8.02	-14.7	42.4

PROJECT: Atlas “D” Missile Site 4, Long-Term Monitoring – Spring 2023
CLIENT: U.S. Army Corps of Engineers (USACE) – Omaha District
CONTRACTOR: URS Group, Inc.
LABORATORY: Eurofins Environment Testing – Eurofins Denver

DATA USABILITY ASSESSMENT

INTRODUCTION

This Data Usability Assessment was performed in accordance with the *Site-Wide Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP) Addendum 3, Former Atlas “D” Missile Site 4, Wyoming* (URS, 2023).

F.E. Warren Air Force Base Former Atlas “D” Missile Site 4 (Site 4) samples were collected to continue the semiannual Long-Term Monitoring program (LTMP) to document current conditions and to provide analytical data for completion of the feasibility study (FS).

Sampling occurred between 11 May and 13 June 2023. The normal field samples submitted for laboratory analysis included: 272 groundwater, four surface water, and four sediment samples for analysis of volatile organic compounds (VOCs). The field quality control (QC) consisted of field duplicate (FD) samples, matrix spike/matrix spike duplicate (MS/MSD) sample pairs, and field blank samples. These included 24 groundwater FDs, one surface water FD, and one sediment FD; 14 groundwater MS/MSD, one surface water MS/MSD, and one sediment MS/MSD sample; and 17 trip blank and one equipment rinsate blank samples. Additionally, three investigative derived waste samples were collected and analyzed for VOCs. The sample identifiers were appended with the designation “21” to denote long-term monitoring (LTM) event 21. All samples were submitted to Eurofins Environment Testing – Eurofins Denver in 16 sample delivery groups (SDGs) for analysis of 52 volatile organic analytes.

PROJECT OBJECTIVES AND SAMPLING DESIGN

Groundwater samples were collected to confirm the current vertical and horizontal plume extent and contaminant of concern concentrations; surface water and sediment samples were collected to ascertain water quality and assess potential contaminant impacts immediately downgradient of the source area, at approximately the mid-point between the source area and the leading edge of the plume, and near the leading edge of the plume. The chemical data will be used to update the site database in support of assessing the groundwater contaminant plume configuration, aerobic co-metabolism, contaminant trends, and mobility; identify possible data gaps; and update the baseline human health risk assessment. Data will also be evaluated to determine the usefulness of each sample location to the LTMP.

The sampling design included the following activities:

- Mobilize to support field activities
- Collect groundwater elevations and water quality parameter data prior to sample collection
- Collect groundwater, surface water, and sediment samples

PROJECT: Atlas “D” Missile Site 4, Long-Term Monitoring – Spring 2023
CLIENT: U.S. Army Corps of Engineers (USACE) – Omaha District
CONTRACTOR: URS Group, Inc.
LABORATORY: Eurofins Environment Testing – Eurofins Denver

- Submit samples for analysis of 51 VOCs by methods SW8260C.
- Manage and dispose of IDW
- Demobilize from the site

Implementation of the sampling design, and a summary of any deviations during sample collection is detailed in the LTMP report.

DATA CONFORMANCE TO MEASUREMENT PERFORMANCE CRITERIA

Data Review Reports

Data verification (completeness of data) and data validation (conformance to specifications) were performed on laboratory electronic data files uploaded to the USACE Formerly Used Defense Sites Chemistry Database (FUDSChem) in a Staged Electronic Data Deliverable (SEDD) 2A format using SEDD Specification and Data Element Dictionary version 5.2. The level of automated data review (ADR) was consistent with USEPA Stage 2A Data Verification and Validation checks, labeled S2AVEM [Stage 2A Validation Electronic and Manual] (USEPA, 2009). The electronic data were verified against analytical method criteria and requirements contained in the *Department of Defense (DoD) Quality Systems Manual (QSM) Version (V) 5.4*. (DoD, 2021).

The data verification has been documented in an Automated Data Review Detail Report for each SDG using a standard reporting output generated by the FUDSChem database. The ‘Batch Report’ indicates the field samples batched together when the lab conducted its analysis, the ‘Field Batch Report’ indicates the field blank sample associations, the ‘QC Outlier Report’ indicates the quality control outliers found by the automated data flagging system (which may have been superseded by manual data validation), and the ‘Qualified Results’ listing indicates the results qualified by the ADR or manually by the data validator.

Data validation was performed on the sample results according to the analytical method requirements, the criteria listed in the Site-Wide UFP-QAPP and the DoD QSM V5.4 Appendix B Table B-4, the DoD General Data Validation Guidelines (DoD 2019), the DoD Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (DoD 2020), and technical judgment. The level of data validation was consistent with USEPA Stage 2B Data Verification and Validation checks, labeled S2BVEM [Stage 2B Validation Electronic and Manual] (USEPA, 2009).

The data validation has been documented in a Data Validation Report for each SDG using a standard reporting output generated by the FUDSChem database. The ‘Table of All Qualified Results’ indicates the results qualified for reasons other than being trace values, the ‘Table of All Trace Results’ indicates the analytes detected at concentrations less than the limit of quantitation (LOQ), the ‘Table of Results with Modified Qualifiers’ lists the results qualified manually by the

PROJECT: Atlas “D” Missile Site 4, Long-Term Monitoring – Spring 2023
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data validator, and the FUDSChem ‘Review Questions’ checklist provides a record of the data validation according to the assigned data review quality control level.

Measurement Performance Criteria

Results for the following data quality indicators were compared to the measurement performance criteria listed in Worksheet #12 of the Site-Wide UFP-QAPP where applicable.

Precision - Total data precision was evaluated by measuring the variability associated with the entire sampling and analysis process as determined by the collection and analysis of field duplicate samples and duplicate matrix spike samples (not collected in passive diffusion bags); analytical data precision was evaluated by measuring the variability associated with the analysis of laboratory control sample (LCS) duplicates.

Groundwater FD samples met the precision performance criteria of 30% relative percent difference (RPD) for detections greater than the analyte limit of quantitation (LOQ) for all samples.

The sediment FD sample precision for **FEW4-LONE TREE-SE1-21** was within the 50% RPD criteria for detections greater than the analyte LOQ.

The surface water FD sample precision for **FEW4-LONE TREE CREEK-19** was within the 30% RPD criteria for detections greater than the analyte LOQ.

The groundwater MS/MSD sample precision was within the 20% RPD criteria for 8 of 14 matrix spike samples. The exceptions included bromomethane (23% RPD) for **FEW4-BELVOIR NO. 1**; 1,4-dioxane (200% RPD) for **FEW4-DYNO-NOBEL 8-21**; bromomethane (21.4% RPD) for **FEW4-MW44R-242-21**; bromomethane (32% RPD) for **FEW4-MW45R-331-21**; 46 analytes for MS/MSD **FEW4-MW47-290-21**; and 51 analytes for **FEW4-MW107-310-21**.

The sediment MS/MSD sample precision was not within the 20% RPD criteria for all analytes except carbon disulfide (24.7% RPD) of MS/MSD **FEW4-BELVOIRBORIESE1-20**.

The surface water MS/MSD sample precision was within the 20% RPD criteria for all analytes of MS/MSD **FEW4-BELVOIRBORIESW1-20**.

Laboratory control sample duplicate (LCSD) analytes met the precision performance criteria of less than 20% RPD for all analytes in 45 of 52 VOC QC batches. The exceptions included 9 analytes in batch 280-613733; 1 analyte in batch 280-613854; 1 analyte in batch 280-613864; 1 analyte in batch 280-614371; 1 analyte in batch 280-615139; 2 analytes in batch 280-616005; and 1 analyte in batch 280-616691.

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Accuracy - Accuracy was evaluated by measuring the recovery of target analytes added to a LCS (laboratory accuracy); measuring the recovery of target analytes added to a matrix spike sample (matrix interference); measuring the recovery of surrogate (chemically similar) analytes added to all field and laboratory QC samples (analytical accuracy); and measuring the concentration of target analytes detected in field and laboratory blanks (contamination/bias).

LCS and LCSD analytes met the accuracy performance criteria for all analytes in 47 of 52 VOC QC batches. The exceptions included 2 analytes in batch 280-613733; 1 analyte in batch 280-614111; 1 analyte in batch 280-614108; one analyte in batch 280-614288; and 3 analytes in batch 280-616691.

MS/MSD analyte recoveries met the accuracy performance criteria for 11 of 14 groundwater MS/MSD samples. The exceptions included: a bromoform 131% recovery (130% upper control limit [UCL]) for **FEW4-MW46-300-21**; a 1,2-dichloroethane 72% recovery (73% lower control limit [LCL]) and a 1,3-dichlorobenzene 120% recovery (119% UCL) for sample **FEW4-MW47-290-21**; and a 1,2-dichloropropane 124% recovery (122% UCL), a 2-hexanone 148% recovery (139% UCL), and a 4-methyl-2-pentanone 147% recovery (130% UCL) for sample **FEW4-MW107-310-21**.

Several sediment MS/MSD analyte recoveries did not meet the accuracy performance criteria for sample **FEW4-BELVOIRBORIESE1-21**. 9 MS recoveries and 6 MSD recoveries of 52 analytes were less than the lower control limit (LCL).

All surface water MS/MSD analyte recoveries met the accuracy performance criteria for field sample **FEW4-BELVOIRBORIESW1-21**.

All surrogate analyte recoveries were within the accuracy performance criteria for groundwater, sediment, and surface water samples.

The only target analytes detected in a laboratory method blank were acetone (7.54J µg/L) and 1,2,3-trichlorobenzene (1.17J µg/L).

The only target analytes detected in an equipment blank were acetone (8.6J µg/L) and 2-butanone (9.9J µg/L).

There were no target analytes detected in the trip blanks.

Representativeness - Representativeness was evaluated by reviewing whether the work plan and standard operating procedures were followed, proper sampling techniques and sample handling procedures were used, and appropriate documentation was prepared establishing sample identification and integrity.

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The laboratory directed anomalous sample condition and sample identifier discrepancies to the Project Chemist for reconciliation, including incongruent sample identifiers, sample containers received broken or containing headspace, or unacceptable sample cooler temperatures. These discrepancies were noted in the data validation reports and or resolved prior to sample result loading to the FUDSChem database and finalization of the laboratory report.

Analyses exceeding established holding times included:

- Samples analyzed beyond the 14-day holding time for preserved samples included **FEW4-TB05-21**, and sample **FEW4-TB13-21** reanalyzed for 1,2-dichloroethane due to a QC issue
- Samples analyzed beyond the 7-day holding time for unpreserved samples included: **FEW4-MW38-21**
- Samples analyzed at a dilution for trichloroethene beyond the applicable holding time included **FEW4-MW72-130-21**

None of the samples noted above were analyzed at more than two times the applicable holding time.

Samples noted to have headspace upon analysis included **FEW4-MW38-21**, **FEW4-MW38-PDB-21**, **FEW4-MW46-389-21**, **FEW4-MW46-389-PDB-21**, **FEW4-MW47-239-21**, **FEW4-MW75-377-21**, **FEW4-MW75-377-PDB-21**, **FEW4-MW88-253-21**, **FEW4-MW90-292-21**, and **FEW4-TB05-21**.

Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride, have been revised to non-detect at the sample analyte limit of quantitation (LOQ) at the direction of the USACE-Omaha Project Chemist citing professional judgment. This included acetone for samples **FEW4-MW15-21** (14J µg/L), **FEW4-MW45R-331-21** (9.2J µg/L), **FEW4-MW54-245-21** (13J µg/L), **FEW4-MW54-284-21** (14J µg/L), **FEW4-MW59-74-21** (31,000J µg/L), **FEW4-MW64-68-21** (15µ/L), **FEW4-MW64-68-FD-21** (15µ/L), **FEW4-MW70-244-21** (13J µg/L), **FEW4-MW79-193-21** (28 µg/L), **FEW4-MW84-298-21** (12J µg/L), **FEW4-MW84B-143-21** (13J µg/L), **FEW4-MW85-151-21** (15 µg/L), and **FEW4-MW85-151-FD-21** (15 µg/L).

The collected data are considered representative of Site 4.

Comparability - The analytical data associated with the field samples are comparable to previous site data. The laboratory used the same analytical methods and maintained similar detection limits that had been used for previous site monitoring events.

Completeness - The data inputs listed in Worksheet #34 of the Site-wide UFP-QAPP were reviewed and found to be complete by the Project Chemist. Completeness was also evaluated

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based on the number of field and QC samples expected to be collected and analyzed and based on the number of valid analyte results (i.e., not rejected due to quality considerations) compared to the total number of analyte results expected.

The LTMP UFP-QAPP (Worksheet 14.1a) specified the anticipated number of field and QC samples expected to be collected and analyzed:

- 272 primary groundwater samples were collected (including 21 samples in passive diffusion bags) and analyzed; approximately 255 primary groundwater samples were expected
- Four primary surface water samples were collected and analyzed; four primary surface water samples were expected
- Four primary sediment samples were collected and analyzed; four primary sediment samples were expected
- 10% field duplicates were expected to be collected; 24 duplicate groundwater samples (10%), one duplicate surface water sample (25%), and one duplicate sediment sample (25%) were collected
- 5% water and sediment MS/MSD sample pairs were expected to be collected; 14 groundwater (6%), one surface water (25%), and one sediment (25%) MS/MSD sample pairs were collected

Valid results: All VOC sample results are considered valid.

Sensitivity - Analytical sensitivity was initially evaluated by comparing the laboratory-reported sample detection limits to the laboratory-specified detection and quantitation limits in Worksheet #15 of the Site-wide UFP-QAPP.

Sensitivity was verified by noting that:

- The LOQ and the highest calibration standard established the calibration range
- Limit of Detection (LOD) values were less than the associated LOQ values
- Detected analyte concentrations between the detection limit and the LOQ were reported and qualified as estimated values
- No detected analyte concentrations were reported exceeding the calibration without an associated diluted result within the calibration

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DATA USABILITY

The sample results collected during the Spring 2023 LTMP are considered usable for project decisions.

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REFERENCES

URS Group, Inc. (URS). 2023. Site-Wide Uniform Federal Policy - Quality Assurance Project Plan Addendum 3, Former Atlas “D” Missile Site 4, Wyoming. June.

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U.S. Department of Defense (DoD). 2021. Department of Defense Quality Systems Manual for Environmental Laboratories (QSM), Version 5.4. October.

U.S. Environmental Protection Agency (EPA). 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. EPA-540-R-08-005. January.



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176494-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 29, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-EAST STRIP 1-21	280-176494-9	Water	Field Sample/N	X
FEW4-MW100-270-21	280-176494-4	Water	Field Sample/N	X
FEW4-MW100-305-21	280-176494-3	Water	Field Sample/N	X
FEW4-MW103-193-21	280-176494-13	Water	Field Sample/N	X
FEW4-MW103-242-21	280-176494-2	Water	Field Sample/N	X
FEW4-MW38-21	280-176494-12	Water	Field Sample/N	X
FEW4-MW38-PDB-21	280-176494-11	Water	Field Sample/N	X
FEW4-MW43R-242-21	280-176494-20	Water	Field Sample/N	X
FEW4-MW43R-262-21	280-176494-19	Water	Field Sample/N	X
FEW4-MW57-211-21	280-176494-18	Water	Field Sample/N	X
FEW4-MW57-211-FD-21	280-176494-17	Water	Field Duplicate/FD	X
FEW4-MW57-240-21	280-176494-16	Water	Field Sample/N	X
FEW4-MW57-276-21	280-176494-15	Water	Field Sample/N	X
FEW4-MW86-353-21	280-176494-1	Water	Field Sample/N	X
FEW4-MW86-353-PDB-21	280-176494-21	Water	Field Sample/N	X
FEW4-MW94-175-21	280-176494-7	Water	Field Sample/N	X
FEW4-MW94-229-21	280-176494-6	Water	Field Sample/N	X
FEW4-MW94-297-21	280-176494-5	Water	Field Sample/N	X
FEW4-MW99-110-21	280-176494-14	Water	Field Sample/N	X
FEW4-TB1-21	280-176494-10	Water	Trip Blank/TB	X
FEW4-TH9-125-21	280-176494-8	Water	Field Sample/N	X

Data Validation Report for 280-176494-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176494-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

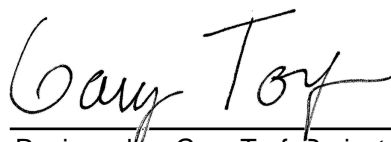
A total of 110 results (10.07%) out of the 1092 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176494-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 29, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

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No Outliers were associated with this sample delivery group.

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW103-193-21 280-176494-13	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW103-193-21 280-176494-13	N	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW38-21 280-176494-12	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4

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Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW38-21 280-176494-12	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromoform	2.00	1.80 U Q	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloroethane	4.00	1.60 U	1.60 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	H1/V4

Data Validation Report for 280-176494-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW38-21 280-176494-12	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	H1/V4
FEW4-MW38-21 280-176494-12	N	Vinyl chloride	2.00	1.00 U	1.00 UJ		ug/l	H1/V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4

Data Validation Report for 280-176494-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW38-PDB-21 280-176494-11	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Acetone	15.0	8.00 U M	8.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromoform	2.00	1.80 U Q	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloroethane	4.00	1.60 U	1.60 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	V4

Data Validation Report for 280-176494-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW38-PDB-21 280-176494-11	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V4
FEW4-MW38-PDB-21 280-176494-11	N	Vinyl chloride	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW99-110-21 280-176494-14	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW99-110-21 280-176494-14	N	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-TB1-21 280-176494-10	TB	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-TB1-21 280-176494-10	TB	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176494-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW100-305-21	N	1,4-Dichlorobenzene	1.00	0.610 J	0.610 J		ug/L	TR
FEW4-MW103-193-21	N	Trichloroethene (TCE)	1.00	0.580 J	0.580 J		ug/L	TR
FEW4-MW103-242-21	N	1,4-Dichlorobenzene	1.00	0.790 J	0.790 J		ug/L	TR
FEW4-MW94-175-21	N	Chlorobenzene	1.00	0.650 J	0.650 J		ug/L	TR
FEW4-MW94-229-21	N	Chlorobenzene	1.00	0.820 J	0.820 J		ug/L	TR
FEW4-TH9-125-21	N	Chlorobenzene	1.00	0.560 J	0.560 J		ug/L	TR

Data Validation Report for 280-176494-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW103-193-21 280-176494-13	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW103-193-21 280-176494-13	N	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW38-21 280-176494-12	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Bromoform	2.00	1.80 U Q	1.80 U	1.80 UJ	H1/V4

Data Validation Report for 280-176494-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW38-21 280-176494-12	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloroethane	4.00	1.60 U	1.60 U	1.60 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	H1/V4
FEW4-MW38-21 280-176494-12	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	H1/V4

Data Validation Report for 280-176494-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW38-21 280-176494-12	N	Vinyl chloride	2.00	1.00 U	1.00 U	1.00 UJ	H1/V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Acetone	15.0	8.00 U M	8.00 U	8.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromoform	2.00	1.80 U Q	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4

Data Validation Report for 280-176494-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW38-PDB-21 280-176494-11	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloroethane	4.00	1.60 U	1.60 U	1.60 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V4
FEW4-MW38-PDB-21 280-176494-11	N	Vinyl chloride	2.00	1.00 U	1.00 U	1.00 UJ	V4
FEW4-MW99-110-21 280-176494-14	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2

Data Validation Report for 280-176494-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW99-110-21 280-176494-14	N	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-TB1-21 280-176494-10	TB	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-TB1-21 280-176494-10	TB	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
H1	Test Hold Time
TR	Trace Level Detect
V2	CCV
V4	Sample Receipt Condition

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176494-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?		•		Sample FEW4-MW38-21 had pH 7 upon analysis.
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			Samples FEW4-MW38-PDB-21 and FEW4-MW38-21 were noted to have headspace upon analysis in the Case Narrative and the raw data. Sample FEW4-MW86-353-21 was noted to have headspace in the Case Narrative however this was not accurate according to the raw data.
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?		•		Sample FEW4-MW38-21 was analyzed beyond the 7-day holding time for unpreserved samples.
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB1-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW86-353-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW57-211-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			

Data Validation Report for 280-176494-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was instrument tuning completed every 12 hours during sample analysis?	.			
Was the Calibration within project acceptance criteria?	.			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_MS1 CCV 280-613717/2: bromomethane -29.6% and carbon disulfide -20.1% were outside the 20% control limit low; associated samples included FEW4-TB1-21, FEW4-MW103-193-21, and FEW4-MW99-110-21. VMS_R1 CCV 280-613716/2: trichlorofluoromethane 20.9% and bromoform 21.4% were outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW86-353	FEW4-MW86-353-21	05-12-2023	1131	N	WG	345.10	355.10	X
FIELDQC	FEW4-TB1-21	05-11-2023	0800	TB	WQ	0.00	0.00	X
FEW4-MW38	FEW4-MW38-PDB-21	05-11-2023	1007	N	WG	326.60	336.60	X
FEW4-MW38	FEW4-MW38-21	05-11-2023	1513	N	WG	326.60	336.60	X
FEW4-MW103-193	FEW4-MW103-193-21	05-11-2023	1202	N	WG	0.00	0.00	X
FEW4-MW99-110	FEW4-MW99-110-21	05-11-2023	1542	N	WG	0.00	0.00	X
FEW4-MW57-276	FEW4-MW57-276-21	05-12-2023	1115	N	WG	269.30	279.30	X
FEW4-MW57-240	FEW4-MW57-240-21	05-12-2023	1131	N	WG	228.50	248.50	X
FEW4-MW57-211	FEW4-MW57-211-FD-21	05-12-2023	1146	FD	WG	203.70	213.70	X
FEW4-MW57-211	FEW4-MW57-211-21	05-12-2023	1146	N	WG	203.70	213.70	X
FEW4-MW43R-262	FEW4-MW43R-262-21	05-12-2023	1223	N	WG	258.50	268.50	X
FEW4-MW86-353	FEW4-MW86-353-MS-21	05-12-2023	1131	MS	WG	345.10	355.10	X
FEW4-MW86-353	FEW4-MW86-353-MSD-21	05-12-2023	1131	SD	WG	345.10	355.10	X
FEW4-MW103-242	FEW4-MW103-242-21	05-12-2023	1313	N	WG	0.00	0.00	X
FEW4-MW43R-242	FEW4-MW43R-242-21	05-12-2023	1234	N	WG	237.90	247.90	X
FEW4-MW86-353	FEW4-MW86-353-PDB-21	05-12-2023	0955	N	WG	345.10	355.10	X
FEW4-MW100-305	FEW4-MW100-305-21	05-12-2023	1125	N	WG	0.00	0.00	X
FEW4-MW100-270	FEW4-MW100-270-21	05-12-2023	1410	N	WG	0.00	0.00	X
FEW4-MW94-297	FEW4-MW94-297-21	05-12-2023	1310	N	WG	0.00	0.00	X
FEW4-MW94-229	FEW4-MW94-229-21	05-12-2023	1325	N	WG	0.00	0.00	X
FEW4-MW94-175	FEW4-MW94-175-21	05-12-2023	1340	N	WG	0.00	0.00	X
TH9-125	FEW4-TH9-125-21	05-12-2023	1420	N	WG	0.00	0.00	X
EAST STRIP 1	FEW4-EAST STRIP 1-21	05-12-2023	1322	N	WG	0.00	0.00	X
Total								23

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-613696								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613696/1002	LCS 280-613696/1002		1/1	5/24/2023 14:54	5/24/2023 14:54	5/24/2023 14:54	280-613696/	BS
LABQC	WQ	LCSD 280-613696/4	LCSD 280-613696/4		1/1	5/24/2023 17:09	5/24/2023 17:09	5/24/2023 17:09	280-613696/	BD
LABQC	WQ	MB 280-613696/7	MB 280-613696/7		1/1	5/24/2023 19:32	5/24/2023 19:32	5/24/2023 19:32	280-613696/	LB
FEW4-MW103-242	WG	FEW4-MW103-242-21	280-176494-2		1/1	5/12/2023 13:13	5/24/2023 22:23	5/24/2023 22:23	280-613696/	N
FEW4-MW100-305	WG	FEW4-MW100-305-21	280-176494-3		1/1	5/12/2023 11:25	5/24/2023 22:43	5/24/2023 22:43	280-613696/	N
FEW4-MW100-270	WG	FEW4-MW100-270-21	280-176494-4		1/1	5/12/2023 14:10	5/24/2023 23:04	5/24/2023 23:04	280-613696/	N
FEW4-MW94-297	WG	FEW4-MW94-297-21	280-176494-5		1/1	5/12/2023 13:10	5/24/2023 23:25	5/24/2023 23:25	280-613696/	N
FEW4-MW94-229	WG	FEW4-MW94-229-21	280-176494-6		1/1	5/12/2023 13:25	5/24/2023 23:45	5/24/2023 23:45	280-613696/	N
FEW4-MW94-175	WG	FEW4-MW94-175-21	280-176494-7		1/1	5/12/2023 13:40	5/25/2023 00:06	5/25/2023 00:06	280-613696/	N
TH9-125	WG	FEW4-TH9-125-21	280-176494-8		1/1	5/12/2023 14:20	5/25/2023 00:26	5/25/2023 00:26	280-613696/	N

Test Method: SW8260D		Analysis Batch: 280-613716								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613716/1002	LCS 280-613716/1002		1/1	5/24/2023 22:04	5/24/2023 22:04	5/24/2023 22:04	280-613716/	BS
LABQC	WQ	LCSD 280-613716/4	LCSD 280-613716/4		1/1	5/24/2023 22:25	5/24/2023 22:25	5/24/2023 22:25	280-613716/	BD
LABQC	WQ	MB 280-613716/7	MB 280-613716/7		1/1	5/24/2023 23:06	5/24/2023 23:06	5/24/2023 23:06	280-613716/	LB
FEW4-MW38	WG	FEW4-MW38-PDB-21	280-176494-11		1/1	5/11/2023 10:07	5/24/2023 23:40	5/24/2023 23:40	280-613716/	N

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Test Method: SW8260D Analysis Batch: 280-613716

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW86-353	WG	FEW4-MW86-353-21	280-176494-1		1/1	5/12/2023 11:31	5/25/2023 00:00	5/25/2023 00:00	280-613716/	N
EAST STRIP 1	WG	FEW4-EAST STRIP 1-21	280-176494-9		1/1	5/12/2023 13:22	5/25/2023 00:21	5/25/2023 00:21	280-613716/	N
FEW4-MW38	WG	FEW4-MW38-21	280-176494-12		1/1	5/11/2023 15:13	5/25/2023 00:42	5/25/2023 00:42	280-613716/	N
FEW4-MW57-276	WG	FEW4-MW57-276-21	280-176494-15		1/1	5/12/2023 11:15	5/25/2023 01:02	5/25/2023 01:02	280-613716/	N
FEW4-MW57-240	WG	FEW4-MW57-240-21	280-176494-16		1/1	5/12/2023 11:31	5/25/2023 01:23	5/25/2023 01:23	280-613716/	N
FEW4-MW57-211	WG	FEW4-MW57-211-FD-21	280-176494-17		1/1	5/12/2023 11:46	5/25/2023 01:44	5/25/2023 01:44	280-613716/	FD
FEW4-MW57-211	WG	FEW4-MW57-211-21	280-176494-18		1/1	5/12/2023 11:46	5/25/2023 02:05	5/25/2023 02:05	280-613716/	N
FEW4-MW43R-262	WG	FEW4-MW43R-262-21	280-176494-19		1/1	5/12/2023 12:23	5/25/2023 02:25	5/25/2023 02:25	280-613716/	N
FEW4-MW43R-242	WG	FEW4-MW43R-242-21	280-176494-20		1/1	5/12/2023 12:34	5/25/2023 02:46	5/25/2023 02:46	280-613716/	N
FEW4-MW86-353	WG	FEW4-MW86-353-PDB-21	280-176494-21		1/1	5/12/2023 09:55	5/25/2023 03:07	5/25/2023 03:07	280-613716/	N
FEW4-MW86-353	WG	FEW4-MW86-353-MS-21	280-176494-1MS		1/1	5/12/2023 11:31	5/25/2023 06:34	5/25/2023 06:34	280-613716/	MS
FEW4-MW86-353	WG	FEW4-MW86-353-MSD-21	280-176494-1MSD		1/1	5/12/2023 11:31	5/25/2023 06:54	5/25/2023 06:54	280-613716/	SD

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-613717								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613717/1002	LCS 280-613717/1002		1/1	5/24/2023 19:37	5/24/2023 19:37	5/24/2023 19:37	280-613717/	BS
LABQC	WQ	LCSD 280-613717/4	LCSD 280-613717/4		1/1	5/24/2023 20:19	5/24/2023 20:19	5/24/2023 20:19	280-613717/	BD
LABQC	WQ	MB 280-613717/7	MB 280-613717/7		1/1	5/24/2023 21:23	5/24/2023 21:23	5/24/2023 21:23	280-613717/	LB
FIELDQC	WQ	FEW4-TB1-21	280-176494-10		1/1	5/11/2023 08:00	5/24/2023 22:39	5/24/2023 22:39	280-613717/	TB
FEW4-MW103-193	WG	FEW4-MW103-193-21	280-176494-13		1/1	5/11/2023 12:02	5/24/2023 23:43	5/24/2023 23:43	280-613717/	N
FEW4-MW99-110	WG	FEW4-MW99-110-21	280-176494-14		1/1	5/11/2023 15:42	5/25/2023 00:04	5/25/2023 00:04	280-613717/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	11052301		FIELDQC	WQ	FEW4-TB1-21	280-176494-10	5/11/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

QC Outliers Report

--No Records Found--

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW100-305-21	280-176494-3	W	N	1,4-Dichlorobenzene	1.00	0.610 J	0.610 J		ug/l	TR
FEW4-MW103-193-21	280-176494-13	W	N	Trichloroethene (TCE)	1.00	0.580 J	0.580 J		ug/l	TR
FEW4-MW103-242-21	280-176494-2	W	N	1,4-Dichlorobenzene	1.00	0.790 J	0.790 J		ug/l	TR
FEW4-MW94-175-21	280-176494-7	W	N	Chlorobenzene	1.00	0.650 J	0.650 J		ug/l	TR
FEW4-MW94-229-21	280-176494-6	W	N	Chlorobenzene	1.00	0.820 J	0.820 J		ug/l	TR
FEW4-TH9-125-21	280-176494-8	W	N	Chlorobenzene	1.00	0.560 J	0.560 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW100-270-21	280-176494-4	W	N	1	Chlorobenzene	1.00	1.30	1.30	ug/l	
FEW4-MW100-305-21	280-176494-3	W	N	1	1,4-Dichlorobenzene	1.00	0.610 J	0.610 J	ug/l	TR
FEW4-MW100-305-21	280-176494-3	W	N	1	Chlorobenzene	1.00	1.70	1.70	ug/l	
FEW4-MW103-193-21	280-176494-13	W	N	1	Trichloroethene (TCE)	1.00	0.580 J	0.580 J	ug/l	TR
FEW4-MW103-242-21	280-176494-2	W	N	1	1,4-Dichlorobenzene	1.00	0.790 J	0.790 J	ug/l	TR
FEW4-MW103-242-21	280-176494-2	W	N	1	Chlorobenzene	1.00	2.30	2.30	ug/l	
FEW4-MW86-353-21	280-176494-1	W	N	1	Trichloroethene (TCE)	1.00	2.40	2.40	ug/l	
FEW4-MW86-353-PDB-21	280-176494-21	W	N	1	Trichloroethene (TCE)	1.00	3.50	3.50	ug/l	
FEW4-MW94-175-21	280-176494-7	W	N	1	Chlorobenzene	1.00	0.650 J	0.650 J	ug/l	TR
FEW4-MW94-229-21	280-176494-6	W	N	1	Chlorobenzene	1.00	0.820 J	0.820 J	ug/l	TR
FEW4-MW94-297-21	280-176494-5	W	N	1	Chlorobenzene	1.00	1.00	1.00	ug/l	
FEW4-TH9-125-21	280-176494-8	W	N	1	Chlorobenzene	1.00	0.560 J	0.560 J	ug/l	TR

Automated Data Review Detail Report for 280-176494-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176538-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 30, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW100-153-21	280-176538-31	Water	Field Sample/N	X
FEW4-MW102-127-21	280-176538-5	Water	Field Sample/N	X
FEW4-MW102-171-21	280-176538-4	Water	Field Sample/N	X
FEW4-MW102-93-21	280-176538-6	Water	Field Sample/N	X
FEW4-MW103-308-21	280-176538-30	Water	Field Sample/N	X
FEW4-MW107-355-21	280-176538-24	Water	Field Sample/N	X
FEW4-MW31-21	280-176538-17	Water	Field Sample/N	X
FEW4-MW46-389-21	280-176538-23	Water	Field Sample/N	X
FEW4-MW46-389-PDB-21	280-176538-22	Water	Field Sample/N	X
FEW4-MW50-250-21	280-176538-14	Water	Field Sample/N	X
FEW4-MW50-290-21	280-176538-16	Water	Field Sample/N	X
FEW4-MW50-318-21	280-176538-15	Water	Field Sample/N	X
FEW4-MW54B-164-21	280-176538-20	Water	Field Sample/N	X
FEW4-MW54B-199-21	280-176538-21	Water	Field Sample/N	X
FEW4-MW87-123-21	280-176538-29	Water	Field Sample/N	X
FEW4-MW87-205-21	280-176538-28	Water	Field Sample/N	X
FEW4-MW91-195-21	280-176538-27	Water	Field Sample/N	X
FEW4-MW91-248-21	280-176538-26	Water	Field Sample/N	X
FEW4-MW91-313-21	280-176538-25	Water	Field Sample/N	X
FEW4-MW93-146-21	280-176538-8	Water	Field Sample/N	X
FEW4-MW93-268-21	280-176538-7	Water	Field Sample/N	X

Data Validation Report for 280-176538-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW93-71-21	280-176538-9	Water	Field Sample/N	X
FEW4-MW93-71-FD-21	280-176538-13	Water	Field Duplicate/FD	X
FEW4-MW96-194-21	280-176538-3	Water	Field Sample/N	X
FEW4-MW96-260-21	280-176538-2	Water	Field Sample/N	X
FEW4-MW96-292-21	280-176538-1	Water	Field Sample/N	X
FEW4-MW97-266-PDB-21	280-176538-18	Water	Field Sample/N	X
FEW4-MW99-161-21	280-176538-19	Water	Field Sample/N	X
FEW4-TB02-21	280-176538-32	Water	Trip Blank/TB	X
FEW4-TH2-21	280-176538-12	Water	Field Sample/N	X
FEW4-TH5-205-21	280-176538-11	Water	Field Sample/N	X
FEW4-TH5-97-21	280-176538-10	Water	Field Sample/N	X

Data Validation Report for 280-176538-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176538-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

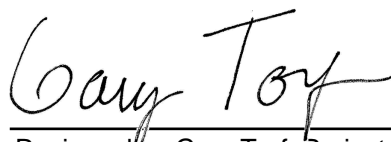
A total of 52 results (3.13%) out of the 1664 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176538-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 30, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176538-1

No Outliers were associated with this sample delivery group.

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW46-389-21 280-176538-23	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4

Data Validation Report for 280-176538-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW46-389-21 280-176538-23	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Bromomethane	5.00	4.00 U M	4.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Chloroethane	4.00	1.60 U	1.60 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	V4

Data Validation Report for 280-176538-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW46-389-21 280-176538-23	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Trichlorofluoromethane	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW46-389-21 280-176538-23	N	Vinyl chloride	2.00	1.00 U	1.00 UJ		ug/l	V4

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176538-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW50-318-21	N	Trichloroethene (TCE)	1.00	0.790 J	0.790 J		ug/L	TR
FEW4-MW96-194-21	N	Trichloroethene (TCE)	1.00	0.920 J	0.920 J		ug/L	TR
FEW4-MW97-266-PDB-21	N	Trichloroethene (TCE)	1.00	0.580 J	0.580 J		ug/L	TR
FEW4-TH5-97-21	N	Trichloroethene (TCE)	1.00	0.680 J	0.680 J		ug/L	TR

Data Validation Report for 280-176538-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW46-389-21 280-176538-23	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Bromomethane	5.00	4.00 U M	4.00 U	4.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4

Data Validation Report for 280-176538-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW46-389-21 280-176538-23	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Chloroethane	4.00	1.60 U	1.60 U	1.60 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	V4

Data Validation Report for 280-176538-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW46-389-21 280-176538-23	N	Trichlorofluoromethane	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW46-389-21 280-176538-23	N	Vinyl chloride	2.00	1.00 U	1.00 U	1.00 UJ	V4

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect
V4	Sample Receipt Condition

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176538-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			Samples received with headspace included FEW4-MW46-389-PDB-21 (2 of 3 vials) and FEW4-MW46-389-21 (3 of 3 vials).
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB02-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW100-153-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW93-71-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-176538-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_R1 CCV 280-613716/2: trichlorofluoromethane 20.9% and bromoform 21.4% were outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW96-292	FEW4-MW96-292-21	05-13-2023	0840	N	WG	0.00	0.00	X
TH5-97	FEW4-TH5-97-21	05-13-2023	1158	N	WG	0.00	0.00	X
TH5-205	FEW4-TH5-205-21	05-13-2023	1200	N	WG	0.00	0.00	X
TH-2	FEW4-TH2-21	05-13-2023	1320	N	WG	107.00	187.00	X
FEW4-MW93-71	FEW4-MW93-71-FD-21	05-13-2023	1106	FD	WG	0.00	0.00	X
FEW4-MW50-250	FEW4-MW50-250-21	05-13-2023	1227	N	WG	247.70	257.70	X
FEW4-MW50-318	FEW4-MW50-318-21	05-13-2023	1236	N	WG	311.00	321.00	X
FEW4-MW50-290	FEW4-MW50-290-21	05-13-2023	1255	N	WG	282.80	292.80	X
FEW4-MW31	FEW4-MW31-21	05-13-2023	1340	N	WG	200.70	210.70	X
FEW4-MW97-266	FEW4-MW97-266-PDB-21	05-13-2023	0854	N	WG	258.50	268.50	X
FEW4-MW99-161	FEW4-MW99-161-21	05-13-2023	1102	N	WG	0.00	0.00	X
FEW4-MW96-260	FEW4-MW96-260-21	05-13-2023	0855	N	WG	0.00	0.00	X
FEW4-MW54B-164	FEW4-MW54B-164-21	05-13-2023	1324	N	WG	0.00	0.00	X
FEW4-MW54B-199	FEW4-MW54B-199-21	05-13-2023	1450	N	WG	0.00	0.00	X
FEW4-MW46-389	FEW4-MW46-389-PDB-21	05-14-2023	0942	N	WG	382.00	392.00	X
FEW4-MW46-389	FEW4-MW46-389-21	05-14-2023	1155	N	WG	382.00	392.00	X
FEW4-MW107-355	FEW4-MW107-355-21	05-14-2023	1005	N	WG	0.00	0.00	X
FEW4-MW91-313	FEW4-MW91-313-21	05-14-2023	1452	N	WG	0.00	0.00	X
FEW4-MW91-248	FEW4-MW91-248-21	05-14-2023	1504	N	WG	0.00	0.00	X
FEW4-MW91-195	FEW4-MW91-195-21	05-14-2023	1512	N	WG	0.00	0.00	X
FEW4-MW87-205	FEW4-MW87-205-21	05-14-2023	1535	N	WG	0.00	0.00	X
FEW4-MW87-123	FEW4-MW87-123-21	05-14-2023	1545	N	WG	0.00	0.00	X
FEW4-MW96-194	FEW4-MW96-194-21	05-13-2023	0910	N	WG	0.00	0.00	X
FEW4-MW103-308	FEW4-MW103-308-21	05-13-2023	1557	N	WG	0.00	0.00	X
FEW4-MW100-153	FEW4-MW100-153-21	05-13-2023	1233	N	WG	0.00	0.00	X
FEW4-MW100-153	FEW4-MW100-153-MS-21	05-13-2023	1233	MS	WG	0.00	0.00	X
FEW4-MW100-153	FEW4-MW100-153-MSD-21	05-13-2023	1233	SD	WG	0.00	0.00	X

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FIELDQC	FEW4-TB02-21	05-13-2023	0800	TB	WQ	0.00	0.00	
FEW4-MW102-171	FEW4-MW102-171-21	05-13-2023	0950	N	WG	0.00	0.00	
FEW4-MW102-127	FEW4-MW102-127-21	05-13-2023	1000	N	WG	0.00	0.00	
FEW4-MW102-93	FEW4-MW102-93-21	05-13-2023	1011	N	WG	0.00	0.00	
FEW4-MW93-268	FEW4-MW93-268-21	05-13-2023	1048	N	WG	0.00	0.00	
FEW4-MW93-146	FEW4-MW93-146-21	05-13-2023	1055	N	WG	0.00	0.00	
FEW4-MW93-71	FEW4-MW93-71-21	05-13-2023	1106	N	WG	0.00	0.00	
Total								34

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-613716								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613716/1002	LCS 280-613716/1002		1/1	5/24/2023 22:04	5/24/2023 22:04	5/24/2023 22:04	280-613716/	BS
LABQC	WQ	LCSD 280-613716/4	LCSD 280-613716/4		1/1	5/24/2023 22:25	5/24/2023 22:25	5/24/2023 22:25	280-613716/	BD
LABQC	WQ	MB 280-613716/7	MB 280-613716/7		1/1	5/24/2023 23:06	5/24/2023 23:06	5/24/2023 23:06	280-613716/	LB
FEW4-MW96-292	WG	FEW4-MW96-292-21	280-176538-1		1/1	5/13/2023 08:40	5/25/2023 03:28	5/25/2023 03:28	280-613716/	N
FEW4-MW96-260	WG	FEW4-MW96-260-21	280-176538-2		1/1	5/13/2023 08:55	5/25/2023 03:48	5/25/2023 03:48	280-613716/	N
FEW4-MW96-194	WG	FEW4-MW96-194-21	280-176538-3		1/1	5/13/2023 09:10	5/25/2023 04:09	5/25/2023 04:09	280-613716/	N
FEW4-MW102-171	WG	FEW4-MW102-171-21	280-176538-4		1/1	5/13/2023 09:50	5/25/2023 04:30	5/25/2023 04:30	280-613716/	N
FEW4-MW102-127	WG	FEW4-MW102-127-21	280-176538-5		1/1	5/13/2023 10:00	5/25/2023 04:50	5/25/2023 04:50	280-613716/	N
FEW4-MW102-93	WG	FEW4-MW102-93-21	280-176538-6		1/1	5/13/2023 10:11	5/25/2023 05:11	5/25/2023 05:11	280-613716/	N
FEW4-MW93-268	WG	FEW4-MW93-268-21	280-176538-7		1/1	5/13/2023 10:48	5/25/2023 05:32	5/25/2023 05:32	280-613716/	N
FEW4-MW93-146	WG	FEW4-MW93-146-21	280-176538-8		1/1	5/13/2023 10:55	5/25/2023 05:52	5/25/2023 05:52	280-613716/	N
FEW4-MW93-71	WG	FEW4-MW93-71-21	280-176538-9		1/1	5/13/2023 11:06	5/25/2023 06:13	5/25/2023 06:13	280-613716/	N

Test Method: SW8260D		Analysis Batch: 280-613726								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613726/1002	LCS 280-613726/1002		1/1	5/25/2023 08:02	5/25/2023 08:02	5/25/2023 08:02	280-613726/	BS
LABQC	WQ	LCSD 280-613726/4	LCSD 280-613726/4		1/1	5/25/2023 08:43	5/25/2023 08:43	5/25/2023 08:43	280-613726/	BD

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Test Method: SW8260D		Analysis Batch: 280-613726								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	MB 280-613726/7	MB 280-613726/7		1/1	5/25/2023 09:43	5/25/2023 09:43	5/25/2023 09:43	280-613726/	LB
TH5-97	WG	FEW4-TH5-97-21	280-176538-10		1/1	5/13/2023 11:58	5/25/2023 14:26	5/25/2023 14:26	280-613726/	N
TH5-205	WG	FEW4-TH5-205-21	280-176538-11		1/1	5/13/2023 12:00	5/25/2023 14:46	5/25/2023 14:46	280-613726/	N
TH-2	WG	FEW4-TH2-21	280-176538-12		1/1	5/13/2023 13:20	5/25/2023 15:06	5/25/2023 15:06	280-613726/	N
FEW4-MW93-71	WG	FEW4-MW93-71-FD-21	280-176538-13		1/1	5/13/2023 11:06	5/25/2023 15:27	5/25/2023 15:27	280-613726/	FD
FEW4-MW50-250	WG	FEW4-MW50-250-21	280-176538-14		1/1	5/13/2023 12:27	5/25/2023 15:47	5/25/2023 15:47	280-613726/	N
FEW4-MW50-318	WG	FEW4-MW50-318-21	280-176538-15		1/1	5/13/2023 12:36	5/25/2023 16:07	5/25/2023 16:07	280-613726/	N
FEW4-MW50-290	WG	FEW4-MW50-290-21	280-176538-16		1/1	5/13/2023 12:55	5/25/2023 16:27	5/25/2023 16:27	280-613726/	N

Test Method: SW8260D		Analysis Batch: 280-613729								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613729/1002	LCS 280-613729/1002		1/1	5/25/2023 08:26	5/25/2023 08:26	5/25/2023 08:26	280-613729/	BS
LABQC	WQ	LCSD 280-613729/4	LCSD 280-613729/4		1/1	5/25/2023 09:21	5/25/2023 09:21	5/25/2023 09:21	280-613729/	BD
LABQC	WQ	MB 280-613729/7	MB 280-613729/7		1/1	5/25/2023 10:28	5/25/2023 10:28	5/25/2023 10:28	280-613729/	LB
FIELDQC	WQ	FEW4-TB02-21	280-176538-32		1/1	5/13/2023 08:00	5/25/2023 10:50	5/25/2023 10:50	280-613729/	TB
FEW4-MW31	WG	FEW4-MW31-21	280-176538-17		1/1	5/13/2023 13:40	5/25/2023 11:12	5/25/2023 11:12	280-613729/	N
FEW4-MW97-266	WG	FEW4-MW97-266-PDB-21	280-176538-18		1/1	5/13/2023 08:54	5/25/2023 11:34	5/25/2023 11:34	280-613729/	N
FEW4-MW99-161	WG	FEW4-MW99-161-21	280-176538-19		1/1	5/13/2023 11:02	5/25/2023 11:56	5/25/2023 11:56	280-613729/	N

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Test Method: SW8260D Analysis Batch: 280-613729

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW54B-164	WG	FEW4-MW54B-164-21	280-176538-20		1/1	5/13/2023 13:24	5/25/2023 12:18	5/25/2023 12:18	280-613729/	N
FEW4-MW54B-199	WG	FEW4-MW54B-199-21	280-176538-21		1/1	5/13/2023 14:50	5/25/2023 12:40	5/25/2023 12:40	280-613729/	N
FEW4-MW46-389	WG	FEW4-MW46-389-PDB-21	280-176538-22		1/1	5/14/2023 09:42	5/25/2023 13:02	5/25/2023 13:02	280-613729/	N
FEW4-MW46-389	WG	FEW4-MW46-389-21	280-176538-23		1/1	5/14/2023 11:55	5/25/2023 13:24	5/25/2023 13:24	280-613729/	N
FEW4-MW107-355	WG	FEW4-MW107-355-21	280-176538-24		1/1	5/14/2023 10:05	5/25/2023 13:46	5/25/2023 13:46	280-613729/	N
FEW4-MW91-313	WG	FEW4-MW91-313-21	280-176538-25		1/1	5/14/2023 14:52	5/25/2023 14:08	5/25/2023 14:08	280-613729/	N
FEW4-MW91-248	WG	FEW4-MW91-248-21	280-176538-26		1/1	5/14/2023 15:04	5/25/2023 14:30	5/25/2023 14:30	280-613729/	N
FEW4-MW91-195	WG	FEW4-MW91-195-21	280-176538-27		1/1	5/14/2023 15:12	5/25/2023 14:53	5/25/2023 14:53	280-613729/	N
FEW4-MW87-205	WG	FEW4-MW87-205-21	280-176538-28		1/1	5/14/2023 15:35	5/25/2023 15:15	5/25/2023 15:15	280-613729/	N
FEW4-MW87-123	WG	FEW4-MW87-123-21	280-176538-29		1/1	5/14/2023 15:45	5/25/2023 15:37	5/25/2023 15:37	280-613729/	N
FEW4-MW103-308	WG	FEW4-MW103-308-21	280-176538-30		1/1	5/13/2023 15:57	5/25/2023 15:59	5/25/2023 15:59	280-613729/	N
FEW4-MW100-153	WG	FEW4-MW100-153-21	280-176538-31		1/1	5/13/2023 12:33	5/25/2023 16:21	5/25/2023 16:21	280-613729/	N
FEW4-MW100-153	WG	FEW4-MW100-153-MS-21	280-176538-31MS		1/1	5/13/2023 12:33	5/25/2023 17:27	5/25/2023 17:27	280-613729/	MS
FEW4-MW100-153	WG	FEW4-MW100-153-MSD-21	280-176538-31MSD		1/1	5/13/2023 12:33	5/25/2023 17:49	5/25/2023 17:49	280-613729/	SD



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	13052301		FIELDQC	WQ	FEW4-TB02-21	280-176538-32	5/13/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

QC Outliers Report

--No Records Found--

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW50-318-21	280-176538-15	W	N	Trichloroethene (TCE)	1.00	0.790 J	0.790 J		ug/l	TR
FEW4-MW96-194-21	280-176538-3	W	N	Trichloroethene (TCE)	1.00	0.920 J	0.920 J		ug/l	TR
FEW4-MW97-266-PDB-21	280-176538-18	W	N	Trichloroethene (TCE)	1.00	0.580 J	0.580 J		ug/l	TR
FEW4-TH5-97-21	280-176538-10	W	N	Trichloroethene (TCE)	1.00	0.680 J	0.680 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW107-355-21	280-176538-24	W	N	1	Trichloroethene (TCE)	1.00	1.10	1.10	ug/l	
FEW4-MW31-21	280-176538-17	W	N	1	Trichloroethene (TCE)	1.00	27.0	27.0	ug/l	
FEW4-MW50-250-21	280-176538-14	W	N	1	Trichloroethene (TCE)	1.00	2.90	2.90	ug/l	
FEW4-MW50-290-21	280-176538-16	W	N	1	Trichloroethene (TCE)	1.00	5.80	5.80	ug/l	
FEW4-MW50-318-21	280-176538-15	W	N	1	Trichloroethene (TCE)	1.00	0.790 J	0.790 J	ug/l	TR
FEW4-MW93-146-21	280-176538-8	W	N	1	Trichloroethene (TCE)	1.00	2.20	2.20	ug/l	
FEW4-MW93-71-21	280-176538-9	W	N	1	Trichloroethene (TCE)	1.00	4.40	4.40	ug/l	
FEW4-MW93-71-FD-21	280-176538-13	W	FD	1	Trichloroethene (TCE)	1.00	4.60	4.60	ug/l	
FEW4-MW96-194-21	280-176538-3	W	N	1	Trichloroethene (TCE)	1.00	0.920 J	0.920 J	ug/l	TR
FEW4-MW96-260-21	280-176538-2	W	N	1	Trichloroethene (TCE)	1.00	15.0	15.0	ug/l	
FEW4-MW97-266-PDB-21	280-176538-18	W	N	1	Trichloroethene (TCE)	1.00	0.580 J	0.580 J	ug/l	TR
FEW4-TH5-97-21	280-176538-10	W	N	1	Trichloroethene (TCE)	1.00	0.680 J	0.680 J	ug/l	TR

Automated Data Review Detail Report for 280-176538-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176540-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 30, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW104-135-21	280-176540-18	Water	Field Sample/N	X
FEW4-MW107-249-21	280-176540-14	Water	Field Sample/N	X
FEW4-MW107-310-21	280-176540-13	Water	Field Sample/N	X
FEW4-MW33-21	280-176540-11	Water	Field Sample/N	X
FEW4-MW33-FD-21	280-176540-12	Water	Field Duplicate/FD	X
FEW4-MW34-21	280-176540-5	Water	Field Sample/N	X
FEW4-MW36-21	280-176540-25	Water	Field Sample/N	X
FEW4-MW36-FD-21	280-176540-26	Water	Field Duplicate/FD	X
FEW4-MW37-21	280-176540-24	Water	Field Sample/N	X
FEW4-MW54-222-21	280-176540-10	Water	Field Sample/N	X
FEW4-MW54-245-21	280-176540-9	Water	Field Sample/N	X
FEW4-MW54-284-21	280-176540-8	Water	Field Sample/N	X
FEW4-MW55-280-21	280-176540-22	Water	Field Sample/N	X
FEW4-MW55-320-21	280-176540-21	Water	Field Sample/N	X
FEW4-MW56-203-21	280-176540-1	Water	Field Sample/N	X
FEW4-MW56-250-21	280-176540-2	Water	Field Sample/N	X
FEW4-MW75-377-21	280-176540-16	Water	Field Sample/N	X
FEW4-MW75-377-PDB-21	280-176540-15	Water	Field Sample/N	X
FEW4-MW87-82-21	280-176540-23	Water	Field Sample/N	X
FEW4-MW90-243-21	280-176540-7	Water	Field Sample/N	X
FEW4-MW90-292-21	280-176540-6	Water	Field Sample/N	X

Data Validation Report for 280-176540-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW92-365-21	280-176540-4	Water	Field Sample/N	X
FEW4-MW92-427-21	280-176540-3	Water	Field Sample/N	X
FEW4-MW95-165-21	280-176540-20	Water	Field Sample/N	X
FEW4-MW95-200-21	280-176540-19	Water	Field Sample/N	X
FEW4-MW97-107-21	280-176540-17	Water	Field Sample/N	X
FEW4-TB03-21	280-176540-27	Water	Trip Blank/TB	X

Data Validation Report for 280-176540-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176540-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

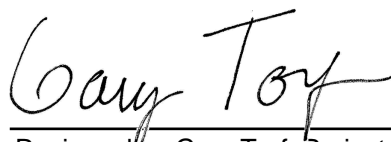
A total of 171 results (12.18%) out of the 1404 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176540-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 30, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-613733/4 (BD)	Cyclohexane	62.0	71 - 130	71 - 130	percent	J/UJ	C	
LCSD 280-613733/4 (BD)	Methylcyclohexane	67.0	72 - 132	72 - 132	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW34-21 280-176540-5	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW34-21 280-176540-5	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-222-21 280-176540-10	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-222-21 280-176540-10	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-245-21 280-176540-9	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-245-21 280-176540-9	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-284-21 280-176540-8	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-284-21 280-176540-8	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW90-243-21 280-176540-7	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW90-243-21 280-176540-7	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW90-292-21 280-176540-6	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C/V4
FEW4-MW90-292-21 280-176540-6	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C/V4
FEW4-MW92-365-21 280-176540-4	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-365-21 280-176540-4	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW92-427-21 280-176540-3	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-427-21 280-176540-3	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-613733/4 (BD)	1,1,2-Trichloro- 1,2,2-trifluoroethane	42.9	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Carbon Tetrachloride	25.4	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Chloroethane	21.3	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Cyclohexane	43.0	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Dichlorodifluorome thane	47.6	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Methylcyclohexan e	42.8	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Tetrachloroethene (PCE)	21.4	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Trichlorofluoromet hane	43.5	< 20	< 20	rpd	J/None	Z	
LCSD 280-613733/4 (BD)	Vinyl chloride	30.3	< 20	< 20	rpd	J/None	Z	
LCSD 280-613854/4 (BD)	Trichlorofluoromet hane	20.9	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW107-310-MSD-21 (SD)	1,2-Dichloropropane	124	78 - 122	78 - 122	percent	J/None	M	
FEW4-MW107-310-MSD-21 (SD)	2-Hexanone	148	57 - 139	57 - 139	percent	J/None	M	
FEW4-MW107-310-MSD-21 (SD)	4-Methyl-2-pentanone (MIBK)	147	67 - 130	67 - 130	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW107-310-MSD-21 (SD)	1,1,1-Trichloroethane	25.2	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,1,2,2-Tetrachloroethane	26.9	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,1,2-Trichloro- 1,2,2-trifluoroethane	23.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,1,2-Trichloroethane	26.3	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,1-Dichloroethane	23.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,1-Dichloroethene	23.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2,3-Trichlorobenzene	23.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2,4-Trichlorobenzene	23.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2-Dibromo-3-chloropropane	36.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2-Dibromoethane (EDB)	24.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2-Dichlorobenzene	23.5	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2-Dichloroethane	22.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,2-Dichloropropane	23.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,3-Dichlorobenzene	25.2	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,4-Dichlorobenzene	27.2	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	1,4-Dioxane	39.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	2-Butanone (MEK)	29.3	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	2-Hexanone	29.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	4-Methyl-2-pentanone (MIBK)	26.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Acetone	28.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Benzene	21.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Bromochloromethane	21.0	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Bromodichloromethane	25.1	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Bromoform	30.7	< 20	< 20	rpd	J/None	D	

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW107-310-MSD-21 (SD)	Bromomethane	22.0	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Carbon disulfide	27.1	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Carbon Tetrachloride	24.9	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Chlorobenzene	20.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Chloroethane	21.3	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Chloroform	21.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Chloromethane	20.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	cis-1,2- Dichloroethene	24.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	cis-1,3- Dichloropropene	25.0	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Cumene	24.3	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Cyclohexane	22.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Dibromochloromet hane	27.1	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Ethylbenzene	20.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	m,p-Xylene	21.1	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Methyl acetate	28.1	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Methyl tert-butyl ether (MTBE)	23.0	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Methylcyclohexan e	23.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Methylene chloride	23.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	o-Xylene	20.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Styrene	22.8	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Tetrachloroethene (PCE)	21.7	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Toluene	22.2	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	trans-1,2- Dichloroethene	22.9	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	trans-1,3- Dichloropropene	26.6	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Trichloroethene (TCE)	21.2	< 20	< 20	rpd	J/None	D	

Data Validation Report for 280-176540-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW107-310-MSD-21 (SD)	Trichlorofluoromet hane	24.4	< 20	< 20	rpd	J/None	D	
FEW4-MW107-310-MSD-21 (SD)	Vinyl chloride	22.8	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS RPD for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW107-310-21 280-176540-13	N	Trichloroethene (TCE)	1.00	3.60 J1	3.60 J		ug/l	D

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW107-310-21 280-176540-13	N	Trichloroethene (TCE)	1.00	3.60 J1	3.60 J		ug/l	D
FEW4-MW34-21 280-176540-5	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW34-21 280-176540-5	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-222-21 280-176540-10	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-222-21 280-176540-10	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-245-21 280-176540-9	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-245-21 280-176540-9	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-284-21 280-176540-8	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-284-21 280-176540-8	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW75-377-21 280-176540-16	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,3-Dichlorobenzene	1.00	0.400 U M	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW75-377-21 280-176540-16	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U Q	3.20 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Chloroethane	4.00	1.60 U Q	1.60 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW75-377-21 280-176540-16	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V4
FEW4-MW75-377-21 280-176540-16	N	Vinyl chloride	2.00	1.00 U Q	1.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U Q	3.20 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW75-377-PDB-21 280-176540-15	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloroethane	4.00	1.60 U Q	1.60 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW75-377-PDB-21 280-176540-15	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Trichloroethene (TCE)	1.00	0.400 U M	0.400 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Vinyl chloride	2.00	1.00 U Q	1.00 UJ		ug/l	V4
FEW4-MW90-243-21 280-176540-7	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW90-243-21 280-176540-7	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW90-292-21 280-176540-6	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U Q	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW90-292-21 280-176540-6	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Bromoform	2.00	1.80 U Q	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Carbon Tetrachloride	1.00	0.800 U Q	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Chloroethane	4.00	1.60 U Q	1.60 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C/V4
FEW4-MW90-292-21 280-176540-6	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C/V4
FEW4-MW90-292-21 280-176540-6	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Tetrachloroethene (PCE)	1.00	0.800 U Q	0.800 UJ		ug/l	V4

Data Validation Report for 280-176540-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW90-292-21 280-176540-6	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V4
FEW4-MW90-292-21 280-176540-6	N	Vinyl chloride	2.00	1.00 U Q	1.00 UJ		ug/l	V4
FEW4-MW92-365-21 280-176540-4	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-365-21 280-176540-4	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW92-427-21 280-176540-3	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-427-21 280-176540-3	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176540-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW33-21	N	cis-1,2-Dichloroethene	1.00	0.720 J	0.720 J		ug/L	TR
FEW4-MW33-FD-21	FD	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J		ug/L	TR
FEW4-MW36-21	N	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J		ug/L	TR
FEW4-MW36-FD-21	FD	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J		ug/L	TR
FEW4-MW92-365-21	N	m,p-Xylene	2.00	0.970 J	0.970 J		ug/L	TR
FEW4-MW92-365-21	N	trans-1,2-Dichloroethene	1.00	0.630 J	0.630 J		ug/L	TR
FEW4-MW92-427-21	N	m,p-Xylene	2.00	0.980 J	0.980 J		ug/L	TR

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW54-245-21 280-176540-9	N	Acetone	15.0	13.0 J	13.0 J	8.00 U	
FEW4-MW54-284-21 280-176540-8	N	Acetone	15.0	14.0 J	14.0 J	8.00 U	
FEW4-MW75-377-21 280-176540-16	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,3-Dichlorobenzene	1.00	0.400 U M	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U Q	3.20 U	3.20 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	V4

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW75-377-21 280-176540-16	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Chloroethane	4.00	1.60 U Q	1.60 U	1.60 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-21 280-176540-16	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V4

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW75-377-21 280-176540-16	N	Vinyl chloride	2.00	1.00 U Q	1.00 U	1.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U Q	3.20 U	3.20 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW75-377-PDB-21 280-176540-15	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloroethane	4.00	1.60 U Q	1.60 U	1.60 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Trichloroethene (TCE)	1.00	0.400 U M	0.400 U	0.400 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V4
FEW4-MW75-377-PDB-21 280-176540-15	N	Vinyl chloride	2.00	1.00 U Q	1.00 U	1.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW90-292-21 280-176540-6	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U Q	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Bromoform	2.00	1.80 U Q	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Carbon Tetrachloride	1.00	0.800 U Q	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4

Data Validation Report for 280-176540-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW90-292-21 280-176540-6	N	Chloroethane	4.00	1.60 U Q	1.60 U	1.60 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ	0.800 UJ	C/V4
FEW4-MW90-292-21 280-176540-6	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ	0.400 UJ	C/V4
FEW4-MW90-292-21 280-176540-6	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Tetrachloroethene (PCE)	1.00	0.800 U Q	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V4
FEW4-MW90-292-21 280-176540-6	N	Vinyl chloride	2.00	1.00 U Q	1.00 U	1.00 UJ	V4

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176540-1

Reason Code Definitions

Code	Definition
C	LCS Recovery
D	MS RPD
M	MS Recovery
TR	Trace Level Detect
V4	Sample Receipt Condition
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176540-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			Samples analyzed with headspace included FEW4-MW90-292-21, FEW4-MW75-377-21, and FEW4-MW75-377-PDB-21.
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB03-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		LCSD 280-613733/4: cyclohexane 62% (71% LCL); methylcyclohexane 67% (72% LCL).
Was the LCS/LCSD RPD within project acceptance limits?		•		LCSD 280-613733/4: 9 analytes > 20% RPD LCSD 280-613854/4: trichlorofluoromethane 20.91% RPD
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW107-310-21.
Were MS/MSD recoveries within project acceptance limits?		•		MSD 1,2-dichloropropane 124% (122% UCL); 2-hexanone 148% (139% UCL); 4-methyl-2-pentaone 147% (130% UCL).
Was the MS/MSD RPD within project acceptance limits?		•		51 of 52 analytes > 20% RPD
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW33-21 and FEW4-MW36-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			

Data Validation Report for 280-176540-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the Calibration within project acceptance criteria?	•			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	•			
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_MS13 CCV 280-613854/2: 4-methyl-2-pentanone 22.3% was outside the 20% control limit high. VMS_R1 CCV 280-613733/2: bromoform 24.4% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment. This included acetone for FEW4-MW54-245-21 (13 ug/L) and FEW4-MW54-284-21 (14 ug/L).

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW56-203	FEW4-MW56-203-21	05-14-2023	1035	N	WG	198.00	208.00	X
FEW4-MW54-222	FEW4-MW54-222-21	05-14-2023	1344	N	WG	216.90	226.90	X
FEW4-MW33	FEW4-MW33-21	05-14-2023	1408	N	WG	188.60	198.60	X
FEW4-MW33	FEW4-MW33-FD-21	05-14-2023	1408	FD	WG	188.60	198.60	X
FEW4-MW107-310	FEW4-MW107-310-21	05-14-2023	1135	N	WG	0.00	0.00	X
FEW4-MW107-310	FEW4-MW107-310-MS-21	05-14-2023	1135	MS	WG	0.00	0.00	X
FEW4-MW107-310	FEW4-MW107-310-MSD-21	05-14-2023	1135	SD	WG	0.00	0.00	X
FEW4-MW107-249	FEW4-MW107-249-21	05-14-2023	1336	N	WG	0.00	0.00	X
FEW4-MW75-377	FEW4-MW75-377-PDB-21	05-14-2023	1307	N	WG	368.40	383.40	X
FEW4-MW75-377	FEW4-MW75-377-21	05-14-2023	1525	N	WG	368.40	383.40	X
FEW4-MW97-107	FEW4-MW97-107-21	05-14-2023	1210	N	WG	0.00	0.00	X
FEW4-MW104-135	FEW4-MW104-135-21	05-14-2023	1506	N	WG	0.00	0.00	X
FEW4-MW95-200	FEW4-MW95-200-21	05-14-2023	0832	N	WG	189.90	204.90	X
FEW4-MW56-250	FEW4-MW56-250-21	05-14-2023	1050	N	WG	246.20	256.20	X
FEW4-MW95-165	FEW4-MW95-165-21	05-14-2023	0900	N	WG	156.90	166.90	X
FEW4-MW55-320	FEW4-MW55-320-21	05-14-2023	0948	N	WG	316.70	326.70	X
FEW4-MW55-280	FEW4-MW55-280-21	05-14-2023	1000	N	WG	276.30	286.30	X
FEW4-MW87-82	FEW4-MW87-82-21	05-14-2023	1551	N	WG	0.00	0.00	X
FEW4-MW37	FEW4-MW37-21	05-14-2023	1612	N	WG	34.50	44.50	X
FEW4-MW36	FEW4-MW36-21	05-14-2023	1630	N	WG	34.60	44.60	X
FEW4-MW36	FEW4-MW36-FD-21	05-14-2023	1630	FD	WG	34.60	44.60	X
FIELDQC	FEW4-TB03-21	05-14-2023	0800	TB	WQ	0.00	0.00	X
FEW4-MW92-427	FEW4-MW92-427-21	05-14-2023	1138	N	WG	0.00	0.00	X
FEW4-MW92-365	FEW4-MW92-365-21	05-14-2023	1152	N	WG	0.00	0.00	X
FEW4-MW34	FEW4-MW34-21	05-14-2023	1213	N	WG	229.80	239.80	X
FEW4-MW90-292	FEW4-MW90-292-21	05-14-2023	1238	N	WG	0.00	0.00	X
FEW4-MW90-243	FEW4-MW90-243-21	05-14-2023	1250	N	WG	0.00	0.00	X



Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW54-284	FEW4-MW54-284-21	05-14-2023	1323	N	WG	279.70	289.70	
FEW4-MW54-245	FEW4-MW54-245-21	05-14-2023	1335	N	WG	240.80	250.80	
Total								29

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-613729								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613729/1002	LCS 280-613729/1002		1/1	5/25/2023 08:26	5/25/2023 08:26	5/25/2023 08:26	280-613729/	BS
LABQC	WQ	LCSD 280-613729/4	LCSD 280-613729/4		1/1	5/25/2023 09:21	5/25/2023 09:21	5/25/2023 09:21	280-613729/	BD
LABQC	WQ	MB 280-613729/7	MB 280-613729/7		1/1	5/25/2023 10:28	5/25/2023 10:28	5/25/2023 10:28	280-613729/	LB
FEW4-MW56-203	WG	FEW4-MW56-203-21	280-176540-1		1/1	5/14/2023 10:35	5/25/2023 16:43	5/25/2023 16:43	280-613729/	N
FEW4-MW56-250	WG	FEW4-MW56-250-21	280-176540-2		1/1	5/14/2023 10:50	5/25/2023 17:05	5/25/2023 17:05	280-613729/	N

Test Method: SW8260D		Analysis Batch: 280-613733								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613733/1002	LCS 280-613733/1002		1/1	5/25/2023 10:51	5/25/2023 10:51	5/25/2023 10:51	280-613733/	BS
LABQC	WQ	LCSD 280-613733/4	LCSD 280-613733/4		1/1	5/25/2023 11:12	5/25/2023 11:12	5/25/2023 11:12	280-613733/	BD
LABQC	WQ	MB 280-613733/7	MB 280-613733/7		1/1	5/25/2023 11:54	5/25/2023 11:54	5/25/2023 11:54	280-613733/	LB
FEW4-MW92-427	WG	FEW4-MW92-427-21	280-176540-3		1/1	5/14/2023 11:38	5/25/2023 14:06	5/25/2023 14:06	280-613733/	N
FEW4-MW92-365	WG	FEW4-MW92-365-21	280-176540-4		1/1	5/14/2023 11:52	5/25/2023 14:27	5/25/2023 14:27	280-613733/	N
FEW4-MW34	WG	FEW4-MW34-21	280-176540-5		1/1	5/14/2023 12:13	5/25/2023 14:47	5/25/2023 14:47	280-613733/	N
FEW4-MW90-292	WG	FEW4-MW90-292-21	280-176540-6		1/1	5/14/2023 12:38	5/25/2023 15:08	5/25/2023 15:08	280-613733/	N
FEW4-MW90-243	WG	FEW4-MW90-243-21	280-176540-7		1/1	5/14/2023 12:50	5/25/2023 15:29	5/25/2023 15:29	280-613733/	N
FEW4-MW54-284	WG	FEW4-MW54-284-21	280-176540-8		1/1	5/14/2023 13:23	5/25/2023 15:50	5/25/2023 15:50	280-613733/	N

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Test Method: SW8260D Analysis Batch: 280-613733

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW54-245	WG	FEW4-MW54-245-21	280-176540-9		1/1	5/14/2023 13:35	5/25/2023 16:10	5/25/2023 16:10	280-613733/	N
FEW4-MW54-222	WG	FEW4-MW54-222-21	280-176540-10		1/1	5/14/2023 13:44	5/25/2023 16:31	5/25/2023 16:31	280-613733/	N

Test Method: SW8260D Analysis Batch: 280-613854

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613854/1002	LCS 280-613854/1002		1/1	5/25/2023 17:07	5/25/2023 17:07	5/25/2023 17:07	280-613854/	BS
LABQC	WQ	LCSD 280-613854/4	LCSD 280-613854/4		1/1	5/25/2023 17:47	5/25/2023 17:47	5/25/2023 17:47	280-613854/	BD
LABQC	WQ	MB 280-613854/7	MB 280-613854/7		1/1	5/25/2023 18:48	5/25/2023 18:48	5/25/2023 18:48	280-613854/	LB
FIELDQC	WQ	FEW4-TB03-21	280-176540-27		1/1	5/14/2023 08:00	5/25/2023 19:25	5/25/2023 19:25	280-613854/	TB
FEW4-MW33	WG	FEW4-MW33-21	280-176540-11		1/1	5/14/2023 14:08	5/25/2023 20:05	5/25/2023 20:05	280-613854/	N
FEW4-MW33	WG	FEW4-MW33-FD-21	280-176540-12		1/1	5/14/2023 14:08	5/25/2023 20:25	5/25/2023 20:25	280-613854/	FD
FEW4-MW107-310	WG	FEW4-MW107-310-21	280-176540-13		1/1	5/14/2023 11:35	5/25/2023 20:45	5/25/2023 20:45	280-613854/	N
FEW4-MW107-249	WG	FEW4-MW107-249-21	280-176540-14		1/1	5/14/2023 13:36	5/25/2023 21:06	5/25/2023 21:06	280-613854/	N
FEW4-MW75-377	WG	FEW4-MW75-377-PDB-21	280-176540-15		1/1	5/14/2023 13:07	5/25/2023 21:26	5/25/2023 21:26	280-613854/	N
FEW4-MW75-377	WG	FEW4-MW75-377-21	280-176540-16		1/1	5/14/2023 15:25	5/25/2023 21:46	5/25/2023 21:46	280-613854/	N
FEW4-MW97-107	WG	FEW4-MW97-107-21	280-176540-17		1/1	5/14/2023 12:10	5/25/2023 22:06	5/25/2023 22:06	280-613854/	N
FEW4-MW104-135	WG	FEW4-MW104-135-21	280-176540-18		1/1	5/14/2023 15:06	5/25/2023 22:26	5/25/2023 22:26	280-613854/	N
FEW4-MW95-200	WG	FEW4-MW95-200-21	280-176540-19		1/1	5/14/2023 08:32	5/25/2023 22:46	5/25/2023 22:46	280-613854/	N

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Test Method: SW8260D Analysis Batch: 280-613854

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW95-165	WG	FEW4-MW95-165-21	280-176540-20		1/1	5/14/2023 09:00	5/25/2023 23:06	5/25/2023 23:06	280-613854/	N
FEW4-MW55-320	WG	FEW4-MW55-320-21	280-176540-21		1/1	5/14/2023 09:48	5/25/2023 23:26	5/25/2023 23:26	280-613854/	N
FEW4-MW55-280	WG	FEW4-MW55-280-21	280-176540-22		1/1	5/14/2023 10:00	5/25/2023 23:46	5/25/2023 23:46	280-613854/	N
FEW4-MW87-82	WG	FEW4-MW87-82-21	280-176540-23		1/1	5/14/2023 15:51	5/26/2023 00:06	5/26/2023 00:06	280-613854/	N
FEW4-MW37	WG	FEW4-MW37-21	280-176540-24		1/1	5/14/2023 16:12	5/26/2023 00:26	5/26/2023 00:26	280-613854/	N
FEW4-MW36	WG	FEW4-MW36-21	280-176540-25		1/1	5/14/2023 16:30	5/26/2023 00:46	5/26/2023 00:46	280-613854/	N
FEW4-MW36	WG	FEW4-MW36-FD-21	280-176540-26		1/1	5/14/2023 16:30	5/26/2023 01:06	5/26/2023 01:06	280-613854/	FD
FEW4-MW107-310	WG	FEW4-MW107-310-MS-21	280-176540-13MS		1/1	5/14/2023 11:35	5/26/2023 02:06	5/26/2023 02:06	280-613854/	MS
FEW4-MW107-310	WG	FEW4-MW107-310-MSD-21	280-176540-13MSD		1/1	5/14/2023 11:35	5/26/2023 02:27	5/26/2023 02:27	280-613854/	SD

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	14052301		FIELDQC	WQ	FEW4-TB03-21	280-176540-27	5/14/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

Automated Data Review Detail Report for 280-176540-1
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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Cyclohexane	62.00 (percent)	J/UJ	71 - 130	71 - 130	C			
LCS Recovery	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Methylcyclohexane	67.00 (percent)	J/UJ	72 - 132	72 - 132	C			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	1,1,2-Trichloro-1,2,2-trifluoroethane	42.86 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Carbon Tetrachloride	25.38 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Chloroethane	21.27 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Cyclohexane	43.02 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Dichlorodifluoromethane	47.62 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Methylcyclohexane	42.82 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Tetrachloroethene (PCE)	21.37 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Trichlorofluoromethane	43.50 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613733/4 (BD) / LCSD 280-613733/4	1 / 1.00	Vinyl chloride	30.29 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-613854/4 (BD) / LCSD 280-613854/4	1 / 1.00	Trichlorofluoromethane	20.91 (rpd)	J/None	< 20	< 20	Z			
MS Recovery	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dichloropropane	124.0 (percent)	J/None	78 - 122	78 - 122	M			
MS Recovery	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	2-Hexanone	148.0 (percent)	J/None	57 - 139	57 - 139	M			
MS Recovery	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	4-Methyl-2-pentanone (MIBK)	147.0 (percent)	J/None	67 - 130	67 - 130	M			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1,1-Trichloroethane	25.17 (rpd)	J/None	< 20	< 20	D			

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1,2,2-Tetrachloroethane	26.91 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1,2-Trichloro-1,2,2-trifluoroethane	23.80 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1,2-Trichloroethane	26.29 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1-Dichloroethane	23.76 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,1-Dichloroethene	23.83 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2,3-Trichlorobenzene	23.58 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2,4-Trichlorobenzene	23.66 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dibromo-3-chloropropane	36.40 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dibromoethane (EDB)	24.78 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dichlorobenzene	23.45 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dichloroethane	22.61 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,2-Dichloropropane	23.62 (rpd)	J/None	< 20	< 20	D			

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,3-Dichlorobenzene	25.17 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,4-Dichlorobenzene	27.23 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	1,4-Dioxane	39.42 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	2-Butanone (MEK)	29.29 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	2-Hexanone	29.57 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	4-Methyl-2-pentanone (MIBK)	26.69 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Acetone	28.83 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Benzene	21.73 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Bromochloromethane	21.02 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Bromodichloromethane	25.11 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Bromoform	30.73 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Bromomethane	21.95 (rpd)	J/None	< 20	< 20	D			

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Carbon disulfide	27.13 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Carbon Tetrachloride	24.87 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Chlorobenzene	20.65 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Chloroethane	21.31 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Chloroform	21.76 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Chloromethane	20.59 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	cis-1,2-Dichloroethene	24.77 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	cis-1,3-Dichloropropene	24.98 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Cumene	24.32 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Cyclohexane	22.74 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Dibromochloromethane	27.05 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Ethylbenzene	20.72 (rpd)	J/None	< 20	< 20	D			

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	m,p-Xylene	21.08 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Methyl acetate	28.10 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Methyl tert-butyl ether (MTBE)	22.95 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Methylcyclohexane	23.41 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Methylene chloride	23.42 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	o-Xylene	20.35 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Styrene	22.75 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Tetrachloroethene (PCE)	21.65 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Toluene	22.18 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	trans-1,2-Dichloroethene	22.86 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	trans-1,3-Dichloropropene	26.62 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Trichloroethene (TCE)	21.19 (rpd)	J/None	< 20	< 20	D			

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Trichlorofluoromethane	24.42 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW107-310-MSD-21 (SD) / 280-176540-13MSD	1 / 1.00	Vinyl chloride	22.77 (rpd)	J/None	< 20	< 20	D			

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW107-310-21	280-176540-13	W	N	Trichloroethene (TCE)	1.00	3.60 J1	3.60 J		ug/l	D
FEW4-MW33-21	280-176540-11	W	N	cis-1,2-Dichloroethene	1.00	0.720 J	0.720 J		ug/l	TR
FEW4-MW33-FD-21	280-176540-12	W	FD	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J		ug/l	TR
FEW4-MW34-21	280-176540-5	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW34-21	280-176540-5	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW36-21	280-176540-25	W	N	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J		ug/l	TR
FEW4-MW36-FD-21	280-176540-26	W	FD	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J		ug/l	TR
FEW4-MW54-222-21	280-176540-10	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-222-21	280-176540-10	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-245-21	280-176540-9	W	N	Acetone	15.0	13.0 J	13.0 J		ug/l	TR
FEW4-MW54-245-21	280-176540-9	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-245-21	280-176540-9	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW54-284-21	280-176540-8	W	N	Acetone	15.0	14.0 J	14.0 J		ug/l	TR
FEW4-MW54-284-21	280-176540-8	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW54-284-21	280-176540-8	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW90-243-21	280-176540-7	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW90-243-21	280-176540-7	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW90-292-21	280-176540-6	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW90-292-21	280-176540-6	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW92-365-21	280-176540-4	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-365-21	280-176540-4	W	N	m,p-Xylene	2.00	0.970 J	0.970 J		ug/l	TR
FEW4-MW92-365-21	280-176540-4	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C
FEW4-MW92-365-21	280-176540-4	W	N	trans-1,2-Dichloroethene	1.00	0.630 J	0.630 J		ug/l	TR
FEW4-MW92-427-21	280-176540-3	W	N	Cyclohexane	1.00	0.800 U Q	0.800 UJ		ug/l	C
FEW4-MW92-427-21	280-176540-3	W	N	m,p-Xylene	2.00	0.980 J	0.980 J		ug/l	TR



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW92-427-21	280-176540-3	W	N	Methylcyclohexane	1.00	0.400 U Q	0.400 UJ		ug/l	C

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW104-135-21	280-176540-18	W	N	1	Trichloroethene (TCE)	1.00	4.30	4.30	ug/l	
FEW4-MW107-249-21	280-176540-14	W	N	1	Trichloroethene (TCE)	1.00	12.0	12.0	ug/l	
FEW4-MW107-310-21	280-176540-13	W	N	1	Trichloroethene (TCE)	1.00	3.60 J1	3.60 J	ug/l	D
FEW4-MW33-21	280-176540-11	W	N	1	cis-1,2-Dichloroethene	1.00	0.720 J	0.720 J	ug/l	TR
FEW4-MW33-21	280-176540-11	W	N	1	Trichloroethene (TCE)	1.00	97.0	97.0	ug/l	
FEW4-MW33-FD-21	280-176540-12	W	FD	1	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J	ug/l	TR
FEW4-MW33-FD-21	280-176540-12	W	FD	1	Trichloroethene (TCE)	1.00	98.0	98.0	ug/l	
FEW4-MW36-21	280-176540-25	W	N	1	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J	ug/l	TR
FEW4-MW36-21	280-176540-25	W	N	1	Trichloroethene (TCE)	1.00	160	160	ug/l	
FEW4-MW36-FD-21	280-176540-26	W	FD	1	cis-1,2-Dichloroethene	1.00	0.430 J	0.430 J	ug/l	TR
FEW4-MW36-FD-21	280-176540-26	W	FD	1	Trichloroethene (TCE)	1.00	150	150	ug/l	
FEW4-MW37-21	280-176540-24	W	N	1	Trichloroethene (TCE)	1.00	2.50	2.50	ug/l	
FEW4-MW54-245-21	280-176540-9	W	N	1	Acetone	15.0	13.0 J	13.0 J	ug/l	TR
FEW4-MW54-284-21	280-176540-8	W	N	1	Acetone	15.0	14.0 J	14.0 J	ug/l	TR
FEW4-MW55-280-21	280-176540-22	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	
FEW4-MW56-203-21	280-176540-1	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW56-250-21	280-176540-2	W	N	1	Trichloroethene (TCE)	1.00	9.90	9.90	ug/l	
FEW4-MW92-365-21	280-176540-4	W	N	1	cis-1,2-Dichloroethene	1.00	1.80	1.80	ug/l	
FEW4-MW92-365-21	280-176540-4	W	N	1	m,p-Xylene	2.00	0.970 J	0.970 J	ug/l	TR
FEW4-MW92-365-21	280-176540-4	W	N	1	trans-1,2-Dichloroethene	1.00	0.630 J	0.630 J	ug/l	TR
FEW4-MW92-365-21	280-176540-4	W	N	1	Trichloroethene (TCE)	1.00	22.0	22.0	ug/l	
FEW4-MW92-427-21	280-176540-3	W	N	1	cis-1,2-Dichloroethene	1.00	1.10	1.10	ug/l	
FEW4-MW92-427-21	280-176540-3	W	N	1	m,p-Xylene	2.00	0.980 J	0.980 J	ug/l	TR
FEW4-MW92-427-21	280-176540-3	W	N	1	Trichloroethene (TCE)	1.00	18.0	18.0	ug/l	

Automated Data Review Detail Report for 280-176540-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176661-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 30, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-KING No. 20-21	280-176661-27	Water	Field Sample/N	X
FEW4-KING No. 20-FD-21	280-176661-28	Water	Field Duplicate/FD	X
FEW4-KING No. 3-21	280-176661-29	Water	Field Sample/N	X
FEW4-MW104-178-21	280-176661-25	Water	Field Sample/N	X
FEW4-MW104-99-21	280-176661-26	Water	Field Sample/N	X
FEW4-MW22-21	280-176661-8	Water	Field Sample/N	X
FEW4-MW52-140-21	280-176661-18	Water	Field Sample/N	X
FEW4-MW52-25-21	280-176661-19	Water	Field Sample/N	X
FEW4-MW52-59-21	280-176661-20	Water	Field Sample/N	X
FEW4-MW52-59-FD-21	280-176661-31	Water	Field Duplicate/FD	X
FEW4-MW53-145-21	280-176661-11	Water	Field Sample/N	X
FEW4-MW53-145-FD-21	280-176661-12	Water	Field Duplicate/FD	X
FEW4-MW53-177-21	280-176661-9	Water	Field Sample/N	X
FEW4-MW53-95-21	280-176661-10	Water	Field Sample/N	X
FEW4-MW55-250-21	280-176661-24	Water	Field Sample/N	X
FEW4-MW55-250-PDB-21	280-176661-23	Water	Field Sample/N	X
FEW4-MW58-124-21	280-176661-7	Water	Field Sample/N	X
FEW4-MW58-169-21	280-176661-6	Water	Field Sample/N	X
FEW4-MW58-213-21	280-176661-5	Water	Field Sample/N	X
FEW4-MW61-107-21	280-176661-4	Water	Field Sample/N	X
FEW4-MW61-107-PDB-21	280-176661-3	Water	Field Sample/N	X

Data Validation Report for 280-176661-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW75-93-21	280-176661-2	Water	Field Sample/N	X
FEW4-MW75-93-PDB-21	280-176661-1	Water	Field Sample/N	X
FEW4-MW84-258-21	280-176661-14	Water	Field Sample/N	X
FEW4-MW84-298-21	280-176661-13	Water	Field Sample/N	X
FEW4-MW84B-143-21	280-176661-16	Water	Field Sample/N	X
FEW4-MW84B-193-21	280-176661-17	Water	Field Sample/N	X
FEW4-MW84B-356-21	280-176661-15	Water	Field Sample/N	X
FEW4-MW95-288-21	280-176661-22	Water	Field Sample/N	X
FEW4-MW95-288-PDB-21	280-176661-21	Water	Field Sample/N	X
FEW4-TB04-21	280-176661-30	Water	Trip Blank/TB	X

Data Validation Report for 280-176661-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176661-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

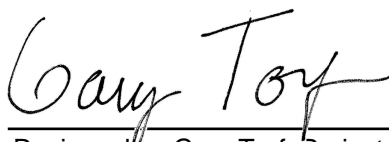
A total of 0 results (0.00%) out of the 1612 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176661-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 30, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176661-1

Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-613868/4 (BD)	Carbon disulfide	21.0	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176661-1

Qualified Results

No results associated with this sample delivery group required qualification.

Table of All Trace Results

Test Method: SW8260D Extraction Method: SW5030B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW52-25-21	N	trans-1,2-Dichloroethene	1.00	0.410 J	0.410 J		ug/L	TR

Data Validation Report for 280-176661-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW84-298-21 280-176661-13	N	Acetone	15.0	12.0 J	12.0 J	8.00 U	
FEW4-MW84B-143-21 280-176661-16	N	Acetone	15.0	13.0 J	13.0 J	8.00 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176661-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB04-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		LCSD 280-613868/4: carbon disulfide 21% RPD
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW55-250-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW53-145-21, FEW4-KING No. 20-21, and FEW4-MW52-59-21
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			

Data Validation Report for 280-176661-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the Calibration within project acceptance criteria?	•			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	•			
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_R1 CCV 280-613862/2: bromoform 22.8% was outside the 20% control limit high. VMS_R1 CCV 280-613891/2: bromoform 21.7% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment. This included acetone for FEW4-MW84-298-21 (12J ug/L) and FEW4-MW84B-143-21 (13J ug/L).

Automated Data Review Detail Report for 280-176661-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW75-93	FEW4-MW75-93-PDB-21	05-15-2023	0933	N	WG	85.40	95.40	X
FEW4-MW53-95	FEW4-MW53-95-21	05-15-2023	1210	N	WG	90.00	100.00	X
FEW4-MW53-145	FEW4-MW53-145-21	05-15-2023	1225	N	WG	140.20	150.20	X
FEW4-MW53-145	FEW4-MW53-145-FD-21	05-15-2023	1225	FD	WG	140.20	150.20	X
FEW4-MW84-298	FEW4-MW84-298-21	05-15-2023	1251	N	WG	290.00	300.00	X
FEW4-MW84-258	FEW4-MW84-258-21	05-15-2023	1304	N	WG	250.00	260.00	X
FEW4-MW84B-356	FEW4-MW84B-356-21	05-15-2023	1338	N	WG	0.00	0.00	X
FEW4-MW84B-143	FEW4-MW84B-143-21	05-15-2023	1350	N	WG	0.00	0.00	X
FEW4-MW84B-193	FEW4-MW84B-193-21	05-15-2023	1400	N	WG	0.00	0.00	X
FEW4-MW52-140	FEW4-MW52-140-21	05-15-2023	1418	N	WG	134.70	144.70	X
FEW4-MW52-25	FEW4-MW52-25-21	05-15-2023	1426	N	WG	20.10	30.10	X
FEW4-MW75-93	FEW4-MW75-93-21	05-15-2023	1105	N	WG	85.40	95.40	X
FEW4-MW52-59	FEW4-MW52-59-21	05-15-2023	1435	N	WG	55.20	65.20	X
FEW4-MW95-288	FEW4-MW95-288-PDB-21	05-15-2023	0904	N	WG	279.80	289.80	X
FEW4-MW95-288	FEW4-MW95-288-21	05-15-2023	1019	N	WG	279.80	289.80	X
FEW4-MW55-250	FEW4-MW55-250-PDB-21	05-15-2023	1414	N	WG	246.20	256.20	X
FEW4-MW55-250	FEW4-MW55-250-21	05-15-2023	1501	N	WG	246.20	256.20	X
FEW4-MW55-250	FEW4-MW55-250-MS-21	05-15-2023	1501	MS	WG	246.20	256.20	X
FEW4-MW55-250	FEW4-MW55-250-MSD-21	05-15-2023	1501	SD	WG	246.20	256.20	X
FEW4-MW104-178	FEW4-MW104-178-21	05-15-2023	1131	N	WG	0.00	0.00	X
FEW4-MW104-99	FEW4-MW104-99-21	05-15-2023	1256	N	WG	0.00	0.00	X
KING NO. 20	FEW4-KING No. 20-21	05-15-2023	1535	N	WG	999.00	999.00	X
KING NO. 20	FEW4-KING No. 20-FD-21	05-15-2023	1535	FD	WG	999.00	999.00	X
KING NO. 3	FEW4-KING No. 3-21	05-15-2023	1615	N	WG	999.00	999.00	X
FEW4-MW61-107	FEW4-MW61-107-PDB-21	05-15-2023	1140	N	WG	100.00	110.00	X
FIELDQC	FEW4-TB04-21	05-15-2023	0800	TB	WQ	0.00	0.00	X
FEW4-MW52-59	FEW4-MW52-59-FD-21	05-15-2023	1435	FD	WG	55.20	65.20	X

Automated Data Review Detail Report for 280-176661-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW61-107	FEW4-MW61-107-21	05-15-2023	1400	N	WG	100.00	110.00	
FEW4-MW58-213	FEW4-MW58-213-21	05-15-2023	1050	N	WG	206.40	216.40	
FEW4-MW58-169	FEW4-MW58-169-21	05-15-2023	1118	N	WG	156.60	176.60	
FEW4-MW58-124	FEW4-MW58-124-21	05-15-2023	1126	N	WG	116.60	126.60	
FEW4-MW22	FEW4-MW22-21	05-15-2023	1141	N	WG	9.60	19.60	
FEW4-MW53-177	FEW4-MW53-177-21	05-15-2023	1200	N	WG	172.20	182.20	
Total								33

Automated Data Review Detail Report for 280-176661-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Batch Report

Test Method: SW8260D		Analysis Batch: 280-613862								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613862/1002	LCS 280-613862/1002		1/1	5/25/2023 18:33	5/25/2023 18:33	5/25/2023 18:33	280-613862/	BS
LABQC	WQ	LCSD 280-613862/4	LCSD 280-613862/4		1/1	5/25/2023 19:27	5/25/2023 19:27	5/25/2023 19:27	280-613862/	BD
LABQC	WQ	MB 280-613862/7	MB 280-613862/7		1/1	5/25/2023 20:09	5/25/2023 20:09	5/25/2023 20:09	280-613862/	LB
FEW4-MW53-145	WG	FEW4-MW53-145-21	280-176661-11		1/1	5/15/2023 12:25	5/25/2023 22:58	5/25/2023 22:58	280-613862/	N
FEW4-MW53-145	WG	FEW4-MW53-145-FD-21	280-176661-12		1/1	5/15/2023 12:25	5/25/2023 23:19	5/25/2023 23:19	280-613862/	FD
FEW4-MW84-298	WG	FEW4-MW84-298-21	280-176661-13		1/1	5/15/2023 12:51	5/25/2023 23:40	5/25/2023 23:40	280-613862/	N
FEW4-MW84-258	WG	FEW4-MW84-258-21	280-176661-14		1/1	5/15/2023 13:04	5/26/2023 00:01	5/26/2023 00:01	280-613862/	N
FEW4-MW84B-356	WG	FEW4-MW84B-356-21	280-176661-15		1/1	5/15/2023 13:38	5/26/2023 00:21	5/26/2023 00:21	280-613862/	N
FEW4-MW84B-143	WG	FEW4-MW84B-143-21	280-176661-16		1/1	5/15/2023 13:50	5/26/2023 00:42	5/26/2023 00:42	280-613862/	N
FEW4-MW84B-193	WG	FEW4-MW84B-193-21	280-176661-17		1/1	5/15/2023 14:00	5/26/2023 01:03	5/26/2023 01:03	280-613862/	N
FEW4-MW52-140	WG	FEW4-MW52-140-21	280-176661-18		1/1	5/15/2023 14:18	5/26/2023 01:24	5/26/2023 01:24	280-613862/	N
FEW4-MW52-25	WG	FEW4-MW52-25-21	280-176661-19		1/1	5/15/2023 14:26	5/26/2023 01:45	5/26/2023 01:45	280-613862/	N
FEW4-MW52-59	WG	FEW4-MW52-59-21	280-176661-20		1/1	5/15/2023 14:35	5/26/2023 02:05	5/26/2023 02:05	280-613862/	N

Test Method: SW8260D		Analysis Batch: 280-613868								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613868/1002	LCS 280-613868/1002		1/1	5/25/2023 18:07	5/25/2023 18:07	5/25/2023 18:07	280-613868/	BS

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Test Method: SW8260D Analysis Batch: 280-613868

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCSD 280-613868/4	LCSD 280-613868/4		1/1	5/25/2023 18:49	5/25/2023 18:49	5/25/2023 18:49	280-613868/	BD
LABQC	WQ	MB 280-613868/7	MB 280-613868/7		1/1	5/25/2023 19:43	5/25/2023 19:43	5/25/2023 19:43	280-613868/	LB
FEW4-MW58-213	WG	FEW4-MW58-213-21	280-176661-5		1/1	5/15/2023 10:50	5/25/2023 20:16	5/25/2023 20:16	280-613868/	N
FEW4-MW58-169	WG	FEW4-MW58-169-21	280-176661-6		1/1	5/15/2023 11:18	5/25/2023 20:37	5/25/2023 20:37	280-613868/	N
FEW4-MW58-124	WG	FEW4-MW58-124-21	280-176661-7		1/1	5/15/2023 11:26	5/25/2023 20:58	5/25/2023 20:58	280-613868/	N
FEW4-MW22	WG	FEW4-MW22-21	280-176661-8		1/1	5/15/2023 11:41	5/25/2023 21:19	5/25/2023 21:19	280-613868/	N
FEW4-MW53-177	WG	FEW4-MW53-177-21	280-176661-9		1/1	5/15/2023 12:00	5/25/2023 21:40	5/25/2023 21:40	280-613868/	N
FEW4-MW53-95	WG	FEW4-MW53-95-21	280-176661-10		1/1	5/15/2023 12:10	5/25/2023 22:02	5/25/2023 22:02	280-613868/	N
FEW4-MW75-93	WG	FEW4-MW75-93-PDB-21	280-176661-1		1/100	5/15/2023 09:33	5/26/2023 01:57	5/26/2023 01:57	280-613868/	N
FEW4-MW75-93	WG	FEW4-MW75-93-21	280-176661-2		1/100	5/15/2023 11:05	5/26/2023 02:18	5/26/2023 02:18	280-613868/	N
FEW4-MW61-107	WG	FEW4-MW61-107-PDB-21	280-176661-3		1/100	5/15/2023 11:40	5/26/2023 02:40	5/26/2023 02:40	280-613868/	N
FEW4-MW61-107	WG	FEW4-MW61-107-21	280-176661-4		1/100	5/15/2023 14:00	5/26/2023 03:01	5/26/2023 03:01	280-613868/	N

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-613891								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-613891/1002	LCS 280-613891/1002		1/1	5/26/2023 07:07	5/26/2023 07:07	5/26/2023 07:07	280-613891/	BS
LABQC	WQ	LCSD 280-613891/4	LCSD 280-613891/4		1/1	5/26/2023 07:49	5/26/2023 07:49	5/26/2023 07:49	280-613891/	BD
LABQC	WQ	MB 280-613891/7	MB 280-613891/7		1/1	5/26/2023 08:30	5/26/2023 08:30	5/26/2023 08:30	280-613891/	LB
FIELDQC	WQ	FEW4-TB04-21	280-176661-30		1/1	5/15/2023 08:00	5/26/2023 10:14	5/26/2023 10:14	280-613891/	TB
FEW4-MW95-288	WG	FEW4-MW95-288-PDB-21	280-176661-21		1/1	5/15/2023 09:04	5/26/2023 10:35	5/26/2023 10:35	280-613891/	N
FEW4-MW95-288	WG	FEW4-MW95-288-21	280-176661-22		1/1	5/15/2023 10:19	5/26/2023 10:55	5/26/2023 10:55	280-613891/	N
FEW4-MW55-250	WG	FEW4-MW55-250-PDB-21	280-176661-23		1/1	5/15/2023 14:14	5/26/2023 11:16	5/26/2023 11:16	280-613891/	N
FEW4-MW55-250	WG	FEW4-MW55-250-21	280-176661-24		1/1	5/15/2023 15:01	5/26/2023 11:37	5/26/2023 11:37	280-613891/	N
FEW4-MW104-178	WG	FEW4-MW104-178-21	280-176661-25		1/1	5/15/2023 11:31	5/26/2023 11:58	5/26/2023 11:58	280-613891/	N
FEW4-MW104-99	WG	FEW4-MW104-99-21	280-176661-26		1/1	5/15/2023 12:56	5/26/2023 12:18	5/26/2023 12:18	280-613891/	N
KING NO. 20	WG	FEW4-KING No. 20-21	280-176661-27		1/1	5/15/2023 15:35	5/26/2023 12:39	5/26/2023 12:39	280-613891/	N
KING NO. 20	WG	FEW4-KING No. 20-FD-21	280-176661-28		1/1	5/15/2023 15:35	5/26/2023 13:00	5/26/2023 13:00	280-613891/	FD
KING NO. 3	WG	FEW4-KING No. 3-21	280-176661-29		1/1	5/15/2023 16:15	5/26/2023 13:21	5/26/2023 13:21	280-613891/	N
FEW4-MW52-59	WG	FEW4-MW52-59-FD-21	280-176661-31		1/1	5/15/2023 14:35	5/26/2023 13:41	5/26/2023 13:41	280-613891/	FD
FEW4-MW55-250	WG	FEW4-MW55-250-MS-21	280-176661-24MS		1/1	5/15/2023 15:01	5/26/2023 15:04	5/26/2023 15:04	280-613891/	MS
FEW4-MW55-250	WG	FEW4-MW55-250-MSD-21	280-176661-24MSD		1/1	5/15/2023 15:01	5/26/2023 15:25	5/26/2023 15:25	280-613891/	SD



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	15052301		FIELDQC	WQ	FEW4-TB04-21	280-176661-30	5/15/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS RPD	LCSD 280-613868/4 (BD) / LCSD 280-613868/4	1 / 1.00	Carbon disulfide	21.01 (rpd)	J/None	< 20	< 20	Z			

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW52-25-21	280-176661-19	W	N	trans-1,2-Dichloroethene	1.00	0.410 J	0.410 J		ug/l	TR
FEW4-MW84-298-21	280-176661-13	W	N	Acetone	15.0	12.0 J	12.0 J		ug/l	TR
FEW4-MW84B-143-21	280-176661-16	W	N	Acetone	15.0	13.0 J	13.0 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-KING No. 20-21	280-176661-27	W	N	1	Trichloroethene (TCE)	1.00	4.50	4.50	ug/l	
FEW4-KING No. 20-FD-21	280-176661-28	W	FD	1	Trichloroethene (TCE)	1.00	4.70	4.70	ug/l	
FEW4-MW104-99-21	280-176661-26	W	N	1	Trichloroethene (TCE)	1.00	9.40	9.40	ug/l	
FEW4-MW52-25-21	280-176661-19	W	N	1	cis-1,2-Dichloroethene	1.00	1.60	1.60	ug/l	
FEW4-MW52-25-21	280-176661-19	W	N	1	trans-1,2-Dichloroethene	1.00	0.410 J	0.410 J	ug/l	TR
FEW4-MW52-25-21	280-176661-19	W	N	1	Trichloroethene (TCE)	1.00	38.0	38.0	ug/l	
FEW4-MW52-59-21	280-176661-20	W	N	1	Trichloroethene (TCE)	1.00	51.0	51.0	ug/l	
FEW4-MW52-59-FD-21	280-176661-31	W	FD	1	Trichloroethene (TCE)	1.00	52.0	52.0	ug/l	
FEW4-MW55-250-21	280-176661-24	W	N	1	Trichloroethene (TCE)	1.00	17.0	17.0	ug/l	
FEW4-MW55-250-PDB-21	280-176661-23	W	N	1	Trichloroethene (TCE)	1.00	16.0	16.0	ug/l	
FEW4-MW61-107-21	280-176661-4	W	N	100	cis-1,2-Dichloroethene	100	210 D	210	ug/l	
FEW4-MW61-107-21	280-176661-4	W	N	100	Trichloroethene (TCE)	100	4600 D	4600	ug/l	
FEW4-MW61-107-PDB-21	280-176661-3	W	N	100	cis-1,2-Dichloroethene	100	300 D	300	ug/l	
FEW4-MW61-107-PDB-21	280-176661-3	W	N	100	Trichloroethene (TCE)	100	4900 D	4900	ug/l	
FEW4-MW75-93-21	280-176661-2	W	N	100	Trichloroethene (TCE)	100	3400 D	3400	ug/l	
FEW4-MW75-93-PDB-21	280-176661-1	W	N	100	Trichloroethene (TCE)	100	4700 D	4700	ug/l	
FEW4-MW84-298-21	280-176661-13	W	N	1	Acetone	15.0	12.0 J	12.0 J	ug/l	TR
FEW4-MW84B-143-21	280-176661-16	W	N	1	Acetone	15.0	13.0 J	13.0 J	ug/l	TR
FEW4-MW95-288-21	280-176661-22	W	N	1	Trichloroethene (TCE)	1.00	12.0	12.0	ug/l	
FEW4-MW95-288-PDB-21	280-176661-21	W	N	1	Trichloroethene (TCE)	1.00	3.10	3.10	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176762-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 30, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-BELVOIRBORIESE1-21	280-176762-1	Solid	Field Sample/N	X
FEW4-BELVOIRBORIESE2-21	280-176762-2	Solid	Field Sample/N	X
FEW4-LONE TREE-SE1-21	280-176762-6	Solid	Field Sample/N	X
FEW4-LONE TREE-SE1-FD-21	280-176762-7	Solid	Field Duplicate/FD	X
FEW4-OTTO SPRING-SE1-21	280-176762-10	Solid	Field Sample/N	X
FEW4-BELVOIRBORIESW1-21	280-176762-3	Water	Field Sample/N	X
FEW4-BELVOIRBORIESW2-21	280-176762-4	Water	Field Sample/N	X
FEW4-LONE TREE CREEK-21	280-176762-5	Water	Field Sample/N	X
FEW4-OTTO SPRING-21	280-176762-8	Water	Field Sample/N	X
FEW4-OTTO SPRING-FD-21	280-176762-9	Water	Field Duplicate/FD	X
FEW4-TB06-21	280-176762-11	Water	Trip Blank/TB	X

Data Validation Report for 280-176762-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176762-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

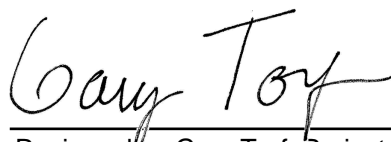
A total of 13 results (2.27%) out of the 572 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176762-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 30, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176762-1

Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-614371/3-A (BD)	Carbon disulfide	21.3	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS RPD for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	Carbon disulfide	0.00370	0.00430 Q	0.00430 J		mg/kg	Z
FEW4-LONE TREE-SE1-21 280-176762-6	N	Carbon disulfide	0.00510	0.00190 J Q	0.00190 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	Carbon disulfide	0.00430	0.00180 J Q	0.00180 J		mg/kg	TR/Z

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176762-1

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-BELVOIRBORIESE1- MS-21 (MS)	1,2,3- Trichlorobenzene	50.0	66 - 130	66 - 130	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	1,2,4- Trichlorobenzene	48.0	67 - 129	67 - 129	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	1,2- Dichlorobenzene	71.0	78 - 121	78 - 121	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	1,3- Dichlorobenzene	66.0	77 - 121	77 - 121	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	1,4- Dichlorobenzene	66.0	75 - 120	75 - 120	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	Cumene	66.0	68 - 134	68 - 134	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	m,p-Xylene	75.0	77 - 124	77 - 124	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	Methylcyclohexan e	54.0	66 - 133	66 - 133	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MS-21 (MS)	Vinyl chloride	55.0	56 - 135	56 - 135	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	1,2,3- Trichlorobenzene	53.0	66 - 130	66 - 130	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	1,2,4- Trichlorobenzene	53.0	67 - 129	67 - 129	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	1,2- Dichlorobenzene	71.0	78 - 121	78 - 121	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	1,3- Dichlorobenzene	69.0	77 - 121	77 - 121	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	1,4- Dichlorobenzene	68.0	75 - 120	75 - 120	percent	J/X	M	
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	Methylcyclohexan e	62.0	66 - 133	66 - 133	percent	J/X	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176762-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-BELVOIRBORIESE1- MSD-21 (SD)	Carbon disulfide	24.7	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176762-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5035A						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	2-Butanone (MEK)	0.0160	0.0100 U Q	0.0100 UJ		mg/kg	V2
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	Chloromethane	0.00790	0.00130 U Q	0.00130 UJ		mg/kg	V1/V2
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	2-Butanone (MEK)	0.0150	0.00950 U M Q	0.00950 UJ		mg/kg	V2
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	Carbon disulfide	0.00370	0.00430 Q	0.00430 J		mg/kg	Z
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	Chloromethane	0.00740	0.00120 U Q	0.00120 UJ		mg/kg	V1/V2
FEW4-LONE TREE-SE1-21 280-176762-6	N	2-Butanone (MEK)	0.0200	0.0130 U Q	0.0130 UJ		mg/kg	V2
FEW4-LONE TREE-SE1-21 280-176762-6	N	Carbon disulfide	0.00510	0.00190 J Q	0.00190 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-21 280-176762-6	N	Chloromethane	0.0100	0.00160 U Q	0.00160 UJ		mg/kg	V1/V2
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	2-Butanone (MEK)	0.0170	0.0110 U Q	0.0110 UJ		mg/kg	V2
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	Carbon disulfide	0.00430	0.00180 J Q	0.00180 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	Chloromethane	0.00870	0.00140 U Q	0.00140 UJ		mg/kg	V1/V2
FEW4-OTTO SPRING-SE1-21 280-176762-10	N	2-Butanone (MEK)	0.0200	0.0130 U Q	0.0130 UJ		mg/kg	V2
FEW4-OTTO SPRING-SE1-21 280-176762-10	N	Chloromethane	0.0100	0.00160 U Q	0.00160 UJ		mg/kg	V1/V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176762-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-LONE TREE CREEK-21	N	Trichloroethene (TCE)	1.00	0.380 J	0.380 J		ug/L	TR
Test Method: SW8260D		Extraction Method: SW5035A						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-BELVOIRBORIESE1-21	N	Toluene	0.00390	0.000850 J	0.000850 J		mg/kg	TR
FEW4-BELVOIRBORIESE2-21	N	Benzene	0.00370	0.000110 J	0.000110 J		mg/kg	TR
FEW4-LONE TREE-SE1-21	N	Carbon disulfide	0.00510	0.00190 J Q	0.00190 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-21	N	Toluene	0.00510	0.00120 J	0.00120 J		mg/kg	TR
FEW4-LONE TREE-SE1-FD-21	FD	Carbon disulfide	0.00430	0.00180 J Q	0.00180 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-FD-21	FD	Toluene	0.00430	0.000580 J	0.000580 J		mg/kg	TR
FEW4-OTTO SPRING-SE1-21	N	Toluene	0.00510	0.000750 J	0.000750 J		mg/kg	TR

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	1,2,3-Trichlorobenzene	0.00390	0.00250 U J1	0.00250 X	0.00250 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	1,2,4-Trichlorobenzene	0.00390	0.00130 U J1	0.00130 X	0.00130 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	1,2-Dichlorobenzene	0.00390	0.00320 U J1	0.00320 X	0.00320 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	1,3-Dichlorobenzene	0.00390	0.00130 U J1	0.00130 X	0.00130 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	1,4-Dichlorobenzene	0.00390	0.000630 U M J1	0.000630 X	0.000630 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	2-Butanone (MEK)	0.0160	0.0100 U Q	0.0100 U	0.0100 UJ	V2
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	Chloromethane	0.00790	0.00130 U Q	0.00130 U	0.00130 UJ	V1/V2
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	Cumene	0.00390	0.00320 U J1	0.00320 X	0.00320 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	m,p-Xylene	0.00250	0.00240 U J1	0.00240 X	0.00240 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	Methylcyclohexane	0.00390	0.00130 U J1	0.00130 X	0.00130 U	
FEW4-BELVOIRBORIESE1-21 280-176762-1	N	Vinyl chloride	0.00390	0.00250 U J1	0.00250 X	0.00250 U	
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	2-Butanone (MEK)	0.0150	0.00950 U M Q	0.00950 U	0.00950 UJ	V2
FEW4-BELVOIRBORIESE2-21 280-176762-2	N	Chloromethane	0.00740	0.00120 U Q	0.00120 U	0.00120 UJ	V1/V2
FEW4-LONE TREE-SE1-21 280-176762-6	N	2-Butanone (MEK)	0.0200	0.0130 U Q	0.0130 U	0.0130 UJ	V2
FEW4-LONE TREE-SE1-21 280-176762-6	N	Chloromethane	0.0100	0.00160 U Q	0.00160 U	0.00160 UJ	V1/V2
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	2-Butanone (MEK)	0.0170	0.0110 U Q	0.0110 U	0.0110 UJ	V2
FEW4-LONE TREE-SE1-FD-21 280-176762-7	FD	Chloromethane	0.00870	0.00140 U Q	0.00140 U	0.00140 UJ	V1/V2
FEW4-OTTO SPRING-SE1-21 280-176762-10	N	2-Butanone (MEK)	0.0200	0.0130 U Q	0.0130 U	0.0130 UJ	V2

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-OTTO SPRING-SE1- 21 280-176762-10	N	Chloromethane	0.0100	0.00160 U Q	0.00160 U	0.00160 UJ	V1/V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
M	MS Recovery
TR	Trace Level Detect
V1	ICV
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176762-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?	•			
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB06-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		LCSD 280-614371/3: carbon disulfide 21.3% RPD
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-BELVOIRBORIESW1-21 and FEW4-BELVOIRBORIESE2-21.
Were MS/MSD recoveries within project acceptance limits?		•		FEW4-BELVOIRBORIESE1-21:15 analytes < LCL
Was the MS/MSD RPD within project acceptance limits?		•		FEW4-BELVOIRBORIESE1-21: carbon disulfide 24.72% RPD.
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-LONE TREE-SE1-21 and FEW4-OTTO SPRING-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			

Data Validation Report for 280-176762-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was instrument tuning completed every 12 hours during sample analysis?	.			
Was the Calibration within project acceptance criteria?	.			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		.		VMS_G2 ICV 280-610151/22: dichlorodifluoromethane -20.2% was outside the 20% control limit low;
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_G2 CCV 280-614297/2: chloromethane -20.7% was outside the 20% control limit low; VMS_G2 CCV 280-614297/14: 2-butanone -24.5% was outside the 20% control limit low;
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
BELVOIRBORIESE1	FEW4-BELVOIRBORIESE1-21	05-17-2023	1315	N	SE	0.00	0.00	
OTTO SPRING-SE1	FEW4-OTTO SPRING-SE1-21	05-17-2023	1446	N	SE	0.00	0.00	
FIELDQC	FEW4-TB06-21	05-17-2023	0800	TB	WQ	0.00	0.00	
BELVOIRBORIESE1	FEW4-BELVOIRBORIESE1-MS-21	05-17-2023	1315	MS	SE	0.00	0.00	
BELVOIRBORIESE1	FEW4-BELVOIRBORIESE1-MSD-21	05-17-2023	1315	SD	SE	0.00	0.00	
BELVOIRBORIESE2	FEW4-BELVOIRBORIESE2-21	05-17-2023	1242	N	SE	0.00	0.00	
BELVOIRBORIESW1	FEW4-BELVOIRBORIESW1-21	05-17-2023	1312	N	WS	0.00	0.00	
BELVOIRBORIESW1	FEW4-BELVOIRBORIESW1-MS-21	05-17-2023	1312	MS	WS	0.00	0.00	
BELVOIRBORIESW1	FEW4-BELVOIRBORIESW1-MSD-21	05-17-2023	1312	SD	WS	0.00	0.00	
BELVOIRBORIESW2	FEW4-BELVOIRBORIESW2-21	05-17-2023	1240	N	WS	0.00	0.00	
LONE TREE CREEK	FEW4-LONE TREE CREEK-21	05-17-2023	1530	N	WS	0.00	0.00	
LONE TREE-SE1	FEW4-LONE TREE-SE1-21	05-17-2023	1532	N	SE	0.00	0.00	
LONE TREE-SE1	FEW4-LONE TREE-SE1-FD-21	05-17-2023	1532	FD	SE	0.00	0.00	
OTTO SPRING	FEW4-OTTO SPRING-21	05-17-2023	1444	N	WS	0.00	0.00	
OTTO SPRING	FEW4-OTTO SPRING-FD-21	05-17-2023	1444	FD	WS	0.00	0.00	
Total								15

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614284								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614284/1002	LCS 280-614284/1002		1/1	5/30/2023 21:57	5/30/2023 21:57	5/30/2023 21:57	280-614284/	BS
LABQC	WQ	LCSD 280-614284/4	LCSD 280-614284/4		1/1	5/30/2023 22:41	5/30/2023 22:41	5/30/2023 22:41	280-614284/	BD
LABQC	WQ	MB 280-614284/7	MB 280-614284/7		1/1	5/30/2023 23:48	5/30/2023 23:48	5/30/2023 23:48	280-614284/	LB
FIELDQC	WQ	FEW4-TB06-21	280-176762-11		1/1	5/17/2023 08:00	5/31/2023 00:23	5/31/2023 00:23	280-614284/	TB
BELVOIRBORIES W1	WS	FEW4-BELVOIRBORIESW1-21	280-176762-3		1/1	5/17/2023 13:12	5/31/2023 01:07	5/31/2023 01:07	280-614284/	N
BELVOIRBORIES W2	WS	FEW4-BELVOIRBORIESW2-21	280-176762-4		1/1	5/17/2023 12:40	5/31/2023 01:29	5/31/2023 01:29	280-614284/	N
LONE TREE CREEK	WS	FEW4-LONE TREE CREEK-21	280-176762-5		1/1	5/17/2023 15:30	5/31/2023 01:51	5/31/2023 01:51	280-614284/	N
OTTO SPRING	WS	FEW4-OTTO SPRING-21	280-176762-8		1/1	5/17/2023 14:44	5/31/2023 02:13	5/31/2023 02:13	280-614284/	N
OTTO SPRING	WS	FEW4-OTTO SPRING-FD-21	280-176762-9		1/1	5/17/2023 14:44	5/31/2023 02:35	5/31/2023 02:35	280-614284/	FD
BELVOIRBORIES W1	WS	FEW4-BELVOIRBORIESW1-MS-21	280-176762-3MS		1/1	5/17/2023 13:12	5/31/2023 07:46	5/31/2023 07:46	280-614284/	MS
BELVOIRBORIES W1	WS	FEW4-BELVOIRBORIESW1-MSD-21	280-176762-3MSD		1/1	5/17/2023 13:12	5/31/2023 08:08	5/31/2023 08:08	280-614284/	SD

Test Method: SW8260D		Analysis Batch: 280-614297								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LCS 280-614371/2-A	LCS 280-614371/2-A		1/1	5/31/2023 07:01	5/31/2023 07:01	5/31/2023 11:25	280-614371/	BS
LABQC	SQ	LCSD 280-614371/3-A	LCSD 280-614371/3-A		1/1	5/31/2023 07:02	5/31/2023 07:02	5/31/2023 11:46	280-614371/	BD
LABQC	SQ	MB 280-614371/1-A	MB 280-614371/1-A		1/1	5/31/2023 07:00	5/31/2023 07:00	5/31/2023 12:27	280-614371/	LB

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Test Method: SW8260D Analysis Batch: 280-614297

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
BELVOIRBORIES E1	SE	FEW4-BELVOIRBORIESE1-21	280-176762-1		1/1	5/17/2023 13:15	5/17/2023 13:15	5/31/2023 12:48	280-614371/	N
BELVOIRBORIES E2	SE	FEW4-BELVOIRBORIESE2-21	280-176762-2		1/1	5/17/2023 12:42	5/17/2023 12:42	5/31/2023 14:11	280-614371/	N
LONE TREE-SE1	SE	FEW4-LONE TREE-SE1-21	280-176762-6		1/1	5/17/2023 15:32	5/17/2023 15:32	5/31/2023 14:32	280-614371/	N
LONE TREE-SE1	SE	FEW4-LONE TREE-SE1-FD-21	280-176762-7		1/1	5/17/2023 15:32	5/17/2023 15:32	5/31/2023 14:53	280-614371/	FD
OTTO SPRING-SE1	SE	FEW4-OTTO SPRING-SE1-21	280-176762-10		1/1	5/17/2023 14:46	5/17/2023 14:46	5/31/2023 15:13	280-614371/	N
BELVOIRBORIES E1	SE	FEW4-BELVOIRBORIESE1-MS-21	280-176762-1MS		1/1	5/17/2023 13:15	5/17/2023 13:15	5/31/2023 17:18	280-614371/	MS
BELVOIRBORIES E1	SE	FEW4-BELVOIRBORIESE1-MSD-21	280-176762-1MSD		1/1	5/17/2023 13:15	5/17/2023 13:15	5/31/2023 17:38	280-614371/	SD

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Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	17052301		FIELDQC	WQ	FEW4-TB06-21	280-176762-11	5/17/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS RPD	LCSD 280-614371/3-A (BD) / LCSD 280-614371/3-A	1 / 1.00	Carbon disulfide	21.30 (rpd)	J/None	< 20	< 20	Z			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	1,2,3-Trichlorobenzene	50.00 (percent)	J/X	66 - 130	66 - 130	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	1,2,4-Trichlorobenzene	48.00 (percent)	J/X	67 - 129	67 - 129	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	1,2-Dichlorobenzene	71.00 (percent)	J/X	78 - 121	78 - 121	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	1,3-Dichlorobenzene	66.00 (percent)	J/X	77 - 121	77 - 121	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	1,4-Dichlorobenzene	66.00 (percent)	J/X	75 - 120	75 - 120	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	Cumene	66.00 (percent)	J/X	68 - 134	68 - 134	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	m,p-Xylene	75.00 (percent)	J/X	77 - 124	77 - 124	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	Methylcyclohexane	54.00 (percent)	J/X	66 - 133	66 - 133	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MS-21 (MS) / 280-176762-1MS	1 / 1.00	Vinyl chloride	55.00 (percent)	J/X	56 - 135	56 - 135	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	1,2,3-Trichlorobenzene	53.00 (percent)	J/X	66 - 130	66 - 130	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	1,2,4-Trichlorobenzene	53.00 (percent)	J/X	67 - 129	67 - 129	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	1,2-Dichlorobenzene	71.00 (percent)	J/X	78 - 121	78 - 121	M			

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	1,3-Dichlorobenzene	69.00 (percent)	J/X	77 - 121	77 - 121	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	1,4-Dichlorobenzene	68.00 (percent)	J/X	75 - 120	75 - 120	M			
MS Recovery	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	Methylcyclohexane	62.00 (percent)	J/X	66 - 133	66 - 133	M			
MS RPD	FEW4-BELVOIRBORIESE1- MSD-21 (SD) / 280-176762-1MSD	1 / 1.00	Carbon disulfide	24.72 (rpd)	J/None	< 20	< 20	D			

Rule is the multiplier used when blank contamination occurs to determine action level.

Automated Data Review Detail Report for 280-176762-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-LONE TREE CREEK-21	280-176762-5	W	N	Trichloroethene (TCE)	1.00	0.380 J	0.380 J		ug/l	TR

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2,3-Trichlorobenzene	0.00390	0.00250 U J1	0.00250 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2,4-Trichlorobenzene	0.00390	0.00130 U J1	0.00130 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2-Dichlorobenzene	0.00390	0.00320 U J1	0.00320 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,3-Dichlorobenzene	0.00390	0.00130 U J1	0.00130 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,4-Dichlorobenzene	0.00390	0.000630 U M J1	0.000630 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Cumene	0.00390	0.00320 U J1	0.00320 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	m,p-Xylene	0.00250	0.00240 U J1	0.00240 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Methylcyclohexane	0.00390	0.00130 U J1	0.00130 X		mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Toluene	0.00390	0.000850 J	0.000850 J		mg/kg	TR
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Vinyl chloride	0.00390	0.00250 U J1	0.00250 X		mg/kg	M
FEW4-BELVOIRBORIESE2-21	280-176762-2	S	N	Benzene	0.00370	0.000110 J	0.000110 J		mg/kg	TR
FEW4-BELVOIRBORIESE2-21	280-176762-2	S	N	Carbon disulfide	0.00370	0.00430 Q	0.00430 J		mg/kg	Z
FEW4-LONE TREE-SE1-21	280-176762-6	S	N	Carbon disulfide	0.00510	0.00190 J Q	0.00190 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-21	280-176762-6	S	N	Toluene	0.00510	0.00120 J	0.00120 J		mg/kg	TR
FEW4-LONE TREE-SE1-FD-21	280-176762-7	S	FD	Carbon disulfide	0.00430	0.00180 J Q	0.00180 J		mg/kg	TR/Z
FEW4-LONE TREE-SE1-FD-21	280-176762-7	S	FD	Toluene	0.00430	0.000580 J	0.000580 J		mg/kg	TR

Automated Data Review Detail Report for 280-176762-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Qualified Results

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-OTTO SPRING-SE1-21	280-176762-10	S	N	Toluene	0.00510	0.000750 J	0.000750 J		mg/kg	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176762-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-BELVOIRBORIESW1-21	280-176762-3	W	N	1	Trichloroethene (TCE)	1.00	3.40	3.40	ug/l	
FEW4-LONE TREE CREEK-21	280-176762-5	W	N	1	Trichloroethene (TCE)	1.00	0.380 J	0.380 J	ug/l	TR

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1	Toluene	0.00390	0.000850 J	0.000850 J	mg/kg	TR
FEW4-BELVOIRBORIESE2-21	280-176762-2	S	N	1	Benzene	0.00370	0.000110 J	0.000110 J	mg/kg	TR
FEW4-BELVOIRBORIESE2-21	280-176762-2	S	N	1	Carbon disulfide	0.00370	0.00430 Q	0.00430 J	mg/kg	Z
FEW4-BELVOIRBORIESE2-21	280-176762-2	S	N	1	Toluene	0.00370	0.0100	0.0100	mg/kg	
FEW4-LONE TREE-SE1-21	280-176762-6	S	N	1	Carbon disulfide	0.00510	0.00190 J Q	0.00190 J	mg/kg	TR/Z
FEW4-LONE TREE-SE1-21	280-176762-6	S	N	1	Toluene	0.00510	0.00120 J	0.00120 J	mg/kg	TR
FEW4-LONE TREE-SE1-FD-21	280-176762-7	S	FD	1	Carbon disulfide	0.00430	0.00180 J Q	0.00180 J	mg/kg	TR/Z
FEW4-LONE TREE-SE1-FD-21	280-176762-7	S	FD	1	Toluene	0.00430	0.000580 J	0.000580 J	mg/kg	TR
FEW4-OTTO SPRING-SE1-21	280-176762-10	S	N	1	Toluene	0.00510	0.000750 J	0.000750 J	mg/kg	TR

Automated Data Review Detail Report for 280-176762-1
 B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Rejected Results

Test Method: SW8260D		Extraction Method: SW5035A		Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2,3-Trichlorobenzene	0.00390	0.00250 U J1	0.00250 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2,4-Trichlorobenzene	0.00390	0.00130 U J1	0.00130 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,2-Dichlorobenzene	0.00390	0.00320 U J1	0.00320 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,3-Dichlorobenzene	0.00390	0.00130 U J1	0.00130 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	1,4-Dichlorobenzene	0.00390	0.000630 U M J1	0.000630 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Cumene	0.00390	0.00320 U J1	0.00320 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	m,p-Xylene	0.00250	0.00240 U J1	0.00240 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Methylcyclohexane	0.00390	0.00130 U J1	0.00130 X	mg/kg	M
FEW4-BELVOIRBORIESE1-21	280-176762-1	S	N	Vinyl chloride	0.00390	0.00250 U J1	0.00250 X	mg/kg	M



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176779-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 31, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-JOHNSON NO. 1-21	280-176779-1	Water	Field Sample/N	X
FEW4-MW05-21	280-176779-2	Water	Field Sample/N	X
FEW4-MW10-21	280-176779-3	Water	Field Sample/N	X
FEW4-MW105-143-21	280-176779-4	Water	Field Sample/N	X
FEW4-MW105-188-21	280-176779-5	Water	Field Sample/N	X
FEW4-MW105-188-FD-21	280-176779-6	Water	Field Duplicate/FD	X
FEW4-MW105-93-21	280-176779-7	Water	Field Sample/N	X
FEW4-MW15-21	280-176779-8	Water	Field Sample/N	X
FEW4-MW21-21	280-176779-9	Water	Field Sample/N	X
FEW4-MW44R-207-21	280-176779-10	Water	Field Sample/N	X
FEW4-MW47-239-21	280-176779-11	Water	Field Sample/N	X
FEW4-MW47-259-21	280-176779-12	Water	Field Sample/N	X
FEW4-MW47-290-21	280-176779-13	Water	Field Sample/N	X
FEW4-MW51-110-21	280-176779-14	Water	Field Sample/N	X
FEW4-MW51-80-21	280-176779-15	Water	Field Sample/N	X
FEW4-MW69-164-21	280-176779-16	Water	Field Sample/N	X
FEW4-MW69-164-FD-21	280-176779-17	Water	Field Duplicate/FD	X
FEW4-MW69-64-21	280-176779-18	Water	Field Sample/N	X
FEW4-MW69-99-21	280-176779-19	Water	Field Sample/N	X
FEW4-MW71-128-21	280-176779-20	Water	Field Sample/N	X
FEW4-MW71-96-21	280-176779-21	Water	Field Sample/N	X

Data Validation Report for 280-176779-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW77-129-21	280-176779-22	Water	Field Sample/N	X
FEW4-MW77-255-21	280-176779-23	Water	Field Sample/N	X
FEW4-MW77-40-21	280-176779-24	Water	Field Sample/N	X
FEW4-MW78-159-21	280-176779-25	Water	Field Sample/N	X
FEW4-MW78-265-21	280-176779-26	Water	Field Sample/N	X
FEW4-MW78-265-FD-21	280-176779-27	Water	Field Duplicate/FD	X
FEW4-MW86-199-21	280-176779-28	Water	Field Sample/N	X
FEW4-MW86-53-21	280-176779-29	Water	Field Sample/N	X
FEW4-MW92B-288-21	280-176779-30	Water	Field Sample/N	X
FEW4-MW92B-288-FD-21	280-176779-31	Water	Field Duplicate/FD	X
FEW4-MW92B-288-PDB-21	280-176779-32	Water	Field Sample/N	X
FEW4-MW92B-322-21	280-176779-33	Water	Field Sample/N	X
FEW4-TB05-21	280-176779-34	Water	Trip Blank/TB	X
FEW4-WEST TRIANGLE-21	280-176779-35	Water	Field Sample/N	X

Data Validation Report for 280-176779-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176779-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

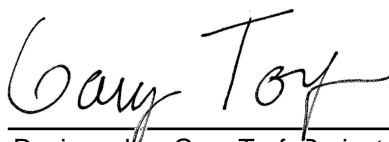
A total of 114 results (6.26%) out of the 1820 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176779-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 31, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176779-1

Quality Control Outliers for test method SW8260D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 280-614111/1002 (BS)	Bromoform	134	66 - 130	66 - 130	percent	J/None	C	
LCSD 280-614111/4 (BD)	Bromoform	135	66 - 130	66 - 130	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176779-1

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW47-290-MS-21 (MS)	1,3-Dichlorobenzene	120	80 - 119	80 - 119	percent	J/None	M	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dichloroethane	72.0	73 - 128	73 - 128	percent	J/X	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176779-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW47-290-MSD-21 (SD)	1,1,1-Trichloroethane	25.0	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,1,2,2-Tetrachloroethane	25.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,1,2-Trichloro- 1,2,2-trifluoroethane	27.4	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,1,2-Trichloroethane	27.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,1-Dichloroethane	25.8	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,1-Dichloroethene	25.0	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2,3-Trichlorobenzene	22.7	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2,4-Trichlorobenzene	24.9	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dibromo-3-chloropropane	25.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dibromoethane (EDB)	27.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dichlorobenzene	25.7	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dichloroethane	26.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,2-Dichloropropane	27.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,3-Dichlorobenzene	25.8	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,4-Dichlorobenzene	26.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	1,4-Dioxane	25.4	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	2-Butanone (MEK)	25.4	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	2-Hexanone	26.5	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	4-Methyl-2-pentanone (MIBK)	26.6	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Acetone	24.8	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Benzene	26.4	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Bromochloromethane	26.5	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Bromodichloromethane	26.6	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Bromoform	27.7	< 20	< 20	rpd	J/None	D	

Data Validation Report for 280-176779-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW47-290-MSD-21 (SD)	Carbon disulfide	25.7	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Carbon Tetrachloride	26.6	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Chlorobenzene	26.1	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Chloroform	26.4	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	cis-1,2- Dichloroethene	24.7	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	cis-1,3- Dichloropropene	25.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Cumene	24.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Cyclohexane	26.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Dibromochloromet hane	26.9	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Ethylbenzene	26.1	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	m,p-Xylene	26.5	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Methyl acetate	24.9	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Methyl tert-butyl ether (MTBE)	25.6	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Methylcyclohexan e	28.1	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Methylene chloride	25.5	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	o-Xylene	26.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Styrene	26.3	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Tetrachloroethene (PCE)	26.0	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Toluene	25.6	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	trans-1,2- Dichloroethene	26.2	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	trans-1,3- Dichloropropene	25.8	< 20	< 20	rpd	J/None	D	
FEW4-MW47-290-MSD-21 (SD)	Trichloroethene (TCE)	23.9	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Data Validation Report for 280-176779-1

Qualified Results associated with the MS RPD for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW47-290-21 280-176779-13	N	Trichloroethene (TCE)	1.00	6.20 J1	6.20 J		ug/l	D

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176779-1

Quality Control Outliers for test method SW8260D, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-TB05-21 (TB)		16.5	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Test Hold Time for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21 280-176779-34	TB	1,1,1-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2,2-Tetrachloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U H Q	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,3-Trichlorobenzene	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,4-Trichlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromo-3-chloropropane	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromoethane (EDB)	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloropropane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,3-Dichlorobenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dioxane	150	50.0 U H	50.0 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Butanone (MEK)	15.0	12.0 U H	12.0 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Hexanone	5.00	4.00 U H Q	4.00 UJ		ug/l	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U H	3.20 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Acetone	15.0	8.00 U H	8.00 UJ		ug/l	H1/V4

Data Validation Report for 280-176779-1

Qualified Results associated with the Test Hold Time for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21 280-176779-34	TB	Benzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromochloromethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromodichloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromoform	2.00	1.80 U H Q	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromomethane	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon disulfide	2.00	0.800 U M H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon Tetrachloride	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroethane	4.00	1.60 U H	1.60 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroform	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloromethane	2.00	1.00 U H Q	1.00 UJ		ug/l	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	cis-1,2-Dichloroethene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	cis-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cumene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cyclohexane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dibromochloromethane	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dichlorodifluoromethane	3.00	2.50 U H	2.50 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Ethylbenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	m,p-Xylene	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl acetate	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl tert-butyl ether (MTBE)	5.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylcyclohexane	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylene chloride	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	o-Xylene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Styrene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Tetrachloroethene (PCE)	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Toluene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4

Data Validation Report for 280-176779-1

Qualified Results associated with the Test Hold Time for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21 280-176779-34	TB	trans-1,2-Dichloroethene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	trans-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichloroethene (TCE)	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichlorofluoromethane	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Vinyl chloride	2.00	1.00 U H	1.00 UJ		ug/l	H1/V4

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176779-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW47-239-21 280-176779-11	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Bromomethane	5.00	4.00 U M	4.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	V4

Data Validation Report for 280-176779-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW47-239-21 280-176779-11	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Chloroethane	4.00	1.60 U	1.60 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Trichloroethene (TCE)	1.00	19.0	19.0 J	-	ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Trichlorofluoromethane	2.00	0.800 U	0.800 UJ		ug/l	V4
FEW4-MW47-239-21 280-176779-11	N	Vinyl chloride	2.00	1.00 U	1.00 UJ		ug/l	V4
FEW4-MW47-290-21 280-176779-13	N	Trichloroethene (TCE)	1.00	6.20 J1	6.20 J		ug/l	D

Data Validation Report for 280-176779-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW92B-288-PDB-21 280-176779-32	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW92B-288-PDB-21 280-176779-32	N	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW92B-288-PDB-21 280-176779-32	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW92B-322-21 280-176779-33	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW92B-322-21 280-176779-33	N	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW92B-322-21 280-176779-33	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-TB05-21 280-176779-34	TB	1,1,1-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2,2-Tetrachloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U H Q	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,3-Trichlorobenzene	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,4-Trichlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromo-3-chloropropane	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromoethane (EDB)	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloropropane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,3-Dichlorobenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dioxane	150	50.0 U H	50.0 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Butanone (MEK)	15.0	12.0 U H	12.0 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Hexanone	5.00	4.00 U H Q	4.00 UJ		ug/l	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U H	3.20 UJ		ug/l	H1/V4

Data Validation Report for 280-176779-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21 280-176779-34	TB	Acetone	15.0	8.00 U H	8.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Benzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromochloromethane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromodichloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromoform	2.00	1.80 U H Q	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromomethane	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon disulfide	2.00	0.800 U M H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon Tetrachloride	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroethane	4.00	1.60 U H	1.60 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroform	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloromethane	2.00	1.00 U H Q	1.00 UJ		ug/l	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	cis-1,2-Dichloroethene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	cis-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cumene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cyclohexane	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dibromochloromethane	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dichlorodifluoromethane	3.00	2.50 U H	2.50 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Ethylbenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	m,p-Xylene	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl acetate	5.00	4.00 U H	4.00 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl tert-butyl ether (MTBE)	5.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylcyclohexane	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylene chloride	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	o-Xylene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Styrene	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Tetrachloroethene (PCE)	1.00	0.800 U H	0.800 UJ		ug/l	H1/V4

Data Validation Report for 280-176779-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21 280-176779-34	TB	Toluene	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	trans-1,2-Dichloroethene	1.00	0.500 U H	0.500 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	trans-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichloroethene (TCE)	1.00	0.400 U H	0.400 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichlorofluoromethane	2.00	0.800 U H	0.800 UJ		ug/l	H1/V4
FEW4-TB05-21 280-176779-34	TB	Vinyl chloride	2.00	1.00 U H	1.00 UJ		ug/l	H1/V4
FEW4-WEST TRIANGLE-21 280-176779-35	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-WEST TRIANGLE-21 280-176779-35	N	Carbon disulfide	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-WEST TRIANGLE-21 280-176779-35	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
 In instances where no LOD is provided, results are reported down to the LOQ.
 Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176779-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW105-143-21	N	cis-1,2-Dichloroethene	2.00	0.760 J D	0.760 J		ug/L	TR
FEW4-MW105-93-21	N	cis-1,2-Dichloroethene	4.00	3.00 J D	3.00 J		ug/L	TR
FEW4-MW77-129-21	N	Vinyl chloride	2.00	0.640 J	0.640 J		ug/L	TR
FEW4-MW77-255-21	N	Trichloroethene (TCE)	1.00	0.330 J	0.330 J		ug/L	TR
FEW4-MW78-159-21	N	Tetrachloroethene (PCE)	1.00	0.850 J	0.850 J		ug/L	TR
FEW4-MW86-199-21	N	cis-1,2-Dichloroethene	1.00	0.470 J	0.470 J		ug/L	TR

Data Validation Report for 280-176779-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW15-21 280-176779-8	N	Acetone	15.0	14.0 J	14.0 J	8.00 U	
FEW4-MW47-239-21 280-176779-11	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Bromomethane	5.00	4.00 U M	4.00 U	4.00 UJ	V4

Data Validation Report for 280-176779-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW47-239-21 280-176779-11	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Chloroethane	4.00	1.60 U	1.60 U	1.60 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Dichlorodifluoromethane	3.00	2.50 U	2.50 U	2.50 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Trichloroethene (TCE)	1.00	19.0	19.0	19.0 J	V4
FEW4-MW47-239-21 280-176779-11	N	Trichlorofluoromethane	2.00	0.800 U	0.800 U	0.800 UJ	V4
FEW4-MW47-239-21 280-176779-11	N	Vinyl chloride	2.00	1.00 U	1.00 U	1.00 UJ	V4

Data Validation Report for 280-176779-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW47-290-21 280-176779-13	N	1,2-Dichloroethane	1.00	0.800 U J1	0.800 X	0.800 U	
FEW4-MW92B-288-PDB-21 280-176779-32	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW92B-288-PDB-21 280-176779-32	N	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW92B-288-PDB-21 280-176779-32	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW92B-322-21 280-176779-33	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW92B-322-21 280-176779-33	N	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW92B-322-21 280-176779-33	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-TB05-21 280-176779-34	TB	1,1,1-Trichloroethane	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2,2-Tetrachloroethane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U H Q	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1,2-Trichloroethane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,1-Dichloroethene	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,3-Trichlorobenzene	2.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2,4-Trichlorobenzene	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromo-3-chloropropane	5.00	4.00 U H	4.00 UJ	4.00 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dibromoethane (EDB)	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichlorobenzene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,2-Dichloropropane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,3-Dichlorobenzene	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dichlorobenzene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	1,4-Dioxane	150	50.0 U H	50.0 UJ	50.0 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Butanone (MEK)	15.0	12.0 U H	12.0 UJ	12.0 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	2-Hexanone	5.00	4.00 U H Q	4.00 UJ	4.00 UJ	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U H	3.20 UJ	3.20 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Acetone	15.0	8.00 U H	8.00 UJ	8.00 UJ	H1/V4

Data Validation Report for 280-176779-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-TB05-21 280-176779-34	TB	Benzene	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromochloromethane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromodichloromethane	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromoform	2.00	1.80 U H Q	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Bromomethane	5.00	4.00 U H	4.00 UJ	4.00 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon disulfide	2.00	0.800 U M H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Carbon Tetrachloride	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chlorobenzene	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroethane	4.00	1.60 U H	1.60 UJ	1.60 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloroform	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Chloromethane	2.00	1.00 U H Q	1.00 UJ	1.00 UJ	H1/V4/V2
FEW4-TB05-21 280-176779-34	TB	cis-1,2-Dichloroethene	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	cis-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cumene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Cyclohexane	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dibromochloromethane	2.00	1.80 U H	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Dichlorodifluoromethane	3.00	2.50 U H	2.50 UJ	2.50 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Ethylbenzene	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	m,p-Xylene	2.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl acetate	5.00	4.00 U H	4.00 UJ	4.00 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methyl tert-butyl ether (MTBE)	5.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylcyclohexane	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Methylene chloride	2.00	1.80 U H	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	o-Xylene	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Styrene	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Tetrachloroethene (PCE)	1.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Toluene	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4

Data Validation Report for 280-176779-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-TB05-21 280-176779-34	TB	trans-1,2-Dichloroethene	1.00	0.500 U H	0.500 UJ	0.500 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	trans-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ	1.80 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichloroethene (TCE)	1.00	0.400 U H	0.400 UJ	0.400 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Trichlorofluoromethane	2.00	0.800 U H	0.800 UJ	0.800 UJ	H1/V4
FEW4-TB05-21 280-176779-34	TB	Vinyl chloride	2.00	1.00 U H	1.00 UJ	1.00 UJ	H1/V4
FEW4-WEST TRIANGLE-21 280-176779-35	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-WEST TRIANGLE-21 280-176779-35	N	Carbon disulfide	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-WEST TRIANGLE-21 280-176779-35	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
D	MS RPD
H1	Test Hold Time
M	MS Recovery
TR	Trace Level Detect
V2	CCV
V4	Sample Receipt Condition

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
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+ The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176779-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			Samples analyzed with headspace included FEW4-MW47-239-21 and FEW4-TB05-21.
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?		•		FEW4-TB05-21 was reanalyzed beyond the 14-day holding time for preserved samples.
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB05-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		LCS 280-614111/1002: bromoform 134%/135% (130% UCL)
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW47-290-21.
Were MS/MSD recoveries within project acceptance limits?		•		MS 1,3-dichlorobenzene 120% (119% UCL) MSD 1,2-dichloroethane 72% (73% LCL)
Was the MS/MSD RPD within project acceptance limits?		•		46 analytes > 20% RPD
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW69-164-21, FEW4-MW78-265-21, FEW4-MW92B-288-21, and FEW4-MW105-188-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			

Data Validation Report for 280-176779-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was instrument tuning completed every 12 hours during sample analysis?	.			
Was the Calibration within project acceptance criteria?	.			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
				VMS_R1 CCV 280-614018/2: bromoform 22.4% was outside the 20% control limit high.
				VMS_R1 CCV 280-614111/2: chloromethane -22.2%, bromomethane -22.7%, and carbon disulfide -22.3% were outside the 20% control limit low; trichlorofluoromethane 24.3% and bromoform 34.5%, were outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_R1 CCV 280-614611/2: chloromethane -20.7%, and 2-hexanone -20.2% were outside the 20% control limit low; bromoform 24.4% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?	.			Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment.
				This included acetone for sample FEW4-MW15-21 at 14J ug/l.

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
JOHNSON NO. 1	FEW4-JOHNSON NO. 1-21	05-16-2023	1545	N	WG	999.00	999.00	X
FEW4-MW44R-207	FEW4-MW44R-207-21	05-16-2023	1445	N	WG	202.20	212.20	X
FEW4-MW47-239	FEW4-MW47-239-21	05-16-2023	1236	N	WG	232.00	242.00	X
FEW4-MW47-259	FEW4-MW47-259-21	05-16-2023	1109	N	WG	247.10	267.10	X
FEW4-MW47-290	FEW4-MW47-290-21	05-16-2023	0921	N	WG	282.90	292.90	X
FEW4-MW47-290	FEW4-MW47-290-MS-21	05-16-2023	0921	MS	WG	282.90	292.90	X
FEW4-MW47-290	FEW4-MW47-290-MSD-21	05-16-2023	0921	SD	WG	282.90	292.90	X
FEW4-MW51-110	FEW4-MW51-110-21	05-16-2023	1318	N	WG	105.10	115.10	X
FEW4-MW51-80	FEW4-MW51-80-21	05-16-2023	1325	N	WG	75.60	85.60	X
FEW4-MW69-164	FEW4-MW69-164-21	05-16-2023	1357	N	WG	156.70	166.70	X
FEW4-MW69-164	FEW4-MW69-164-FD-21	05-16-2023	1357	FD	WG	156.70	166.70	X
FEW4-MW69-64	FEW4-MW69-64-21	05-16-2023	1340	N	WG	56.00	66.00	X
FEW4-MW69-99	FEW4-MW69-99-21	05-16-2023	1350	N	WG	91.30	101.30	X
FEW4-MW05	FEW4-MW05-21	05-16-2023	1300	N	WG	255.00	265.00	X
FEW4-MW71-128	FEW4-MW71-128-21	05-16-2023	1226	N	WG	0.00	0.00	X
FEW4-MW71-96	FEW4-MW71-96-21	05-16-2023	1219	N	WG	0.00	0.00	X
FEW4-MW77-129	FEW4-MW77-129-21	05-16-2023	1422	N	WG	121.40	131.40	X
FEW4-MW77-255	FEW4-MW77-255-21	05-16-2023	1433	N	WG	246.90	256.90	X
FEW4-MW77-40	FEW4-MW77-40-21	05-16-2023	1415	N	WG	30.10	45.10	X
FEW4-MW78-159	FEW4-MW78-159-21	05-16-2023	1147	N	WG	0.00	0.00	X
FEW4-MW78-265	FEW4-MW78-265-21	05-16-2023	1155	N	WG	0.00	0.00	X
FEW4-MW78-265	FEW4-MW78-265-FD-21	05-16-2023	1155	FD	WG	0.00	0.00	X
FEW4-MW86-199	FEW4-MW86-199-21	05-16-2023	1108	N	WG	191.70	201.70	X
FEW4-MW86-53	FEW4-MW86-53-21	05-16-2023	1100	N	WG	45.90	55.90	X
FEW4-MW10	FEW4-MW10-21	05-16-2023	1045	N	WG	22.60	32.60	X
FEW4-MW92B-288	FEW4-MW92B-288-21	05-16-2023	1400	N	WG	0.00	0.00	X
FEW4-MW92B-288	FEW4-MW92B-288-FD-21	05-16-2023	1400	FD	WG	0.00	0.00	X

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW92B-288	FEW4-MW92B-288-PDB-21	05-16-2023	1245	N	WG	0.00	0.00	
FEW4-MW92B-322	FEW4-MW92B-322-21	05-16-2023	1125	N	WG	0.00	0.00	
FIELDQC	FEW4-TB05-21	05-16-2023	0800	TB	WQ	0.00	0.00	
WEST TRIANGLE	FEW4-WEST TRIANGLE-21	05-16-2023	1648	N	WG	0.00	0.00	
FEW4-MW105-143	FEW4-MW105-143-21	05-16-2023	1313	N	WG	0.00	0.00	
FEW4-MW105-188	FEW4-MW105-188-21	05-16-2023	1125	N	WG	0.00	0.00	
FEW4-MW105-188	FEW4-MW105-188-FD-21	05-16-2023	1125	FD	WG	0.00	0.00	
FEW4-MW105-93	FEW4-MW105-93-21	05-16-2023	1425	N	WG	0.00	0.00	
FEW4-MW15	FEW4-MW15-21	05-16-2023	1245	N	WG	135.60	145.60	X
FEW4-MW21	FEW4-MW21-21	05-16-2023	1123	N	WG	37.30	47.30	X
Total								37

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614018								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614018/1002	LCS 280-614018/1002		1/1	5/26/2023 16:27	5/26/2023 16:27	5/26/2023 16:27	280-614018/	BS
LABQC	WQ	LCSD 280-614018/4	LCSD 280-614018/4		1/1	5/26/2023 17:53	5/26/2023 17:53	5/26/2023 17:53	280-614018/	BD
LABQC	WQ	MB 280-614018/7	MB 280-614018/7		1/1	5/26/2023 18:35	5/26/2023 18:35	5/26/2023 18:35	280-614018/	LB
JOHNSON NO. 1	WG	FEW4-JOHNSON NO. 1-21	280-176779-1		1/1	5/16/2023 15:45	5/26/2023 21:03	5/26/2023 21:03	280-614018/	N
FEW4-MW05	WG	FEW4-MW05-21	280-176779-2		1/1	5/16/2023 13:00	5/26/2023 21:24	5/26/2023 21:24	280-614018/	N
FEW4-MW10	WG	FEW4-MW10-21	280-176779-3		1/1	5/16/2023 10:45	5/26/2023 21:44	5/26/2023 21:44	280-614018/	N

Test Method: SW8260D		Analysis Batch: 280-614037								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614037/1002	LCS 280-614037/1002		1/1	5/26/2023 21:37	5/26/2023 21:37	5/26/2023 21:37	280-614037/	BS
LABQC	WQ	LCSD 280-614037/4	LCSD 280-614037/4		1/1	5/26/2023 22:21	5/26/2023 22:21	5/26/2023 22:21	280-614037/	BD
LABQC	WQ	MB 280-614037/7	MB 280-614037/7		1/1	5/26/2023 23:27	5/26/2023 23:27	5/26/2023 23:27	280-614037/	LB
FEW4-MW105-188	WG	FEW4-MW105-188-21	280-176779-5		1/1	5/16/2023 11:25	5/27/2023 02:31	5/27/2023 02:31	280-614037/	N
FEW4-MW105-188	WG	FEW4-MW105-188-FD-21	280-176779-6		1/1	5/16/2023 11:25	5/27/2023 02:53	5/27/2023 02:53	280-614037/	FD
FEW4-MW15	WG	FEW4-MW15-21	280-176779-8		1/1	5/16/2023 12:45	5/27/2023 03:15	5/27/2023 03:15	280-614037/	N
FEW4-MW21	WG	FEW4-MW21-21	280-176779-9		1/1	5/16/2023 11:23	5/27/2023 03:37	5/27/2023 03:37	280-614037/	N
FEW4-MW44R-207	WG	FEW4-MW44R-207-21	280-176779-10		1/1	5/16/2023 14:45	5/27/2023 03:59	5/27/2023 03:59	280-614037/	N

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Test Method: SW8260D		Analysis Batch: 280-614037								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW47-239	WG	FEW4-MW47-239-21	280-176779-11		1/1	5/16/2023 12:36	5/27/2023 04:21	5/27/2023 04:21	280-614037/	N
FEW4-MW47-259	WG	FEW4-MW47-259-21	280-176779-12		1/1	5/16/2023 11:09	5/27/2023 04:43	5/27/2023 04:43	280-614037/	N
FEW4-MW47-290	WG	FEW4-MW47-290-21	280-176779-13		1/1	5/16/2023 09:21	5/27/2023 05:05	5/27/2023 05:05	280-614037/	N
FEW4-MW51-110	WG	FEW4-MW51-110-21	280-176779-14		1/1	5/16/2023 13:18	5/27/2023 05:27	5/27/2023 05:27	280-614037/	N
FEW4-MW69-164	WG	FEW4-MW69-164-21	280-176779-16		1/1	5/16/2023 13:57	5/27/2023 05:49	5/27/2023 05:49	280-614037/	N
FEW4-MW69-164	WG	FEW4-MW69-164-FD-21	280-176779-17		1/1	5/16/2023 13:57	5/27/2023 06:11	5/27/2023 06:11	280-614037/	FD
FEW4-MW69-64	WG	FEW4-MW69-64-21	280-176779-18		1/2	5/16/2023 13:40	5/27/2023 06:55	5/27/2023 06:55	280-614037/	N
FEW4-MW105-143	WG	FEW4-MW105-143-21	280-176779-4		1/2	5/16/2023 13:13	5/27/2023 07:18	5/27/2023 07:18	280-614037/	N
FEW4-MW105-93	WG	FEW4-MW105-93-21	280-176779-7		1/4	5/16/2023 14:25	5/27/2023 07:40	5/27/2023 07:40	280-614037/	N
FEW4-MW51-80	WG	FEW4-MW51-80-21	280-176779-15		1/10	5/16/2023 13:25	5/27/2023 08:02	5/27/2023 08:02	280-614037/	N
FEW4-MW47-290	WG	FEW4-MW47-290-MS-21	280-176779-13MS		1/1	5/16/2023 09:21	5/27/2023 08:24	5/27/2023 08:24	280-614037/	MS
FEW4-MW47-290	WG	FEW4-MW47-290-MSD-21	280-176779-13MSD		1/1	5/16/2023 09:21	5/27/2023 08:47	5/27/2023 08:47	280-614037/	SD

Test Method: SW8260D		Analysis Batch: 280-614062								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614062/1002	LCS 280-614062/1002		1/1	5/27/2023 17:36	5/27/2023 17:36	5/27/2023 17:36	280-614062/	BS
LABQC	WQ	LCSD 280-614062/4	LCSD 280-614062/4		1/1	5/27/2023 18:20	5/27/2023 18:20	5/27/2023 18:20	280-614062/	BD
LABQC	WQ	MB 280-614062/7	MB 280-614062/7		1/1	5/27/2023 19:04	5/27/2023 19:04	5/27/2023 19:04	280-614062/	LB

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Test Method: SW8260D Analysis Batch: 280-614062

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW77-129	WG	FEW4-MW77-129-21	280-176779-22		1/1	5/16/2023 14:22	5/27/2023 22:16	5/27/2023 22:16	280-614062/	N
FEW4-MW77-255	WG	FEW4-MW77-255-21	280-176779-23		1/1	5/16/2023 14:33	5/27/2023 22:38	5/27/2023 22:38	280-614062/	N
FEW4-MW77-40	WG	FEW4-MW77-40-21	280-176779-24		1/1	5/16/2023 14:15	5/27/2023 23:00	5/27/2023 23:00	280-614062/	N
FEW4-MW78-159	WG	FEW4-MW78-159-21	280-176779-25		1/1	5/16/2023 11:47	5/27/2023 23:22	5/27/2023 23:22	280-614062/	N
FEW4-MW78-265	WG	FEW4-MW78-265-21	280-176779-26		1/1	5/16/2023 11:55	5/27/2023 23:44	5/27/2023 23:44	280-614062/	N
FEW4-MW78-265	WG	FEW4-MW78-265-FD-21	280-176779-27		1/1	5/16/2023 11:55	5/28/2023 00:06	5/28/2023 00:06	280-614062/	FD
FEW4-MW86-199	WG	FEW4-MW86-199-21	280-176779-28		1/1	5/16/2023 11:08	5/28/2023 00:29	5/28/2023 00:29	280-614062/	N
FEW4-MW86-53	WG	FEW4-MW86-53-21	280-176779-29		1/1	5/16/2023 11:00	5/28/2023 00:51	5/28/2023 00:51	280-614062/	N
FEW4-MW92B-288	WG	FEW4-MW92B-288-21	280-176779-30		1/1	5/16/2023 14:00	5/28/2023 01:13	5/28/2023 01:13	280-614062/	N
FEW4-MW92B-288	WG	FEW4-MW92B-288-FD-21	280-176779-31		1/1	5/16/2023 14:00	5/28/2023 01:35	5/28/2023 01:35	280-614062/	FD
FEW4-MW69-99	WG	FEW4-MW69-99-21	280-176779-19		1/4	5/16/2023 13:50	5/28/2023 01:57	5/28/2023 01:57	280-614062/	N
FEW4-MW71-128	WG	FEW4-MW71-128-21	280-176779-20		1/10	5/16/2023 12:26	5/28/2023 02:19	5/28/2023 02:19	280-614062/	N
FEW4-MW71-96	WG	FEW4-MW71-96-21	280-176779-21		1/20	5/16/2023 12:19	5/28/2023 02:42	5/28/2023 02:42	280-614062/	N

Automated Data Review Detail Report for 280-176779-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614111								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614111/1002	LCS 280-614111/1002		1/1	5/30/2023 06:55	5/30/2023 06:55	5/30/2023 06:55	280-614111/	BS
LABQC	WQ	LCSD 280-614111/4	LCSD 280-614111/4		1/1	5/30/2023 07:36	5/30/2023 07:36	5/30/2023 07:36	280-614111/	BD
LABQC	WQ	MB 280-614111/7	MB 280-614111/7		1/1	5/30/2023 08:38	5/30/2023 08:38	5/30/2023 08:38	280-614111/	LB
FEW4-MW92B-288	WG	FEW4-MW92B-288-PDB-21	280-176779-32		1/1	5/16/2023 12:45	5/30/2023 11:33	5/30/2023 11:33	280-614111/	N
FEW4-MW92B-322	WG	FEW4-MW92B-322-21	280-176779-33		1/1	5/16/2023 11:25	5/30/2023 11:53	5/30/2023 11:53	280-614111/	N
WEST TRIANGLE	WG	FEW4-WEST TRIANGLE-21	280-176779-35		1/1	5/16/2023 16:48	5/30/2023 12:14	5/30/2023 12:14	280-614111/	N

Test Method: SW8260D		Analysis Batch: 280-614611								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614611/1002	LCS 280-614611/1002		1/1	6/1/2023 18:34	6/1/2023 18:34	6/1/2023 18:34	280-614611/	BS
LABQC	WQ	LCSD 280-614611/4	LCSD 280-614611/4		1/1	6/1/2023 19:16	6/1/2023 19:16	6/1/2023 19:16	280-614611/	BD
LABQC	WQ	MB 280-614611/7	MB 280-614611/7		1/1	6/1/2023 20:18	6/1/2023 20:18	6/1/2023 20:18	280-614611/	LB
FIELDQC	WQ	FEW4-TB05-21	280-176779-34		1/1	5/16/2023 08:00	6/1/2023 20:56	6/1/2023 20:56	280-614611/	TB



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	16052301		FIELDQC	WQ	FEW4-TB05-21	280-176779-34	5/16/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

Automated Data Review Detail Report for 280-176779-1
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F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	LCS 280-614111/1002 (BS) / LCS 280-614111/1002	1 / 1.00	Bromoform	134.0 (percent)	J/None	66 - 130	66 - 130	C			
LCS Recovery	LCSD 280-614111/4 (BD) / LCSD 280-614111/4	1 / 1.00	Bromoform	135.0 (percent)	J/None	66 - 130	66 - 130	C			
MS Recovery	FEW4-MW47-290-MS-21 (MS) / 280-176779-13MS	1 / 1.00	1,3-Dichlorobenzene	120.0 (percent)	J/None	80 - 119	80 - 119	M			
MS Recovery	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dichloroethane	72.00 (percent)	J/X	73 - 128	73 - 128	M			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1,1-Trichloroethane	24.97 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1,2,2-Tetrachloroethane	25.19 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1,2-Trichloro-1,2,2-trifluoroethane	27.44 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1,2-Trichloroethane	27.26 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1-Dichloroethane	25.76 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,1-Dichloroethene	25.03 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2,3-Trichlorobenzene	22.71 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2,4-Trichlorobenzene	24.85 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dibromo-3-chloropropane	25.17 (rpd)	J/None	< 20	< 20	D			

Automated Data Review Detail Report for 280-176779-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dibromoethane (EDB)	27.26 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dichlorobenzene	25.67 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dichloroethane	26.17 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,2-Dichloropropane	27.32 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,3-Dichlorobenzene	25.82 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,4-Dichlorobenzene	26.25 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	1,4-Dioxane	25.38 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	2-Butanone (MEK)	25.35 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	2-Hexanone	26.46 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	4-Methyl-2-pentanone (MIBK)	26.60 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Acetone	24.79 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Benzene	26.35 (rpd)	J/None	< 20	< 20	D			

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Bromochloromethane	26.53 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Bromodichloromethane	26.61 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Bromoform	27.66 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Carbon disulfide	25.66 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Carbon Tetrachloride	26.59 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Chlorobenzene	26.12 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Chloroform	26.37 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	cis-1,2-Dichloroethene	24.69 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	cis-1,3-Dichloropropene	25.31 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Cumene	24.24 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Cyclohexane	26.24 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Dibromochloromethane	26.85 (rpd)	J/None	< 20	< 20	D			

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Ethylbenzene	26.12 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	m,p-Xylene	26.51 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Methyl acetate	24.87 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Methyl tert-butyl ether (MTBE)	25.57 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Methylcyclohexane	28.13 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Methylene chloride	25.49 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	o-Xylene	26.23 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Styrene	26.26 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Tetrachloroethene (PCE)	26.04 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Toluene	25.59 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	trans-1,2-Dichloroethene	26.24 (rpd)	J/None	< 20	< 20	D			
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	trans-1,3-Dichloropropene	25.78 (rpd)	J/None	< 20	< 20	D			

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F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW47-290-MSD-21 (SD) / 280-176779-13MSD	1 / 1.00	Trichloroethene (TCE)	23.92 (rpd)	J/None	< 20	< 20	D			
Test Hold Time	FEW4-TB05-21 (TB) / 280-176779-34	1 / 1.00	All in Run	16.54 (days)	J/UJ	< 14	< 28	H1	Test Exceeds UWL		

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW105-143-21	280-176779-4	W	N	cis-1,2-Dichloroethene	2.00	0.760 J D	0.760 J		ug/l	TR
FEW4-MW105-93-21	280-176779-7	W	N	cis-1,2-Dichloroethene	4.00	3.00 J D	3.00 J		ug/l	TR
FEW4-MW15-21	280-176779-8	W	N	Acetone	15.0	14.0 J	14.0 J		ug/l	TR
FEW4-MW47-290-21	280-176779-13	W	N	1,2-Dichloroethane	1.00	0.800 U J1	0.800 X		ug/l	M
FEW4-MW47-290-21	280-176779-13	W	N	Trichloroethene (TCE)	1.00	6.20 J1	6.20 J		ug/l	D
FEW4-MW77-129-21	280-176779-22	W	N	Vinyl chloride	2.00	0.640 J	0.640 J		ug/l	TR
FEW4-MW77-255-21	280-176779-23	W	N	Trichloroethene (TCE)	1.00	0.330 J	0.330 J		ug/l	TR
FEW4-MW78-159-21	280-176779-25	W	N	Tetrachloroethene (PCE)	1.00	0.850 J	0.850 J		ug/l	TR
FEW4-MW86-199-21	280-176779-28	W	N	cis-1,2-Dichloroethene	1.00	0.470 J	0.470 J		ug/l	TR
FEW4-TB05-21	280-176779-34	W	TB	1,1,1-Trichloroethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,1,2,2-Tetrachloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U H Q	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,1,2-Trichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,1-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,1-Dichloroethene	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2,3-Trichlorobenzene	2.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2,4-Trichlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2-Dibromo-3-chloropropane	5.00	4.00 U H	4.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2-Dibromoethane (EDB)	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,2-Dichloropropane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,3-Dichlorobenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,4-Dichlorobenzene	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	1,4-Dioxane	150	50.0 U H	50.0 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	2-Butanone (MEK)	15.0	12.0 U H	12.0 UJ		ug/l	H1

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21	280-176779-34	W	TB	2-Hexanone	5.00	4.00 U H Q	4.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U H	3.20 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Acetone	15.0	8.00 U H	8.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Benzene	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Bromochloromethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Bromodichloromethane	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Bromoform	2.00	1.80 U H Q	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Bromomethane	5.00	4.00 U H	4.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Carbon disulfide	2.00	0.800 U M H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Carbon Tetrachloride	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Chlorobenzene	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Chloroethane	4.00	1.60 U H	1.60 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Chloroform	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Chloromethane	2.00	1.00 U H Q	1.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	cis-1,2-Dichloroethene	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	cis-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Cumene	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Cyclohexane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Dibromochloromethane	2.00	1.80 U H	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Dichlorodifluoromethane	3.00	2.50 U H	2.50 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Ethylbenzene	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	m,p-Xylene	2.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Methyl acetate	5.00	4.00 U H	4.00 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Methyl tert-butyl ether (MTBE)	5.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Methylcyclohexane	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Methylene chloride	2.00	1.80 U H	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	o-Xylene	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Styrene	1.00	0.800 U H	0.800 UJ		ug/l	H1

Automated Data Review Detail Report for 280-176779-1
 B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB05-21	280-176779-34	W	TB	Tetrachloroethene (PCE)	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Toluene	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	trans-1,2-Dichloroethene	1.00	0.500 U H	0.500 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	trans-1,3-Dichloropropene	2.00	1.80 U H	1.80 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Trichloroethene (TCE)	1.00	0.400 U H	0.400 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Trichlorofluoromethane	2.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB05-21	280-176779-34	W	TB	Vinyl chloride	2.00	1.00 U H	1.00 UJ		ug/l	H1

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176779-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-JOHNSON NO. 1-21	280-176779-1	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	
FEW4-MW10-21	280-176779-3	W	N	1	Trichloroethene (TCE)	1.00	55.0	55.0	ug/l	
FEW4-MW105-143-21	280-176779-4	W	N	2	cis-1,2-Dichloroethene	2.00	0.760 J D	0.760 J	ug/l	TR
FEW4-MW105-143-21	280-176779-4	W	N	2	Trichloroethene (TCE)	2.00	120 D	120	ug/l	
FEW4-MW105-93-21	280-176779-7	W	N	4	cis-1,2-Dichloroethene	4.00	3.00 J D	3.00 J	ug/l	TR
FEW4-MW105-93-21	280-176779-7	W	N	4	Trichloroethene (TCE)	4.00	150 D	150	ug/l	
FEW4-MW15-21	280-176779-8	W	N	1	Acetone	15.0	14.0 J	14.0 J	ug/l	TR
FEW4-MW15-21	280-176779-8	W	N	1	Trichloroethene (TCE)	1.00	17.0	17.0	ug/l	
FEW4-MW21-21	280-176779-9	W	N	1	Trichloroethene (TCE)	1.00	110	110	ug/l	
FEW4-MW44R-207-21	280-176779-10	W	N	1	Trichloroethene (TCE)	1.00	29.0	29.0	ug/l	
FEW4-MW47-239-21	280-176779-11	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW47-259-21	280-176779-12	W	N	1	Trichloroethene (TCE)	1.00	18.0	18.0	ug/l	
FEW4-MW47-290-21	280-176779-13	W	N	1	Trichloroethene (TCE)	1.00	6.20 J1	6.20 J	ug/l	D
FEW4-MW51-110-21	280-176779-14	W	N	1	Trichloroethene (TCE)	1.00	4.90	4.90	ug/l	
FEW4-MW51-80-21	280-176779-15	W	N	10	Trichloroethene (TCE)	10.0	580 D	580	ug/l	
FEW4-MW69-164-21	280-176779-16	W	N	1	Trichloroethene (TCE)	1.00	7.90	7.90	ug/l	
FEW4-MW69-164-FD-21	280-176779-17	W	FD	1	Trichloroethene (TCE)	1.00	8.10	8.10	ug/l	
FEW4-MW69-64-21	280-176779-18	W	N	2	Trichloroethene (TCE)	2.00	170 D	170	ug/l	
FEW4-MW69-99-21	280-176779-19	W	N	4	Trichloroethene (TCE)	4.00	290 D	290	ug/l	
FEW4-MW71-128-21	280-176779-20	W	N	10	Trichloroethene (TCE)	10.0	360 D	360	ug/l	
FEW4-MW71-96-21	280-176779-21	W	N	20	Trichloroethene (TCE)	20.0	810 D	810	ug/l	
FEW4-MW77-129-21	280-176779-22	W	N	1	cis-1,2-Dichloroethene	1.00	2.30	2.30	ug/l	
FEW4-MW77-129-21	280-176779-22	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	
FEW4-MW77-129-21	280-176779-22	W	N	1	Vinyl chloride	2.00	0.640 J	0.640 J	ug/l	TR
FEW4-MW77-255-21	280-176779-23	W	N	1	Trichloroethene (TCE)	1.00	0.330 J	0.330 J	ug/l	TR
FEW4-MW77-40-21	280-176779-24	W	N	1	Trichloroethene (TCE)	1.00	66.0	66.0	ug/l	
FEW4-MW78-159-21	280-176779-25	W	N	1	Tetrachloroethene (PCE)	1.00	0.850 J	0.850 J	ug/l	TR

Automated Data Review Detail Report for 280-176779-1
 B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW78-159-21	280-176779-25	W	N	1	Trichloroethene (TCE)	1.00	4.40	4.40	ug/l	
FEW4-MW86-199-21	280-176779-28	W	N	1	cis-1,2-Dichloroethene	1.00	0.470 J	0.470 J	ug/l	TR
FEW4-MW86-199-21	280-176779-28	W	N	1	Trichloroethene (TCE)	1.00	3.60	3.60	ug/l	
FEW4-MW86-53-21	280-176779-29	W	N	1	cis-1,2-Dichloroethene	1.00	1.50	1.50	ug/l	
FEW4-MW86-53-21	280-176779-29	W	N	1	Trichloroethene (TCE)	1.00	68.0	68.0	ug/l	
FEW4-MW92B-288-21	280-176779-30	W	N	1	Trichloroethene (TCE)	1.00	60.0	60.0	ug/l	
FEW4-MW92B-288-FD-21	280-176779-31	W	FD	1	Trichloroethene (TCE)	1.00	62.0	62.0	ug/l	
FEW4-MW92B-288-PDB-21	280-176779-32	W	N	1	Trichloroethene (TCE)	1.00	66.0	66.0	ug/l	
FEW4-MW92B-322-21	280-176779-33	W	N	1	Trichloroethene (TCE)	1.00	2.70	2.70	ug/l	



Rejected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW47-290-21	280-176779-13	W	N	1,2-Dichloroethane	1.00	0.800 U J1	0.800 X	ug/l	M



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176791-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: August 31, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW01-21	280-176791-1	Water	Field Sample/N	X
FEW4-MW01-PDB-21	280-176791-2	Water	Field Sample/N	X
FEW4-MW03-21	280-176791-3	Water	Field Sample/N	X
FEW4-MW04-21	280-176791-4	Water	Field Sample/N	X
FEW4-MW24-21	280-176791-5	Water	Field Sample/N	X
FEW4-MW26-21	280-176791-6	Water	Field Sample/N	X
FEW4-MW46-300-21	280-176791-7	Water	Field Sample/N	X
FEW4-MW46-334-21	280-176791-8	Water	Field Sample/N	X
FEW4-MW48-254-21	280-176791-9	Water	Field Sample/N	X
FEW4-MW48-284-21	280-176791-10	Water	Field Sample/N	X
FEW4-MW48-284-FD-21	280-176791-11	Water	Field Duplicate/FD	X
FEW4-MW62-158-21	280-176791-12	Water	Field Sample/N	X
FEW4-MW62-252-21	280-176791-13	Water	Field Sample/N	X
FEW4-MW62-84-21	280-176791-14	Water	Field Sample/N	X
FEW4-MW65-142-21	280-176791-15	Water	Field Sample/N	X
FEW4-MW65-208-21	280-176791-16	Water	Field Sample/N	X
FEW4-MW65-88-21	280-176791-17	Water	Field Sample/N	X
FEW4-MW66-158-21	280-176791-18	Water	Field Sample/N	X
FEW4-MW66-205-21	280-176791-19	Water	Field Sample/N	X
FEW4-MW66-94-21	280-176791-20	Water	Field Sample/N	X
FEW4-MW68-140-21	280-176791-21	Water	Field Sample/N	X

Data Validation Report for 280-176791-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW68-140-FD-21	280-176791-22	Water	Field Duplicate/FD	X
FEW4-MW68-185-21	280-176791-23	Water	Field Sample/N	X
FEW4-MW68-80-21	280-176791-24	Water	Field Sample/N	X
FEW4-MW70-100-21	280-176791-25	Water	Field Sample/N	X
FEW4-MW70-142-21	280-176791-26	Water	Field Sample/N	X
FEW4-MW70-244-21	280-176791-27	Water	Field Sample/N	X
FEW4-MW72-130-21	280-176791-28	Water	Field Sample/N	X
FEW4-MW72-158-21	280-176791-29	Water	Field Sample/N	X
FEW4-MW72-205-21	280-176791-30	Water	Field Sample/N	X
FEW4-MW83-129-21	280-176791-31	Water	Field Sample/N	X
FEW4-MW83-129-FD-21	280-176791-32	Water	Field Duplicate/FD	X
FEW4-MW83-271-21	280-176791-33	Water	Field Sample/N	X
FEW4-MW83-88-21	280-176791-34	Water	Field Sample/N	X
FEW4-MW97-266-21	280-176791-35	Water	Field Sample/N	X
FEW4-TB07-21	280-176791-36	Water	Trip Blank/TB	X
FEW4-TB08-21	280-176791-37	Water	Trip Blank/TB	X

Data Validation Report for 280-176791-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176791-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

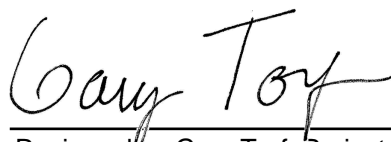
A total of 38 results (1.98%) out of the 1924 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176791-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

August 31, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176791-1

Quality Control Outliers for test method SW8260D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 280-614288/1002 (BS)	Bromoform	131	66 - 130	66 - 130	percent	J/None	C	
LCSD 280-614108/4 (BD)	cis-1,3- Dichloropropene	130	75 - 124	75 - 124	percent	J/None	C	
LCSD 280-614288/4 (BD)	Bromoform	136	66 - 130	66 - 130	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176791-1

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW46-300-MSD-21 (SD)	Bromoform	131	66 - 130	66 - 130	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176791-1

Quality Control Outliers for test method SW8260D, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW72-130-21 (N)		14.5	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Test Hold Time for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW72-130-21 280-176791-28	N	Trichloroethene (TCE)	4.00	180 D H	180 J	-	ug/l	H1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176791-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW04-21 280-176791-4	N	Bromomethane	20.0	16.0 U Q	16.0 UJ		ug/l	V2
FEW4-MW24-21 280-176791-5	N	Bromomethane	50.0	40.0 U Q	40.0 UJ		ug/l	V2
FEW4-MW26-21 280-176791-6	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW46-300-21 280-176791-7	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW46-334-21 280-176791-8	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW48-254-21 280-176791-9	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW48-284-21 280-176791-10	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW48-284-FD-21 280-176791-11	FD	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW62-158-21 280-176791-12	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW62-252-21 280-176791-13	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW62-84-21 280-176791-14	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW65-142-21 280-176791-15	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW70-244-21 280-176791-27	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW72-130-21 280-176791-28	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW72-130-21 280-176791-28	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW72-130-21 280-176791-28	N	Trichloroethene (TCE)	4.00	180 D H	180 J	-	ug/l	H1
FEW4-MW72-130-21 280-176791-28	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW72-158-21 280-176791-29	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW72-158-21 280-176791-29	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW72-158-21 280-176791-29	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW72-205-21 280-176791-30	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW72-205-21 280-176791-30	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW72-205-21 280-176791-30	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW83-129-21 280-176791-31	N	Bromomethane	250	200 U Q	200 UJ		ug/l	V2
FEW4-MW83-129-21 280-176791-31	N	Dichlorodifluoromethane	150	130 U Q	130 UJ		ug/l	V2
FEW4-MW83-129-21 280-176791-31	N	Trichlorofluoromethane	100	40.0 U Q	40.0 UJ		ug/l	V2

Data Validation Report for 280-176791-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW83-129-FD-21 280-176791-32	FD	Bromomethane	250	200 U Q	200 UJ		ug/l	V2
FEW4-MW83-129-FD-21 280-176791-32	FD	Dichlorodifluoromethane	150	130 U Q	130 UJ		ug/l	V2
FEW4-MW83-129-FD-21 280-176791-32	FD	Trichlorofluoromethane	100	40.0 U Q	40.0 UJ		ug/l	V2
FEW4-MW83-271-21 280-176791-33	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW83-271-21 280-176791-33	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW83-271-21 280-176791-33	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW83-88-21 280-176791-34	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW83-88-21 280-176791-34	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW83-88-21 280-176791-34	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2
FEW4-MW97-266-21 280-176791-35	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW97-266-21 280-176791-35	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	V2
FEW4-MW97-266-21 280-176791-35	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176791-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW66-205-21	N	cis-1,2-Dichloroethene	20.0	7.10 J D	7.10 J		ug/L	TR
FEW4-MW70-142-21	N	Trichloroethene (TCE)	1.00	0.430 J	0.430 J		ug/L	TR
FEW4-MW72-130-21	N	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J		ug/L	TR
FEW4-MW83-129-FD-21	FD	cis-1,2-Dichloroethene	50.0	17.0 J D	17.0 J		ug/L	TR

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW04-21 280-176791-4	N	Bromomethane	20.0	16.0 U Q	16.0 U	16.0 UJ	V2
FEW4-MW24-21 280-176791-5	N	Bromomethane	50.0	40.0 U Q	40.0 U	40.0 UJ	V2
FEW4-MW26-21 280-176791-6	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW46-300-21 280-176791-7	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW46-334-21 280-176791-8	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW48-254-21 280-176791-9	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW48-284-21 280-176791-10	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW48-284-FD-21 280-176791-11	FD	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW62-158-21 280-176791-12	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW62-252-21 280-176791-13	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW62-84-21 280-176791-14	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW65-142-21 280-176791-15	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW70-244-21 280-176791-27	N	Acetone	15.0	13.0 J	13.0 J	8.00 U	
FEW4-MW70-244-21 280-176791-27	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW72-130-21 280-176791-28	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW72-130-21 280-176791-28	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW72-130-21 280-176791-28	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW72-158-21 280-176791-29	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW72-158-21 280-176791-29	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW72-158-21 280-176791-29	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW72-205-21 280-176791-30	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW72-205-21 280-176791-30	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW72-205-21 280-176791-30	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW83-129-21 280-176791-31	N	Bromomethane	250	200 U Q	200 U	200 UJ	V2
FEW4-MW83-129-21 280-176791-31	N	Dichlorodifluoromethane	150	130 U Q	130 U	130 UJ	V2
FEW4-MW83-129-21 280-176791-31	N	Trichlorofluoromethane	100	40.0 U Q	40.0 U	40.0 UJ	V2

Data Validation Report for 280-176791-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW83-129-FD-21 280-176791-32	FD	Bromomethane	250	200 U Q	200 U	200 UJ	V2
FEW4-MW83-129-FD-21 280-176791-32	FD	Dichlorodifluoromethane	150	130 U Q	130 U	130 UJ	V2
FEW4-MW83-129-FD-21 280-176791-32	FD	Trichlorofluoromethane	100	40.0 U Q	40.0 U	40.0 UJ	V2
FEW4-MW83-271-21 280-176791-33	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW83-271-21 280-176791-33	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW83-271-21 280-176791-33	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW83-88-21 280-176791-34	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW83-88-21 280-176791-34	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW83-88-21 280-176791-34	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2
FEW4-MW97-266-21 280-176791-35	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW97-266-21 280-176791-35	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	V2
FEW4-MW97-266-21 280-176791-35	N	Trichlorofluoromethane	2.00	0.800 U Q	0.800 U	0.800 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
H1	Test Hold Time
M	MS Recovery
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

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X	Result may require rejection; PDT attention required
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Bias

-	The result may be biased low
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+	The result may be biased high
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Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result	
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Data Validation Report for 280-176791-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?	•			Sample FEW4-MW68-140-FD-21 and FEW4-MW83-129-FD-21 noted 3 vials each on the COC but only 2 vials for each sample was received.
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?		•		Reanalysis for dilution of trichloroethene in sample FEW4-MW72-130-21 was performed beyond the 14-day holding time for preserved samples.
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB07-21 FEW4-TB08-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		LCSD 280-614108/4: cis-1,3-dichloropropene 130% (124% UCL). LCS/D 280-614288/1002: bromoform 131%/136% (130% UCL)
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW46-300-21.
Were MS/MSD recoveries within project acceptance limits?		•		bromoform 131% (130% UCL)
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW48-284-21, FEW4-MW68-140-21, and FEW4-MW83-129-21.
Were reported sample concentrations within calibration range?	•			

Data Validation Report for 280-176791-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the GC/MS system properly tuned based on method criteria?	.			
Was instrument tuning completed every 12 hours during sample analysis?	.			
Was the Calibration within project acceptance criteria?	.			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_R1 CCV 280-614288/2: bromomethane -25.5% was outside the 20% control limit low; bromoform 30.7% was outside the 20% control limit high. VMS_R1 CCV 280-614449/2: bromoform 28.6% was outside the 20% control limit high. VMS_X4 CCV 280-614275/2: dichlorodifluoromethane -32.1%, bromomethane -23.4%, and trichlorofluoromethane -23.3% were outside the 20% control limit low; 4-methyl-2-pentanone 20.3% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?	.			Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment. This included acetone for sample FEW4-MW70-244-21 at 13J ug/L.

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW01	FEW4-MW01-21	05-17-2023	1438	N	WG	72.00	82.00	X
FEW4-MW48-284	FEW4-MW48-284-21	05-17-2023	1315	N	WG	277.40	287.40	X
FEW4-MW48-284	FEW4-MW48-284-FD-21	05-17-2023	1315	FD	WG	277.40	287.40	X
FEW4-MW62-158	FEW4-MW62-158-21	05-17-2023	1502	N	WG	150.60	160.60	X
FEW4-MW62-252	FEW4-MW62-252-21	05-17-2023	1453	N	WG	244.50	254.50	X
FEW4-MW62-84	FEW4-MW62-84-21	05-17-2023	1510	N	WG	74.90	89.90	X
FEW4-MW65-142	FEW4-MW65-142-21	05-17-2023	1237	N	WG	130.50	150.50	X
FEW4-MW65-208	FEW4-MW65-208-21	05-17-2023	1230	N	WG	200.70	210.70	X
FEW4-MW65-88	FEW4-MW65-88-21	05-17-2023	1217	N	WG	80.20	90.20	X
FEW4-MW66-158	FEW4-MW66-158-21	05-17-2023	1602	N	WG	140.60	160.60	X
FEW4-MW66-205	FEW4-MW66-205-21	05-17-2023	1553	N	WG	196.00	211.00	X
FEW4-MW01	FEW4-MW01-PDB-21	05-17-2023	1340	N	WG	72.00	82.00	X
FEW4-MW66-94	FEW4-MW66-94-21	05-17-2023	1547	N	WG	84.80	99.80	X
FEW4-MW68-140	FEW4-MW68-140-21	05-17-2023	1143	N	WG	130.70	145.70	X
FEW4-MW68-140	FEW4-MW68-140-FD-21	05-17-2023	1143	FD	WG	130.70	145.70	X
FEW4-MW68-185	FEW4-MW68-185-21	05-17-2023	1127	N	WG	175.80	190.80	X
FEW4-MW68-80	FEW4-MW68-80-21	05-17-2023	1136	N	WG	70.30	85.30	X
FEW4-MW70-100	FEW4-MW70-100-21	05-17-2023	1311	N	WG	90.00	105.00	X
FEW4-MW70-142	FEW4-MW70-142-21	05-17-2023	1303	N	WG	134.80	144.80	X
FEW4-MW70-244	FEW4-MW70-244-21	05-17-2023	1256	N	WG	236.20	246.20	X
FEW4-MW72-130	FEW4-MW72-130-21	05-17-2023	1355	N	WG	120.50	135.50	X
FEW4-MW72-158	FEW4-MW72-158-21	05-17-2023	1346	N	WG	150.30	160.30	X
FEW4-MW03	FEW4-MW03-21	05-17-2023	1038	N	WG	137.00	147.00	X
FEW4-MW72-205	FEW4-MW72-205-21	05-17-2023	1338	N	WG	195.60	210.60	X
FEW4-MW83-129	FEW4-MW83-129-21	05-17-2023	1433	N	WG	121.40	131.40	X
FEW4-MW83-129	FEW4-MW83-129-FD-21	05-17-2023	1433	FD	WG	121.40	131.40	X
FEW4-MW83-271	FEW4-MW83-271-21	05-17-2023	1423	N	WG	263.30	273.30	X

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Sample Summary								SW8260D	
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED		
FEW4-MW83-88	FEW4-MW83-88-21	05-17-2023	1413	N	WG	81.10	91.10		X
FEW4-MW97-266	FEW4-MW97-266-21	05-17-2023	1120	N	WG	258.50	268.50		X
FIELDQC	FEW4-TB07-21	05-17-2023	0805	TB	WQ	0.00	0.00		X
FIELDQC	FEW4-TB08-21	05-17-2023	0810	TB	WQ	0.00	0.00		X
FEW4-MW04	FEW4-MW04-21	05-17-2023	1237	N	WG	125.00	135.00		X
FEW4-MW24	FEW4-MW24-21	05-17-2023	1200	N	WG	126.30	136.30		X
FEW4-MW26	FEW4-MW26-21	05-17-2023	1527	N	WG	214.70	224.70		X
FEW4-MW46-300	FEW4-MW46-300-21	05-17-2023	1128	N	WG	292.50	302.50		X
FEW4-MW46-300	FEW4-MW46-300-MS-21	05-17-2023	1128	MS	WG	292.50	302.50		X
FEW4-MW46-300	FEW4-MW46-300-MSD-21	05-17-2023	1128	SD	WG	292.50	302.50		X
FEW4-MW46-334	FEW4-MW46-334-21	05-17-2023	1002	N	WG	322.20	342.20		X
FEW4-MW48-254	FEW4-MW48-254-21	05-17-2023	1437	N	WG	242.10	262.10		X
Total									39

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614108								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614108/1002	LCS 280-614108/1002		1/1	5/30/2023 04:36	5/30/2023 04:36	5/30/2023 04:36	280-614108/	BS
LABQC	WQ	LCSD 280-614108/4	LCSD 280-614108/4		1/1	5/30/2023 05:17	5/30/2023 05:17	5/30/2023 05:17	280-614108/	BD
LABQC	WQ	MB 280-614108/7	MB 280-614108/7		1/1	5/30/2023 07:29	5/30/2023 07:29	5/30/2023 07:29	280-614108/	LB
FIELDQC	WQ	FEW4-TB07-21	280-176791-36		1/1	5/17/2023 08:05	5/30/2023 08:57	5/30/2023 08:57	280-614108/	TB
FIELDQC	WQ	FEW4-TB08-21	280-176791-37		1/1	5/17/2023 08:10	5/30/2023 09:18	5/30/2023 09:18	280-614108/	TB

Test Method: SW8260D		Analysis Batch: 280-614275								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614275/1002	LCS 280-614275/1002		1/1	5/30/2023 17:42	5/30/2023 17:42	5/30/2023 17:42	280-614275/	BS
LABQC	WQ	LCSD 280-614275/4	LCSD 280-614275/4		1/1	5/30/2023 18:02	5/30/2023 18:02	5/30/2023 18:02	280-614275/	BD
LABQC	WQ	MB 280-614275/7	MB 280-614275/7		1/1	5/30/2023 19:04	5/30/2023 19:04	5/30/2023 19:04	280-614275/	LB
FEW4-MW97-266	WG	FEW4-MW97-266-21	280-176791-35		1/1	5/17/2023 11:20	5/30/2023 22:28	5/30/2023 22:28	280-614275/	N
FEW4-MW83-88	WG	FEW4-MW83-88-21	280-176791-34		1/1	5/17/2023 14:13	5/30/2023 22:49	5/30/2023 22:49	280-614275/	N
FEW4-MW83-271	WG	FEW4-MW83-271-21	280-176791-33		1/1	5/17/2023 14:23	5/30/2023 23:09	5/30/2023 23:09	280-614275/	N
FEW4-MW72-205	WG	FEW4-MW72-205-21	280-176791-30		1/1	5/17/2023 13:38	5/30/2023 23:30	5/30/2023 23:30	280-614275/	N
FEW4-MW72-158	WG	FEW4-MW72-158-21	280-176791-29		1/1	5/17/2023 13:46	5/30/2023 23:50	5/30/2023 23:50	280-614275/	N
FEW4-MW72-130	WG	FEW4-MW72-130-21	280-176791-28		1/1	5/17/2023 13:55	5/31/2023 00:11	5/31/2023 00:11	280-614275/	N

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Test Method: SW8260D		Analysis Batch: 280-614275								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW83-129	WG	FEW4-MW83-129-21	280-176791-31		1/50	5/17/2023 14:33	5/31/2023 02:15	5/31/2023 02:15	280-614275/	N
FEW4-MW83-129	WG	FEW4-MW83-129-FD-21	280-176791-32		1/50	5/17/2023 14:33	5/31/2023 02:36	5/31/2023 02:36	280-614275/	FD

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Batch Report

Test Method: SW8260D		Analysis Batch: 280-614284								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614284/1002	LCS 280-614284/1002		1/1	5/30/2023 21:57	5/30/2023 21:57	5/30/2023 21:57	280-614284/	BS
LABQC	WQ	LCSD 280-614284/4	LCSD 280-614284/4		1/1	5/30/2023 22:41	5/30/2023 22:41	5/30/2023 22:41	280-614284/	BD
LABQC	WQ	MB 280-614284/7	MB 280-614284/7		1/1	5/30/2023 23:48	5/30/2023 23:48	5/30/2023 23:48	280-614284/	LB
FEW4-MW65-208	WG	FEW4-MW65-208-21	280-176791-16		1/1	5/17/2023 12:30	5/31/2023 02:57	5/31/2023 02:57	280-614284/	N
FEW4-MW65-88	WG	FEW4-MW65-88-21	280-176791-17		1/1	5/17/2023 12:17	5/31/2023 03:19	5/31/2023 03:19	280-614284/	N
FEW4-MW66-94	WG	FEW4-MW66-94-21	280-176791-20		1/1	5/17/2023 15:47	5/31/2023 03:41	5/31/2023 03:41	280-614284/	N
FEW4-MW68-140	WG	FEW4-MW68-140-21	280-176791-21		1/1	5/17/2023 11:43	5/31/2023 04:03	5/31/2023 04:03	280-614284/	N
FEW4-MW68-140	WG	FEW4-MW68-140-FD-21	280-176791-22		1/1	5/17/2023 11:43	5/31/2023 04:25	5/31/2023 04:25	280-614284/	FD
FEW4-MW68-185	WG	FEW4-MW68-185-21	280-176791-23		1/1	5/17/2023 11:27	5/31/2023 04:47	5/31/2023 04:47	280-614284/	N
FEW4-MW68-80	WG	FEW4-MW68-80-21	280-176791-24		1/1	5/17/2023 11:36	5/31/2023 05:09	5/31/2023 05:09	280-614284/	N
FEW4-MW70-100	WG	FEW4-MW70-100-21	280-176791-25		1/1	5/17/2023 13:11	5/31/2023 05:31	5/31/2023 05:31	280-614284/	N
FEW4-MW70-142	WG	FEW4-MW70-142-21	280-176791-26		1/1	5/17/2023 13:03	5/31/2023 05:53	5/31/2023 05:53	280-614284/	N
FEW4-MW66-205	WG	FEW4-MW66-205-21	280-176791-19		1/20	5/17/2023 15:53	5/31/2023 06:38	5/31/2023 06:38	280-614284/	N
FEW4-MW66-158	WG	FEW4-MW66-158-21	280-176791-18		1/40	5/17/2023 16:02	5/31/2023 07:01	5/31/2023 07:01	280-614284/	N

Test Method: SW8260D Analysis Batch: 280-614288

Automated Data Review Detail Report for 280-176791-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Test Method: SW8260D Analysis Batch: 280-614288

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614288/1002	LCS 280-614288/1002		1/1	5/31/2023 08:08	5/31/2023 08:08	5/31/2023 08:08	280-614288/	BS
LABQC	WQ	LCSD 280-614288/4	LCSD 280-614288/4		1/1	5/31/2023 08:50	5/31/2023 08:50	5/31/2023 08:50	280-614288/	BD
LABQC	WQ	MB 280-614288/7	MB 280-614288/7		1/1	5/31/2023 09:52	5/31/2023 09:52	5/31/2023 09:52	280-614288/	LB
FEW4-MW26	WG	FEW4-MW26-21	280-176791-6		1/1	5/17/2023 15:27	5/31/2023 12:39	5/31/2023 12:39	280-614288/	N
FEW4-MW46-300	WG	FEW4-MW46-300-21	280-176791-7		1/1	5/17/2023 11:28	5/31/2023 12:59	5/31/2023 12:59	280-614288/	N
FEW4-MW46-334	WG	FEW4-MW46-334-21	280-176791-8		1/1	5/17/2023 10:02	5/31/2023 13:20	5/31/2023 13:20	280-614288/	N
FEW4-MW48-254	WG	FEW4-MW48-254-21	280-176791-9		1/1	5/17/2023 14:37	5/31/2023 13:41	5/31/2023 13:41	280-614288/	N
FEW4-MW48-284	WG	FEW4-MW48-284-21	280-176791-10		1/1	5/17/2023 13:15	5/31/2023 14:02	5/31/2023 14:02	280-614288/	N
FEW4-MW48-284	WG	FEW4-MW48-284-FD-21	280-176791-11		1/1	5/17/2023 13:15	5/31/2023 14:23	5/31/2023 14:23	280-614288/	FD
FEW4-MW62-158	WG	FEW4-MW62-158-21	280-176791-12		1/1	5/17/2023 15:02	5/31/2023 14:44	5/31/2023 14:44	280-614288/	N
FEW4-MW62-252	WG	FEW4-MW62-252-21	280-176791-13		1/1	5/17/2023 14:53	5/31/2023 15:04	5/31/2023 15:04	280-614288/	N
FEW4-MW62-84	WG	FEW4-MW62-84-21	280-176791-14		1/1	5/17/2023 15:10	5/31/2023 15:25	5/31/2023 15:25	280-614288/	N
FEW4-MW65-142	WG	FEW4-MW65-142-21	280-176791-15		1/1	5/17/2023 12:37	5/31/2023 15:46	5/31/2023 15:46	280-614288/	N
FEW4-MW70-244	WG	FEW4-MW70-244-21	280-176791-27		1/1	5/17/2023 12:56	5/31/2023 16:07	5/31/2023 16:07	280-614288/	N
FEW4-MW04	WG	FEW4-MW04-21	280-176791-4		1/4	5/17/2023 12:37	5/31/2023 16:28	5/31/2023 16:28	280-614288/	N
FEW4-MW24	WG	FEW4-MW24-21	280-176791-5		1/10	5/17/2023 12:00	5/31/2023 16:49	5/31/2023 16:49	280-614288/	N
FEW4-MW46-300	WG	FEW4-MW46-300-MS-21	280-176791-7MS		1/1	5/17/2023 11:28	5/31/2023 17:10	5/31/2023 17:10	280-614288/	MS

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Test Method: SW8260D		Analysis Batch: 280-614288								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW46-300	WG	FEW4-MW46-300-MSD-21	280-176791-7MSD		1/1	5/17/2023 11:28	5/31/2023 17:30	5/31/2023 17:30	280-614288/	SD

Test Method: SW8260D		Analysis Batch: 280-614376								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614376/11	LCS 280-614376/11		1/1	5/31/2023 13:50	5/31/2023 13:50	5/31/2023 13:50	280-614376/	BS
LABQC	WQ	LCSD 280-614376/4	LCSD 280-614376/4		1/1	5/31/2023 14:11	5/31/2023 14:11	5/31/2023 14:11	280-614376/	BD
LABQC	WQ	MB 280-614376/7	MB 280-614376/7		1/1	5/31/2023 15:14	5/31/2023 15:14	5/31/2023 15:14	280-614376/	LB
FEW4-MW01	WG	FEW4-MW01-21	280-176791-1		1/1	5/17/2023 14:38	5/31/2023 18:24	5/31/2023 18:24	280-614376/	N
FEW4-MW01	WG	FEW4-MW01-PDB-21	280-176791-2		1/1	5/17/2023 13:40	5/31/2023 18:45	5/31/2023 18:45	280-614376/	N
FEW4-MW03	WG	FEW4-MW03-21	280-176791-3		1/4	5/17/2023 10:38	5/31/2023 20:52	5/31/2023 20:52	280-614376/	N

Test Method: SW8260D		Analysis Batch: 280-614449								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614449/1002	LCS 280-614449/1002		1/1	5/31/2023 20:19	5/31/2023 20:19	5/31/2023 20:19	280-614449/	BS
LABQC	WQ	LCSD 280-614449/4	LCSD 280-614449/4		1/1	5/31/2023 21:01	5/31/2023 21:01	5/31/2023 21:01	280-614449/	BD
LABQC	WQ	MB 280-614449/7	MB 280-614449/7		1/1	5/31/2023 22:32	5/31/2023 22:32	5/31/2023 22:32	280-614449/	LB

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Test Method: SW8260D		Analysis Batch: 280-614449								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW72-130	WG	FEW4-MW72-130-21	280-176791-28		2/4	5/17/2023 13:55	6/1/2023 00:36	6/1/2023 00:36	280-614449/	N



Field Batch Report

Test Method: SW8260D			Extraction Method: SW5030B			Leach Method: NONE		
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	17052301		FIELDQC	WQ	FEW4-TB07-21	280-176791-36	5/17/2023 08:05	TB
	17052302		FIELDQC	WQ	FEW4-TB08-21	280-176791-37	5/17/2023 08:10	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS Recovery	LCS 280-614288/1002 (BS) / LCS 280-614288/1002	1 / 1.00	Bromoform	131.0 (percent)	J/None	66 - 130	66 - 130	C			
LCS Recovery	LCSD 280-614108/4 (BD) / LCSD 280-614108/4	1 / 1.00	cis-1,3-Dichloropropene	130.0 (percent)	J/None	75 - 124	75 - 124	C			
LCS Recovery	LCSD 280-614288/4 (BD) / LCSD 280-614288/4	1 / 1.00	Bromoform	136.0 (percent)	J/None	66 - 130	66 - 130	C			
MS Recovery	FEW4-MW46-300-MSD-21 (SD) / 280-176791-7MSD	1 / 1.00	Bromoform	131.0 (percent)	J/None	66 - 130	66 - 130	M			
Test Hold Time	FEW4-MW72-130-21 (N) / 280-176791-28	2 / 4.00	All in Run	14.45 (days)	J/UJ	< 14	< 28	H1	Test Exceeds UWL		

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW66-205-21	280-176791-19	W	N	cis-1,2-Dichloroethene	20.0	7.10 J D	7.10 J		ug/l	TR
FEW4-MW70-142-21	280-176791-26	W	N	Trichloroethene (TCE)	1.00	0.430 J	0.430 J		ug/l	TR
FEW4-MW70-244-21	280-176791-27	W	N	Acetone	15.0	13.0 J	13.0 J		ug/l	TR
FEW4-MW72-130-21	280-176791-28	W	N	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J		ug/l	TR
FEW4-MW72-130-21	280-176791-28	W	N	Trichloroethene (TCE)	4.00	180 D H	180 J	-	ug/l	H1
FEW4-MW83-129-FD-21	280-176791-32	W	FD	cis-1,2-Dichloroethene	50.0	17.0 J D	17.0 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176791-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW01-21	280-176791-1	W	N	1	Trichloroethene (TCE)	1.00	120	120	ug/l	
FEW4-MW01-PDB-21	280-176791-2	W	N	1	Trichloroethene (TCE)	1.00	78.0	78.0	ug/l	
FEW4-MW03-21	280-176791-3	W	N	4	cis-1,2-Dichloroethene	4.00	10.0 D	10.0	ug/l	
FEW4-MW03-21	280-176791-3	W	N	4	Trichloroethene (TCE)	4.00	460 D	460	ug/l	
FEW4-MW04-21	280-176791-4	W	N	4	cis-1,2-Dichloroethene	4.00	12.0 D	12.0	ug/l	
FEW4-MW04-21	280-176791-4	W	N	4	Trichloroethene (TCE)	4.00	600 D	600	ug/l	
FEW4-MW24-21	280-176791-5	W	N	10	Trichloroethene (TCE)	10.0	1200 D	1200	ug/l	
FEW4-MW46-300-21	280-176791-7	W	N	1	Trichloroethene (TCE)	1.00	1.10 M	1.10	ug/l	
FEW4-MW48-254-21	280-176791-9	W	N	1	Trichloroethene (TCE)	1.00	20.0	20.0	ug/l	
FEW4-MW48-284-21	280-176791-10	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW48-284-FD-21	280-176791-11	W	FD	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW62-158-21	280-176791-12	W	N	1	Trichloroethene (TCE)	1.00	56.0	56.0	ug/l	
FEW4-MW62-84-21	280-176791-14	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	
FEW4-MW65-142-21	280-176791-15	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW66-158-21	280-176791-18	W	N	40	cis-1,2-Dichloroethene	40.0	86.0 D	86.0	ug/l	
FEW4-MW66-158-21	280-176791-18	W	N	40	Trichloroethene (TCE)	40.0	3300 D	3300	ug/l	
FEW4-MW66-205-21	280-176791-19	W	N	20	cis-1,2-Dichloroethene	20.0	7.10 J D	7.10 J	ug/l	TR
FEW4-MW66-205-21	280-176791-19	W	N	20	Trichloroethene (TCE)	20.0	1700 D	1700	ug/l	
FEW4-MW66-94-21	280-176791-20	W	N	1	Trichloroethene (TCE)	1.00	160	160	ug/l	
FEW4-MW68-80-21	280-176791-24	W	N	1	Trichloroethene (TCE)	1.00	17.0	17.0	ug/l	
FEW4-MW70-100-21	280-176791-25	W	N	1	Trichloroethene (TCE)	1.00	96.0	96.0	ug/l	
FEW4-MW70-142-21	280-176791-26	W	N	1	Trichloroethene (TCE)	1.00	0.430 J	0.430 J	ug/l	TR
FEW4-MW70-244-21	280-176791-27	W	N	1	Acetone	15.0	13.0 J	13.0 J	ug/l	TR
FEW4-MW72-130-21	280-176791-28	W	N	1	cis-1,2-Dichloroethene	1.00	0.620 J	0.620 J	ug/l	TR
FEW4-MW72-130-21	280-176791-28	W	N	4	Trichloroethene (TCE)	4.00	180 D H	180 J	ug/l	H1
FEW4-MW72-158-21	280-176791-29	W	N	1	cis-1,2-Dichloroethene	1.00	1.40	1.40	ug/l	
FEW4-MW72-158-21	280-176791-29	W	N	1	Trichloroethene (TCE)	1.00	9.90	9.90	ug/l	

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW83-129-21	280-176791-31	W	N	50	Trichloroethene (TCE)	50.0	4100 D	4100	ug/l	
FEW4-MW83-129-FD-21	280-176791-32	W	FD	50	cis-1,2-Dichloroethene	50.0	17.0 J D	17.0 J	ug/l	TR
FEW4-MW83-129-FD-21	280-176791-32	W	FD	50	Trichloroethene (TCE)	50.0	4200 D	4200	ug/l	
FEW4-MW83-88-21	280-176791-34	W	N	1	Trichloroethene (TCE)	1.00	56.0	56.0	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176832-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: September 07, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-DYNO-NOBEL 16-21	280-176832-1	Water	Field Sample/N	X
FEW4-DYNO-NOBEL 22-21	280-176832-2	Water	Field Sample/N	X
FEW4-DYNO-NOBEL 23-21	280-176832-3	Water	Field Sample/N	X
FEW4-DYNO-NOBEL 26-21	280-176832-4	Water	Field Sample/N	X
FEW4-DYNO-NOBEL 27-21	280-176832-5	Water	Field Sample/N	X
FEW4-DYNO-NOBEL 8-21	280-176832-6	Water	Field Sample/N	X
FEW4-DYNO-NOBELNO.24-21	280-176832-7	Water	Field Sample/N	X
FEW4-DYNO-NOBELNO.24-FD-21	280-176832-8	Water	Field Duplicate/FD	X
FEW4-DYNO-NOBELNO.25-21	280-176832-9	Water	Field Sample/N	X
FEW4-MW106-230-21	280-176832-10	Water	Field Sample/N	X
FEW4-REES BROS. 5-21	280-176832-11	Water	Field Sample/N	X
FEW4-TB09-21	280-176832-12	Water	Trip Blank/TB	X

Data Validation Report for 280-176832-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176832-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

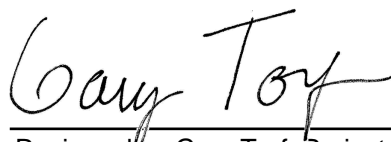
A total of 2 results (0.32%) out of the 624 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176832-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 07, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176832-1

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-DYNO-NOBEL 8-MSD-21 (SD)	1,4-Dioxane	0.00	59 - 139	59 - 139	percent	J/X	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-DYNO-NOBEL 8-21 280-176832-6	N	1,4-Dioxane	150	50.0 U J1	50.0 UJ		ug/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176832-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-DYNO-NOBEL 8-MSD- 21 (SD)	1,4-Dioxane	200	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176832-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-DYNO-NOBEL 8-21 280-176832-6	N	1,4-Dioxane	150	50.0 U J1	50.0 UJ		ug/l	M
FEW4-REES BROS. 5-21 280-176832-11	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176832-1

Trace Results

No results associated with this sample delivery group are considered trace.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-DYNO-NOBEL 8-21 280-176832-6	N	1,4-Dioxane	150	50.0 U J1	50.0 X	50.0 UJ	M
FEW4-REES BROS. 5-21 280-176832-11	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
M	MS Recovery
V2	CCV

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176832-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB09-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-DYNO-NOBEL 8-21.
Were MS/MSD recoveries within project acceptance limits?		•		1,4-dioxane 0% recovery (59% LCL)
Was the MS/MSD RPD within project acceptance limits?		•		1,4-dioxane 200% RPD (20% UCL)
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-DYNO-NOBELNO.24-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-176832-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_X4 CCV 280-614467/2: bromomethane - 22.1% was outside the 20% control limit low; the analyte was not detected in associated sample FEW4-REES BROS. 5-21.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

Automated Data Review Detail Report for 280-176832-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
DYNO-NOBEL 16	FEW4-DYNO-NOBEL 16-21	05-18-2023	1127	N	WG	220.00	340.00	
FEW4-MW106-230	FEW4-MW106-230-21	05-18-2023	0934	N	WG	0.00	0.00	
REES BROS. 5	FEW4-REES BROS. 5-21	05-18-2023	0818	N	WG	0.00	0.00	
FIELDQC	FEW4-TB09-21	05-18-2023	0800	TB	WQ	0.00	0.00	
DYNO-NOBEL 22	FEW4-DYNO-NOBEL 22-21	05-18-2023	1151	N	WG	165.00	250.00	
DYNO-NOBEL 23	FEW4-DYNO-NOBEL 23-21	05-18-2023	1242	N	WG	180.00	280.00	
DYNO-NOBEL 26	FEW4-DYNO-NOBEL 26-21	05-18-2023	1216	N	WG	120.00	180.00	
DYNO-NOBEL 27	FEW4-DYNO-NOBEL 27-21	05-18-2023	1048	N	WG	230.00	330.00	
DYNO-NOBEL 8	FEW4-DYNO-NOBEL 8-21	05-18-2023	1012	N	WG	85.00	185.00	
DYNO-NOBEL 8	FEW4-DYNO-NOBEL 8-MS-21	05-18-2023	1012	MS	WG	85.00	185.00	
DYNO-NOBEL 8	FEW4-DYNO-NOBEL 8-MSD-21	05-18-2023	1012	SD	WG	85.00	185.00	
DYNO-NOBELNO.24	FEW4-DYNO-NOBELNO.24-21	05-18-2023	0923	N	WG	188.00	268.00	
DYNO-NOBELNO.24	FEW4-DYNO-NOBELNO.24-FD-21	05-18-2023	0923	FD	WG	188.00	268.00	
DYNO-NOBELNO.25	FEW4-DYNO-NOBELNO.25-21	05-18-2023	0853	N	WG	177.00	273.00	
Total								14

Automated Data Review Detail Report for 280-176832-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Batch Report

Test Method: SW8260D		Analysis Batch: 280-614448								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614448/1002	LCS 280-614448/1002		1/1	5/31/2023 18:47	5/31/2023 18:47	5/31/2023 18:47	280-614448/	BS
LABQC	WQ	LCSD 280-614448/4	LCSD 280-614448/4		1/1	5/31/2023 19:31	5/31/2023 19:31	5/31/2023 19:31	280-614448/	BD
LABQC	WQ	MB 280-614448/7	MB 280-614448/7		1/1	5/31/2023 20:37	5/31/2023 20:37	5/31/2023 20:37	280-614448/	LB
FIELDQC	WQ	FEW4-TB09-21	280-176832-12		1/1	5/18/2023 08:00	5/31/2023 22:19	5/31/2023 22:19	280-614448/	TB
DYNO-NOBEL 16	WG	FEW4-DYNO-NOBEL 16-21	280-176832-1		1/1	5/18/2023 11:27	6/1/2023 00:53	6/1/2023 00:53	280-614448/	N
DYNO-NOBEL 22	WG	FEW4-DYNO-NOBEL 22-21	280-176832-2		1/1	5/18/2023 11:51	6/1/2023 01:15	6/1/2023 01:15	280-614448/	N
DYNO-NOBEL 23	WG	FEW4-DYNO-NOBEL 23-21	280-176832-3		1/1	5/18/2023 12:42	6/1/2023 01:38	6/1/2023 01:38	280-614448/	N
DYNO-NOBEL 26	WG	FEW4-DYNO-NOBEL 26-21	280-176832-4		1/1	5/18/2023 12:16	6/1/2023 02:00	6/1/2023 02:00	280-614448/	N
DYNO-NOBEL 27	WG	FEW4-DYNO-NOBEL 27-21	280-176832-5		1/1	5/18/2023 10:48	6/1/2023 02:22	6/1/2023 02:22	280-614448/	N
DYNO-NOBEL 8	WG	FEW4-DYNO-NOBEL 8-21	280-176832-6		1/1	5/18/2023 10:12	6/1/2023 02:44	6/1/2023 02:44	280-614448/	N
DYNO-NOBELNO.24	WG	FEW4-DYNO-NOBELNO.24-21	280-176832-7		1/1	5/18/2023 09:23	6/1/2023 03:06	6/1/2023 03:06	280-614448/	N
DYNO-NOBELNO.24	WG	FEW4-DYNO-NOBELNO.24-FD-21	280-176832-8		1/1	5/18/2023 09:23	6/1/2023 03:28	6/1/2023 03:28	280-614448/	FD
DYNO-NOBELNO.25	WG	FEW4-DYNO-NOBELNO.25-21	280-176832-9		1/1	5/18/2023 08:53	6/1/2023 03:50	6/1/2023 03:50	280-614448/	N
FEW4-MW106-230	WG	FEW4-MW106-230-21	280-176832-10		1/1	5/18/2023 09:34	6/1/2023 04:12	6/1/2023 04:12	280-614448/	N
DYNO-NOBEL 8	WG	FEW4-DYNO-NOBEL 8-MS-21	280-176832-6MS		1/1	5/18/2023 10:12	6/1/2023 04:34	6/1/2023 04:34	280-614448/	MS
DYNO-NOBEL 8	WG	FEW4-DYNO-NOBEL 8-MSD-21	280-176832-6MSD		1/1	5/18/2023 10:12	6/1/2023 04:56	6/1/2023 04:56	280-614448/	SD

Automated Data Review Detail Report for 280-176832-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Test Method: SW8260D Analysis Batch: 280-614467

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614467/1002	LCS 280-614467/1002		1/1	6/1/2023 08:28	6/1/2023 08:28	6/1/2023 08:28	280-614467/	BS
LABQC	WQ	LCSD 280-614467/4	LCSD 280-614467/4		1/1	6/1/2023 08:48	6/1/2023 08:48	6/1/2023 08:48	280-614467/	BD
LABQC	WQ	MB 280-614467/7	MB 280-614467/7		1/1	6/1/2023 09:50	6/1/2023 09:50	6/1/2023 09:50	280-614467/	LB
REES BROS. 5	WG	FEW4-REES BROS. 5-21	280-176832-11		1/1	5/18/2023 08:18	6/1/2023 12:24	6/1/2023 12:24	280-614467/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	18052301		FIELDQC	WQ	FEW4-TB09-21	280-176832-12	5/18/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

Automated Data Review Detail Report for 280-176832-1
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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS Recovery	FEW4-DYNO-NOBEL 8-MSD-21 (SD) / 280-176832-6MSD	1 / 1.00	1,4-Dioxane	0.000 (percent)	J/X	59 - 139	59 - 139	M			
MS RPD	FEW4-DYNO-NOBEL 8-MSD-21 (SD) / 280-176832-6MSD	1 / 1.00	1,4-Dioxane	200.0 (rpd)	J/None	< 20	< 20	D			

Rule is the multiplier used when blank contamination occurs to determine action level.



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-DYNO-NOBEL 8-21	280-176832-6	W	N	1,4-Dioxane	150	50.0 U J1	50.0 X		ug/l	M

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176832-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-DYNO-NOBEL 16-21	280-176832-1	W	N	1	Trichloroethene (TCE)	1.00	4.70	4.70	ug/l	
FEW4-DYNO-NOBEL 22-21	280-176832-2	W	N	1	Trichloroethene (TCE)	1.00	20.0	20.0	ug/l	
FEW4-DYNO-NOBEL 23-21	280-176832-3	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	
FEW4-DYNO-NOBEL 26-21	280-176832-4	W	N	1	Trichloroethene (TCE)	1.00	4.40	4.40	ug/l	
FEW4-DYNO-NOBEL 27-21	280-176832-5	W	N	1	Trichloroethene (TCE)	1.00	3.50	3.50	ug/l	
FEW4-DYNO-NOBELNO.24-21	280-176832-7	W	N	1	Trichloroethene (TCE)	1.00	8.20	8.20	ug/l	
FEW4-DYNO-NOBELNO.24-FD-21	280-176832-8	W	FD	1	Trichloroethene (TCE)	1.00	9.30	9.30	ug/l	
FEW4-DYNO-NOBELNO.25-21	280-176832-9	W	N	1	Trichloroethene (TCE)	1.00	7.90	7.90	ug/l	
FEW4-MW106-230-21	280-176832-10	W	N	1	cis-1,2-Dichloroethene	1.00	1.90	1.90	ug/l	
FEW4-MW106-230-21	280-176832-10	W	N	1	Trichloroethene (TCE)	1.00	160	160	ug/l	
FEW4-REES BROS. 5-21	280-176832-11	W	N	1	Trichloroethene (TCE)	1.00	3.80	3.80	ug/l	



Rejected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-DYNO-NOBEL 8-21	280-176832-6	W	N	1,4-Dioxane	150	50.0 U J1	50.0 X	ug/l	M

Data Validation Report for 280-176837-1



US Army Corps
of Engineers®

Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176837-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: September 07, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-BELVOIR-BORIE 1-21	280-176837-1	Water	Field Sample/N	X
FEW4-BELVOIR-BORIE 1-FD-21	280-176837-2	Water	Field Duplicate/FD	X
FEW4-COW CAMP NO. 1-21	280-176837-3	Water	Field Sample/N	X
FEW4-DUCK CREEK-21	280-176837-4	Water	Field Sample/N	X
FEW4-MW07-21	280-176837-5	Water	Field Sample/N	X
FEW4-MW25-21	280-176837-6	Water	Field Sample/N	X
FEW4-MW27-21	280-176837-7	Water	Field Sample/N	X
FEW4-MW28-21	280-176837-8	Water	Field Sample/N	X
FEW4-MW32-21	280-176837-9	Water	Field Sample/N	X
FEW4-MW32-FD-21	280-176837-10	Water	Field Duplicate/FD	X
FEW4-MW44R-242-21	280-176837-11	Water	Field Sample/N	X
FEW4-MW48-225-21	280-176837-12	Water	Field Sample/N	X
FEW4-MW63-143-21	280-176837-13	Water	Field Sample/N	X
FEW4-MW63-223-21	280-176837-14	Water	Field Sample/N	X
FEW4-MW63-79-21	280-176837-15	Water	Field Sample/N	X
FEW4-MW67-233-21	280-176837-16	Water	Field Sample/N	X
FEW4-MW67-64-21	280-176837-17	Water	Field Sample/N	X
FEW4-MW67-97-21	280-176837-18	Water	Field Sample/N	X
FEW4-MW76-123-21	280-176837-19	Water	Field Sample/N	X
FEW4-MW76-255-21	280-176837-20	Water	Field Sample/N	X
FEW4-MW76-87-21	280-176837-21	Water	Field Sample/N	X

Data Validation Report for 280-176837-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW82-132-21	280-176837-22	Water	Field Sample/N	X
FEW4-MW82-161-21	280-176837-23	Water	Field Sample/N	X
FEW4-MW82-83-21	280-176837-24	Water	Field Sample/N	X
FEW4-MW88-183-21	280-176837-25	Water	Field Sample/N	X
FEW4-MW88-253-21	280-176837-26	Water	Field Sample/N	X
FEW4-MW88-253-FD-21	280-176837-27	Water	Field Duplicate/FD	X
FEW4-TB10-21	280-176837-28	Water	Trip Blank/TB	X

Data Validation Report for 280-176837-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176837-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

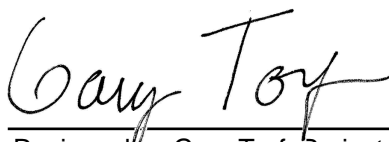
A total of 54 results (3.71%) out of the 1456 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

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Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 07, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

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Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW44R-242-MSD-21 (SD)	Bromomethane	21.4	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

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Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW28-21 280-176837-8	N	2-Hexanone	500	400 U Q	400 UJ		ug/l	V2
FEW4-MW28-21 280-176837-8	N	Chloromethane	200	100 U Q	100 UJ		ug/l	V2
FEW4-MW88-253-21 280-176837-26	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,1-Dichloroethane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,1-Dichloroethene	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichloropropane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	1,4-Dioxane	150	50.0 U	50.0 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	2-Butanone (MEK)	15.0	12.0 U	12.0 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	2-Hexanone	5.00	4.00 U	4.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Acetone	15.0	8.00 U	8.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Benzene	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Bromochloromethane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Bromodichloromethane	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	P

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Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW88-253-21 280-176837-26	N	Bromomethane	5.00	4.00 U	4.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Carbon disulfide	2.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Carbon Tetrachloride	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Chlorobenzene	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Chloroethane	4.00	1.60 U	1.60 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Chloroform	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Cumene	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Cyclohexane	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Dibromochloromethane	2.00	1.80 U	1.80 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Ethylbenzene	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	m,p-Xylene	2.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Methyl acetate	5.00	4.00 U	4.00 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Methylcyclohexane	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Methylene chloride	2.00	1.80 U	1.80 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	o-Xylene	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Styrene	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Toluene	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 UJ		ug/l	P

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Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW88-253-21 280-176837-26	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Trichlorofluoromethane	2.00	0.800 U	0.800 UJ		ug/l	P
FEW4-MW88-253-21 280-176837-26	N	Vinyl chloride	2.00	1.00 U	1.00 UJ		ug/l	P

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

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Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW07-21	N	cis-1,2-Dichloroethene	1.00	0.380 J	0.380 J		ug/L	TR
FEW4-MW27-21	N	Trichloroethene (TCE)	1.00	0.730 J	0.730 J		ug/L	TR
FEW4-MW32-21	N	Trichloroethene (TCE)	1.00	0.670 J	0.670 J		ug/L	TR
FEW4-MW32-FD-21	FD	Trichloroethene (TCE)	1.00	0.730 J	0.730 J		ug/L	TR
FEW4-MW63-143-21	N	cis-1,2-Dichloroethene	2.00	0.720 J D	0.720 J		ug/L	TR
FEW4-MW63-79-21	N	cis-1,2-Dichloroethene	1.00	0.450 J	0.450 J		ug/L	TR
FEW4-MW67-64-21	N	cis-1,2-Dichloroethene	1.00	0.500 J	0.500 J		ug/L	TR
FEW4-MW67-97-21	N	cis-1,2-Dichloroethene	4.00	1.40 J D	1.40 J		ug/L	TR
FEW4-MW82-132-21	N	cis-1,2-Dichloroethene	4.00	3.10 J D	3.10 J		ug/L	TR
FEW4-MW88-183-21	N	cis-1,2-Dichloroethene	1.00	0.760 J	0.760 J		ug/L	TR

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW28-21 280-176837-8	N	2-Hexanone	500	400 U Q	400 U	400 UJ	V2
FEW4-MW28-21 280-176837-8	N	Chloromethane	200	100 U Q	100 U	100 UJ	V2
FEW4-MW88-253-21 280-176837-26	N	1,1,1-Trichloroethane	1.00	0.500 U	0.500 U	0.500 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2,2-Tetrachloroethane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2-Trichloro-1,2,2-trifluoroethane	3.00	1.80 U	1.80 U	1.80 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,1,2-Trichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,1-Dichloroethane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,1-Dichloroethene	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2,3-Trichlorobenzene	2.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2,4-Trichlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dibromo-3-chloropropane	5.00	4.00 U	4.00 U	4.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dibromoethane (EDB)	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichloroethane	1.00	0.800 U M	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,2-Dichloropropane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,3-Dichlorobenzene	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,4-Dichlorobenzene	1.00	0.500 U	0.500 U	0.500 UJ	P
FEW4-MW88-253-21 280-176837-26	N	1,4-Dioxane	150	50.0 U	50.0 U	50.0 UJ	P
FEW4-MW88-253-21 280-176837-26	N	2-Butanone (MEK)	15.0	12.0 U	12.0 U	12.0 UJ	P
FEW4-MW88-253-21 280-176837-26	N	2-Hexanone	5.00	4.00 U	4.00 U	4.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	4-Methyl-2-pentanone (MIBK)	5.00	3.20 U	3.20 U	3.20 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Benzene	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Bromochloromethane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Bromodichloromethane	1.00	0.500 U	0.500 U	0.500 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	P

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW88-253-21 280-176837-26	N	Bromomethane	5.00	4.00 U	4.00 U	4.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Carbon disulfide	2.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Carbon Tetrachloride	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Chlorobenzene	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Chloroethane	4.00	1.60 U	1.60 U	1.60 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Chloroform	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	cis-1,2-Dichloroethene	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	cis-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Cumene	1.00	0.500 U	0.500 U	0.500 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Cyclohexane	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Dibromochloromethane	2.00	1.80 U	1.80 U	1.80 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Dichlorodifluoromethane	3.00	2.50 U Q	2.50 U	2.50 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Ethylbenzene	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	m,p-Xylene	2.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Methyl acetate	5.00	4.00 U	4.00 U	4.00 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Methyl tert-butyl ether (MTBE)	5.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Methylcyclohexane	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Methylene chloride	2.00	1.80 U	1.80 U	1.80 UJ	P
FEW4-MW88-253-21 280-176837-26	N	o-Xylene	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Styrene	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Tetrachloroethene (PCE)	1.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Toluene	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	trans-1,2-Dichloroethene	1.00	0.500 U	0.500 U	0.500 UJ	P

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW88-253-21 280-176837-26	N	trans-1,3-Dichloropropene	2.00	1.80 U	1.80 U	1.80 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Trichloroethene (TCE)	1.00	0.400 U	0.400 U	0.400 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Trichlorofluoromethane	2.00	0.800 U	0.800 U	0.800 UJ	P
FEW4-MW88-253-21 280-176837-26	N	Vinyl chloride	2.00	1.00 U	1.00 U	1.00 UJ	P

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
P	Sample preservation/collection requirement not met.
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176837-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			Sample FEW4-MW88-253-21 was analyzed with headspace.
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB10-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW44R-242-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		bromomethane 21.4% RPD (20% RPD UCL)
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW32-21, FEW4-BELVOIR-BORIE 1-21, and FEW4-MW88-253-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-176837-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		•		VMS_MS11 ICV 280-614450/20: dichlorodifluoromethane 28.9% was outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_MS11 CCV 280-614493/2: dichlorodifluoromethane 32.9% and chloromethane 23.7% were outside the 20% control limit high. VMS_R1 CCV 280-614611/2: chloromethane -20.7% and 2-hexanone -20.2% were outside the 20% control limit low; the analytes were not detected in associated sample FEW4-MW28-21. Bromoform 24.4% and 1,1,2-trichloro-1,2,2-trifluoroethane 21% were outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?		•		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
BELVOIR-BORIE 1	FEW4-BELVOIR-BORIE 1-21	05-19-2023	0902	N	WG	90.00	140.00	X
FEW4-MW32	FEW4-MW32-FD-21	05-19-2023	1142	FD	WG	103.70	113.70	X
FEW4-MW44R-242	FEW4-MW44R-242-21	05-19-2023	1156	N	WG	237.30	247.30	X
FEW4-MW44R-242	FEW4-MW44R-242-MS-21	05-19-2023	1156	MS	WG	237.30	247.30	X
FEW4-MW44R-242	FEW4-MW44R-242-MSD-21	05-19-2023	1156	SD	WG	237.30	247.30	X
FEW4-MW48-225	FEW4-MW48-225-21	05-19-2023	0949	N	WG	217.30	227.30	X
FEW4-MW63-143	FEW4-MW63-143-21	05-19-2023	1111	N	WG	135.40	145.40	X
FEW4-MW63-223	FEW4-MW63-223-21	05-19-2023	1056	N	WG	215.50	225.50	X
FEW4-MW63-79	FEW4-MW63-79-21	05-19-2023	1104	N	WG	69.50	84.50	X
FEW4-MW67-233	FEW4-MW67-233-21	05-19-2023	1325	N	WG	223.10	238.10	X
FEW4-MW67-64	FEW4-MW67-64-21	05-19-2023	1333	N	WG	53.90	68.90	X
FEW4-MW67-97	FEW4-MW67-97-21	05-19-2023	1343	N	WG	87.60	102.60	X
FEW4-MW76-123	FEW4-MW76-123-21	05-19-2023	1029	N	WG	115.80	125.80	X
BELVOIR-BORIE 1	FEW4-BELVOIR-BORIE 1-FD-21	05-19-2023	0902	FD	WG	90.00	140.00	X
FEW4-MW76-255	FEW4-MW76-255-21	05-19-2023	1020	N	WG	247.20	257.20	X
FEW4-MW76-87	FEW4-MW76-87-21	05-19-2023	1035	N	WG	79.80	89.80	X
FEW4-MW82-132	FEW4-MW82-132-21	05-19-2023	1246	N	WG	124.70	134.70	X
FEW4-MW82-161	FEW4-MW82-161-21	05-19-2023	1236	N	WG	153.80	163.80	X
FEW4-MW82-83	FEW4-MW82-83-21	05-19-2023	1227	N	WG	75.80	85.80	X
FEW4-MW88-183	FEW4-MW88-183-21	05-19-2023	1000	N	WG	0.00	0.00	X
FEW4-MW88-253	FEW4-MW88-253-21	05-19-2023	0947	N	WG	0.00	0.00	X
FEW4-MW88-253	FEW4-MW88-253-FD-21	05-19-2023	0947	FD	WG	0.00	0.00	X
FIELDQC	FEW4-TB10-21	05-19-2023	0800	TB	WQ	0.00	0.00	X
COW CAMP NO. 1	FEW4-COW CAMP NO. 1-21	05-19-2023	1113	N	WG	324.00	400.00	X
DUCKCREEK STOCK	FEW4-DUCK CREEK-21	05-19-2023	0957	N	WG	0.00	0.00	X
FEW4-MW07	FEW4-MW07-21	05-19-2023	1127	N	WG	100.00	110.00	X
FEW4-MW25	FEW4-MW25-21	05-19-2023	1200	N	WG	150.45	160.45	X



Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW27	FEW4-MW27-21	05-19-2023	1301	N	WG	120.70	130.70	
FEW4-MW28	FEW4-MW28-21	05-19-2023	1313	N	WG	119.85	129.85	
FEW4-MW32	FEW4-MW32-21	05-19-2023	1142	N	WG	103.70	113.70	X
Total								30

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614466								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614466/1002	LCS 280-614466/1002		1/1	6/1/2023 08:58	6/1/2023 08:58	6/1/2023 08:58	280-614466/	BS
LABQC	WQ	LCSD 280-614466/4	LCSD 280-614466/4		1/1	6/1/2023 09:52	6/1/2023 09:52	6/1/2023 09:52	280-614466/	BD
LABQC	WQ	MB 280-614466/7	MB 280-614466/7		1/1	6/1/2023 10:58	6/1/2023 10:58	6/1/2023 10:58	280-614466/	LB
BELVOIR-BORIE 1	WG	FEW4-BELVOIR-BORIE 1-21	280-176837-1		1/1	5/19/2023 09:02	6/1/2023 14:39	6/1/2023 14:39	280-614466/	N
BELVOIR-BORIE 1	WG	FEW4-BELVOIR-BORIE 1-FD-21	280-176837-2		1/1	5/19/2023 09:02	6/1/2023 15:01	6/1/2023 15:01	280-614466/	FD
COW CAMP NO. 1	WG	FEW4-COW CAMP NO. 1-21	280-176837-3		1/1	5/19/2023 11:13	6/1/2023 15:23	6/1/2023 15:23	280-614466/	N
DUCKCREEK STOCK	WG	FEW4-DUCK CREEK-21	280-176837-4		1/1	5/19/2023 09:57	6/1/2023 15:45	6/1/2023 15:45	280-614466/	N
FEW4-MW07	WG	FEW4-MW07-21	280-176837-5		1/1	5/19/2023 11:27	6/1/2023 16:07	6/1/2023 16:07	280-614466/	N
FEW4-MW25	WG	FEW4-MW25-21	280-176837-6		1/1	5/19/2023 12:00	6/1/2023 16:29	6/1/2023 16:29	280-614466/	N
FEW4-MW27	WG	FEW4-MW27-21	280-176837-7		1/1	5/19/2023 13:01	6/1/2023 16:51	6/1/2023 16:51	280-614466/	N

Test Method: SW8260D		Analysis Batch: 280-614493								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614493/1002	LCS 280-614493/1002		1/1	6/1/2023 08:25	6/1/2023 08:25	6/1/2023 08:25	280-614493/	BS
LABQC	WQ	LCSD 280-614493/4	LCSD 280-614493/4		1/1	6/1/2023 09:13	6/1/2023 09:13	6/1/2023 09:13	280-614493/	BD
LABQC	WQ	MB 280-614493/7	MB 280-614493/7		1/1	6/1/2023 10:17	6/1/2023 10:17	6/1/2023 10:17	280-614493/	LB
FIELDQC	WQ	FEW4-TB10-21	280-176837-28		1/1	5/19/2023 08:00	6/1/2023 10:50	6/1/2023 10:50	280-614493/	TB
FEW4-MW44R-242	WG	FEW4-MW44R-242-21	280-176837-11		1/1	5/19/2023 11:56	6/1/2023 11:12	6/1/2023 11:12	280-614493/	N
FEW4-MW32	WG	FEW4-MW32-21	280-176837-9		1/1	5/19/2023 11:42	6/1/2023 11:33	6/1/2023 11:33	280-614493/	N

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Test Method: SW8260D Analysis Batch: 280-614493

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW48-225	WG	FEW4-MW48-225-21	280-176837-12		1/1	5/19/2023 09:49	6/1/2023 12:16	6/1/2023 12:16	280-614493/	N
FEW4-MW63-223	WG	FEW4-MW63-223-21	280-176837-14		1/1	5/19/2023 10:56	6/1/2023 12:37	6/1/2023 12:37	280-614493/	N
FEW4-MW63-79	WG	FEW4-MW63-79-21	280-176837-15		1/1	5/19/2023 11:04	6/1/2023 12:58	6/1/2023 12:58	280-614493/	N
FEW4-MW67-233	WG	FEW4-MW67-233-21	280-176837-16		1/1	5/19/2023 13:25	6/1/2023 13:19	6/1/2023 13:19	280-614493/	N
FEW4-MW67-64	WG	FEW4-MW67-64-21	280-176837-17		1/1	5/19/2023 13:33	6/1/2023 13:41	6/1/2023 13:41	280-614493/	N
FEW4-MW76-123	WG	FEW4-MW76-123-21	280-176837-19		1/1	5/19/2023 10:29	6/1/2023 14:02	6/1/2023 14:02	280-614493/	N
FEW4-MW76-255	WG	FEW4-MW76-255-21	280-176837-20		1/1	5/19/2023 10:20	6/1/2023 14:23	6/1/2023 14:23	280-614493/	N
FEW4-MW82-161	WG	FEW4-MW82-161-21	280-176837-23		1/1	5/19/2023 12:36	6/1/2023 14:45	6/1/2023 14:45	280-614493/	N
FEW4-MW82-83	WG	FEW4-MW82-83-21	280-176837-24		1/1	5/19/2023 12:27	6/1/2023 15:06	6/1/2023 15:06	280-614493/	N
FEW4-MW88-183	WG	FEW4-MW88-183-21	280-176837-25		1/1	5/19/2023 10:00	6/1/2023 15:28	6/1/2023 15:28	280-614493/	N
FEW4-MW88-253	WG	FEW4-MW88-253-21	280-176837-26		1/1	5/19/2023 09:47	6/1/2023 15:49	6/1/2023 15:49	280-614493/	N
FEW4-MW88-253	WG	FEW4-MW88-253-FD-21	280-176837-27		1/1	5/19/2023 09:47	6/1/2023 16:10	6/1/2023 16:10	280-614493/	FD
FEW4-MW32	WG	FEW4-MW32-FD-21	280-176837-10		1/1	5/19/2023 11:42	6/1/2023 16:31	6/1/2023 16:31	280-614493/	FD
FEW4-MW82-132	WG	FEW4-MW82-132-21	280-176837-22		1/4	5/19/2023 12:46	6/1/2023 16:53	6/1/2023 16:53	280-614493/	N
FEW4-MW76-87	WG	FEW4-MW76-87-21	280-176837-21		1/2	5/19/2023 10:35	6/1/2023 17:15	6/1/2023 17:15	280-614493/	N
FEW4-MW67-97	WG	FEW4-MW67-97-21	280-176837-18		1/4	5/19/2023 13:43	6/1/2023 17:36	6/1/2023 17:36	280-614493/	N
FEW4-MW63-143	WG	FEW4-MW63-143-21	280-176837-13		1/2	5/19/2023 11:11	6/1/2023 17:58	6/1/2023 17:58	280-614493/	N
FEW4-MW44R-242	WG	FEW4-MW44R-242-MS-21	280-176837-11MS		1/1	5/19/2023 11:56	6/1/2023 18:19	6/1/2023 18:19	280-614493/	MS

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Test Method: SW8260D Analysis Batch: 280-614493

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW44R-242	WG	FEW4-MW44R-242-MSD-21	280-176837-11MSD		1/1	5/19/2023 11:56	6/1/2023 18:41	6/1/2023 18:41	280-614493/	SD

Test Method: SW8260D Analysis Batch: 280-614611

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614611/1002	LCS 280-614611/1002		1/1	6/1/2023 18:34	6/1/2023 18:34	6/1/2023 18:34	280-614611/	BS
LABQC	WQ	LCSD 280-614611/4	LCSD 280-614611/4		1/1	6/1/2023 19:16	6/1/2023 19:16	6/1/2023 19:16	280-614611/	BD
LABQC	WQ	MB 280-614611/7	MB 280-614611/7		1/1	6/1/2023 20:18	6/1/2023 20:18	6/1/2023 20:18	280-614611/	LB
FEW4-MW28	WG	FEW4-MW28-21	280-176837-8		1/100	5/19/2023 13:13	6/2/2023 03:11	6/2/2023 03:11	280-614611/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	19052301		FIELDQC	WQ	FEW4-TB10-21	280-176837-28	5/19/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
MS RPD	FEW4-MW44R-242-MSD-21 (SD) / 280-176837-11MSD	1 / 1.00	Bromomethane	21.43 (rpd)	J/None	< 20	< 20	D			

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW07-21	280-176837-5	W	N	cis-1,2-Dichloroethene	1.00	0.380 J	0.380 J		ug/l	TR
FEW4-MW27-21	280-176837-7	W	N	Trichloroethene (TCE)	1.00	0.730 J	0.730 J		ug/l	TR
FEW4-MW32-21	280-176837-9	W	N	Trichloroethene (TCE)	1.00	0.670 J	0.670 J		ug/l	TR
FEW4-MW32-FD-21	280-176837-10	W	FD	Trichloroethene (TCE)	1.00	0.730 J	0.730 J		ug/l	TR
FEW4-MW63-143-21	280-176837-13	W	N	cis-1,2-Dichloroethene	2.00	0.720 J D	0.720 J		ug/l	TR
FEW4-MW63-79-21	280-176837-15	W	N	cis-1,2-Dichloroethene	1.00	0.450 J	0.450 J		ug/l	TR
FEW4-MW67-64-21	280-176837-17	W	N	cis-1,2-Dichloroethene	1.00	0.500 J	0.500 J		ug/l	TR
FEW4-MW67-97-21	280-176837-18	W	N	cis-1,2-Dichloroethene	4.00	1.40 J D	1.40 J		ug/l	TR
FEW4-MW82-132-21	280-176837-22	W	N	cis-1,2-Dichloroethene	4.00	3.10 J D	3.10 J		ug/l	TR
FEW4-MW88-183-21	280-176837-25	W	N	cis-1,2-Dichloroethene	1.00	0.760 J	0.760 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-BELVOIR-BORIE 1-21	280-176837-1	W	N	1	Trichloroethene (TCE)	1.00	4.90	4.90	ug/l	
FEW4-BELVOIR-BORIE 1-FD-21	280-176837-2	W	FD	1	Trichloroethene (TCE)	1.00	4.90	4.90	ug/l	
FEW4-COW CAMP NO. 1-21	280-176837-3	W	N	1	Trichloroethene (TCE)	1.00	13.0	13.0	ug/l	
FEW4-MW07-21	280-176837-5	W	N	1	cis-1,2-Dichloroethene	1.00	0.380 J	0.380 J	ug/l	TR
FEW4-MW07-21	280-176837-5	W	N	1	Trichloroethene (TCE)	1.00	100	100	ug/l	
FEW4-MW27-21	280-176837-7	W	N	1	Trichloroethene (TCE)	1.00	0.730 J	0.730 J	ug/l	TR
FEW4-MW28-21	280-176837-8	W	N	100	Trichloroethene (TCE)	100	5000 D	5000	ug/l	
FEW4-MW32-21	280-176837-9	W	N	1	cis-1,2-Dichloroethene	1.00	1.30	1.30	ug/l	
FEW4-MW32-21	280-176837-9	W	N	1	Trichloroethene (TCE)	1.00	0.670 J	0.670 J	ug/l	TR
FEW4-MW32-FD-21	280-176837-10	W	FD	1	cis-1,2-Dichloroethene	1.00	1.20	1.20	ug/l	
FEW4-MW32-FD-21	280-176837-10	W	FD	1	Trichloroethene (TCE)	1.00	0.730 J	0.730 J	ug/l	TR
FEW4-MW44R-242-21	280-176837-11	W	N	1	Trichloroethene (TCE)	1.00	17.0	17.0	ug/l	
FEW4-MW48-225-21	280-176837-12	W	N	1	Trichloroethene (TCE)	1.00	40.0	40.0	ug/l	
FEW4-MW63-143-21	280-176837-13	W	N	2	cis-1,2-Dichloroethene	2.00	0.720 J D	0.720 J	ug/l	TR
FEW4-MW63-143-21	280-176837-13	W	N	2	Trichloroethene (TCE)	2.00	170 D	170	ug/l	
FEW4-MW63-79-21	280-176837-15	W	N	1	cis-1,2-Dichloroethene	1.00	0.450 J	0.450 J	ug/l	TR
FEW4-MW63-79-21	280-176837-15	W	N	1	Trichloroethene (TCE)	1.00	110	110	ug/l	
FEW4-MW67-64-21	280-176837-17	W	N	1	cis-1,2-Dichloroethene	1.00	0.500 J	0.500 J	ug/l	TR
FEW4-MW67-64-21	280-176837-17	W	N	1	Trichloroethene (TCE)	1.00	76.0	76.0	ug/l	
FEW4-MW67-97-21	280-176837-18	W	N	4	cis-1,2-Dichloroethene	4.00	1.40 J D	1.40 J	ug/l	TR
FEW4-MW67-97-21	280-176837-18	W	N	4	Trichloroethene (TCE)	4.00	350 D	350	ug/l	
FEW4-MW76-87-21	280-176837-21	W	N	2	Trichloroethene (TCE)	2.00	170 D	170	ug/l	
FEW4-MW82-132-21	280-176837-22	W	N	4	cis-1,2-Dichloroethene	4.00	3.10 J D	3.10 J	ug/l	TR
FEW4-MW82-132-21	280-176837-22	W	N	4	Trichloroethene (TCE)	4.00	340 D	340	ug/l	
FEW4-MW82-161-21	280-176837-23	W	N	1	Trichloroethene (TCE)	1.00	12.0	12.0	ug/l	
FEW4-MW82-83-21	280-176837-24	W	N	1	cis-1,2-Dichloroethene	1.00	1.60	1.60	ug/l	

Automated Data Review Detail Report for 280-176837-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW82-83-21	280-176837-24	W	N	1	Trichloroethene (TCE)	1.00	140	140	ug/l	
FEW4-MW88-183-21	280-176837-25	W	N	1	cis-1,2-Dichloroethene	1.00	0.760 J	0.760 J	ug/l	TR
FEW4-MW88-183-21	280-176837-25	W	N	1	Trichloroethene (TCE)	1.00	6.20	6.20	ug/l	

Automated Data Review Detail Report for 280-176837-1
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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176899-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: September 07, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW106-316-21	280-176899-1	Water	Field Sample/N	X
FEW4-MW29-21	280-176899-2	Water	Field Sample/N	X
FEW4-MW30-21	280-176899-3	Water	Field Sample/N	X
FEW4-MW40-21	280-176899-4	Water	Field Sample/N	X
FEW4-MW45R-252-21	280-176899-5	Water	Field Sample/N	X
FEW4-MW45R-299-21	280-176899-6	Water	Field Sample/N	X
FEW4-MW45R-299-PDB-21	280-176899-7	Water	Field Sample/N	X
FEW4-MW51-210-PDB-21	280-176899-8	Water	Field Sample/N	X
FEW4-MW60-233-21	280-176899-9	Water	Field Sample/N	X
FEW4-MW61-221-21	280-176899-10	Water	Field Sample/N	X
FEW4-MW61-80-21	280-176899-11	Water	Field Sample/N	X
FEW4-MW64-122-21	280-176899-12	Water	Field Sample/N	X
FEW4-MW64-68-21	280-176899-13	Water	Field Sample/N	X
FEW4-MW64-68-FD-21	280-176899-14	Water	Field Duplicate/FD	X
FEW4-MW80-128-21	280-176899-15	Water	Field Sample/N	X
FEW4-MW80-223-21	280-176899-16	Water	Field Sample/N	X
FEW4-MW81-207-21	280-176899-17	Water	Field Sample/N	X
FEW4-MW89-178-21	280-176899-18	Water	Field Sample/N	X
FEW4-MW89-178-PDB-21	280-176899-19	Water	Field Sample/N	X
FEW4-TB12-21	280-176899-20	Water	Trip Blank/TB	X

Data Validation Report for 280-176899-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176899-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

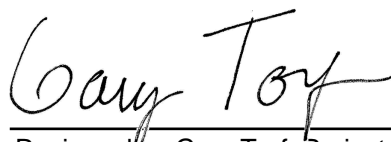
A total of 0 results (0.00%) out of the 1040 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176899-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 07, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176899-1

No Outliers were associated with this sample delivery group.

Qualified Results

No results associated with this sample delivery group required qualification.

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW106-316-21	N	cis-1,2-Dichloroethene	2.00	1.10 J D	1.10 J		ug/L	TR
FEW4-MW29-21	N	cis-1,2-Dichloroethene	1.00	0.840 J	0.840 J		ug/L	TR
FEW4-MW61-221-21	N	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J		ug/L	TR
FEW4-MW64-122-21	N	Trichloroethene (TCE)	1.00	0.440 J	0.440 J		ug/L	TR
FEW4-MW89-178-21	N	cis-1,2-Dichloroethene	2.00	1.00 J D	1.00 J		ug/L	TR
FEW4-MW89-178-PDB-21	N	cis-1,2-Dichloroethene	1.00	0.350 J	0.350 J		ug/L	TR

Data Validation Report for 280-176899-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW64-68-21 280-176899-13	N	Acetone	15.0	15.0	15.0	8.00 U	
FEW4-MW64-68-FD-21 280-176899-14	FD	Acetone	15.0	15.0	15.0	8.00 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176899-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB12-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW45R-299-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW64-68-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-176899-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		•		VMS_MS11 ICV 280-614450/20:> dichlorodifluoromethane 28.9% was outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_P CCV 280-614615/2: 1,4-dioxane 21.7% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			<p>Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment.</p> <p>This includes the acetone results for FEW4-MW64-68-21 and FEW4-MW64-68-FD-21 at 15 ug/L.</p>

Automated Data Review Detail Report for 280-176899-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW106-316	FEW4-MW106-316-21	05-21-2023	1425	N	WG	0.00	0.00	X
FEW4-MW61-221	FEW4-MW61-221-21	05-21-2023	1058	N	WG	208.70	228.70	X
FEW4-MW61-80	FEW4-MW61-80-21	05-21-2023	1618	N	WG	70.40	85.40	X
FEW4-MW64-122	FEW4-MW64-122-21	05-21-2023	0900	N	WG	114.70	124.70	X
FEW4-MW64-68	FEW4-MW64-68-21	05-21-2023	0908	N	WG	58.70	73.70	X
FEW4-MW64-68	FEW4-MW64-68-FD-21	05-21-2023	0908	FD	WG	58.70	73.70	X
FEW4-MW80-128	FEW4-MW80-128-21	05-21-2023	1025	N	WG	120.60	130.60	X
FEW4-MW80-223	FEW4-MW80-223-21	05-21-2023	1016	N	WG	214.60	224.60	X
FEW4-MW81-207	FEW4-MW81-207-21	05-21-2023	1002	N	WG	197.20	212.20	X
FEW4-MW89-178	FEW4-MW89-178-21	05-21-2023	1507	N	WG	0.00	0.00	X
FEW4-MW89-178	FEW4-MW89-178-PDB-21	05-21-2023	1405	N	WG	0.00	0.00	X
FEW4-MW29	FEW4-MW29-21	05-21-2023	0944	N	WG	99.20	109.20	X
FIELDQC	FEW4-TB12-21	05-21-2023	0800	TB	WQ	0.00	0.00	X
FEW4-MW30	FEW4-MW30-21	05-21-2023	0928	N	WG	105.20	115.20	X
FEW4-MW40	FEW4-MW40-21	05-21-2023	0850	N	WG	82.80	92.80	X
FEW4-MW45R-252	FEW4-MW45R-252-21	05-21-2023	1146	N	WG	247.60	257.60	X
FEW4-MW45R-299	FEW4-MW45R-299-21	05-21-2023	0959	N	WG	295.70	305.70	X
FEW4-MW45R-299	FEW4-MW45R-299-MS-21	05-21-2023	0959	MS	WG	295.70	305.70	X
FEW4-MW45R-299	FEW4-MW45R-299-MSD-21	05-21-2023	0959	SD	WG	295.70	305.70	X
FEW4-MW45R-299	FEW4-MW45R-299-PDB-21	05-21-2023	0827	N	WG	295.70	305.70	X
FEW4-MW51-210	FEW4-MW51-210-PDB-21	05-21-2023	1140	N	WG	205.40	215.40	X
FEW4-MW60-233	FEW4-MW60-233-21	05-21-2023	1406	N	WG	225.10	235.10	X
Total								22

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614615								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614615/1002	LCS 280-614615/1002		1/1	6/1/2023 18:43	6/1/2023 18:43	6/1/2023 18:43	280-614615/	BS
LABQC	WQ	LCSD 280-614615/4	LCSD 280-614615/4		1/1	6/1/2023 20:06	6/1/2023 20:06	6/1/2023 20:06	280-614615/	BD
LABQC	WQ	MB 280-614615/7	MB 280-614615/7		1/1	6/1/2023 21:13	6/1/2023 21:13	6/1/2023 21:13	280-614615/	LB
FEW4-MW29	WG	FEW4-MW29-21	280-176899-2		1/1	5/21/2023 09:44	6/1/2023 22:10	6/1/2023 22:10	280-614615/	N
FEW4-MW106-316	WG	FEW4-MW106-316-21	280-176899-1		1/2	5/21/2023 14:25	6/2/2023 02:57	6/2/2023 02:57	280-614615/	N
FEW4-MW30	WG	FEW4-MW30-21	280-176899-3		1/4	5/21/2023 09:28	6/2/2023 04:04	6/2/2023 04:04	280-614615/	N

Test Method: SW8260D		Analysis Batch: 280-614621								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614621/1002	LCS 280-614621/1002		1/1	6/1/2023 21:19	6/1/2023 21:19	6/1/2023 21:19	280-614621/	BS
LABQC	WQ	LCSD 280-614621/4	LCSD 280-614621/4		1/1	6/1/2023 22:01	6/1/2023 22:01	6/1/2023 22:01	280-614621/	BD
LABQC	WQ	MB 280-614621/7	MB 280-614621/7		1/1	6/1/2023 23:05	6/1/2023 23:05	6/1/2023 23:05	280-614621/	LB
FIELDQC	WQ	FEW4-TB12-21	280-176899-20		1/1	5/21/2023 08:00	6/2/2023 00:20	6/2/2023 00:20	280-614621/	TB
FEW4-MW45R-252	WG	FEW4-MW45R-252-21	280-176899-5		1/1	5/21/2023 11:46	6/2/2023 01:03	6/2/2023 01:03	280-614621/	N
FEW4-MW40	WG	FEW4-MW40-21	280-176899-4		1/1	5/21/2023 08:50	6/2/2023 01:24	6/2/2023 01:24	280-614621/	N
FEW4-MW45R-299	WG	FEW4-MW45R-299-21	280-176899-6		1/1	5/21/2023 09:59	6/2/2023 01:45	6/2/2023 01:45	280-614621/	N
FEW4-MW45R-299	WG	FEW4-MW45R-299-PDB-21	280-176899-7		1/1	5/21/2023 08:27	6/2/2023 02:07	6/2/2023 02:07	280-614621/	N
FEW4-MW51-210	WG	FEW4-MW51-210-PDB-21	280-176899-8		1/1	5/21/2023 11:40	6/2/2023 02:28	6/2/2023 02:28	280-614621/	N
FEW4-MW60-233	WG	FEW4-MW60-233-21	280-176899-9		1/1	5/21/2023 14:06	6/2/2023 02:49	6/2/2023 02:49	280-614621/	N

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Test Method: SW8260D Analysis Batch: 280-614621

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW64-122	WG	FEW4-MW64-122-21	280-176899-12		1/1	5/21/2023 09:00	6/2/2023 03:11	6/2/2023 03:11	280-614621/	N
FEW4-MW64-68	WG	FEW4-MW64-68-21	280-176899-13		1/1	5/21/2023 09:08	6/2/2023 03:32	6/2/2023 03:32	280-614621/	N
FEW4-MW64-68	WG	FEW4-MW64-68-FD-21	280-176899-14		1/1	5/21/2023 09:08	6/2/2023 03:53	6/2/2023 03:53	280-614621/	FD
FEW4-MW89-178	WG	FEW4-MW89-178-PDB-21	280-176899-19		1/1	5/21/2023 14:05	6/2/2023 04:15	6/2/2023 04:15	280-614621/	N
FEW4-MW89-178	WG	FEW4-MW89-178-21	280-176899-18		1/2	5/21/2023 15:07	6/2/2023 04:36	6/2/2023 04:36	280-614621/	N
FEW4-MW61-221	WG	FEW4-MW61-221-21	280-176899-10		1/5	5/21/2023 10:58	6/2/2023 04:58	6/2/2023 04:58	280-614621/	N
FEW4-MW61-80	WG	FEW4-MW61-80-21	280-176899-11		1/20	5/21/2023 16:18	6/2/2023 05:20	6/2/2023 05:20	280-614621/	N
FEW4-MW81-207	WG	FEW4-MW81-207-21	280-176899-17		1/40	5/21/2023 10:02	6/2/2023 05:42	6/2/2023 05:42	280-614621/	N
FEW4-MW80-223	WG	FEW4-MW80-223-21	280-176899-16		1/100	5/21/2023 10:16	6/2/2023 06:04	6/2/2023 06:04	280-614621/	N
FEW4-MW80-128	WG	FEW4-MW80-128-21	280-176899-15		1/400	5/21/2023 10:25	6/2/2023 06:26	6/2/2023 06:26	280-614621/	N
FEW4-MW45R-299	WG	FEW4-MW45R-299-MS-21	280-176899-6MS		1/1	5/21/2023 09:59	6/2/2023 06:48	6/2/2023 06:48	280-614621/	MS
FEW4-MW45R-299	WG	FEW4-MW45R-299-MSD-21	280-176899-6MSD		1/1	5/21/2023 09:59	6/2/2023 07:09	6/2/2023 07:09	280-614621/	SD



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	21052301		FIELDQC	WQ	FEW4-TB12-21	280-176899-20	5/21/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

QC Outliers Report

--No Records Found--

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW106-316-21	280-176899-1	W	N	cis-1,2-Dichloroethene	2.00	1.10 J D	1.10 J		ug/l	TR
FEW4-MW29-21	280-176899-2	W	N	cis-1,2-Dichloroethene	1.00	0.840 J	0.840 J		ug/l	TR
FEW4-MW61-221-21	280-176899-10	W	N	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J		ug/l	TR
FEW4-MW64-122-21	280-176899-12	W	N	Trichloroethene (TCE)	1.00	0.440 J	0.440 J		ug/l	TR
FEW4-MW89-178-21	280-176899-18	W	N	cis-1,2-Dichloroethene	2.00	1.00 J D	1.00 J		ug/l	TR
FEW4-MW89-178-PDB-21	280-176899-19	W	N	cis-1,2-Dichloroethene	1.00	0.350 J	0.350 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176899-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW106-316-21	280-176899-1	W	N	2	cis-1,2-Dichloroethene	2.00	1.10 J D	1.10 J	ug/l	TR
FEW4-MW106-316-21	280-176899-1	W	N	2	Trichloroethene (TCE)	2.00	210 D	210	ug/l	
FEW4-MW29-21	280-176899-2	W	N	1	cis-1,2-Dichloroethene	1.00	0.840 J	0.840 J	ug/l	TR
FEW4-MW29-21	280-176899-2	W	N	1	Trichloroethene (TCE)	1.00	130	130	ug/l	
FEW4-MW30-21	280-176899-3	W	N	4	Trichloroethene (TCE)	4.00	350 D	350	ug/l	
FEW4-MW40-21	280-176899-4	W	N	1	Trichloroethene (TCE)	1.00	31.0	31.0	ug/l	
FEW4-MW45R-252-21	280-176899-5	W	N	1	Trichloroethene (TCE)	1.00	6.40	6.40	ug/l	
FEW4-MW45R-299-21	280-176899-6	W	N	1	Trichloroethene (TCE)	1.00	4.00	4.00	ug/l	
FEW4-MW45R-299-PDB-21	280-176899-7	W	N	1	Trichloroethene (TCE)	1.00	1.10	1.10	ug/l	
FEW4-MW60-233-21	280-176899-9	W	N	1	Trichloroethene (TCE)	1.00	85.0	85.0	ug/l	
FEW4-MW61-221-21	280-176899-10	W	N	5	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J	ug/l	TR
FEW4-MW61-221-21	280-176899-10	W	N	5	Trichloroethene (TCE)	5.00	380 D	380	ug/l	
FEW4-MW61-80-21	280-176899-11	W	N	20	cis-1,2-Dichloroethene	20.0	29.0 D	29.0	ug/l	
FEW4-MW61-80-21	280-176899-11	W	N	20	Trichloroethene (TCE)	20.0	1400 D	1400	ug/l	
FEW4-MW64-122-21	280-176899-12	W	N	1	Trichloroethene (TCE)	1.00	0.440 J	0.440 J	ug/l	TR
FEW4-MW64-68-21	280-176899-13	W	N	1	Acetone	15.0	15.0	15.0	ug/l	
FEW4-MW64-68-21	280-176899-13	W	N	1	Trichloroethene (TCE)	1.00	1.90	1.90	ug/l	
FEW4-MW64-68-FD-21	280-176899-14	W	FD	1	Acetone	15.0	15.0	15.0	ug/l	
FEW4-MW64-68-FD-21	280-176899-14	W	FD	1	Trichloroethene (TCE)	1.00	2.00	2.00	ug/l	
FEW4-MW80-128-21	280-176899-15	W	N	400	Trichloroethene (TCE)	400	53000 D	53000	ug/l	
FEW4-MW80-223-21	280-176899-16	W	N	100	Trichloroethene (TCE)	100	10000 D	10000	ug/l	
FEW4-MW81-207-21	280-176899-17	W	N	40	Trichloroethene (TCE)	40.0	1800 D	1800	ug/l	
FEW4-MW89-178-21	280-176899-18	W	N	2	cis-1,2-Dichloroethene	2.00	1.00 J D	1.00 J	ug/l	TR
FEW4-MW89-178-21	280-176899-18	W	N	2	Trichloroethene (TCE)	2.00	220 D	220	ug/l	
FEW4-MW89-178-PDB-21	280-176899-19	W	N	1	cis-1,2-Dichloroethene	1.00	0.350 J	0.350 J	ug/l	TR

Automated Data Review Detail Report for 280-176899-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW89-178-PDB-21	280-176899-19	W	N	1	Trichloroethene (TCE)	1.00	47.0	47.0	ug/l	

Automated Data Review Detail Report for 280-176899-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176914-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: September 07, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW06-21	280-176914-1	Water	Field Sample/N	X
FEW4-MW101-106-21	280-176914-2	Water	Field Sample/N	X
FEW4-MW101-138-21	280-176914-3	Water	Field Sample/N	X
FEW4-MW101-238-21	280-176914-4	Water	Field Sample/N	X
FEW4-MW13-21	280-176914-5	Water	Field Sample/N	X
FEW4-MW19-21	280-176914-6	Water	Field Sample/N	X
FEW4-MW19-FD-21	280-176914-7	Water	Field Duplicate/FD	X
FEW4-MW20-21	280-176914-8	Water	Field Sample/N	X
FEW4-MW39-21	280-176914-9	Water	Field Sample/N	X
FEW4-MW49-286-21	280-176914-10	Water	Field Sample/N	X
FEW4-MW49-311-21	280-176914-11	Water	Field Sample/N	X
FEW4-MW49-333-21	280-176914-12	Water	Field Sample/N	X
FEW4-MW73-137-21	280-176914-13	Water	Field Sample/N	X
FEW4-MW73-218-21	280-176914-14	Water	Field Sample/N	X
FEW4-MW73-243-21	280-176914-15	Water	Field Sample/N	X
FEW4-MW78-112-21	280-176914-16	Water	Field Sample/N	X
FEW4-MW78-112-PDB-21	280-176914-17	Water	Field Sample/N	X
FEW4-MW79-127-21	280-176914-18	Water	Field Sample/N	X
FEW4-MW79-326-21	280-176914-19	Water	Field Sample/N	X
FEW4-MW81-100-21	280-176914-20	Water	Field Sample/N	X
FEW4-MW85-151-21	280-176914-21	Water	Field Sample/N	X

Data Validation Report for 280-176914-1

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW85-151-FD-21	280-176914-22	Water	Field Duplicate/FD	X
FEW4-MW85-205-21	280-176914-23	Water	Field Sample/N	X
FEW4-MW85-92-21	280-176914-24	Water	Field Sample/N	X
FEW4-MW88-133-21	280-176914-25	Water	Field Sample/N	X
FEW4-MW88-133-PDB-21	280-176914-26	Water	Field Sample/N	X
FEW4-MW89-207-21	280-176914-27	Water	Field Sample/N	X
FEW4-MW89-250-21	280-176914-28	Water	Field Sample/N	X
FEW4-MW98-180-21	280-176914-29	Water	Field Sample/N	X
FEW4-MW98-217-21	280-176914-30	Water	Field Sample/N	X
FEW4-MW98-263-21	280-176914-31	Water	Field Sample/N	X
FEW4-TB11-21	280-176914-32	Water	Trip Blank/TB	X

Data Validation Report for 280-176914-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176914-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

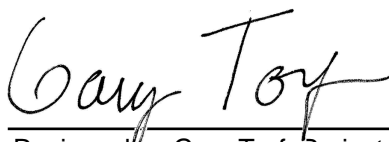
A total of 32 results (1.92%) out of the 1664 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176914-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 07, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176914-1

No Outliers were associated with this sample delivery group.

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW06-21 280-176914-1	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW06-21 280-176914-1	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW101-106-21 280-176914-2	N	2-Hexanone	20.0	16.0 U Q	16.0 UJ		ug/l	V2
FEW4-MW101-106-21 280-176914-2	N	Chloromethane	8.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW101-138-21 280-176914-3	N	2-Hexanone	50.0	40.0 U Q	40.0 UJ		ug/l	V2
FEW4-MW101-138-21 280-176914-3	N	Chloromethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2
FEW4-MW101-238-21 280-176914-4	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW101-238-21 280-176914-4	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW13-21 280-176914-5	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW13-21 280-176914-5	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW19-21 280-176914-6	N	2-Hexanone	50.0	40.0 U Q	40.0 UJ		ug/l	V2
FEW4-MW19-21 280-176914-6	N	Chloromethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2
FEW4-MW19-FD-21 280-176914-7	FD	2-Hexanone	25.0	20.0 U Q	20.0 UJ		ug/l	V2
FEW4-MW19-FD-21 280-176914-7	FD	Chloromethane	10.0	5.00 U Q	5.00 UJ		ug/l	V2
FEW4-MW20-21 280-176914-8	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2

Data Validation Report for 280-176914-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW20-21 280-176914-8	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW39-21 280-176914-9	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW39-21 280-176914-9	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW49-286-21 280-176914-10	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW49-286-21 280-176914-10	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW49-311-21 280-176914-11	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW49-311-21 280-176914-11	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW49-333-21 280-176914-12	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW49-333-21 280-176914-12	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW73-137-21 280-176914-13	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW73-137-21 280-176914-13	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW73-218-21 280-176914-14	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW73-218-21 280-176914-14	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW73-243-21 280-176914-15	N	2-Hexanone	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW73-243-21 280-176914-15	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW78-112-21 280-176914-16	N	2-Hexanone	10.0	8.00 U Q	8.00 UJ		ug/l	V2
FEW4-MW78-112-21 280-176914-16	N	Chloromethane	4.00	2.00 U Q	2.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176914-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW101-238-21	N	Trichloroethene (TCE)	1.00	0.750 J	0.750 J		ug/L	TR
FEW4-MW19-FD-21	FD	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J		ug/L	TR
FEW4-MW73-243-21	N	Trichloroethene (TCE)	1.00	0.450 J	0.450 J		ug/L	TR
FEW4-MW78-112-21	N	cis-1,2-Dichloroethene	2.00	1.20 J D	1.20 J		ug/L	TR
FEW4-MW78-112-21	N	Tetrachloroethene (PCE)	2.00	1.00 J D	1.00 J		ug/L	TR
FEW4-MW78-112-PDB-21	N	cis-1,2-Dichloroethene	2.00	1.50 J D	1.50 J		ug/L	TR
FEW4-MW79-127-21	N	cis-1,2-Dichloroethene	2.00	1.30 J D	1.30 J		ug/L	TR
FEW4-MW85-151-21	N	Trichloroethene (TCE)	1.00	0.370 J	0.370 J		ug/L	TR
FEW4-MW85-92-21	N	cis-1,2-Dichloroethene	20.0	7.20 J D	7.20 J		ug/L	TR

Data Validation Report for 280-176914-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D							
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW06-21 280-176914-1	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW06-21 280-176914-1	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW101-106-21 280-176914-2	N	2-Hexanone	20.0	16.0 U Q	16.0 U	16.0 UJ	V2
FEW4-MW101-106-21 280-176914-2	N	Chloromethane	8.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW101-138-21 280-176914-3	N	2-Hexanone	50.0	40.0 U Q	40.0 U	40.0 UJ	V2
FEW4-MW101-138-21 280-176914-3	N	Chloromethane	20.0	10.0 U Q	10.0 U	10.0 UJ	V2
FEW4-MW101-238-21 280-176914-4	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW101-238-21 280-176914-4	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW13-21 280-176914-5	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW13-21 280-176914-5	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW19-21 280-176914-6	N	2-Hexanone	50.0	40.0 U Q	40.0 U	40.0 UJ	V2
FEW4-MW19-21 280-176914-6	N	Chloromethane	20.0	10.0 U Q	10.0 U	10.0 UJ	V2
FEW4-MW19-FD-21 280-176914-7	FD	2-Hexanone	25.0	20.0 U Q	20.0 U	20.0 UJ	V2
FEW4-MW19-FD-21 280-176914-7	FD	Chloromethane	10.0	5.00 U Q	5.00 U	5.00 UJ	V2
FEW4-MW20-21 280-176914-8	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW20-21 280-176914-8	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW39-21 280-176914-9	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW39-21 280-176914-9	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW49-286-21 280-176914-10	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW49-286-21 280-176914-10	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW49-311-21 280-176914-11	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW49-311-21 280-176914-11	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW49-333-21 280-176914-12	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW49-333-21 280-176914-12	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW73-137-21 280-176914-13	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW73-137-21 280-176914-13	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2

Data Validation Report for 280-176914-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW73-218-21 280-176914-14	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW73-218-21 280-176914-14	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW73-243-21 280-176914-15	N	2-Hexanone	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW73-243-21 280-176914-15	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW78-112-21 280-176914-16	N	2-Hexanone	10.0	8.00 U Q	8.00 U	8.00 UJ	V2
FEW4-MW78-112-21 280-176914-16	N	Chloromethane	4.00	2.00 U Q	2.00 U	2.00 UJ	V2
FEW4-MW85-151-21 280-176914-21	N	Acetone	15.0	15.0	15.0	8.00 U	
FEW4-MW85-151-FD-21 280-176914-22	FD	Acetone	15.0	15.0	15.0	8.00 U	

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176914-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB11-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW49-286-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW85-151-21 and FEW4-MW19-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-176914-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	•			
Were CCVs run at the required frequency and within project acceptance criteria?		•		<p>VMS_P CCV 280-614615/2: 1,4-dioxane 21.7% was outside the 20% control limit high.</p> <p>VMS_R1 CCV 280-614611/2: chloromethane -20.7% and 2-hexanone -20.2% were outside the 20% control limit low; the analytes were not detected in any associated samples. 1,1,2-trichloro-1,2,2-trifluoroethane 20.7% and bromoform 24.4% were outside the 20% control limit high.</p> <p>VMS_R1 CCV 280-614625/2: bromoform 23.6% was outside the 20% control limit high.</p>
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			<p>Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment.</p> <p>This included acetone in samples FEW4-MW85-151-21 and FEW4-MW85-151-FD-21 at 15 ug/L.</p>

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW06	FEW4-MW06-21	05-20-2023	1412	N	WG	120.00	130.00	X
FEW4-MW49-286	FEW4-MW49-286-21	05-20-2023	1029	N	WG	279.20	289.20	X
FEW4-MW49-286	FEW4-MW49-286-MS-21	05-20-2023	1029	MS	WG	279.20	289.20	X
FEW4-MW49-286	FEW4-MW49-286-MSD-21	05-20-2023	1029	SD	WG	279.20	289.20	X
FEW4-MW49-311	FEW4-MW49-311-21	05-20-2023	1200	N	WG	304.20	314.20	X
FEW4-MW49-333	FEW4-MW49-333-21	05-20-2023	1412	N	WG	326.40	336.40	X
FEW4-MW73-137	FEW4-MW73-137-21	05-20-2023	1300	N	WG	127.60	142.60	X
FEW4-MW73-218	FEW4-MW73-218-21	05-20-2023	1254	N	WG	204.50	219.50	X
FEW4-MW73-243	FEW4-MW73-243-21	05-20-2023	1245	N	WG	235.70	245.70	X
FEW4-MW78-112	FEW4-MW78-112-21	05-20-2023	0849	N	WG	0.00	0.00	X
FEW4-MW78-112	FEW4-MW78-112-PDB-21	05-20-2023	1057	N	WG	0.00	0.00	X
FEW4-MW79-127	FEW4-MW79-127-21	05-20-2023	1235	N	WG	0.00	0.00	X
FEW4-MW79-326	FEW4-MW79-326-21	05-20-2023	1227	N	WG	0.00	0.00	X
FEW4-MW101-106	FEW4-MW101-106-21	05-20-2023	1349	N	WG	98.10	108.10	X
FEW4-MW81-100	FEW4-MW81-100-21	05-20-2023	1120	N	WG	90.90	105.90	X
FEW4-MW85-151	FEW4-MW85-151-21	05-20-2023	1440	N	WG	143.40	153.40	X
FEW4-MW85-151	FEW4-MW85-151-FD-21	05-20-2023	1440	FD	WG	143.40	153.40	X
FEW4-MW85-205	FEW4-MW85-205-21	05-20-2023	1433	N	WG	197.40	207.40	X
FEW4-MW85-92	FEW4-MW85-92-21	05-20-2023	1450	N	WG	84.40	94.40	X
FEW4-MW88-133	FEW4-MW88-133-21	05-20-2023	1238	N	WG	0.00	0.00	X
FEW4-MW88-133	FEW4-MW88-133-PDB-21	05-20-2023	1151	N	WG	0.00	0.00	X
FEW4-MW89-207	FEW4-MW89-207-21	05-20-2023	1157	N	WG	0.00	0.00	X
FEW4-MW89-250	FEW4-MW89-250-21	05-20-2023	1147	N	WG	0.00	0.00	X
FEW4-MW98-180	FEW4-MW98-180-21	05-20-2023	1529	N	WG	0.00	0.00	X
FEW4-MW101-138	FEW4-MW101-138-21	05-20-2023	1400	N	WG	130.10	140.10	X
FEW4-MW98-217	FEW4-MW98-217-21	05-20-2023	1408	N	WG	0.00	0.00	X
FEW4-MW98-263	FEW4-MW98-263-21	05-20-2023	1626	N	WG	0.00	0.00	X

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FIELDQC	FEW4-TB11-21	05-20-2023	0800	TB	WQ	0.00	0.00	
FEW4-MW101-238	FEW4-MW101-238-21	05-20-2023	1342	N	WG	230.20	240.20	
FEW4-MW13	FEW4-MW13-21	05-20-2023	1208	N	WG	205.30	215.30	
FEW4-MW19	FEW4-MW19-21	05-20-2023	1326	N	WG	114.90	124.90	
FEW4-MW19	FEW4-MW19-FD-21	05-20-2023	1326	FD	WG	114.90	124.90	
FEW4-MW20	FEW4-MW20-21	05-20-2023	1133	N	WG	253.90	263.90	
FEW4-MW39	FEW4-MW39-21	05-20-2023	1422	N	WG	80.00	115.00	
Total								34

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614611								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614611/1002	LCS 280-614611/1002		1/1	6/1/2023 18:34	6/1/2023 18:34	6/1/2023 18:34	280-614611/	BS
LABQC	WQ	LCSD 280-614611/4	LCSD 280-614611/4		1/1	6/1/2023 19:16	6/1/2023 19:16	6/1/2023 19:16	280-614611/	BD
LABQC	WQ	MB 280-614611/7	MB 280-614611/7		1/1	6/1/2023 20:18	6/1/2023 20:18	6/1/2023 20:18	280-614611/	LB
FEW4-MW06	WG	FEW4-MW06-21	280-176914-1		1/1	5/20/2023 14:12	6/1/2023 21:38	6/1/2023 21:38	280-614611/	N
FEW4-MW101-238	WG	FEW4-MW101-238-21	280-176914-4		1/1	5/20/2023 13:42	6/1/2023 21:59	6/1/2023 21:59	280-614611/	N
FEW4-MW13	WG	FEW4-MW13-21	280-176914-5		1/1	5/20/2023 12:08	6/1/2023 22:19	6/1/2023 22:19	280-614611/	N
FEW4-MW20	WG	FEW4-MW20-21	280-176914-8		1/1	5/20/2023 11:33	6/1/2023 22:40	6/1/2023 22:40	280-614611/	N
FEW4-MW39	WG	FEW4-MW39-21	280-176914-9		1/1	5/20/2023 14:22	6/1/2023 23:00	6/1/2023 23:00	280-614611/	N
FEW4-MW49-286	WG	FEW4-MW49-286-21	280-176914-10		1/1	5/20/2023 10:29	6/1/2023 23:21	6/1/2023 23:21	280-614611/	N
FEW4-MW49-311	WG	FEW4-MW49-311-21	280-176914-11		1/1	5/20/2023 12:00	6/1/2023 23:42	6/1/2023 23:42	280-614611/	N
FEW4-MW49-333	WG	FEW4-MW49-333-21	280-176914-12		1/1	5/20/2023 14:12	6/2/2023 00:02	6/2/2023 00:02	280-614611/	N
FEW4-MW73-137	WG	FEW4-MW73-137-21	280-176914-13		1/1	5/20/2023 13:00	6/2/2023 00:23	6/2/2023 00:23	280-614611/	N
FEW4-MW73-218	WG	FEW4-MW73-218-21	280-176914-14		1/1	5/20/2023 12:54	6/2/2023 00:44	6/2/2023 00:44	280-614611/	N
FEW4-MW73-243	WG	FEW4-MW73-243-21	280-176914-15		1/1	5/20/2023 12:45	6/2/2023 01:05	6/2/2023 01:05	280-614611/	N
FEW4-MW78-112	WG	FEW4-MW78-112-21	280-176914-16		1/2	5/20/2023 08:49	6/2/2023 01:26	6/2/2023 01:26	280-614611/	N
FEW4-MW101-106	WG	FEW4-MW101-106-21	280-176914-2		1/4	5/20/2023 13:49	6/2/2023 01:47	6/2/2023 01:47	280-614611/	N
FEW4-MW19	WG	FEW4-MW19-FD-21	280-176914-7		1/5	5/20/2023 13:26	6/2/2023 02:07	6/2/2023 02:07	280-614611/	FD
FEW4-MW101-138	WG	FEW4-MW101-138-21	280-176914-3		1/10	5/20/2023 14:00	6/2/2023 02:29	6/2/2023 02:29	280-614611/	N

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Test Method: SW8260D Analysis Batch: 280-614611

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW19	WG	FEW4-MW19-21	280-176914-6		1/10	5/20/2023 13:26	6/2/2023 02:50	6/2/2023 02:50	280-614611/	N
FEW4-MW49-286	WG	FEW4-MW49-286-MS-21	280-176914-10MS		1/1	5/20/2023 10:29	6/2/2023 03:32	6/2/2023 03:32	280-614611/	MS
FEW4-MW49-286	WG	FEW4-MW49-286-MSD-21	280-176914-10MSD		1/1	5/20/2023 10:29	6/2/2023 03:52	6/2/2023 03:52	280-614611/	SD

Test Method: SW8260D Analysis Batch: 280-614615

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614615/1002	LCS 280-614615/1002		1/1	6/1/2023 18:43	6/1/2023 18:43	6/1/2023 18:43	280-614615/	BS
LABQC	WQ	LCSD 280-614615/4	LCSD 280-614615/4		1/1	6/1/2023 20:06	6/1/2023 20:06	6/1/2023 20:06	280-614615/	BD
LABQC	WQ	MB 280-614615/7	MB 280-614615/7		1/1	6/1/2023 21:13	6/1/2023 21:13	6/1/2023 21:13	280-614615/	LB
FIELDQC	WQ	FEW4-TB11-21	280-176914-32		1/1	5/20/2023 08:00	6/1/2023 21:48	6/1/2023 21:48	280-614615/	TB
FEW4-MW79-326	WG	FEW4-MW79-326-21	280-176914-19		1/1	5/20/2023 12:27	6/1/2023 22:32	6/1/2023 22:32	280-614615/	N
FEW4-MW81-100	WG	FEW4-MW81-100-21	280-176914-20		1/1	5/20/2023 11:20	6/1/2023 22:55	6/1/2023 22:55	280-614615/	N
FEW4-MW85-151	WG	FEW4-MW85-151-21	280-176914-21		1/1	5/20/2023 14:40	6/1/2023 23:17	6/1/2023 23:17	280-614615/	N
FEW4-MW85-151	WG	FEW4-MW85-151-FD-21	280-176914-22		1/1	5/20/2023 14:40	6/1/2023 23:39	6/1/2023 23:39	280-614615/	FD
FEW4-MW85-205	WG	FEW4-MW85-205-21	280-176914-23		1/1	5/20/2023 14:33	6/2/2023 00:01	6/2/2023 00:01	280-614615/	N
FEW4-MW88-133	WG	FEW4-MW88-133-21	280-176914-25		1/1	5/20/2023 12:38	6/2/2023 00:23	6/2/2023 00:23	280-614615/	N
FEW4-MW88-133	WG	FEW4-MW88-133-PDB-21	280-176914-26		1/1	5/20/2023 11:51	6/2/2023 00:44	6/2/2023 00:44	280-614615/	N
FEW4-MW89-207	WG	FEW4-MW89-207-21	280-176914-27		1/1	5/20/2023 11:57	6/2/2023 01:06	6/2/2023 01:06	280-614615/	N
FEW4-MW89-250	WG	FEW4-MW89-250-21	280-176914-28		1/1	5/20/2023 11:47	6/2/2023 01:28	6/2/2023 01:28	280-614615/	N

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Test Method: SW8260D Analysis Batch: 280-614615

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW98-180	WG	FEW4-MW98-180-21	280-176914-29		1/1	5/20/2023 15:29	6/2/2023 01:50	6/2/2023 01:50	280-614615/	N
FEW4-MW98-217	WG	FEW4-MW98-217-21	280-176914-30		1/1	5/20/2023 14:08	6/2/2023 02:12	6/2/2023 02:12	280-614615/	N
FEW4-MW98-263	WG	FEW4-MW98-263-21	280-176914-31		1/1	5/20/2023 16:26	6/2/2023 02:35	6/2/2023 02:35	280-614615/	N
FEW4-MW78-112	WG	FEW4-MW78-112-PDB-21	280-176914-17		1/2	5/20/2023 10:57	6/2/2023 03:19	6/2/2023 03:19	280-614615/	N
FEW4-MW79-127	WG	FEW4-MW79-127-21	280-176914-18		1/2	5/20/2023 12:35	6/2/2023 03:42	6/2/2023 03:42	280-614615/	N
FEW4-MW85-92	WG	FEW4-MW85-92-21	280-176914-24		1/20	5/20/2023 14:50	6/2/2023 04:49	6/2/2023 04:49	280-614615/	N

Test Method: SW8260D Analysis Batch: 280-614625

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614625/1002	LCS 280-614625/1002		1/1	6/2/2023 07:07	6/2/2023 07:07	6/2/2023 07:07	280-614625/	BS
LABQC	WQ	LCSD 280-614625/4	LCSD 280-614625/4		1/1	6/2/2023 07:48	6/2/2023 07:48	6/2/2023 07:48	280-614625/	BD
LABQC	WQ	MB 280-614625/7	MB 280-614625/7		1/1	6/2/2023 08:50	6/2/2023 08:50	6/2/2023 08:50	280-614625/	LB
FEW4-MW73-137	WG	FEW4-MW73-137-21	280-176914-13		2/4	5/20/2023 13:00	6/2/2023 15:05	6/2/2023 15:05	280-614625/	N

Test Method: SW8260D Analysis Batch: 280-614772

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614772/1002	LCS 280-614772/1002		1/1	6/2/2023 21:05	6/2/2023 21:05	6/2/2023 21:05	280-614772/	BS
LABQC	WQ	LCSD 280-614772/4	LCSD 280-614772/4		1/1	6/2/2023 21:49	6/2/2023 21:49	6/2/2023 21:49	280-614772/	BD
LABQC	WQ	MB 280-614772/7	MB 280-614772/7		1/1	6/2/2023 22:55	6/2/2023 22:55	6/2/2023 22:55	280-614772/	LB
FEW4-MW73-218	WG	FEW4-MW73-218-21	280-176914-14		2/1	5/20/2023 12:54	6/2/2023 23:55	6/2/2023 23:55	280-614772/	N

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Test Method: SW8260D		Analysis Batch: 280-614772								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW81-100	WG	FEW4-MW81-100-21	280-176914-20		2/5	5/20/2023 11:20	6/3/2023 05:25	6/3/2023 05:25	280-614772/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	20052301		FIELDQC	WQ	FEW4-TB11-21	280-176914-32	5/20/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

QC Outliers Report

--No Records Found--

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW101-238-21	280-176914-4	W	N	Trichloroethene (TCE)	1.00	0.750 J	0.750 J		ug/l	TR
FEW4-MW19-FD-21	280-176914-7	W	FD	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J		ug/l	TR
FEW4-MW73-243-21	280-176914-15	W	N	Trichloroethene (TCE)	1.00	0.450 J	0.450 J		ug/l	TR
FEW4-MW78-112-21	280-176914-16	W	N	cis-1,2-Dichloroethene	2.00	1.20 J D	1.20 J		ug/l	TR
FEW4-MW78-112-21	280-176914-16	W	N	Tetrachloroethene (PCE)	2.00	1.00 J D	1.00 J		ug/l	TR
FEW4-MW78-112-PDB-21	280-176914-17	W	N	cis-1,2-Dichloroethene	2.00	1.50 J D	1.50 J		ug/l	TR
FEW4-MW79-127-21	280-176914-18	W	N	cis-1,2-Dichloroethene	2.00	1.30 J D	1.30 J		ug/l	TR
FEW4-MW85-151-21	280-176914-21	W	N	Trichloroethene (TCE)	1.00	0.370 J	0.370 J		ug/l	TR
FEW4-MW85-92-21	280-176914-24	W	N	cis-1,2-Dichloroethene	20.0	7.20 J D	7.20 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 280-176914-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW06-21	280-176914-1	W	N	1	Trichloroethene (TCE)	1.00	79.0	79.0	ug/l	
FEW4-MW101-106-21	280-176914-2	W	N	4	Trichloroethene (TCE)	4.00	290 D	290	ug/l	
FEW4-MW101-138-21	280-176914-3	W	N	10	Trichloroethene (TCE)	10.0	730 D	730	ug/l	
FEW4-MW101-238-21	280-176914-4	W	N	1	Trichloroethene (TCE)	1.00	0.750 J	0.750 J	ug/l	TR
FEW4-MW19-21	280-176914-6	W	N	10	Trichloroethene (TCE)	10.0	630 D	630	ug/l	
FEW4-MW19-FD-21	280-176914-7	W	FD	5	cis-1,2-Dichloroethene	5.00	2.50 J D	2.50 J	ug/l	TR
FEW4-MW19-FD-21	280-176914-7	W	FD	5	Trichloroethene (TCE)	5.00	580 D	580	ug/l	
FEW4-MW20-21	280-176914-8	W	N	1	Trichloroethene (TCE)	1.00	42.0	42.0	ug/l	
FEW4-MW39-21	280-176914-9	W	N	1	Trichloroethene (TCE)	1.00	26.0	26.0	ug/l	
FEW4-MW49-286-21	280-176914-10	W	N	1	Trichloroethene (TCE)	1.00	20.0	20.0	ug/l	
FEW4-MW49-311-21	280-176914-11	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW49-333-21	280-176914-12	W	N	1	Trichloroethene (TCE)	1.00	18.0	18.0	ug/l	
FEW4-MW73-137-21	280-176914-13	W	N	1	cis-1,2-Dichloroethene	1.00	1.00	1.00	ug/l	
FEW4-MW73-137-21	280-176914-13	W	N	4	Trichloroethene (TCE)	4.00	270 D	270	ug/l	
FEW4-MW73-243-21	280-176914-15	W	N	1	Trichloroethene (TCE)	1.00	0.450 J	0.450 J	ug/l	TR
FEW4-MW78-112-21	280-176914-16	W	N	2	cis-1,2-Dichloroethene	2.00	1.20 J D	1.20 J	ug/l	TR
FEW4-MW78-112-21	280-176914-16	W	N	2	Tetrachloroethene (PCE)	2.00	1.00 J D	1.00 J	ug/l	TR
FEW4-MW78-112-21	280-176914-16	W	N	2	Trichloroethene (TCE)	2.00	240 D	240	ug/l	
FEW4-MW78-112-PDB-21	280-176914-17	W	N	2	cis-1,2-Dichloroethene	2.00	1.50 J D	1.50 J	ug/l	TR
FEW4-MW78-112-PDB-21	280-176914-17	W	N	2	Trichloroethene (TCE)	2.00	260 D	260	ug/l	
FEW4-MW79-127-21	280-176914-18	W	N	2	cis-1,2-Dichloroethene	2.00	1.30 J D	1.30 J	ug/l	TR
FEW4-MW79-127-21	280-176914-18	W	N	2	Trichloroethene (TCE)	2.00	290 D	290	ug/l	
FEW4-MW81-100-21	280-176914-20	W	N	1	cis-1,2-Dichloroethene	1.00	1.70	1.70	ug/l	
FEW4-MW81-100-21	280-176914-20	W	N	5	Trichloroethene (TCE)	5.00	270 D	270	ug/l	
FEW4-MW85-151-21	280-176914-21	W	N	1	Acetone	15.0	15.0	15.0	ug/l	
FEW4-MW85-151-21	280-176914-21	W	N	1	Trichloroethene (TCE)	1.00	0.370 J	0.370 J	ug/l	TR
FEW4-MW85-151-FD-21	280-176914-22	W	FD	1	Acetone	15.0	15.0	15.0	ug/l	

Automated Data Review Detail Report for 280-176914-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW85-92-21	280-176914-24	W	N	20	cis-1,2-Dichloroethene	20.0	7.20 J D	7.20 J	ug/l	TR
FEW4-MW85-92-21	280-176914-24	W	N	20	Trichloroethene (TCE)	20.0	1600 D	1600	ug/l	
FEW4-MW88-133-21	280-176914-25	W	N	1	Trichloroethene (TCE)	1.00	100	100	ug/l	
FEW4-MW88-133-PDB-21	280-176914-26	W	N	1	Trichloroethene (TCE)	1.00	37.0	37.0	ug/l	
FEW4-MW98-180-21	280-176914-29	W	N	1	Trichloroethene (TCE)	1.00	5.40	5.40	ug/l	
FEW4-MW98-217-21	280-176914-30	W	N	1	Trichloroethene (TCE)	1.00	5.90	5.90	ug/l	
FEW4-MW98-263-21	280-176914-31	W	N	1	Trichloroethene (TCE)	1.00	5.70	5.70	ug/l	

Automated Data Review Detail Report for 280-176914-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
 Event: FE Warren Site 4 FS Spring 2023
 SDG: 280-176915-1
 Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
 Prime Contractor: URS Corp., Omaha, NE
 Project Manager: Tom Wohlford
 Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
 Data Review Contractor: URS Group, Inc.
 Data Review Level: S2BVEM
 Primary Data Reviewer: Gary Torf, Project Chemist
 Date Submitted: September 07, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-BELVOIR NO. 1-21	280-176915-1	Water	Field Sample/N	X
FEW4-BELVOIR NO. 3-21	280-176915-2	Water	Field Sample/N	X
FEW4-BELVOIR NO. 3-FD-21	280-176915-3	Water	Field Duplicate/FD	X
FEW4-BORIE NO. 1-21	280-176915-4	Water	Field Sample/N	X
FEW4-ELKAR NO. 7-21	280-176915-5	Water	Field Sample/N	X
FEW4-FINNERTY NO. 2-21	280-176915-6	Water	Field Sample/N	X
FEW4-MW106-272-21	280-176915-7	Water	Field Sample/N	X
FEW4-MW51-210-21	280-176915-8	Water	Field Sample/N	X
FEW4-MW59-183-21	280-176915-9	Water	Field Sample/N	X
FEW4-MW59-183-FD-21	280-176915-10	Water	Field Duplicate/FD	X
FEW4-MW59-183-PDB-21	280-176915-11	Water	Field Sample/N	X
FEW4-MW60-90-21	280-176915-12	Water	Field Sample/N	X
FEW4-TB13-21	280-176915-13	Water	Trip Blank/TB	X
FEW4-WEBER NO. 1-21	280-176915-14	Water	Field Sample/N	X

Data Validation Report for 280-176915-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-176915-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

MS Recovery

MS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

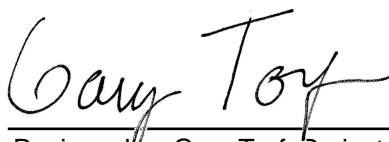
A total of 5 results (0.69%) out of the 728 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-176915-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 07, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-176915-1

Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-615139/6 (BD)	1,1,2-Trichloro- 1,2,2- trifluoroethane	21.4	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176915-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-BELVOIR NO. 1-MSD- 21 (SD)	Bromomethane	22.9	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-176915-1

Quality Control Outliers for test method SW8260D, Test Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of analysis found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-TB13-21 (TB)		15.5	< 14	< 28	days	J/UJ	H1	Test Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Test Hold Time for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-TB13-21 280-176915-13	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-176915-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW59-183-FD-21 280-176915-10	FD	Bromomethane	5.00	4.00 U Q M	4.00 UJ		ug/l	V2
FEW4-TB13-21 280-176915-13	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1
FEW4-TB13-21 280-176915-13	TB	Acetone	15.0	8.00 U	8.00 UJ		ug/l	V2
FEW4-TB13-21 280-176915-13	TB	Bromoform	2.00	1.80 U	1.80 UJ		ug/l	V2
FEW4-TB13-21 280-176915-13	TB	Chloromethane	2.00	1.00 U	1.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-176915-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-ELKAR NO. 7-21	N	Trichloroethene (TCE)	1.00	0.840 J	0.840 J		ug/L	TR
FEW4-MW106-272-21	N	cis-1,2-Dichloroethene	2.00	1.40 J D	1.40 J		ug/L	TR

Data Validation Report for 280-176915-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW59-183-FD-21 280-176915-10	FD	Bromomethane	5.00	4.00 U Q M	4.00 U	4.00 UJ	V2
FEW4-TB13-21 280-176915-13	TB	Acetone	15.0	8.00 U	8.00 U	8.00 UJ	V2
FEW4-TB13-21 280-176915-13	TB	Bromoform	2.00	1.80 U	1.80 U	1.80 UJ	V2
FEW4-TB13-21 280-176915-13	TB	Chloromethane	2.00	1.00 U	1.00 U	1.00 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
H1	Test Hold Time
TR	Trace Level Detect
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-176915-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?		•		Sample FEW4-TB13-21 was reanalyzed for 1,2-dichloroethane outside the 14-day holding time for preserved samples due to a QC issue.
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB13-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		LCSD 280-615139/6: 1,1,2-trichloro-1,2,2-trifluoroethane 21% RPD
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-BELVOIR NO. 1-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		bromomethane 23% RPD (20% RPD UCL)
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4-MW59-183-21 and FEW4-BELVOIR NO. 3-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			

Data Validation Report for 280-176915-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the Calibration within project acceptance criteria?	•			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		•		VMS_MS11 ICV 280-614450/20: dichlorodifluoromethane 28.9% was outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_MS13 CCV 280-615139/2: chloromethane -21.8%, acetone -20.3%, and bromoform -22.1% were outside the 20% control limit low; these analytes were associated with the reanalysis of sample FEW4-TB13-21. VMS_P CCV 280-614632/2: bromomethane -21.4% was outside the 20% control limit low; this analyte was associated with sample FEW4-MW59-183-FD-21. VMS_R1 CCV 280-614625/2: bromoform 23.6% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?		•		

Automated Data Review Detail Report for 280-176915-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
BELVOIR NO. 1	FEW4-BELVOIR NO. 1-21	05-22-2023	1115	N	WG	110.00	160.00	X
FEW4-MW59-183	FEW4-MW59-183-FD-21	05-22-2023	1358	FD	WG	175.60	185.60	X
FEW4-MW59-183	FEW4-MW59-183-PDB-21	05-22-2023	1128	N	WG	175.60	185.60	X
FEW4-MW60-90	FEW4-MW60-90-21	05-22-2023	1417	N	WG	79.70	94.70	X
FIELDQC	FEW4-TB13-21	05-22-2023	0800	TB	WQ	0.00	0.00	X
WEBER NO. 1	FEW4-WEBER NO. 1-21	05-22-2023	0945	N	WG	163.00	213.00	X
BELVOIR NO. 1	FEW4-BELVOIR NO. 1-MS-21	05-22-2023	1115	MS	WG	110.00	160.00	X
BELVOIR NO. 1	FEW4-BELVOIR NO. 1-MSD-21	05-22-2023	1115	SD	WG	110.00	160.00	X
BELVOIR NO. 3	FEW4-BELVOIR NO. 3-21	05-22-2023	1045	N	WG	999.00	999.00	X
BELVOIR NO. 3	FEW4-BELVOIR NO. 3-FD-21	05-22-2023	1045	FD	WG	999.00	999.00	X
BORIE NO. 1	FEW4-BORIE NO. 1-21	05-22-2023	0847	N	WG	170.00	320.00	X
ELKAR NO. 7	FEW4-ELKAR NO. 7-21	05-22-2023	1009	N	WG	160.00	273.00	X
FINNERTY NO. 2	FEW4-FINNERTY NO. 2-21	05-22-2023	0915	N	WG	147.00	371.00	X
FEW4-MW106-272	FEW4-MW106-272-21	05-22-2023	0940	N	WG	0.00	0.00	X
FEW4-MW51-210	FEW4-MW51-210-21	05-22-2023	0854	N	WG	205.40	215.40	X
FEW4-MW59-183	FEW4-MW59-183-21	05-22-2023	1358	N	WG	175.60	185.60	X
Total								16

Automated Data Review Detail Report for 280-176915-1
B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
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Batch Report

Test Method: SW8260D		Analysis Batch: 280-614625								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614625/1002	LCS 280-614625/1002		1/1	6/2/2023 07:07	6/2/2023 07:07	6/2/2023 07:07	280-614625/	BS
LABQC	WQ	LCSD 280-614625/4	LCSD 280-614625/4		1/1	6/2/2023 07:48	6/2/2023 07:48	6/2/2023 07:48	280-614625/	BD
LABQC	WQ	MB 280-614625/7	MB 280-614625/7		1/1	6/2/2023 08:50	6/2/2023 08:50	6/2/2023 08:50	280-614625/	LB
BELVOIR NO. 1	WG	FEW4-BELVOIR NO. 1-21	280-176915-1		1/1	5/22/2023 11:15	6/2/2023 09:32	6/2/2023 09:32	280-614625/	N
BELVOIR NO. 3	WG	FEW4-BELVOIR NO. 3-21	280-176915-2		1/1	5/22/2023 10:45	6/2/2023 09:53	6/2/2023 09:53	280-614625/	N
BELVOIR NO. 3	WG	FEW4-BELVOIR NO. 3-FD-21	280-176915-3		1/1	5/22/2023 10:45	6/2/2023 10:14	6/2/2023 10:14	280-614625/	FD
BORIE NO. 1	WG	FEW4-BORIE NO. 1-21	280-176915-4		1/1	5/22/2023 08:47	6/2/2023 10:34	6/2/2023 10:34	280-614625/	N
ELKAR NO. 7	WG	FEW4-ELKAR NO. 7-21	280-176915-5		1/1	5/22/2023 10:09	6/2/2023 10:55	6/2/2023 10:55	280-614625/	N
FINNERTY NO. 2	WG	FEW4-FINNERTY NO. 2-21	280-176915-6		1/1	5/22/2023 09:15	6/2/2023 11:16	6/2/2023 11:16	280-614625/	N
FEW4-MW51-210	WG	FEW4-MW51-210-21	280-176915-8		1/1	5/22/2023 08:54	6/2/2023 11:36	6/2/2023 11:36	280-614625/	N
FEW4-MW59-183	WG	FEW4-MW59-183-21	280-176915-9		1/1	5/22/2023 13:58	6/2/2023 11:57	6/2/2023 11:57	280-614625/	N
FEW4-MW106-272	WG	FEW4-MW106-272-21	280-176915-7		1/2	5/22/2023 09:40	6/2/2023 14:23	6/2/2023 14:23	280-614625/	N
BELVOIR NO. 1	WG	FEW4-BELVOIR NO. 1-MS-21	280-176915-1MS		1/1	5/22/2023 11:15	6/2/2023 15:26	6/2/2023 15:26	280-614625/	MS
BELVOIR NO. 1	WG	FEW4-BELVOIR NO. 1-MSD-21	280-176915-1MSD		1/1	5/22/2023 11:15	6/2/2023 15:46	6/2/2023 15:46	280-614625/	SD

Test Method: SW8260D		Analysis Batch: 280-614632								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614632/1002	LCS 280-614632/1002		1/1	6/2/2023 07:58	6/2/2023 07:58	6/2/2023 07:58	280-614632/	BS
LABQC	WQ	LCSD 280-614632/4	LCSD 280-614632/4		1/1	6/2/2023 08:55	6/2/2023 08:55	6/2/2023 08:55	280-614632/	BD

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Test Method: SW8260D Analysis Batch: 280-614632

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	MB 280-614632/7	MB 280-614632/7		1/1	6/2/2023 10:01	6/2/2023 10:01	6/2/2023 10:01	280-614632/	LB
FEW4-MW59-183	WG	FEW4-MW59-183-FD-21	280-176915-10		1/1	5/22/2023 13:58	6/2/2023 10:23	6/2/2023 10:23	280-614632/	FD

Test Method: SW8260D Analysis Batch: 280-614794

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614794/1002	LCS 280-614794/1002		1/1	6/3/2023 14:21	6/3/2023 14:21	6/3/2023 14:21	280-614794/	BS
LABQC	WQ	LCSD 280-614794/4	LCSD 280-614794/4		1/1	6/3/2023 15:18	6/3/2023 15:18	6/3/2023 15:18	280-614794/	BD
LABQC	WQ	MB 280-614794/7	MB 280-614794/7		1/1	6/3/2023 16:22	6/3/2023 16:22	6/3/2023 16:22	280-614794/	LB
FEW4-MW59-183	WG	FEW4-MW59-183-PDB-21	280-176915-11		1/1	5/22/2023 11:28	6/3/2023 17:04	6/3/2023 17:04	280-614794/	N
WEBER NO. 1	WG	FEW4-WEBER NO. 1-21	280-176915-14		1/1	5/22/2023 09:45	6/3/2023 17:25	6/3/2023 17:25	280-614794/	N
FEW4-MW60-90	WG	FEW4-MW60-90-21	280-176915-12		1/200	5/22/2023 14:17	6/3/2023 22:48	6/3/2023 22:48	280-614794/	N

Test Method: SW8260D Analysis Batch: 280-614969

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-614969/1002	LCS 280-614969/1002		1/1	6/5/2023 19:27	6/5/2023 19:27	6/5/2023 19:27	280-614969/	BS
LABQC	WQ	LCSD 280-614969/4	LCSD 280-614969/4		1/1	6/5/2023 20:10	6/5/2023 20:10	6/5/2023 20:10	280-614969/	BD
LABQC	WQ	MB 280-614969/7	MB 280-614969/7		1/1	6/5/2023 21:16	6/5/2023 21:16	6/5/2023 21:16	280-614969/	LB
FIELDQC	WQ	FEW4-TB13-21	280-176915-13		1/1	5/22/2023 08:00	6/5/2023 22:08	6/5/2023 22:08	280-614969/	TB

Test Method: SW8260D Analysis Batch: 280-615139

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Test Method: SW8260D Analysis Batch: 280-615139

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-615139/1002	LCS 280-615139/1002		1/1	6/6/2023 18:12	6/6/2023 18:12	6/6/2023 18:12	280-615139/	BS
LABQC	WQ	LCSD 280-615139/6	LCSD 280-615139/6		1/1	6/6/2023 18:59	6/6/2023 18:59	6/6/2023 18:59	280-615139/	BD
LABQC	WQ	MB 280-615139/9	MB 280-615139/9		1/1	6/6/2023 20:09	6/6/2023 20:09	6/6/2023 20:09	280-615139/	LB
FIELDQC	WQ	FEW4-TB13-21	280-176915-13		2/1	5/22/2023 08:00	6/6/2023 20:46	6/6/2023 20:46	280-615139/	TB



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	22052301		FIELDQC	WQ	FEW4-TB13-21	280-176915-13	5/22/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS RPD	LCSD 280-615139/6 (BD) / LCSD 280-615139/6	1 / 1.00	1,1,2-Trichloro-1,2,2-trifluoroethane	21.42 (rpd)	J/None	< 20	< 20	Z			
MS RPD	FEW4-BELVOIR NO. 1-MSD-21 (SD) / 280-176915-1MSD	1 / 1.00	Bromomethane	22.93 (rpd)	J/None	< 20	< 20	D			
Test Hold Time	FEW4-TB13-21 (TB) / 280-176915-13	2 / 1.00	All in Run	15.53 (days)	J/UJ	< 14	< 28	H1	Test Exceeds UWL		

Rule is the multiplier used when blank contamination occurs to determine action level.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-ELKAR NO. 7-21	280-176915-5	W	N	Trichloroethene (TCE)	1.00	0.840 J	0.840 J		ug/l	TR
FEW4-MW106-272-21	280-176915-7	W	N	cis-1,2-Dichloroethene	2.00	1.40 J D	1.40 J		ug/l	TR
FEW4-TB13-21	280-176915-13	W	TB	1,2-Dichloroethane	1.00	0.800 U H	0.800 UJ		ug/l	H1

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-BELVOIR NO. 1-21	280-176915-1	W	N	1	Trichloroethene (TCE)	1.00	11.0	11.0	ug/l	
FEW4-BELVOIR NO. 3-21	280-176915-2	W	N	1	Trichloroethene (TCE)	1.00	1.90	1.90	ug/l	
FEW4-BELVOIR NO. 3-FD-21	280-176915-3	W	FD	1	Trichloroethene (TCE)	1.00	2.00	2.00	ug/l	
FEW4-ELKAR NO. 7-21	280-176915-5	W	N	1	Trichloroethene (TCE)	1.00	0.840 J	0.840 J	ug/l	TR
FEW4-FINNERTY NO. 2-21	280-176915-6	W	N	1	Trichloroethene (TCE)	1.00	19.0	19.0	ug/l	
FEW4-MW106-272-21	280-176915-7	W	N	2	cis-1,2-Dichloroethene	2.00	1.40 J D	1.40 J	ug/l	TR
FEW4-MW106-272-21	280-176915-7	W	N	2	Trichloroethene (TCE)	2.00	200 D	200	ug/l	
FEW4-MW59-183-21	280-176915-9	W	N	1	Trichloroethene (TCE)	1.00	2.80	2.80	ug/l	
FEW4-MW59-183-FD-21	280-176915-10	W	FD	1	Trichloroethene (TCE)	1.00	2.90	2.90	ug/l	
FEW4-MW59-183-PDB-21	280-176915-11	W	N	1	Trichloroethene (TCE)	1.00	11.0	11.0	ug/l	
FEW4-MW60-90-21	280-176915-12	W	N	200	cis-1,2-Dichloroethene	200	770 D	770	ug/l	
FEW4-MW60-90-21	280-176915-12	W	N	200	Trichloroethene (TCE)	200	28000 D	28000	ug/l	
FEW4-WEBER NO. 1-21	280-176915-14	W	N	1	Trichloroethene (TCE)	1.00	22.0	22.0	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
Event: FE Warren Site 4 FS Spring 2023
SDG: 280-177347-1
Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
Prime Contractor: URS Corp., Omaha, NE
Project Manager: Tom Wohlford
Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor: URS Group, Inc.
Data Review Level: S2BVEM
Primary Data Reviewer: Gary Torf, Project Chemist
Date Submitted: September 12, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW44R-308-21	280-177347-1	Water	Field Sample/N	X
FEW4-MW45R-331-21	280-177347-2	Water	Field Sample/N	X
FEW4-MW71-205-21	280-177347-3	Water	Field Sample/N	X
FEW4-MW71-205-PDB-21	280-177347-4	Water	Field Sample/N	X
FEW4-MW79-193-21	280-177347-5	Water	Field Sample/N	X
FEW4-MW79-193-PDB-21	280-177347-6	Water	Field Sample/N	X
FEW4-MW80-284-21	280-177347-7	Water	Field Sample/N	X
FEW4-TB14-21	280-177347-8	Water	Trip Blank/TB	X

Data Validation Report for 280-177347-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-177347-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

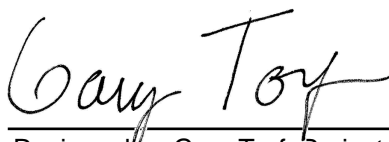
A total of 4 results (0.96%) out of the 416 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-177347-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 12, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-177347-1

Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-616005/4 (BD)	Chloroethane	20.2	< 20	< 20	rpd	J/None	Z	
LCSD 280-616005/4 (BD)	Vinyl chloride	23.5	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-177347-1

Quality Control Outliers for test method SW8260D, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-MW45R-331-MSD-21 (SD)	Bromomethane	32.3	< 20	< 20	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-177347-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW71-205-PDB-21 280-177347-4	N	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-MW71-205-PDB-21 280-177347-4	N	Methyl acetate	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-TB14-21 280-177347-8	TB	Chloromethane	2.00	1.00 U Q	1.00 UJ		ug/l	V2
FEW4-TB14-21 280-177347-8	TB	Methyl acetate	5.00	4.00 U Q	4.00 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-177347-1

Trace Results

No results associated with this sample delivery group are considered trace.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW45R-331-21 280-177347-2	N	Acetone	15.0	9.20 J	9.20 J	8.00 U	
FEW4-MW71-205-PDB-21 280-177347-4	N	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-MW71-205-PDB-21 280-177347-4	N	Methyl acetate	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW79-193-21 280-177347-5	N	Acetone	15.0	28.0	28.0	8.00 U	
FEW4-TB14-21 280-177347-8	TB	Chloromethane	2.00	1.00 U Q	1.00 U	1.00 UJ	V2
FEW4-TB14-21 280-177347-8	TB	Methyl acetate	5.00	4.00 U Q	4.00 U	4.00 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
D	MS RPD
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Data Validation Report for 280-177347-1

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-177347-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB14-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?		•		LCSD 280-616005/4: chloroethane 20.2% RPD; vinyl chloride 23.5% RPD
Was a MS/MSD pair prepared with each batch?	•			Matrix spike duplicate samples were collected for FEW4-MW45R-331-21.
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?		•		bromomethane 32% RPD
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?			•	Field duplicate samples were not collected with this SDG.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			
Was the Calibration within project acceptance criteria?	•			

Data Validation Report for 280-177347-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		•		VMS_MS11 ICV 280-614450/20: dichlorodifluoromethane 28.9% was outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_MS1 CCV 280-615638/2: chloromethane - 26% and methyl acetate -21.2% were outside the 20% control limit low;
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			<p>Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment.</p> <p>This includes the acetone result for sample FEW4-MW45R-331-21 at 9.2J ug/L and FEW4-MW79-193-21 at 28 ug/L,</p>

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW44R-308	FEW4-MW44R-308-21	06-02-2023	1130	N	WG	303.80	313.80	
FEW4-MW45R-331	FEW4-MW45R-331-21	06-02-2023	0910	N	WG	328.30	338.30	
FEW4-MW45R-331	FEW4-MW45R-331-21	06-02-2023	0910	MS	WG	328.30	338.30	
FEW4-MW45R-331	FEW4-MW45R-331-MSD-21	06-02-2023	0910	SD	WG	328.30	338.30	
FEW4-MW71-205	FEW4-MW71-205-21	06-01-2023	0921	N	WG	197.40	207.40	
FEW4-MW71-205	FEW4-MW71-205-PDB-21	05-31-2023	0922	N	WG	197.40	207.40	
FEW4-MW79-193	FEW4-MW79-193-21	06-01-2023	1435	N	WG	0.00	0.00	
FEW4-MW79-193	FEW4-MW79-193-PDB-21	06-01-2023	1015	N	WG	0.00	0.00	
FEW4-MW80-284	FEW4-MW80-284-21	06-02-2023	1350	N	WG	276.00	286.00	
FIELDQC	FEW4-TB14-21	05-31-2023	0800	TB	WQ	0.00	0.00	
Total								10

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-615638								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-615638/1002	LCS 280-615638/1002		1/1	6/9/2023 18:01	6/9/2023 18:01	6/9/2023 18:01	280-615638/	BS
LABQC	WQ	LCSD 280-615638/4	LCSD 280-615638/4		1/1	6/9/2023 18:43	6/9/2023 18:43	6/9/2023 18:43	280-615638/	BD
LABQC	WQ	MB 280-615638/7	MB 280-615638/7		1/1	6/9/2023 19:46	6/9/2023 19:46	6/9/2023 19:46	280-615638/	LB
FIELDQC	WQ	FEW4-TB14-21	280-177347-8		1/1	5/31/2023 08:00	6/9/2023 21:37	6/9/2023 21:37	280-615638/	TB
FEW4-MW71-205	WG	FEW4-MW71-205-PDB-21	280-177347-4		1/1	5/31/2023 09:22	6/9/2023 23:44	6/9/2023 23:44	280-615638/	N

Test Method: SW8260D		Analysis Batch: 280-616005								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616005/1002	LCS 280-616005/1002		1/1	6/14/2023 07:46	6/14/2023 07:46	6/14/2023 07:46	280-616005/	BS
LABQC	WQ	LCSD 280-616005/4	LCSD 280-616005/4		1/1	6/14/2023 08:28	6/14/2023 08:28	6/14/2023 08:28	280-616005/	BD
LABQC	WQ	MB 280-616005/7	MB 280-616005/7		1/1	6/14/2023 09:32	6/14/2023 09:32	6/14/2023 09:32	280-616005/	LB
FEW4-MW45R-331	WG	FEW4-MW45R-331-21	280-177347-2		1/1	6/2/2023 09:10	6/14/2023 10:43	6/14/2023 10:43	280-616005/	N
FEW4-MW44R-308	WG	FEW4-MW44R-308-21	280-177347-1		1/1	6/2/2023 11:30	6/14/2023 13:55	6/14/2023 13:55	280-616005/	N
FEW4-MW71-205	WG	FEW4-MW71-205-21	280-177347-3		1/1	6/1/2023 09:21	6/14/2023 14:16	6/14/2023 14:16	280-616005/	N
FEW4-MW79-193	WG	FEW4-MW79-193-21	280-177347-5		1/1	6/1/2023 14:35	6/14/2023 14:38	6/14/2023 14:38	280-616005/	N
FEW4-MW79-193	WG	FEW4-MW79-193-PDB-21	280-177347-6		1/1	6/1/2023 10:15	6/14/2023 14:59	6/14/2023 14:59	280-616005/	N
FEW4-MW80-284	WG	FEW4-MW80-284-21	280-177347-7		1/1	6/2/2023 13:50	6/14/2023 15:20	6/14/2023 15:20	280-616005/	N
FEW4-MW45R-331	WG	FEW4-MW45R-331-21	280-177347-2MS		1/1	6/2/2023 09:10	6/14/2023 17:29	6/14/2023 17:29	280-616005/	MS

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Test Method: SW8260D		Analysis Batch: 280-616005								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
FEW4-MW45R-331	WG	FEW4-MW45R-331-MSD-21	280-177347-2MSD		1/1	6/2/2023 09:10	6/14/2023 17:50	6/14/2023 17:50	280-616005/	SD



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	31052301		FIELDQC	WQ	FEW4-TB14-21	280-177347-8	5/31/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
LCS RPD	LCSD 280-616005/4 (BD) / LCSD 280-616005/4	1 / 1.00	Chloroethane	20.19 (rpd)	J/None	< 20	< 20	Z			
LCS RPD	LCSD 280-616005/4 (BD) / LCSD 280-616005/4	1 / 1.00	Vinyl chloride	23.48 (rpd)	J/None	< 20	< 20	Z			
MS RPD	FEW4-MW45R-331-MSD-21 (SD) / 280-177347-2MSD	1 / 1.00	Bromomethane	32.26 (rpd)	J/None	< 20	< 20	D			

Rule is the multiplier used when blank contamination occurs to determine action level.



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW45R-331-21	280-177347-2	W	N	Acetone	15.0	9.20 J	9.20 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW44R-308-21	280-177347-1	W	N	1	Trichloroethene (TCE)	1.00	2.10	2.10	ug/l	
FEW4-MW45R-331-21	280-177347-2	W	N	1	Acetone	15.0	9.20 J	9.20 J	ug/l	TR
FEW4-MW79-193-21	280-177347-5	W	N	1	Acetone	15.0	28.0	28.0	ug/l	
FEW4-MW79-193-21	280-177347-5	W	N	1	cis-1,2-Dichloroethene	1.00	2.30	2.30	ug/l	
FEW4-MW79-193-21	280-177347-5	W	N	1	Trichloroethene (TCE)	1.00	7.60	7.60	ug/l	
FEW4-MW79-193-PDB-21	280-177347-6	W	N	1	cis-1,2-Dichloroethene	1.00	3.00	3.00	ug/l	
FEW4-MW79-193-PDB-21	280-177347-6	W	N	1	Trichloroethene (TCE)	1.00	14.0	14.0	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
Event: FE Warren Site 4 FS Spring 2023
SDG: 280-177394-1
Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
Prime Contractor: URS Corp., Omaha, NE
Project Manager: Tom Wohlford
Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor: URS Group, Inc.
Data Review Level: S2BVEM
Primary Data Reviewer: Gary Torf, Project Chemist
Date Submitted: September 12, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-MW56-290-21	280-177394-1	Water	Field Sample/N	X
FEW4-MW56-290-PDB-21	280-177394-2	Water	Field Sample/N	X
FEW4-MW59-74-21	280-177394-3	Water	Field Sample/N	X
FEW4-MW60-146-21	280-177394-4	Water	Field Sample/N	X
FEW4-MW75-308-21	280-177394-5	Water	Field Sample/N	X
FEW4-MW75-308-FD-21	280-177394-6	Water	Field Duplicate/FD	X
FEW4-MW81-279-21	280-177394-7	Water	Field Sample/N	X
FEW4-TB15-21	280-177394-8	Water	Trip Blank/TB	X

Data Validation Report for 280-177394-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-177394-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

Field Duplicate RPD

Lab Blank

LCS Recovery

LCS RPD

Prep Hold Time

Surrogate

Test Hold Time

Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

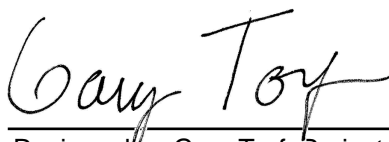
A total of 3 results (0.72%) out of the 416 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-177394-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 12, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-177394-1

Quality Control Outliers for test method SW8260D, Lab Blank

The purpose of laboratory blanks is to determine the existence and magnitude of cross-contamination problems resulting from laboratory activities. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in laboratory blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
MB 280-615477/7 (LB)	Acetone	7.54	< 6.6	< 15	ug/l	U/None*	L	
MB 280-616175/7 (LB)	1,2,3- Trichlorobenzene	1.17	< 0.7	< 2	ug/l	U/None*	L	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOD or LOQ will be qualified based on the validation guidance assigned in the project setup.

Qualified Results associated with the Lab Blank for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW59-74-21 280-177394-3	N	Acetone	60000	31000 J D B	60000 U		ug/l	L

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Data Validation Report for 280-177394-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW56-290-21 280-177394-1	N	Bromomethane	5.00	4.00 U Q	4.00 UJ		ug/l	V2
FEW4-MW59-74-21 280-177394-3	N	Acetone	60000	31000 J D B	60000 U		ug/l	L
FEW4-MW60-146-21 280-177394-4	N	Bromomethane	1000	800 U Q	800 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-177394-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW56-290-21	N	cis-1,2-Dichloroethene	1.00	0.420 J	0.420 J		ug/L	TR

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Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW56-290-21 280-177394-1	N	Bromomethane	5.00	4.00 U Q	4.00 U	4.00 UJ	V2
FEW4-MW60-146-21 280-177394-4	N	Bromomethane	1000	800 U Q	800 U	800 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
L	Lab Blank
TR	Trace Level Detect
V2	CCV

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-177394-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB15-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?		•		MB 280-615477/7: acetone 7.54J ug/L MB 280-616175/7: 1,2,3-trichlorobenzene 1.17J ug/L
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		Matrix spike duplicate samples were not collected with this SDG.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?	•			Field duplicate samples were collected for FEW4 -MW75-308-21.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?	•			

Data Validation Report for 280-177394-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the Calibration within project acceptance criteria?	•			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?		•		VMS_MS11 ICV 280-614450/20: dichlorodifluoromethane 28.9% was outside the 20% control limit high.
Were CCVs run at the required frequency and within project acceptance criteria?		•		VMS_MS1 CCV 280-616357/2: bromomethane -24.3% was outside the 20% control limit low; the analyte was associated with samples FEW4-MW56-290-21 and FEW4-MW60-146-21. Acetone 20.2% and 4-methyl-2-pentanone 24.3% was outside the 20% control limit high. VMS_X4 CCV 280-616335/2: bromoform 21.6% was outside the 20% control limit high.
Were internal standard retention times and area criteria within project acceptance criteria?	•			
Were internal standards spiked for every sample, standard, and QC sample?	•			
Were instrument run logs present and filled out appropriately?	•			
Were sample preparation sheets present and filled out appropriately?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for exclusion in the data validation process?	•			Detections of common lab contaminants that have not historically been seen at the site, including 2-butanone, acetone, and methylene chloride have been revised to non-detect at the direction of the USACE-Omaha Project Chemist citing professional judgment. This includes the acetone result for sample FEW40MW59-74-21 at 31,000J ug/L.

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-MW56-290	FEW4-MW56-290-21	06-04-2023	1245	N	WG	286.70	296.70	
FEW4-MW56-290	FEW4-MW56-290-PDB-21	06-03-2023	1350	N	WG	286.70	296.70	
FEW4-MW59-74	FEW4-MW59-74-21	06-04-2023	1510	N	WG	65.80	75.80	
FEW4-MW60-146	FEW4-MW60-146-21	06-04-2023	1135	N	WG	138.00	148.00	
FEW4-MW75-308	FEW4-MW75-308-21	06-03-2023	1035	N	WG	295.10	310.10	
FEW4-MW75-308	FEW4-MW75-308-FD-21	06-03-2023	1035	FD	WG	295.10	310.10	
FEW4-MW81-279	FEW4-MW81-279-21	06-03-2023	1250	N	WG	269.20	284.20	
FIELDQC	FEW4-TB15-21	06-03-2023	0800	TB	WQ	0.00	0.00	
Total								8

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-615477								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-615477/1002	LCS 280-615477/1002		1/1	6/8/2023 21:57	6/8/2023 21:57	6/8/2023 21:57	280-615477/	BS
LABQC	WQ	LCSD 280-615477/4	LCSD 280-615477/4		1/1	6/8/2023 22:39	6/8/2023 22:39	6/8/2023 22:39	280-615477/	BD
LABQC	WQ	MB 280-615477/7	MB 280-615477/7		1/1	6/8/2023 23:43	6/8/2023 23:43	6/8/2023 23:43	280-615477/	LB
FEW4-MW59-74	WG	FEW4-MW59-74-21	280-177394-3		1/4000	6/4/2023 15:10	6/9/2023 06:04	6/9/2023 06:04	280-615477/	N

Test Method: SW8260D		Analysis Batch: 280-616175								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616175/1002	LCS 280-616175/1002		1/1	6/14/2023 19:53	6/14/2023 19:53	6/14/2023 19:53	280-616175/	BS
LABQC	WQ	LCSD 280-616175/4	LCSD 280-616175/4		1/1	6/14/2023 20:34	6/14/2023 20:34	6/14/2023 20:34	280-616175/	BD
LABQC	WQ	MB 280-616175/7	MB 280-616175/7		1/1	6/14/2023 21:48	6/14/2023 21:48	6/14/2023 21:48	280-616175/	LB
FIELDQC	WQ	FEW4-TB15-21	280-177394-8		1/1	6/3/2023 08:00	6/14/2023 22:31	6/14/2023 22:31	280-616175/	TB
FEW4-MW56-290	WG	FEW4-MW56-290-PDB-21	280-177394-2		1/1	6/3/2023 13:50	6/15/2023 02:17	6/15/2023 02:17	280-616175/	N
FEW4-MW75-308	WG	FEW4-MW75-308-21	280-177394-5		1/1	6/3/2023 10:35	6/15/2023 02:37	6/15/2023 02:37	280-616175/	N

Test Method: SW8260D		Analysis Batch: 280-616335								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616335/1002	LCS 280-616335/1002		1/1	6/15/2023 16:30	6/15/2023 16:30	6/15/2023 16:30	280-616335/	BS
LABQC	WQ	LCSD 280-616335/4	LCSD 280-616335/4		1/1	6/15/2023 17:46	6/15/2023 17:46	6/15/2023 17:46	280-616335/	BD

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Test Method: SW8260D Analysis Batch: 280-616335

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	MB 280-616335/7	MB 280-616335/7		1/1	6/15/2023 19:08	6/15/2023 19:08	6/15/2023 19:08	280-616335/	LB
FEW4-MW75-308	WG	FEW4-MW75-308-FD-21	280-177394-6		1/1	6/3/2023 10:35	6/15/2023 20:03	6/15/2023 20:03	280-616335/	FD
FEW4-MW81-279	WG	FEW4-MW81-279-21	280-177394-7		1/1	6/3/2023 12:50	6/15/2023 20:23	6/15/2023 20:23	280-616335/	N

Test Method: SW8260D Analysis Batch: 280-616357

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616357/1002	LCS 280-616357/1002		1/1	6/16/2023 06:51	6/16/2023 06:51	6/16/2023 06:51	280-616357/	BS
LABQC	WQ	LCSD 280-616357/4	LCSD 280-616357/4		1/1	6/16/2023 07:44	6/16/2023 07:44	6/16/2023 07:44	280-616357/	BD
LABQC	WQ	MB 280-616357/7	MB 280-616357/7		1/1	6/16/2023 09:09	6/16/2023 09:09	6/16/2023 09:09	280-616357/	LB
FEW4-MW56-290	WG	FEW4-MW56-290-21	280-177394-1		1/1	6/4/2023 12:45	6/16/2023 15:52	6/16/2023 15:52	280-616357/	N
FEW4-MW60-146	WG	FEW4-MW60-146-21	280-177394-4		1/200	6/4/2023 11:35	6/16/2023 16:14	6/16/2023 16:14	280-616357/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	03062302		FIELDQC	WQ	FEW4-TB15-21	280-177394-8	6/3/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Lab Blank	MB 280-615477/7 (LB) / MB 280-615477/7	1 / 1.00	Acetone	7.540 (ug/l)	U/None*	< 6.6	< 15	L		2	15.1
Lab Blank	MB 280-616175/7 (LB) / MB 280-616175/7	1 / 1.00	1,2,3-Trichlorobenzene	1.170 (ug/l)	U/None*	< 0.7	< 2	L		1	1.17

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOQ will be qualified based on the validation type such as J+ at the sample result.

Rule is the multiplier used when blank contamination occurs to determine action level.

*Blank qualification may apply a J flag when the sample result is greater than the reporting limit for NFG and when the sample result is between 5 and 20 times the blank result for EM200-1-10.



Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW56-290-21	280-177394-1	W	N	cis-1,2-Dichloroethene	1.00	0.420 J	0.420 J		ug/l	TR
FEW4-MW59-74-21	280-177394-3	W	N	Acetone	60000	31000 J D B	60000 U		ug/l	L

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-MW56-290-21	280-177394-1	W	N	1	cis-1,2-Dichloroethene	1.00	0.420 J	0.420 J	ug/l	TR
FEW4-MW56-290-21	280-177394-1	W	N	1	Trichloroethene (TCE)	1.00	1.10	1.10	ug/l	
FEW4-MW56-290-PDB-21	280-177394-2	W	N	1	cis-1,2-Dichloroethene	1.00	1.40	1.40	ug/l	
FEW4-MW56-290-PDB-21	280-177394-2	W	N	1	Trichloroethene (TCE)	1.00	5.60	5.60	ug/l	
FEW4-MW59-74-21	280-177394-3	W	N	4000	Trichloroethene (TCE)	4000	190000 D	190000	ug/l	
FEW4-MW60-146-21	280-177394-4	W	N	200	cis-1,2-Dichloroethene	200	2200 D	2200	ug/l	
FEW4-MW60-146-21	280-177394-4	W	N	200	Trichloroethene (TCE)	200	35000 D	35000	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
Event: FE Warren Site 4 FS Spring 2023
SDG: 280-177511-1
Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
Prime Contractor: URS Corp., Omaha, NE
Project Manager: Tom Wohlford
Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor: URS Group, Inc.
Data Review Level: S2BVEM
Primary Data Reviewer: Gary Torf, Project Chemist
Date Submitted: September 13, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-EB01-21	280-177511-1	Water	Equipment Blank/EB	X
FEW4-MW59-125-21	280-177511-2	Water	Field Sample/N	X
FEW4-MW74-104-21	280-177511-3	Water	Field Sample/N	X
FEW4-MW74-263-21	280-177511-4	Water	Field Sample/N	X
FEW4-MW74-359-21	280-177511-5	Water	Field Sample/N	X
FEW4-MW74-359-PDB-21	280-177511-6	Water	Field Sample/N	X
FEW4-TB16-21	280-177511-7	Water	Trip Blank/TB	X

Data Validation Report for 280-177511-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-177511-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Equipment Blank
- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

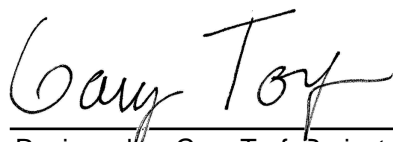
A total of 3 results (0.82%) out of the 364 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-177511-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 13, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-177511-1

Quality Control Outliers for test method SW8260D, Equipment Blank

The purpose of equipment blanks is to determine the existence and magnitude of cross-contamination problems resulting from the process during sampling. Reported results were evaluated to determine compliance with the required acceptance criteria. Summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and contaminants found in equipment blanks are listed below along with any associated qualified results.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
FEW4-EB01-21 (EB)	2-Butanone (MEK)	9.90	< 6	< 15	ug/l	U/None*	V	
FEW4-EB01-21 (EB)	Acetone	8.60	< 6.6	< 15	ug/l	U/None*	V	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOD or LOQ will be qualified based on the validation guidance assigned in the project setup.

No results associated with this QC element required qualification.

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Quality Control Outliers for test method SW8260D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS 280-616691/1002 (BS)	2-Hexanone	144	57 - 139	57 - 139	percent	J/None	C	
LCS 280-616691/1002 (BS)	4-Methyl-2-pentanone (MIBK)	149	67 - 130	67 - 130	percent	J/None	C	
LCS 280-616691/1002 (BS)	Bromoform	131	66 - 130	66 - 130	percent	J/None	C	
LCSD 280-616691/4 (BD)	4-Methyl-2-pentanone (MIBK)	139	67 - 130	67 - 130	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

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Quality Control Outliers for test method SW8260D, LCS RPD

The objective of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. LCS/LCSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Laboratory control sample/laboratory control sample duplicate RPD results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCSD 280-615672/4 (BD)	1,4-Dioxane	26.0	< 20	< 20	rpd	J/None	Z	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results. Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Data Validation Report for 280-177511-1

Table of All Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-MW59-125-21 280-177511-2	N	2-Butanone (MEK)	1500	1200 U Q	1200 UJ		ug/l	V2
FEW4-MW59-125-21 280-177511-2	N	Acetone	1500	800 U Q	800 UJ		ug/l	V2
FEW4-MW59-125-21 280-177511-2	N	Chloromethane	200	100 U Q	100 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.

In instances where no LOD is provided, results are reported down to the LOQ.

Trace values are not included in the qualified results table unless additional reason codes are associated.

Data Validation Report for 280-177511-1

Table of All Trace Results

Test Method: SW8260D		Extraction Method: SW5030B						
FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-EB01-21	EB	2-Butanone (MEK)	15.0	9.90 J	9.90 J		ug/L	TR
FEW4-EB01-21	EB	Acetone	15.0	8.60 J	8.60 J		ug/L	TR
FEW4-MW59-125-21	N	cis-1,2-Dichloroethene	100	39.0 J D	39.0 J		ug/L	TR
FEW4-MW74-104-21	N	1,1,2-Trichloroethane	1.00	0.870 J	0.870 J		ug/L	TR
FEW4-MW74-263-21	N	Trichloroethene (TCE)	1.00	0.810 J	0.810 J		ug/L	TR

Data Validation Report for 280-177511-1

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8260D

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
FEW4-MW59-125-21 280-177511-2	N	2-Butanone (MEK)	1500	1200 U Q	1200 U	1200 UJ	V2
FEW4-MW59-125-21 280-177511-2	N	Acetone	1500	800 U Q	800 U	800 UJ	V2
FEW4-MW59-125-21 280-177511-2	N	Chloromethane	200	100 U Q	100 U	100 UJ	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
TR	Trace Level Detect
V	Equipment Blank
V2	CCV
Z	LCS RPD

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-177511-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		.		
Were there discrepancies between the COC and the sample labels?		.		
Were samples relinquished properly on the COC?	.			
Were all samples properly preserved?		.		Sample FEW4-MW59-125-21 was preserved with ascorbic acid however the pH was 5 upon analysis.
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	.			
Were sample results reported with percent moisture correction if required?			.	
Were analytical methods performed and analysis dates present?	.			
Were all requested target analytes reported?	.			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	.			
Were holding times met?	.			
Were trip blanks analyzed at the proper frequency and in control?	.			
Were field blanks analyzed at the proper frequency and in control?			.	
Were equipment blanks analyzed at the proper frequency and in control?		.		FEW4-EB01-21: 2-butanone 9.9J ug/L; acetone 8.6J ug/L.
Was a method blank prepared and analyzed with each batch?	.			
Were target analytes in the method blank less than DL?	.			
Was an LCS/LCSD pair prepared and analyzed with each batch?	.			
Were LCS/LCSD recoveries within project acceptance limits?		.		LCS 280-616691/1002: 2-hexanone 144% (139% UCL); 4-methyl-2-pentanone 149% (130% UCL); bromoform 131% (130% UCL). LCSD LCSD 280-616691/4: 4-methyl-2-pentanone 139% (130% UCL).
Was the LCS/LCSD RPD within project acceptance limits?		.		LCSD 280-615672/4: 1,4-dioxane 26% RPD
Was a MS/MSD pair prepared with each batch?		.		Matrix spike duplicate samples were not collected with this SDG.
Were MS/MSD recoveries within project acceptance limits?			.	
Was the MS/MSD RPD within project acceptance limits?			.	
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			.	
Were surrogate recoveries within project acceptance limits?	.			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?			.	Field duplicate samples were not collected with this SDG.
Were reported sample concentrations within calibration range?	.			

Data Validation Report for 280-177511-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Was the GC/MS system properly tuned based on method criteria?	.			
Was instrument tuning completed every 12 hours during sample analysis?	.			
Was the Calibration within project acceptance criteria?	.			
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?		.		VMS_MS1 CCV 280-616691/2: several analytes were outside the 20% control limit, however the only sample analyte associated with this CCV was trichloroethene which was within the control limit. VMS_MS13 CCV 280-615672/2: chloromethane -23.6%, acetone -25.8%, and 2-butanone -21.8% were outside the 20% control limit low; only sample FEW4-MW59-125-21 was associated with this CCV.
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FIELDQC	FEW4-EB01-21	06-06-2023	1430	EB	WQ	0.00	0.00	
FEW4-MW59-125	FEW4-MW59-125-21	06-06-2023	1223	N	WG	115.30	130.30	
FEW4-MW74-104	FEW4-MW74-104-21	06-05-2023	1137	N	WG	97.30	107.30	
FEW4-MW74-263	FEW4-MW74-263-21	06-05-2023	1355	N	WG	255.40	265.40	
FEW4-MW74-359	FEW4-MW74-359-21	06-06-2023	1315	N	WG	352.00	362.00	
FEW4-MW74-359	FEW4-MW74-359-PDB-21	06-06-2023	0855	N	WG	352.00	362.00	
FIELDQC	FEW4-TB16-21	06-05-2023	0800	TB	WQ	0.00	0.00	
Total								7

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1



Batch Report

Test Method: SW8260D		Analysis Batch: 280-615672								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-615672/1002	LCS 280-615672/1002		1/1	6/12/2023 09:35	6/12/2023 09:35	6/12/2023 09:35	280-615672/	BS
LABQC	WQ	LCSD 280-615672/4	LCSD 280-615672/4		1/1	6/12/2023 10:50	6/12/2023 10:50	6/12/2023 10:50	280-615672/	BD
LABQC	WQ	MB 280-615672/7	MB 280-615672/7		1/1	6/12/2023 11:43	6/12/2023 11:43	6/12/2023 11:43	280-615672/	LB
FEW4-MW59-125	WG	FEW4-MW59-125-21	280-177511-2		1/100	6/6/2023 12:23	6/12/2023 16:02	6/12/2023 16:02	280-615672/	N

Test Method: SW8260D		Analysis Batch: 280-616497								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616497/1002	LCS 280-616497/1002		1/1	6/17/2023 09:23	6/17/2023 09:23	6/17/2023 09:23	280-616497/	BS
LABQC	WQ	LCSD 280-616497/4	LCSD 280-616497/4		1/1	6/17/2023 10:07	6/17/2023 10:07	6/17/2023 10:07	280-616497/	BD
LABQC	WQ	MB 280-616497/7	MB 280-616497/7		1/1	6/17/2023 11:13	6/17/2023 11:13	6/17/2023 11:13	280-616497/	LB
FIELDQC	WQ	FEW4-TB16-21	280-177511-7		1/1	6/5/2023 08:00	6/17/2023 13:26	6/17/2023 13:26	280-616497/	TB
FEW4-MW74-104	WG	FEW4-MW74-104-21	280-177511-3		1/1	6/5/2023 11:37	6/17/2023 17:28	6/17/2023 17:28	280-616497/	N
FEW4-MW74-263	WG	FEW4-MW74-263-21	280-177511-4		1/1	6/5/2023 13:55	6/17/2023 17:50	6/17/2023 17:50	280-616497/	N

Test Method: SW8260D		Analysis Batch: 280-616691								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616691/1002	LCS 280-616691/1002		1/1	6/19/2023 17:49	6/19/2023 17:49	6/19/2023 17:49	280-616691/	BS

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Test Method: SW8260D Analysis Batch: 280-616691

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCSD 280-616691/4	LCSD 280-616691/4		1/1	6/19/2023 18:10	6/19/2023 18:10	6/19/2023 18:10	280-616691/	BD
LABQC	WQ	MB 280-616691/7	MB 280-616691/7		1/1	6/19/2023 19:14	6/19/2023 19:14	6/19/2023 19:14	280-616691/	LB
FEW4-MW74-104	WG	FEW4-MW74-104-21	280-177511-3		2/20	6/5/2023 11:37	6/19/2023 22:55	6/19/2023 22:55	280-616691/	N

Test Method: SW8260D Analysis Batch: 280-616702

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-616702/1002	LCS 280-616702/1002		1/1	6/19/2023 23:31	6/19/2023 23:31	6/19/2023 23:31	280-616702/	BS
LABQC	WQ	MB 280-616702/7	MB 280-616702/7		1/1	6/20/2023 00:15	6/20/2023 00:15	6/20/2023 00:15	280-616702/	LB
FIELDQC	WQ	FEW4-EB01-21	280-177511-1		1/1	6/6/2023 14:30	6/20/2023 01:42	6/20/2023 01:42	280-616702/	EB
FEW4-MW74-359	WG	FEW4-MW74-359-21	280-177511-5		1/1	6/6/2023 13:15	6/20/2023 02:04	6/20/2023 02:04	280-616702/	N
FEW4-MW74-359	WG	FEW4-MW74-359-PDB-21	280-177511-6		1/1	6/6/2023 08:55	6/20/2023 02:26	6/20/2023 02:26	280-616702/	N
LABQC	WQ	LCSD 280-616702/4	LCSD 280-616702/4		1/1	6/20/2023 06:51	6/20/2023 06:51	6/20/2023 06:51	280-616702/	BD

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Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
06062301	05062302		FIELDQC	WQ	FEW4-EB01-21	280-177511-1	6/6/2023 14:30	EB
	05062302		FIELDQC	WQ	FEW4-TB16-21	280-177511-7	6/5/2023 08:00	TB
06062301	05062302		FEW4-MW59-125	WG	FEW4-MW59-125-21	280-177511-2	6/6/2023 12:23	N
06062301	05062302		FEW4-MW74-104	WG	FEW4-MW74-104-21	280-177511-3	6/5/2023 11:37	N
06062301	05062302		FEW4-MW74-263	WG	FEW4-MW74-263-21	280-177511-4	6/5/2023 13:55	N
06062301	05062302		FEW4-MW74-359	WG	FEW4-MW74-359-21	280-177511-5	6/6/2023 13:15	N
06062301	05062302		FEW4-MW74-359	WG	FEW4-MW74-359-PDB-21	280-177511-6	6/6/2023 08:55	N

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

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QC Outlier Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE							
QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Equipment Blank	FEW4-EB01-21 (EB) / 280-177511-1	1 / 1.00	2-Butanone (MEK)	9.900 (ug/l)	U/None*	< 6	< 15	V		2	19.8
Equipment Blank	FEW4-EB01-21 (EB) / 280-177511-1	1 / 1.00	Acetone	8.600 (ug/l)	U/None*	< 6.6	< 15	V		2	17.2
LCS Recovery	LCS 280-616691/1002 (BS) / LCS 280-616691/1002	1 / 1.00	2-Hexanone	144.0 (percent)	J/None	57 - 139	57 - 139	C			
LCS Recovery	LCS 280-616691/1002 (BS) / LCS 280-616691/1002	1 / 1.00	4-Methyl-2-pentanone (MIBK)	149.0 (percent)	J/None	67 - 130	67 - 130	C			
LCS Recovery	LCS 280-616691/1002 (BS) / LCS 280-616691/1002	1 / 1.00	Bromoform	131.0 (percent)	J/None	66 - 130	66 - 130	C			
LCS Recovery	LCSD 280-616691/4 (BD) / LCSD 280-616691/4	1 / 1.00	4-Methyl-2-pentanone (MIBK)	139.0 (percent)	J/None	67 - 130	67 - 130	C			
LCS RPD	LCSD 280-615672/4 (BD) / LCSD 280-615672/4	1 / 1.00	1,4-Dioxane	26.04 (rpd)	J/None	< 20	< 20	Z			

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOQ will be qualified based on the validation type such as J+ at the sample result.

Rule is the multiplier used when blank contamination occurs to determine action level.

*Blank qualification may apply a J flag when the sample result is greater than the reporting limit for NFG and when the sample result is between 5 and 20 times the blank result for EM200-1-10.

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-EB01-21	280-177511-1	W	EB	2-Butanone (MEK)	15.0	9.90 J	9.90 J		ug/l	TR
FEW4-EB01-21	280-177511-1	W	EB	Acetone	15.0	8.60 J	8.60 J		ug/l	TR
FEW4-MW59-125-21	280-177511-2	W	N	cis-1,2-Dichloroethene	100	39.0 J D	39.0 J		ug/l	TR
FEW4-MW74-104-21	280-177511-3	W	N	1,1,2-Trichloroethane	1.00	0.870 J	0.870 J		ug/l	TR
FEW4-MW74-263-21	280-177511-4	W	N	Trichloroethene (TCE)	1.00	0.810 J	0.810 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-EB01-21	280-177511-1	W	EB	1	2-Butanone (MEK)	15.0	9.90 J	9.90 J	ug/l	TR
FEW4-EB01-21	280-177511-1	W	EB	1	Acetone	15.0	8.60 J	8.60 J	ug/l	TR
FEW4-MW59-125-21	280-177511-2	W	N	100	cis-1,2-Dichloroethene	100	39.0 J D	39.0 J	ug/l	TR
FEW4-MW59-125-21	280-177511-2	W	N	100	Trichloroethene (TCE)	100	1100 D	1100	ug/l	
FEW4-MW74-104-21	280-177511-3	W	N	1	1,1,2-Trichloroethane	1.00	0.870 J	0.870 J	ug/l	TR
FEW4-MW74-104-21	280-177511-3	W	N	1	cis-1,2-Dichloroethene	1.00	17.0	17.0	ug/l	
FEW4-MW74-104-21	280-177511-3	W	N	20	Trichloroethene (TCE)	20.0	2000 D	2000	ug/l	
FEW4-MW74-263-21	280-177511-4	W	N	1	Trichloroethene (TCE)	1.00	0.810 J	0.810 J	ug/l	TR
FEW4-MW74-359-21	280-177511-5	W	N	1	Trichloroethene (TCE)	1.00	1.10	1.10	ug/l	

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Rejected Results

--No Records Found--



Facility: B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
Event: FE Warren Site 4 FS Spring 2023
SDG: 280-177917-1
Guidance Document: F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1
Prime Contractor: URS Corp., Omaha, NE
Project Manager: Tom Wohlford
Contract Laboratory(ies): Eurofins Environment Testing TestAmerica, Arvada, CO
Data Review Contractor: URS Group, Inc.
Data Review Level: S2BVEM
Primary Data Reviewer: Gary Torf, Project Chemist
Date Submitted: September 13, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8260D
FEW4-IDW-EFF-21	280-177917-1	Water	Field Sample/N	X
FEW4-IDW-INF-21	280-177917-2	Water	Field Sample/N	X
FEW4-IDW-INT-21	280-177917-3	Water	Field Sample/N	X
FEW4-TB17-21	280-177917-4	Water	Trip Blank/TB	X

Data Validation Report for 280-177917-1

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by URS Corp., Omaha, NE; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO and were reported under sample delivery group (SDG) 280-177917-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Lab Blank
- LCS Recovery
- LCS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time
- Trip Blank

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

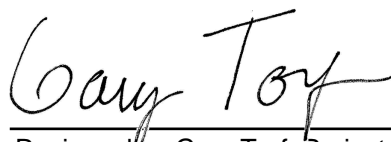
A total of 0 results (0.00%) out of the 208 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Data Validation Report for 280-177917-1

Narrative Comments

Analytical Method	Data Reviewer Comment
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SW8260D	No additional comments; see Checklist for detail.
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Reviewed by Gary Torf, Project Chemist, URS Group, Inc.

September 13, 2023

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Data Validation Report for 280-177917-1

No Outliers were associated with this sample delivery group.

Qualified Results

No results associated with this sample delivery group required qualification.

Table of All Trace Results

Test Method: SW8260D Extraction Method: SW5030B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-IDW-INF-21	N	Trichloroethene (TCE)	1.00	0.650 J	0.650 J		ug/L	TR

Data Validation Report for 280-177917-1

Results with Modified Qualifiers

No qualifiers associated with this sample delivery group were modified manually.

Reason Code Definitions

Code	Definition
TR	Trace Level Detect

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Data Validation Report for 280-177917-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?		•		
Were there discrepancies between the COC and the sample labels?		•		
Were samples relinquished properly on the COC?	•			
Were all samples properly preserved?	•			
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?	•			
Were sample results reported with percent moisture correction if required?			•	
Were analytical methods performed and analysis dates present?	•			
Were all requested target analytes reported?	•			
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)	•			
Were holding times met?	•			
Were trip blanks analyzed at the proper frequency and in control?	•			FEW4-TB17-21
Were field blanks analyzed at the proper frequency and in control?			•	
Were equipment blanks analyzed at the proper frequency and in control?			•	
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than DL?	•			
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?		•		Matrix spike duplicate samples were not collected with this SDG.
Were MS/MSD recoveries within project acceptance limits?			•	
Was the MS/MSD RPD within project acceptance limits?			•	
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?			•	
Were surrogate recoveries within project acceptance limits?	•			
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?			•	Field duplicate samples were not collected with this SDG.
Were reported sample concentrations within calibration range?	•			
Was the GC/MS system properly tuned based on method criteria?	•			
Was instrument tuning completed every 12 hours during sample analysis?				
Was the Calibration within project acceptance criteria?				

Data Validation Report for 280-177917-1

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)

Review Questions	Yes	No	NA	Comment
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?	.			
Were CCVs run at the required frequency and within project acceptance criteria?	.			
Were internal standard retention times and area criteria within project acceptance criteria?	.			
Were internal standards spiked for every sample, standard, and QC sample?	.			
Were instrument run logs present and filled out appropriately?	.			
Were sample preparation sheets present and filled out appropriately?	.			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	.			
Were DoD QSM corrective actions followed if deviations were noted?	.			
Were any data recommended for exclusion in the data validation process?		.		

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Sample Summary								SW8260D
Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	
FEW4-IDW-EFF	FEW4-IDW-EFF-21	06-13-2023	0948	N	WW	0.00	0.00	
FEW4-IDW-INF	FEW4-IDW-INF-21	06-13-2023	0944	N	WW	0.00	0.00	
FEW4-IDW-INT	FEW4-IDW-INT-21	06-13-2023	0946	N	WW	0.00	0.00	
FIELDQC	FEW4-TB17-21	06-13-2023	0800	TB	WQ	0.00	0.00	X
Total								4

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Batch Report

Test Method: SW8260D		Analysis Batch: 280-617357								
Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LCS 280-617357/1002	LCS 280-617357/1002		1/1	6/25/2023 08:54	6/25/2023 08:54	6/25/2023 08:54	280-617357/	BS
LABQC	WQ	LCSD 280-617357/4	LCSD 280-617357/4		1/1	6/25/2023 09:38	6/25/2023 09:38	6/25/2023 09:38	280-617357/	BD
LABQC	WQ	MB 280-617357/7	MB 280-617357/7		1/1	6/25/2023 10:22	6/25/2023 10:22	6/25/2023 10:22	280-617357/	LB
FIELDQC	WQ	FEW4-TB17-21	280-177917-4		1/1	6/13/2023 08:00	6/25/2023 10:53	6/25/2023 10:53	280-617357/	TB
FEW4-IDW-EFF	WW	FEW4-IDW-EFF-21	280-177917-1		1/1	6/13/2023 09:48	6/25/2023 12:44	6/25/2023 12:44	280-617357/	N
FEW4-IDW-INF	WW	FEW4-IDW-INF-21	280-177917-2		1/1	6/13/2023 09:44	6/25/2023 13:06	6/25/2023 13:06	280-617357/	N
FEW4-IDW-INT	WW	FEW4-IDW-INT-21	280-177917-3		1/1	6/13/2023 09:46	6/25/2023 13:28	6/25/2023 13:28	280-617357/	N



Field Batch Report

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE				
EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
	13062301		FIELDQC	WQ	FEW4-TB17-21	280-177917-4	6/13/2023 08:00	TB

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

QC Outliers Report

--No Records Found--

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Qualified Results

Test Method: SW8260D		Extraction Method: SW5030B		Leach Method: NONE						
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
FEW4-IDW-INF-21	280-177917-2	W	N	Trichloroethene (TCE)	1.00	0.650 J	0.650 J		ug/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

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Detected Results

Test Method: SW8260D		Extraction Method: SW5030B			Leach Method: NONE					
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
FEW4-IDW-INF-21	280-177917-2	W	N	1	Trichloroethene (TCE)	1.00	0.650 J	0.650 J	ug/l	TR

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B08WY0467-02, F.E. Warren AFB, Site 4, Feasibility Study
F.E. Warren Atlas Site 4 - Draft Final LT & PM UFP-QAPP Addendum 1

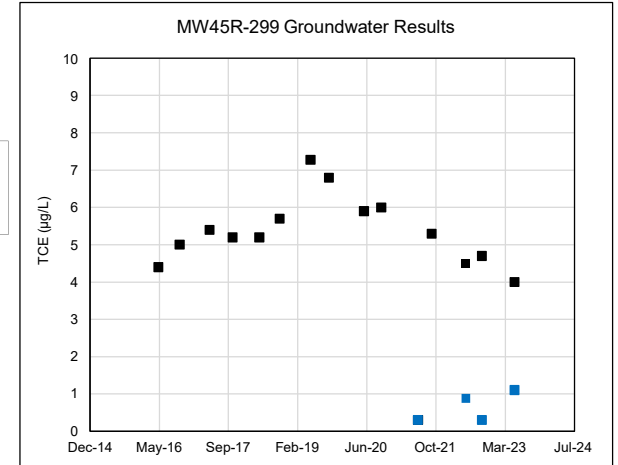


Rejected Results

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TABLE E-1
LOW TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW45R-299-7	Ogallala	5/4/16	4.4		133%	0.3	5.30	5
FEW4-MW45R-299-8		10/5/16	5	13%				
FEW4-MW45R-299-9		5/9/17	5.4	8%				
FEW4-MW45R-299		10/21/17	5.2	4%				
FEW4-MW45R-299-11		5/4/18	5.2	0%				
FEW4-MW45R-299-12		9/28/18	5.7	9%				
FEW4-MW45R-299-13		5/8/19	7.28	24%				
FEW4-MW45R-299-14		9/18/19	6.8	7%				
FEW4-MW45R-299-15		5/29/20	5.9	14%				
FEW4-MW45R-299-16		9/30/20	6	2%				
FEW4-MW45R-299-17		6/23/21	0.3 U	181%				
FEW4-MW45R-299-PDB-17		6/23/21	0.3 U	0%				
FEW4-MW45R-299-18		9/29/21	5.3	179%				
FEW4-MW45R-299-19		6/5/22	4.5	16%				
FEW4-MW45R-299-FD-19		6/5/22	4.5					
FEW4-MW45R-299-PDB-19		6/5/22	0.88 J	135%				
FEW4-MW45R-299-20		9/27/22	4.7	137%				
FEW4-MW45R-299-PDB-20		9/27/22	0.3 U	176%				
FEW4-MW45R-299-21		5/21/23	4	172%				
FEW4-MW45R-299-PDB-21		5/21/23	1.1	114%				



FEW4-MW46-389-7	White River	5/5/16	0.3 U		41%	0.3	1.40	1
FEW4-MW46-389-8		10/9/16	0.3 U					
FEW4-MW46-389-9		6/4/17	0.3 U	0%				
FEW4-MW46-389		11/15/17	0.3 U	0%				
FEW4-MW46-389-11		5/19/18	0.3 U	0%				
FEW4-MW46-389-12		10/3/18	0.3 U	0%				
FEW4-MW46-389-13		5/15/19	0.3 U	0%				
FEW4-MW46-389-14		9/30/19	0.3 U	0%				
FEW4-MW46-389-15		5/27/20	0.3 U	0%				
FEW4-MW46-389-16		10/5/20	0.3 U	0%				
FEW4-MW46-389-17		5/22/21	0.3 U	0%				
FEW4-MW46-389-18		9/16/21	0.3 U	0%				
FEW4-MW46-389-19		7/6/22	0.3 U	0%				
FEW4-MW46-389-PDB-19		7/6/22	0.3 U	0%				
FEW4-MW46-389-20		10/18/22	1.4 J	129%				
FEW4-MW46-389-PDB-20		10/18/22	0.3 UJ	129%				
FEW4-MW46-389-21		5/14/23	0.4 UJ	29%				
FEW4-MW46-389-PDB-21		5/14/23	0.4 UJ	0%				

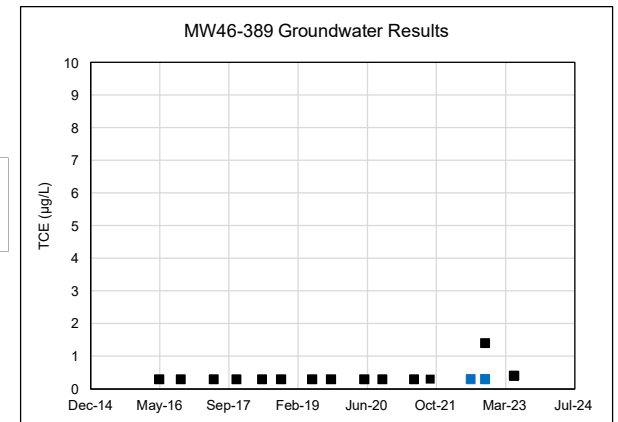
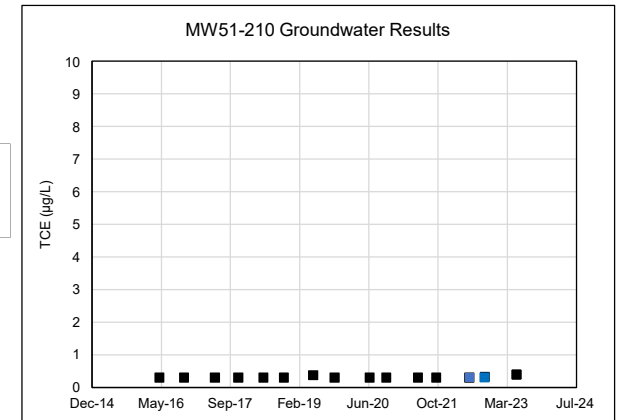


TABLE E-1
LOW TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW51-210-7	Ogallala	4/27/16	0.3 U		7%	0.3	1.40	1
FEW4-MW51-210-8		10/21/16	0.3 U	0%				
FEW4-MW51-210-9		6/3/17	0.3 U	0%				
FEW4-MW51-210		11/17/17	0.3 U	0%				
FEW4-MW51-210-11		5/19/18	0.3 UJ	0%				
FEW4-MW51-210-12		10/13/18	0.3 U	0%				
FEW4-MW51-210-13		5/13/19	0.38 J	24%				
FEW4-MW51-210-14		10/14/19	0.3 U	24%				
FEW4-MW51-210-15		6/24/20	0.3 U	0%				
FEW4-MW51-210-16		10/23/20	0.3 U	0%				
EW4-MW51-210-17		6/8/21	0.3 U	0%				
FEW4-MW51-210-18		10/18/21	0.3 U	0%				
FEW4-MW51-210-19		6/14/22	0.3 U	0%				
FEW4-MW51-210-PDB-19		6/14/22	0.3 U	0%				
FEW4-MW51-210-20		10/3/22	0.33 J	10%				
FEW4-MW51-210-PDB-20		10/3/22	0.3 U	10%				
FEW4-MW51-210-21		5/22/23	0.4 U	29%				
FEW4-MW51-210-PDB-21		5/21/23	0.4 U	0%				



FEW4-MW56-290-7	White River	5/11/16	0.95 J		91%	1.10	5.6	5
FEW4-MW56-290-8		10/8/16	5.1	137%				
FEW4-MW56-290-9		5/5/17	3.5	37%				
FEW4-MW56-290		11/8/17	3	15%				
FEW4-MW56-290-11		5/17/18	3.6 J	18%				
FEW4-MW56-290-12		10/2/18	3.1	15%				
FEW4-MW56-290-13		4/28/19	1.49	70%				
FEW4-MW56-290-14		9/14/19	4.6	102%				
FEW4-MW56-290-15		5/18/20	3.8	19%				
FEW4-MW56-290-16		9/30/20	5.7	40%				
FEW4-MW56-290-17		5/19/21	5	13%				
FEW4-MW56-290-PDB-17		5/18/21	0.3 UJ	177%				
FEW4-MW56-290-18		10/4/21	4.7	176%				
FEW4-MW56-290-19		6/5/22	4.3	9%				
FEW4-MW56-290-PDB-19		6/4/22	3.7 J	15%				
FEW4-MW56-290-20		9/17/22	1.7	74%				
FEW4-MW56-290-PDB-20		9/16/22	5	99%				
FEW4-MW56-290-21		6/4/23	1.1	128%				
FEW4-MW56-290-PDB-21		6/3/23	5.6	134%				

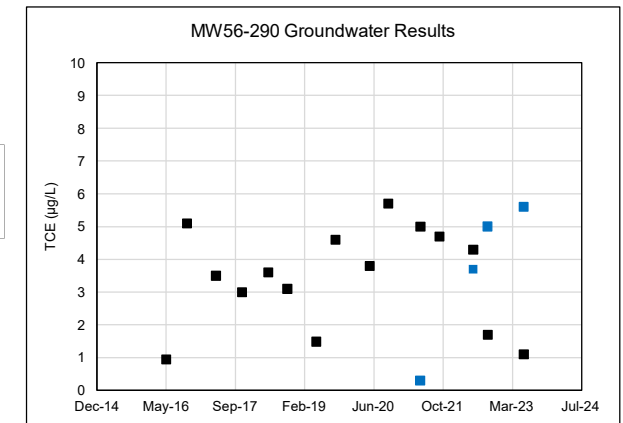
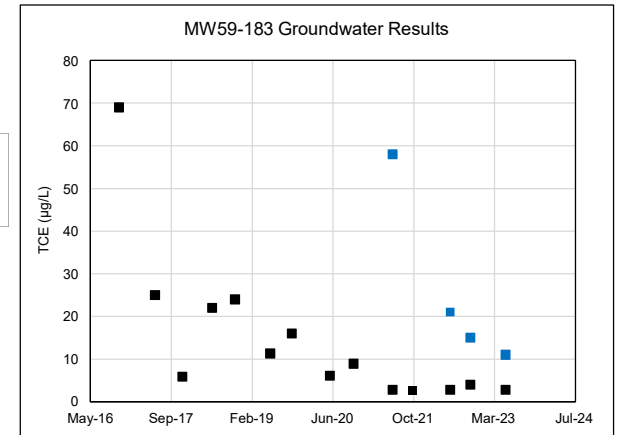


TABLE E-1
LOW TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW59-183-8	White River	11/4/16	69 J		122%	2.5	21	19
FEW4-MW59-183-9		6/14/17	25	94%				
FEW4-MW59-183		12/1/17	5.9	124%				
FEW4-MW59-183-11		6/3/18	22	115%				
FEW4-MW59-183-12		10/22/18	24	9%				
FEW4-MW59-183-13		5/27/19	11.3	72%				
FEW4-MW59-183-14		10/8/19	16	34%				
FEW4-MW59-183-15		5/30/20	6.1	90%				
FEW4-MW59-183-16		10/24/20	8.9	37%				
FEW4-MW59-183-17		6/22/21	2.8	104%				
FEW4-MW59-183-PDB-17		6/22/21	58	182%				
FEW4-MW59-183-18		10/25/21	2.5	183%				
FEW4-MW59-183-19		6/13/22	2.8	11%				
FEW4-MW59-183-PDB-19		6/13/22	21	153%				
FEW4-MW59-183-20		10/16/22	4 J	136%				
FEW4-MW59-183-PDB-20		10/16/22	15 J	116%				
FEW4-MW59-183-21		5/22/23	2.8	137%				
FEW4-MW59-183-PDB-21		5/22/23	11	119%				



FEW-MW71-205-8	White River	10/23/16	18		88%	0.4	3.0	3
FEW4-MW71-205-9		6/7/17	11	48%				
FEW-MW71-205		11/7/17	5.5	67%				
FEW4-MW71-205-11		5/22/18	3.4 J	47%				
FEW4-MW71-205-12		10/27/18	3.1 J	9%				
FEW4-MW71-205-13		5/25/19	2.5	21%				
FEW4-MW71-205-14		10/25/19	4.7	61%				
FEW4-MW71-205-15		6/12/20	0.3 U	176%				
FEW4-MW71-205-16		10/24/20	1.3	125%				
FEW4-MW71-205-17		6/4/21	1.4	7%				
FEW4-MW71-205-18		10/19/21	0.9 J	43%				
FEW4-MW71-205-19		6/14/22	2.3	88%				
FEW4-MW71-205-PDB-19		6/13/22	1	79%				
FEW4-MW71-205-20		10/3/22	0.36 J	94%				
FEW4-MW71-205-PDB-20		10/2/22	3	157%				
FEW4-MW71-205-21		6/1/23	0.4 U	153%				
FEW4-MW71-205-PDB-21		5/31/23	0.4 U	0%				

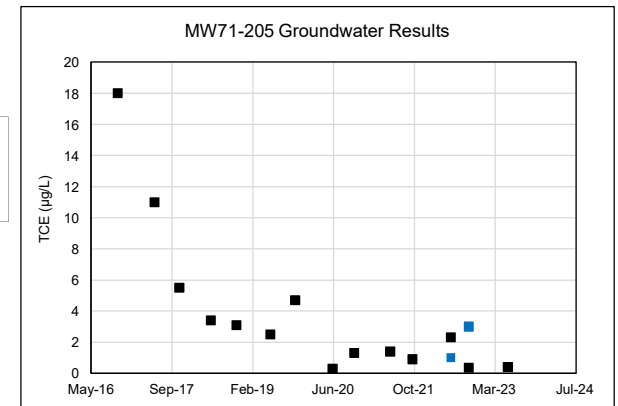
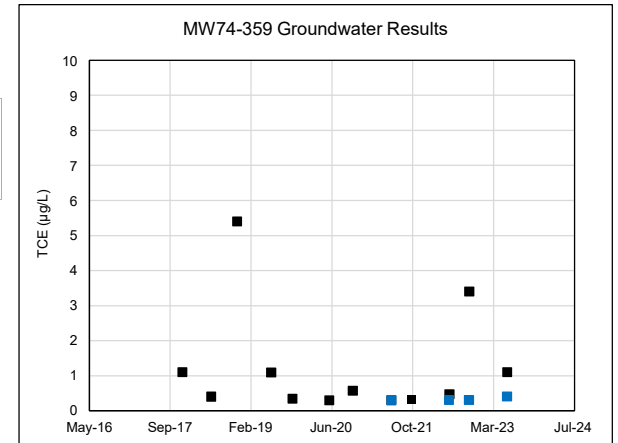
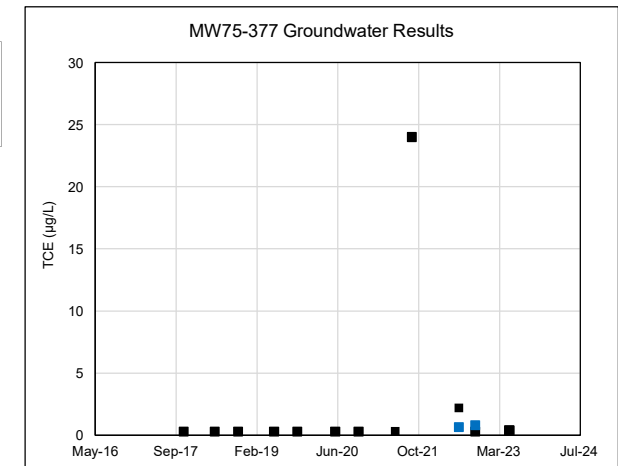


TABLE E-1
LOW TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW74-359	White River	12/6/17	1.1 J		90%	0.3	3.40	3
FEW4-MW74-359-11		6/2/18	0.4 UJ	93%				
FEW4-MW74-359-12-1		11/9/18	5.4 J	172%				
FEW4-MW74-359-13		6/9/19	1.09	133%				
FEW4-MW74-359-14		10/17/19	0.34 J	105%				
FEW4-MW74-359-15		6/1/20	0.3 U	13%				
FEW4-MW74-359-16		10/24/20	0.57 J	62%				
FEW4-MW74-359-17		6/22/21	0.3 U	62%				
FEW4-MW74-359-PDB-17		6/21/21	0.3 UJ	0%				
FEW4-MW74-359-18		10/26/21	0.3 U	0%				
FEW4-MW74-359-19		6/14/22	0.47 J	44%				
FEW4-MW74-359-PDB-19		6/13/22	0.3 U	44%				
FEW4-MW74-359-20		10/15/22	3.4	168%				
FEW4-MW74-359-PDB-20		10/14/22	0.3 UJ	168%				
FEW4-MW74-359-21		6/7/23	1.1	114%				
FEW4-MW74-359-PDB-21		6/7/23	0.4 U	93%				



FEW4-MW75-377	White River	11/7/17	0.3 U		84%	0.3	2.20	2
FEW4-MW75-377-11		5/19/18	0.3 U	0%				
FEW4-MW75-377-12		10/10/18	0.3 U	0%				
FEW4-MW75-377-13		5/21/19	0.3 U	0%				
FEW4-MW75-377-14		10/11/19	0.3 U	0%				
FEW4-MW75-377-15		6/1/20	0.3 U	0%				
FEW4-MW75-377-16		10/24/20	0.3 U	0%				
FEW4-MW75-377-17		6/8/21	0.3 UJ	0%				
FEW4-MW75-377-18		9/18/21	24	195%				
FEW4-MW75-377-19		7/7/22	2.2	166%				
FEW4-MW75-377-PDB-19		7/7/22	0.66 J	108%				
FEW4-MW75-377-20		10/15/22	0.3 U	75%				
FEW4-MW75-377-PDB-20		10/16/22	0.8 J	91%				
FEW4-MW75-377-21		5/14/23	0.4 UJ	67%				
FEW4-MW75-377-PDB-21		5/14/23	0.4 UJ	0%				



Notes:

Blue color shows PDB result

µg/L = microgram per liter

J = estimated

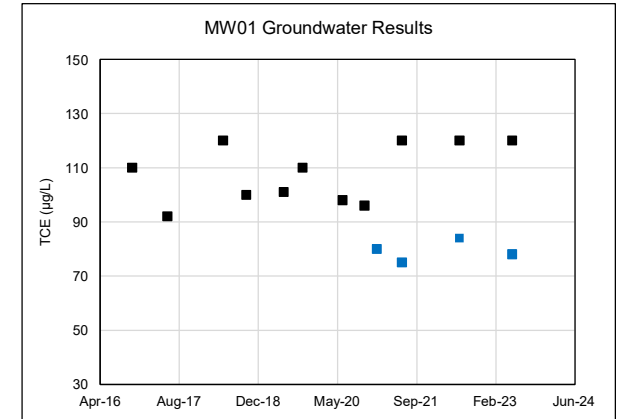
PDB = passive diffusion bag

TCE = trichloroethene

₁ All RPDs that were calculated for the last 4 events (i.e., Events 18, 19, 20 and 21) were averaged together for this cell.

TABLE E-2
MID-LEVEL TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW01-8	White River	10/20/16	110			38%	75	120
FEW4-MW01-9		5/31/17	92	18%				
FEW4-MW01-11		5/17/18	120	26%				
FEW4-MW01-12		10/10/18	100	18%				
FEW4-MW01-13		6/4/19	101	1%	38%	75	120	45
FEW4-MW01-14		10/1/19	110	9%				
FEW4-MW01-15		6/10/20	98	12%				
FEW4-MW01-16		10/27/20	96	2%				
FEW4-MW01-PDB		1/12/21	80	18%				
FEW4-MW01-17		6/20/21	120	40%				
FEW4-MW01-PDB-17		6/20/21	75	46%				
FEW4-MW01-19		6/18/22	120 J	46%				
FEW4-MW01-PDB-19		6/18/22	84	35%				
FEW4-MW01-21		5/17/23	120	35%				
FEW4-MW01-PDB-21		5/17/23	78	42%				



FEW4-MW55-250-7	Ogallala	5/10/16	15		11%	16	21	5
FEW4-MW55-250-8		10/9/16	16	6%				
FEW4-MW55-250-9		5/13/17	19	17%				
FEW4-MW55-250		11/1/17	20	5%				
FEW4-MW55-250-11		5/3/18	20 J	0%				
FEW4-MW55-250-12		9/26/18	17	16%				
FEW4-MW55-250-13		4/27/19	22.5	28%				
FEW4-MW55-250-14		9/13/19	23	2%				
FEW4-MW55-250-15		5/18/20	21	9%				
FEW4-MW55-250-16		9/28/20	25	17%				
FEW4-MW55-250-FD-17		6/20/21	24					
FEW4-MW55-250-17		6/20/21	24	4%				
FEW4-MW55-250-PDB-17		6/20/21	16	40%				
FEW4-MW55-250-18		9/19/21	21	27%				
FEW4-MW55-250-19		6/5/22	20	5%				
FEW4-MW55-250-PDB-19		6/5/22	19	5%				
FEW4-MW55-250-20		9/17/22	21	10%				
FEW4-MW55-250-PDB-20		9/17/22	21	0%				
FEW4-MW55-250-21		5/15/23	17	21%				
FEW4-MW55-250-PDB-21		5/15/23	16	6%				

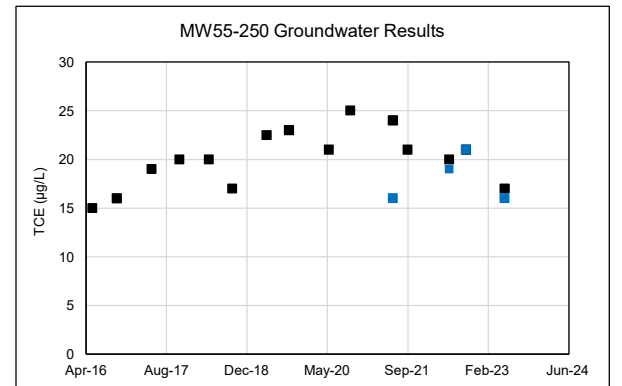
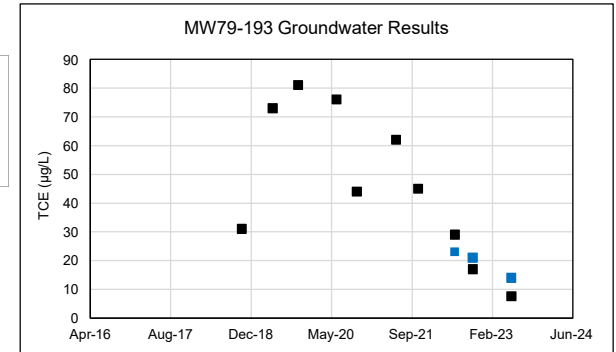


TABLE E-2
MID-LEVEL TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW79-193-12	White River	10/30/18	31 J		43%	7.6	45	37
FEW4-MW79-193-13		5/9/19	73	81%				
FEW4-MW79-193-14		10/15/19	81	10%				
FEW4-MW79-193-15		6/9/20	76	6%				
FEW4-MW79-193-16		10/13/20	44	53%				
FEW4-MW79-193-17		6/14/21	62	34%				
FEW4-MW79-193-18		10/29/21	45	32%				
FEW4-MW79-193-19		6/15/22	29 J	43%				
FEW4-MW79-193-PDB-19		6/14/22	23	23%				
FEW4-MW79-193-20		10/4/22	17	30%				
FEW4-MW79-193-PDB-20		10/4/22	21	21%				
FEW4-MW79-193-21		6/1/23	7.6	94%				
FEW4-MW79-193-PDB-21		6/1/23	14	59%				



FEW4-MW88-133-14	White River	10/9/19	120		92%	30	110	80
FEW4-MW88-133-15		5/31/20	98	20%				
FEW4-MW88-133-16		11/3/20	110	12%				
FEW4-MW88-133-17		6/20/21	110 J	0%				
FEW4-MW88-133-PDB-17		6/20/21	25	126%				
FEW4-MW88-133-18		10/16/21	110	126%				
FEW4-MW88-133-19		6/17/22	95	15%				
FEW4-MW88-133-FD-19		6/17/22	94					
FEW4-MW88-133-PDB-19		6/17/22	30	104%				
FEW4-MW88-133-20		10/4/22	110 J	114%				
FEW4-MW88-133-PDB-20		10/4/22	36	101%				
FEW4-MW88-133-21		5/20/23	100	94%				
FEW4-MW88-133-PDB-21		5/20/23	37	92%				

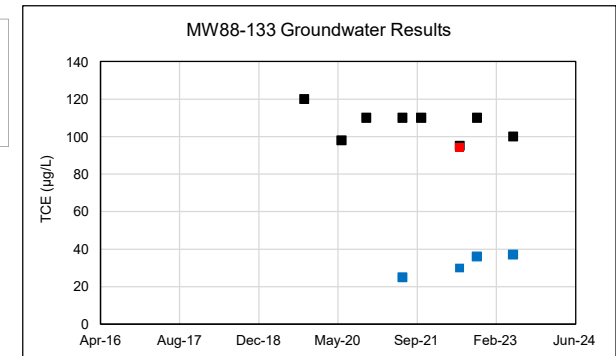
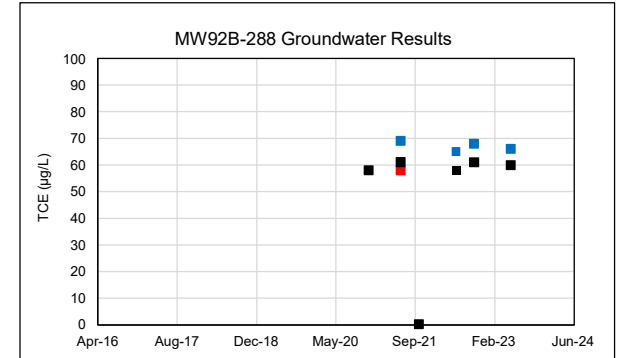


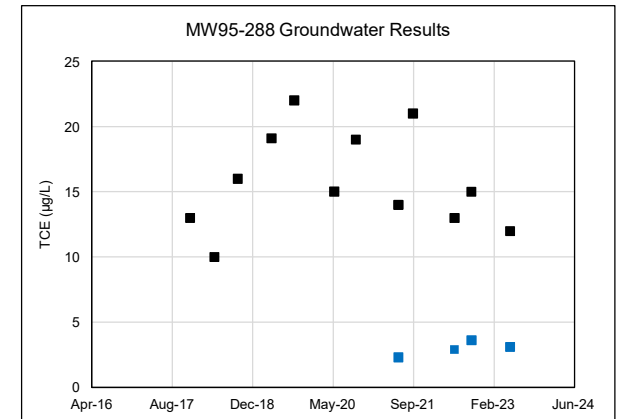
TABLE E-2
MID-LEVEL TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW92B-288-16	Ogallala	12/2/20	58 J		10%	58	68	10
FEW4-MW92B-288-FD-17		6/21/21	58 J					
FEW4-MW92B-288-17		6/21/21	61 J	5%				
FEW4-MW92B-288-PDB-17		6/21/21	69 J	12%				
FEW4-MW92B-288-18		10/14/21	0.3 U	198%				
FEW4-MW92B-288-19		6/5/22	58 J	198%				
FEW4-MW92B-288-PDB-19		6/5/22	65	11%				
FEW4-MW92B-288-20		9/27/22	61	6%				
FEW4-MW92B-288-PDB-20		9/27/22	68	11%				
FEW4-MW92B-288-21		5/16/23	60	13%				
FEW4-MW92B-288-PDB-21		5/16/23	66	10%				

(Event 18 results omitted - severe outlier and does not contribute to comparison)



FEW4-MW95-288	Ogallala	12/3/17	13		117%	3	21	18
FEW4-MW95-288-11		5/3/18	10 J	26%				
FEW4-MW95-288-12		9/26/18	16	46%				
FEW4-MW95-288-13		4/24/19	19.1	18%				
FEW4-MW95-288-14		9/12/19	22	14%				
FEW4-MW95-288-15		5/18/20	15	38%				
FEW4-MW95-288-16		9/28/20	19	24%				
FEW4-MW95-288-FD-17		6/20/21	14					
FEW4-MW95-288-17		6/20/21	14	30%				
FEW4-MW95-288-PDB-17		6/20/21	2.3	144%				
FEW4-MW95-288-18		9/18/21	21	161%				
FEW4-MW95-288-19		6/4/22	13 J	47%				
FEW4-MW95-288-PDB-19		6/4/22	2.9	127%				
FEW4-MW95-288-20		9/17/22	15	135%				
FEW4-MW95-288-PDB-20		9/17/22	3.6	123%				
FEW4-MW95-288-21		5/15/23	12	108%				
FEW4-MW95-288-PDB-21		5/15/23	3.1	118%				

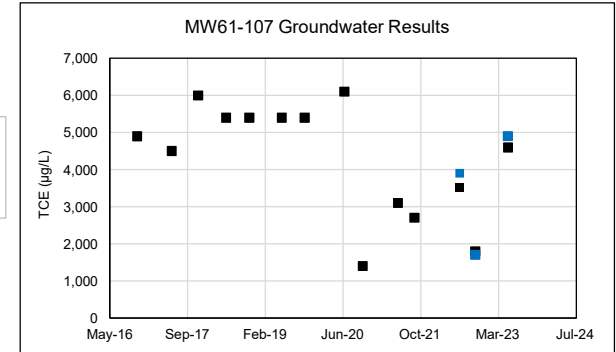


Notes:
 MW01 was not sampled during the Fall 2021 LTM Event 18
 Blue color shows PDB result
 Red color shows duplicate result
 µg/L = microgram per liter
 J = estimated
 PDB = passive diffusion bag
 TCE = trichloroethene

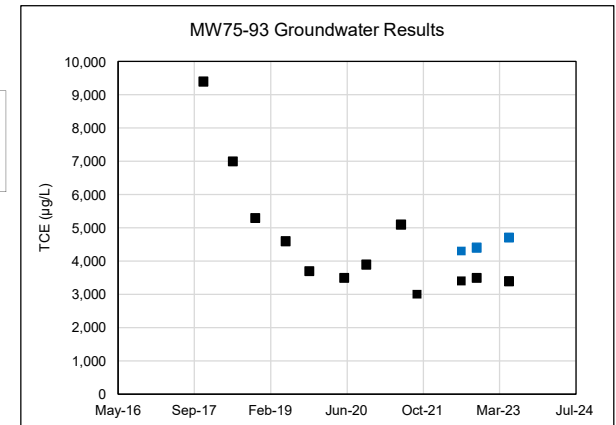
₁ All RPDs that were calculated for the last 4 events (i.e., Events 18, 19, 20 and 21) were averaged together for this cell.

TABLE E-3
HIGH TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW61-107-8	Ogallala/ White River	11/2/16	4900					
FEW4-MW61-107-9		6/13/17	4500	9%				
FEW4-MW61-107		11/30/17	6000	29%				
FEW4-MW61-107-11		5/29/18	5400	11%				
FEW4-MW61-107-12		10/25/18	5400	0%	33%	1700	4900	3200
FEW4-MW61-107-13		5/21/19	5400	0%				
FEW4-MW61-107-14		10/15/19	5400	0%				
FEW4-MW61-107-15		6/27/20	6100	12%				
FEW4-MW61-107-16		10/22/20	1400	125%				
FEW4-MW61-107-17		6/7/21	3100	76%				
FEW4-MW61-107-18		9/20/21	2700	14%				
FEW4-MW61-107-19		7/8/22	3500	26%				
FEW4-MW61-107-PDB-19		7/8/22	3900	11%				
FEW4-MW61-107-20		10/16/22	1800	74%				
FEW4-MW61-107-PDB-20		10/16/22	1700	6%				
FEW4-MW61-107-21		5/15/23	4600	92%				
FEW4-MW61-107-PDB-21		5/15/23	4900	6%				



FEW4-MW75-93	White River	11/20/17	9400	J					
FEW4-MW75-93-11		6/1/18	7000		29%				
FEW4-MW75-93-12		10/25/18	5300		28%				
FEW4-MW75-93-13		5/12/19	4600		14%				
FEW4-MW75-93-14		10/15/19	3700		22%	27%	3000	4700	1700
FEW4-MW75-93-15		5/30/20	3500	J	6%				
FEW4-MW75-93-16		10/22/20	3900		11%				
FEW4-MW75-93-17		6/6/21	5100		27%				
FEW4-MW75-93-18		9/20/21	3000	J	52%				
FEW4-MW75-93-19		7/7/22	3400		13%				
FEW4-MW75-93-PDB-19		7/7/22	4300		23%				
FEW4-MW75-93-20		10/16/22	3500	J	21%				
FEW4-MW75-93-PDB-20		10/16/22	4400	J	23%				
FEW4-MW75-93-21		5/15/23	3400		26%				
FEW4-MW75-93-PDB-21		5/15/23	4700		32%				



**TABLE E-3
HIGH TCE CONCENTRATION PDB COMPARISON
FORMER ATLAS "D" MISSILE SITE 4**

Sample Identification	Screen Formation	Sample Date	TCE Result (µg/L)	Relative Percent Difference of TCE Results (preceding event to following) ₁	Average Relative Percent Difference Over Last 4 Events	Minimum TCE from Last 4 Events (µg/L)	Maximum TCE from Last 4 Events (µg/L)	TCE Range Over Last 4 Events (µg/L)
FEW4-MW78-112-12	White River	10/31/18	140		45%	58	260	202
FEW4-MW78-112-13		5/19/19	140	0%				
FEW4-MW78-112-14		9/30/19	160	13%				
FEW4-MW78-112-15		6/9/20	140	13%				
FEW4-MW78-112-16		11/2/20	150	7%				
FEW4-MW78-112-17		5/26/21	170 J	13%				
FEW4-MW78-112-18		10/28/21	250 J	38%				
FEW4-MW78-112-19		6/13/22	240	4%				
FEW4-MW78-112-PDB-19		6/13/22	94	87%				
FEW4-MW78-112-20		10/2/22	58	47%				
FEW4-MW78-112-PDB-20		10/2/22	180 J	103%				
FEW4-MW78-112-21		5/20/23	240	29%				
FEW4-MW78-112-PDB-21		5/20/23	260	8%				
FEW4-MW89-178-12	Ogallala/ White River	11/7/18	43		85%	45	220	175
FEW4-MW89-178-13		5/8/19	183	124%				
FEW4-MW89-178-14		9/26/19	200	9%				
FEW4-MW89-178-15		6/8/20	250	22%				
FEW4-MW89-178-16		10/10/20	220	13%				
FEW4-MW89-178-17		6/14/21	220 J	0%				
FEW4-MW89-178-18		10/11/21	220 J	0%				
FEW4-MW89-178-19		6/15/22	200 J	10%				
FEW4-MW89-178-PDB-19		6/15/22	45	127%				
FEW4-MW89-178-20		10/1/22	190 J	123%				
FEW4-MW89-178-PDB-20		10/1/22	64	99%				
FEW4-MW89-178-21		5/21/23	220	110%				
FEW4-MW89-178-PDB-21		5/21/23	47	130%				

Notes:

Blue color shows PDB result

µg/L = microgram per liter

J = estimated

PDB = passive diffusion bag

TCE = trichloroethene

₁ All RPDs that were calculated for the last 4 events (i.e., Events 18, 19, 20 and 21) were averaged together for this cell.

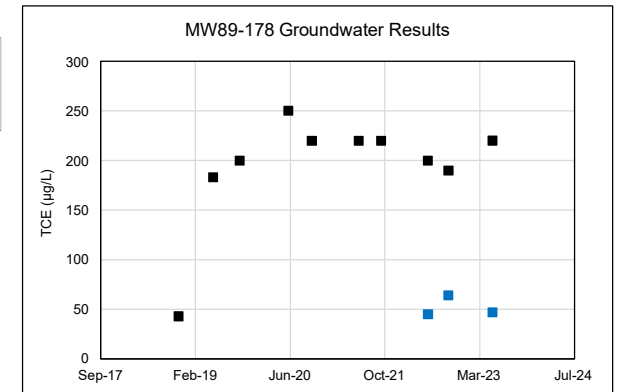
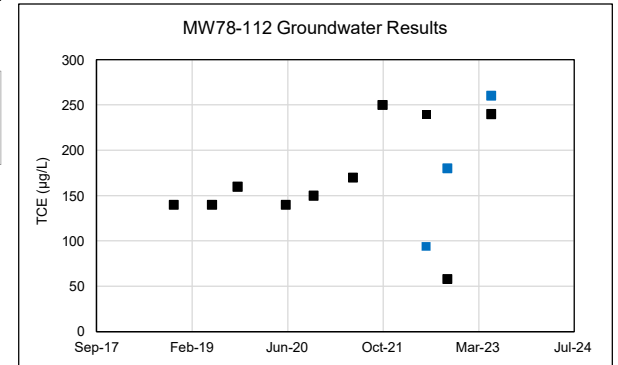


TABLE E-4
SPRING 2023 PDB RESULTS COMPARED TO FALL 2021 CONVENTIONAL RESULTS
FORMER ATLAS "D" MISSILE SITE 4

Location Identification	Fall 2021 TCE Concentration (µg/L)	Spring 2023 TCE Concentration (µg/L)	RPD (%)
TH-2	0.3	0.4	29%
TH5-97	0.3	0.68	78%
TH5-205	0.3	0.4	29%
TH9-125	0.3	0.4	29%
MW05	0.3	0.3	0%
MW06	96	79	19%
MW07	100	100	0%
MW10	0.3	55	198%
MW13	0.3	0.4	29%
MW15	160	17.0	89%
MW19	1100	630	54%
MW20	4.8	42	159%
MW21	220	110	67%
MW22	0.3	0.4	29%
MW24	1500	1200	22%
MW25	0.3	0.4	29%
MW26	1	0.4	86%
MW27	1.6	0.73	75%
MW28	6000	5000	18%
MW29	150	130	14%
MW30	490	350	33%
MW31	25	27	8%
MW32	1.2	0.67	57%
MW33	62	97	44%
MW34	0.3	0.4	29%
MW36	2.3	160	194%
MW37	0.3	2.5	157%
MW38	0.38	0.4	5%
MW39	59	26	78%
MW40	32	31	3%
MW50-250	3.1	2.9	7%
MW50-290	16	5.8	94%
MW50-318	5.4	0.79	149%
MW51-80	480	580	19%
MW51-110	13	4.9	91%
MW52-25	43	38	12%
MW52-59	60	51	16%
MW52-140	0.3	0.4	29%
MW53-95	0.3	0.4	29%
MW53-145	0.3	0.4	29%
MW53-177	0.3	0.4	29%
MW54-222	0.3	0.4	29%
MW54-245	0.3	0.4	29%
MW54-284	0.3	0.4	29%
MW55-280	19	15	24%

TABLE E-4
SPRING 2023 PDB RESULTS COMPARED TO FALL 2021 CONVENTIONAL RESULTS
FORMER ATLAS "D" MISSILE SITE 4

Location Identification	Fall 2021 TCE Concentration (µg/L)	Spring 2023 TCE Concentration (µg/L)	RPD (%)
MW55-320	0.82	0.4	69%
MW56-203	18	19	5%
MW56-250	9.9	9.9	0%
MW57-211	0.3	0.4	29%
MW57-240	0.3	0.4	29%
MW57-276	0.3	0.4	29%
MW58-124	0.3	0.4	29%
MW58-169	0.3	0.4	29%
MW58-213	0.3	0.4	29%
MW62-84	10	14	33%
MW62-158	250	56	127%
MW62-252	0.3	0.4	29%
MW63-79	180	110	48%
MW63-143	310	170	58%
MW63-223	0.3	0.4	29%
MW64-68	1.8	1.9	5%
MW64-122	1.6	0.44	114%
MW65-88	0.3	0.4	29%
MW65-142	16	19	17%
MW65-208	0.3	0.4	29%
MW66-94	110	160	37%
MW66-158	4100	3300	22%
MW66-205	1800	1700	6%
MW67-64	91	76	18%
MW67-97	340	350	3%
MW67-233	0.3	0.4	29%
MW68-80	17	17	0%
MW68-140	0.42	0.4	5%
MW68-185	0.3	0.4	29%
MW69-64	250	170	38%
MW69-99	210	290	32%
MW69-164	9.8	7.9	21%
MW70-100	150	96	44%
MW70-142	1	0.43	80%
MW70-244	0.3	0.4	29%
MW71-96	870	810	7%
MW71-128	390	360	8%
MW72-130	150	180	18%
MW72-158	6.7	9.9	39%
MW72-205	0.3	0.4	29%
MW73-137	280	270	4%
MW73-218	0.3	0.4	29%
MW73-243	0.91	0.45	68%
MW76-87	120	170	34%
MW76-123	0.3	0.4	29%

TABLE E-4
SPRING 2023 PDB RESULTS COMPARED TO FALL 2021 CONVENTIONAL RESULTS
FORMER ATLAS "D" MISSILE SITE 4

Location Identification	Fall 2021 TCE Concentration (µg/L)	Spring 2023 TCE Concentration (µg/L)	RPD (%)
MW76-255	0.3	0.4	29%
MW77-40	89	66	30%
MW77-129	23	14	49%
MW77-255	0.3	0.33	10%
MW78-159	8.4	4.4	63%
MW78-265	1.1	0.4	93%
MW79-127	220	290	27%
MW79-326	0.3	0.4	29%
MW80-128	41000	53000	26%
MW80-223	10000	10000	0%
MW81-207	1800	1800	0%
MW82-83	1300	14	196%
MW82-132	430	340	23%
MW82-161	7.1	12	51%
MW83-88	14	56	120%
MW83-129	5400	4100	27%
MW83-271	0.3	0.4	29%
MW84-258	0.3	0.4	29%
MW84-298	0.3	0.4	29%
MW84B-143	0.3	0.4	29%
MW84B-193	0.3	0.4	29%
MW84B-356	0.3	0.4	29%
MW85-92	1500	1600	6%
MW85-151	18	0.37	192%
MW85-205	0.3	0.4	29%
MW86-53	68	68	0%
MW86-199	5	3.6	33%
MW86-353	8.1	2.4	109%
MW87-82	0.3	0.4	29%
MW87-123	0.3	0.4	29%
MW87-205	0.3	0.4	29%
MW88-183	0.3	6.2	182%
MW88-253	0.5	0.4	22%
MW89-207	0.3	0.4	29%
MW89-250	0.3	0.4	29%
MW90-243	0.3	0.4	29%
MW90-292	0.3	0.4	29%
MW91-195	0.3	0.4	29%
MW91-248	0.3	0.4	29%
MW91-313	13	0.4	188%
MW92-365	36	22	48%
MW92-427	9.1	18	66%
MW93-71	6.2	4.4	34%
MW93-146	1.8	2.2	20%
MW93-268	0.3	0.4	29%

TABLE E-4
SPRING 2023 PDB RESULTS COMPARED TO FALL 2021 CONVENTIONAL RESULTS
FORMER ATLAS "D" MISSILE SITE 4

Location Identification	Fall 2021 TCE Concentration (µg/L)	Spring 2023 TCE Concentration (µg/L)	RPD (%)
MW94-175	0.3	0.4	29%
MW94-229	0.3	0.4	29%
MW94-297	0.3	0.4	29%
MW95-165	8.9	0.4	183%
MW95-200	5.2	0.4	171%
MW96-194	4.1	0.92	127%
MW96-260	13	15	14%
MW96-292	1.1	0.4	93%
MW97-266	0.3	0.4	29%
MW101-106	260	290	11%
MW101-138	740	730	1%
MW101-238	1.4	0.75	60%
MW102-93	0.3	0.4	29%
MW102-127	0.3	0.4	29%
MW102-171	0.3	0.4	29%

Notes:

Red color suggests PDB should be lowered in screen to attempt to capture preferential pathway.

Orange color shows PDB result with > 30% RPD. However, the PDB sampling method is more conservative than conventional sampling methods.

µg/L = micrograms per liter

% = percent

RPD = relative percent difference

TCE = trichloroethene