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2020 ANNUAL GROUNDWATER MONITORING REPORT

FIRE TRAINING PIT (FTP) AND TRACKED VEHICLE REPAIR/OLD MOBILIZATION AND TRAINING EQUIPMENT SITE (TVR/OLD MATES)

Yakima Training Center

Yakima, Washington

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2020 Annual Groundwater Monitoring Report

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Prepared for

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ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
bgs	below ground surface
cis-DCE	cis-1,2-dichloroethylene
COC	contaminant of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
EA	EA Engineering, Science, and Technology, Inc., PBC
E&E	Ecology & Environment
Ecology	Washington State Department of Ecology
ERP	Environmental Restoration Program
FTP	fire training pit
JBLM	Joint Base Lewis-McChord
MMP	main motor pool
MTCA	Model Toxics Control Act
Old MATES	Old Mobilization and Training Equipment Site
ORC	Oxygen release compound
PAH	polycyclic aromatic hydrocarbon
PAIC	Pomona Artesian Irrigation Company
PCB	polychlorinated biphenyl
PDB	passive diffusion bag
Pegasus	Pegasus Environmental Management Services
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA facility assessment
SAIC	Science Applications International Corporation
SI	site investigation
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons

TPH-D	total petroleum hydrocarbons – diesel range
TPH-G	total petroleum hydrocarbons – gasoline range
TPH-O	total petroleum hydrocarbons – heavy oil range
TVR	Tracked Vehicle Repair
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
U.S.	United States
UST	underground storage tank
VOC	volatile organic compound
WAC	Washington Administrative Code
YTC	Yakima Training Center

1. INTRODUCTION

This Annual Groundwater Monitoring Report documents the March (Spring) and September (Fall) 2020 semiannual groundwater monitoring events conducted at the Yakima Training Center (YTC) former Fire Training Pit (FTP) and the Tracked Vehicle Repair/Old Mobilization and Training Equipment Site (TVR/Old MATES).

This report presents sampling procedures, water level measurements, and analytical results for groundwater monitoring activities conducted at the FTP and TVR/Old MATES sites in 2020. This report was prepared for Joint Base Lewis-McChord (JBLM) Public Works by EA Engineering, Science, and Technology, Inc., PBC (EA). Work was completed in accordance with the Site-Specific Uniform Federal Policy–Quality Assurance Project Plan (UFP-QAPP) (EA 2019), and Washington Administrative Code (WAC) Chapters 173-340-810 and 173-340-820.

Long-term management remedies, including land use controls and groundwater monitoring to monitor natural attenuation of site contaminants for the foreseeable future, were selected and are implemented at the former FTP site and TVR/Old MATES facilities in accordance with their respective Decision Documents (Fort Lewis Environmental Restoration Program [ERP] 2007a and 2007b). Groundwater monitoring for site-related contaminants will continue until contaminant concentrations fall below Model Toxics Control Act (MTCA) Method A/Standard Method B groundwater cleanup levels (JBLM 2017).

Site-related contaminants are petroleum hydrocarbons, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) at the former FTP site and VOCs at TVR/Old MATES. Well construction details are included in Table 1. MTCA groundwater cleanup levels for selected contaminants of concern (COCs) are included in Tables 2 through 5.

The objectives of the groundwater monitoring program at FTP and TVR/Old MATES are to:

- Evaluate the groundwater concentrations of COCs at select monitoring wells.
- Determine whether COCs in groundwater are increasing, decreasing, or otherwise show evidence of offsite migration.

Based on these objectives, this report intends to evaluate whether the existing groundwater monitoring program is adequate to characterize the extent of groundwater contamination or if changes to the monitoring network and/or monitoring frequency are required to meet regulatory objectives.

1.1 YTC BACKGROUND

YTC is an active United States (U.S.) Army sub-installation of JBLM located approximately 5 miles northeast of the City of Yakima (Figure 1). YTC has been used for training military artillery, infantry, and engineering units since 1941. Expansion of YTC occurred in the early

1950s with the acquisition of additional land and permanent construction of the Cantonment Area in the southwest portion of YTC. An expansion of YTC to the north occurred in the early 1990s. Currently, YTC has an area of 327,231 acres.

1.2 SITE DESCRIPTIONS

1.2.1 Former Fire Training Pit

The former FTP is located in the northeast portion of the Cantonment Area (Figure 2). The former FTP was used to practice extinguishing fires two to three times a year from an unknown start date until 1987 with a single training event in 1990 (Shapiro & Associates 1991). Practice events consisted of saturating an open, unlined earthen pit with water, adding and igniting 500 to 1,000 gallons of waste JP-4 aviation fuel, diesel fuel, or motor gasoline and then extinguishing the fire (Shapiro & Associates 1991).

Although reports of the releases differ slightly (Ecology & Environment [E&E] 1993, Science Applications International Corporation [SAIC] 1995), petroleum products were released to site soils as a result of past fire training practices. During the 1990s, the site was used for storing stockpiles of waste sand-filter material and sediments from the adjacent vehicle wash rack treatment system (E&E 1993) as well as storing fuel bladders (Shannon & Wilson 2001). Currently the site is vacant and is not being used by YTC.

The groundwater monitoring network at the former FTP includes wells FTP-1, FTP-13, FTP-14, FTP-15, and FTP-16. The wells, excluding FTP-13, are located downgradient of the contamination source. FTP-13 is located approximately crossgradient (south) of the contamination source. Well construction details for the monitoring wells are presented in Table 1.

1.2.2 TVR/Old MATES

TVR/Old MATES is located in the west central portion of the Cantonment Area (Figure 2). Trichloroethylene (TCE) was detected during a 1993 Site Investigation (SI) conducted by E&E in two monitoring wells installed near the TVR facility, two monitoring wells installed near the Old MATES, and the Marie well (a domestic drinking water well decommissioned in the late 1990s).

The monitoring well network at TVR/Old MATES includes wells MTS-1, MTS-2, TVR-1, TVR-2, TVR-3, TVR-4, TVR-5, TVR-6, TVR-7, 815-2, and MMP-1, as well as the two currently active water supply wells (Pomona production well and the Pomona Artesian Irrigation Company [PAIC] production well). Monitoring wells MTS-1, MTS-2, MTS-4, TVR-1 through TVR-7, MMP-1, the Pomona production well, and the PAIC production well are located downgradient of the contaminant source. TCE and other VOCs have not been detected in either of the currently active water supply wells. Well construction details for the monitoring wells are presented in Table 1.

Vehicle maintenance has been conducted and de-greasing solvents have used been since approximately 1968 at Building 845, and since 1975 at Building 951 (Shapiro & Associates 1991). Four 250-gallon underground storage tanks (USTs) for waste oil were in use at Building 845 from 1975 until 1991 (Shapiro & Associates 1991, Pegasus Environmental Management Services [Pegasus] 1993, SAIC 1995). A fifth waste oil UST (650 gallons) was used at Building 845 from 1980 until 1991 (Shapiro & Associates 1991, Pegasus 1993, SAIC 1995). One 2,000-gallon waste oil UST removed from Building 951 in 1995 was thought to be in operation since 1968 (Shapiro & Associates 1991, SAIC 1995). All six of these former waste oil USTs have been removed. Three of the five waste oil tanks at Building 845 and the 2,000-gallon waste oil UST at Building 951 were "clean closed" with soil concentrations below cleanup levels promulgated under the MTCA (CEcon Corporation 1994, SAIC 1995). However, as discussed in the investigation chronology section (Section 1.4), soil contamination from waste oil USTs 845-3 and 845-4 remained under adjacent structures following tank removal activities. A downgradient monitoring well (TVR-2) is located as close to the UST 845-3/4 excavation as possible. It should also be noted that a former floor drain from Building 845 discharged immediately adjacent to the current location of monitoring well TVR-1 (Cory 2004).

1.3 SITE GEOLOGY AND HYDROGEOLOGY

Structurally and physiographically, YTC is located within the Yakima Fold Belt, which is characterized by northwest/southeast-trending anticlines and synclines. Most of the YTC Cantonment area is located within the synclinal valley between the anticlinal Yakima and Umtanum Ridges.

Lithologically, YTC is underlain by a thick sequence of basalt flows known as the Columbia River Basalt Group. From youngest to oldest, the four formations that comprise the Columbia River Basalt Group are the Saddle Mountain Basalt, Wanapum Basalt, Grande Ronde Basalt, and Imnaha Basalt (Schuster et al. 1997). Portions of the YTC Cantonment area have sedimentary rocks/deposits of the Ellensburg Formation and/or quaternary deposits on top of the basalt flows (Schuster et al. 1997).

The uppermost sediments underlying the former FTP site consist of localized fill materials and up to 12 feet of alluvium comprised primarily of unconsolidated silty sand and unconsolidated soils of the Ellensburg Formation (Shannon & Wilson 2001). The uppermost bedrock unit at the former FTP site is the Pomona Flow of the Saddle Mountain Basalt Formation (E&E 1993, Schuster et al. 1997, Shannon & Wilson 2001). In general, this unit is present at a depth of approximately 5 to 10 feet below ground surface (bgs) at the site (E&E 1993, Shannon & Wilson 2001). Basalt apparently extends to an approximate depth of 150 feet bgs without significant interbeds (E&E 1993, Shannon & Wilson 2001).

The former FTP site has perched groundwater located in fractured basalt near the top of the Pomona Basalt flow (E&E 1993, Shannon & Wilson 2001). Depth-to-water at the site is approximately 10 to 25 feet bgs (Shannon & Wilson 2001). The direction of the shallow groundwater flow is towards the southwest and generally mirrors the surface topography. The

next deepest groundwater-bearing unit is at approximately 150 feet below the site (Shannon & Wilson 2001).

The unconsolidated sediments underlying TVR/Old MATES consist of localized fill, alluvium comprised primarily of unconsolidated silty sand, and unconsolidated soils of the Ellensburg Formation (Shannon & Wilson 2001). Together, the alluvium and Ellensburg sediments are up to 50 feet thick at the Old MATES facility. The uppermost bedrock unit beneath the sediments in the TVR/Old MATES area is the Pomona Flow of the Saddle Mountain Basalt Formation (E&E 1993, Shannon & Wilson 2001). In general, this unit was encountered at depths between 10 and 45 feet bgs in the six monitoring wells at TVR, MTS (Old MATES wells), and main motor pool (MMP) (E&E 1993). Saddle Mountain Basalt extends beneath the site without significant interbeds to a depth of greater than 100 feet bgs (E&E 1993). The direction of groundwater flow is to the west towards the Yakima River (E&E 1993).

1.4 INVESTIGATION CHRONOLOGY

1.4.1 Facility-wide Investigations

A facility-wide preliminary assessment of YTC was completed in the early 1990s by Shapiro & Associates, Inc. The preliminary assessment documented the aforementioned site uses, identified potential receptors, and concluded that the two sites covered by this report could potentially be releasing hazardous substances to groundwater as a result of historical activities.

A Site Screening Inspection and Hazard Ranking System Score for YTC were completed in January 1993 by Resource Applications, Inc. (1993a, 1993b). A Hazard Ranking System Score was calculated; however, it was not high enough for YTC to be considered for inclusion on the Comprehensive Environmental Response, Compensation, and Liability Act National Priorities List.

Yakima Health District collected groundwater samples from 12 private domestic wells located downgradient of YTC and analyzed those samples for VOCs in 1995 (Yakima Health District 1995). The PAIC Well (located on YTC across the street from YTC's Pomona Well) was one of the 12 wells sampled. No contaminants were detected in the wells, with the exception of styrene in a single well at a concentration equal to the detection limit of 0.1 micrograms per liter (µg/L).

The final Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) Report was completed in September 1995 by SAIC. The RFA for the entire installation was a result of a RCRA Part B Permit Application for the Range 14 open burning/open detonation area. The 1995 RFA indicated a high potential for releases to soil and possibly groundwater at the former FTP. As a result, there was a recommendation to remediate contaminated soil and the petroleum product in well FTP-1. Although the 1995 RFA did not explicitly address TCE in groundwater in the TVR/Old MATES area, the RFA recommended a corrective action for soil contamination that remained under a building adjacent to waste oil USTs 845-3 (Solid Waste Management Unit [SWMU] 43) and 845-4 (SWMU 44). RCRA corrective actions that were recommended or

implied by the RFA need to satisfy MTCA regulations in accordance with WAC 173-303-646(3).

In October 2012, YTC had its first 5-year periodic review regarding six sites currently managed by the JBLM Installation Restoration Program. The review focused on sites where environmental remedies are currently in place; however, the COCs were still above their respective cleanup levels (U.S. Army Corps of Engineers 2012). Both the former FTP and the TVR/Old MATES sites were part of this periodic review. No significant concerns regarding the monitoring network were noted for the former FTP site and no recommendations were made. One concern was noted regarding the TVR/Old MATES monitoring network. TCE concentrations had been increasing over time in samples collected from monitoring well TVR-6, located on the western end of the monitoring network. It was suggested that if TCE concentrations continued to increase in TVR-6, it may warrant installing additional downgradient monitoring wells. However, since TCE concentrations at TVR-6 have consistently been below the MTCA Method A Cleanup Level of 5 µg/L since March 2017, the addition of wells near TVR-6 may no longer be warranted.

A second 5-year periodic review occurred in 2017 and concluded that remedies at the former TVR/Old MATES sites are protective of human health and the environment through land use controls. However, it did recommend that the installation of one or two additional downgradient wells should be considered to better define the downgradient plume extent and confirm that TCE is not migrating off YTC (Regional Planning and Environmental Center, Fort Worth District, U.S. Army Corps of Engineers 2017).

The UFP-QAPP for the former FTP and TVR/Old MATES sites was most recently updated in 2019 (EA 2019).

1.4.2 Fire Training Pit

1.4.2.1 Investigations

The former FTP was one of the YTC facilities/sites investigated and summarized in the E&E SI Report (September 1993). Monitoring well FTP-1 was installed and four grab surface or near-surface soil samples and two composite surface soil samples were collected during the E&E SI. Significant groundwater was not encountered during the drilling of the FTP-1 borehole to a depth of approximately 140 feet. However, when it came time to decommission the FTP-1 borehole, several gallons of petroleum product were discovered on top of a column of water. As a result, FTP-1 was completed to a depth of approximately 20 feet in the shallow groundwater, located within the weathered portion of the uppermost basalt flow with a screen interval depth of 8 to 18 feet.

A RCRA facility investigation to further delineate the nature and extent of contamination at the former FTP site was completed in November 2001 by Shannon & Wilson. Monitoring wells FTP-13 through FTP-16 were installed in 1999 in the perched groundwater located at the fractured top of the uppermost basalt flow. Groundwater monitoring events were conducted in

July 1999, November 2000, and May 2001. Nine other soil borings were also advanced during the investigation.

1.4.2.2 Soil Removal

An interim remedial action was completed at the former FTP site in 2003 to remove soil contamination that exceeded MTCA Method A/Standard Method B cleanup levels. Soil was excavated during three separate mobilizations: July 2003, September 2003, and October 2003. The total excavation area was approximately 5,000 square feet and extended downward until the underlying basalt was encountered. Soil (1,351 tons) was disposed off-site in November 2003. Contaminant concentrations in confirmation soil samples were below MTCA Method A/Standard Method B cleanup levels except for gasoline and diesel range total petroleum hydrocarbons (TPH) (total petroleum hydrocarbons – gasoline range [TPH-G] and total petroleum hydrocarbons – diesel range [TPH-D], respectively) in two samples collected from the soil/basalt interface. The excavation was backfilled with clean soil. The cleanup action was documented in a January 2004 report (Bay West 2004).

The terrestrial ecological pathway was closed as described in the April 2006 terrestrial ecological evaluation by Pacific Northwest National Laboratory (2006).

1.4.2.3 Groundwater Monitoring

The Fort Lewis ERP conducted groundwater monitoring events in January 2004, March and August 2005, March and August 2006, March and September 2007, and March and September 2008. Between March 2005 and March 2007, 4-inch diameter "socks" containing Oxygen Release Compound (ORC) were installed in the monitoring wells by Fort Lewis ERP in well FTP-1 between 11 to 18 feet bgs. During the deployment of ORC at FTP-1, depth-to-water ranged from 11.54 feet bgs in August 2006 to 15.59 feet bgs in March 2007.

Groundwater monitoring has been conducted semi-annually at wells FTP-1, FTP-14, FTP-15, and FTP-16 since 2005. One sampling event, considered the "wet season," or spring event, is typically conducted in February or March of each year. The second sampling event, considered the "dry season," or fall event, is typically conducted in August or September of each year. Groundwater samples are collected for analysis of hydrocarbons and depth-to-water is measured during each event.

TPH concentrations in samples from FTP-14, FTP-15, and FTP-16 have generally been below the MTCA cleanup levels since monitoring began at the FTP (EA 2020). Sampling for TPH-G, TPH-D, and total petroleum hydrocarbons – heavy oil range (TPH-O) was reduced from semiannual to annual in 2018 with Washington State Department of Ecology (Ecology) concurrence. Sampling was then discontinued at these wells in 2019 with Ecology concurrence.

1.4.3 TVR/Old MATES

1.4.3.1 UST Removal

In October 1991, Pegasus evacuated, excavated, removed, cleaned, and disposed of five waste oil USTs at Building 845 (TVR). Pegasus noted visible surface contamination associated with three of the UST excavations. Soil samples from all excavations were analyzed for TPH, benzene, toluene, ethylbenzene, xylenes, Toxicity Characteristic Leaching Procedure (TCLP) VOCs, and TCLP metals. TPH concentrations exceeding 10,000 milligrams per kilogram were detected in samples collected from all five UST excavations. TCLP TCE and TCLP tetrachloroethylene were detected at 20 milligrams per liter (sample from UST 845-5) and 17 milligrams per liter (sample from UST 845-6), respectively. No TCLP VOCs were detected in samples collected from USTs 845-3 (SWMU 43) and 845-4 (SWMU 44) excavations. No additional corrective action was taken by Pegasus due to contract limitations.

1.4.3.2 Soil Removal

CEcon Corporation was contracted to excavate and remove contaminated soil left in place following the tank removal activities by Pegasus. CEcon Corporation removed approximately 1,000 cubic yards of soil while excavating contaminated soil from the five Building 845 waste oil tank sites in October 1993. Confirmation samples collected by CEcon Corporation verified that no further action was required for USTs 845-2 (SWMU 42), 845-5 (SWMU 45), and 845-6 (SWMU 46); however, some TPH contaminated soil was left in place on the north and east sidewalls of the UST 845-3/4 (SWMUs 43/44) excavation, since existing structures (Building 845 lube rack and oil-water separator) prevented further excavation in those directions (over 400 cubic yards of soil had already been removed). Although all confirmation samples collected by CEcon Corporation were analyzed for potential contaminants suspected at the time, no confirmation samples were analyzed for VOCs.

1.4.3.3 Additional Investigation

TVR, Old MATES, and MMP were among the facilities investigated in the September 1993 SI by E&E. Groundwater samples were collected from the two TVR, two Old MATES, and two MMP monitoring wells as well as the Pomona, PAIC, and Marie drinking water wells. In addition, soil samples were collected from each monitoring well borehole during drilling and analyzed for VOCs, SVOCs, pesticides/polychlorinated biphenyls (PCBs), metals, and TPH. Based on the presence of TCE in groundwater at TVR and Old MATES and the absence of contamination in corresponding soil samples, the SI Report concluded that TCE contamination in groundwater "may indicate migration from an unidentified source at the YTC facility."

1.4.3.4 Groundwater Monitoring

Fort Lewis ERP conducted a groundwater monitoring event in January 2004 and installed monitoring wells MTS-3, MTS-4, TVR-3, and TVR-4 between October and November 2004. The ERP conducted groundwater monitoring events in March 2005 and August 2005 and installed additional monitoring wells TVR-5, TVR-6, TVR-7, and 815-2 in October 2005.

Groundwater monitoring has been conducted semi-annually since 2005 at wells MTS-1, MTS-2, TVR-1, TVR-2, TVR-3, TVR-4, TVR-5, TVR-6, TVR-7, 815-2, and MMP-1, as well as the two currently active water supply wells (Pomona production well and the PAIC production well). Sampling events typically coincide with FTP sampling events. Beginning in August 2005, groundwater samples have been collected using disposable passive diffusion bags (PDBs). PDBs are sealed, low density polyethylene bags filled with de-ionized water. PDBs are hung so that the top of the PDBs are approximately 3 feet off the bottom of monitoring wells using a dedicated stainless-steel cable and clip. PDBs are hung at least two weeks prior to sampling to allow VOC concentrations in groundwater and the water inside of the PDB to reach equilibrium (Interstate Technology and Regulatory Council 2004). During each sampling event, samples are analyzed for VOCs and depth-to-water is measured.

Contaminant concentrations in samples from wells 815-2, MMP-1, TVR-2, and TVR-5 are below the MTCA Method A cleanup level, and all wells exhibit statistically significant downward trends in TCE concentrations (EA 2020). These wells were removed from the monitoring program in 2019 with Ecology concurrence.

1.5 POTENTIAL GROUNDWATER RECEPTORS

The nearest potential groundwater receptors to the FTP and TVR/Old MATES sites are the Pomona and PAIC drinking water wells. The Pomona and PAIC wells are domestic water supply wells located approximately 1 mile southwest of the FTP site and approximately 250 feet southwest of well TVR-1. Over the past decade, additional residential drinking water wells have been installed west of the YTC boundary, approximately 1,500 to 3,000 feet northwest of the TVR/Old MATES TCE plume (Figure 2).

The Pomona well is an artesian well used by YTC as a primary production source for the Pomona water distribution system. The Pomona well is completed in the Wanapum and/or Grande Ronde Formation (HongWest & Associates 1996) with open borehole completion between depths of approximately 353 and 407 feet bgs (Fain 2000, Cory 2004). Sources of information provided incorrect information about the well construction details of the Pomona Well (including a typo in Table 2-1 of the current Water System Plan) (Cory 2004). A downhole video survey conducted by YTC in 1995 is considered to be the most accurate source of construction detail information for the Pomona Well to date. In addition to indicating the open interval referenced above, the video survey also indicated that water was entering the Pomona Well at approximately 401 feet bgs (Fain 2000).

The PAIC well is an artesian well used by PAIC as the sole production well for the PAIC water system serving approximately 60 homes and businesses located west of YTC (Wilson 2004). It appears that the PAIC well was constructed in an identical fashion as the Pomona well. Both wells were installed by the PAIC in 1913 by the same driller within 100 feet of each other (Fain 2000). Well logs from pumping tests conducted in 1940 indicate identical (although very generic) well construction details for the Pomona well and PAIC well (Fain 2000). The construction details on the 1940 well logs were 10-inch diameter casings to a depth of 60 feet bgs and 6 $^{5}/_{8}$-inch diameter casings from 60 to 430 feet bgs for both wells. Since the video

survey of the Pomona well showed the 1940 well log and other sources of post-drilling anecdotal information to be incorrect with respect to the actual well construction details of the well, it is reasonable to assume that the video survey is also a more accurate representation of well construction details for the PAIC well than the 1940 well log.

The bases for assuming nearly identical well construction details for the two wells are 1) both wells are artesian, 2) both wells have similar production capacities, 3) both wells were installed at the same time and location by the same well driller for the same water system, and 4) both wells have identical 1940 well logs.

Given the distance of both wells from the FTP site and the hydraulic separation between the shallow groundwater and the aquifer(s) where the water supply wells are completed, it is unlikely that these potential receptors are being impacted by the FTP site. It is also unlikely that either water supply well would be impacted by TCE contamination in the TVR/Old MATES area given the relatively low TCE concentrations detected in samples collected from monitoring wells and the hydraulic separation between the Selah Interbed and the aquifer(s) in which the water supply wells are completed. Existing water quality data from both the Pomona and PAIC wells support this conclusion.

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2. FIELD ACTIVITIES

This section presents field activities conducted in Spring and Fall 2020. Copies of completed field forms for 2020 sampling events are included in Appendix A.

2.1 GROUNDWATER MEASUREMENT, SAMPLING, AND ANALYSIS

2.1.1 Groundwater Flow

Static water level measurements were measured using an electronic water level indicator (water level meter or interface probe) at each well location. Water level measurements were recorded to the nearest 0.01 feet from the top of the well casing at each well location and recorded in the field logbook. The electronic instrument was decontaminated before use, between wells, and at the end of the day.

2.1.2 Groundwater Sampling Tasks

Groundwater sampling was conducted during the first quarter (spring/wet season) and third quarter (fall/dry season). Sample containers were provided by the analytical laboratory (ALS Environmental of Kelso, Washington) prior to sampling. Groundwater samples were transported to ALS Environmental under proper chain-of-custody. Copies of laboratory analytical reports are included in Appendix A.

2.1.2.1 Former Fire Training Pit Site

Each monitoring well at the FTP site was bailed using a disposable Teflon bailer until three well volumes were removed, or the monitoring well was bailed dry, whichever occurred first. Water quality parameters were not monitored or recorded during bailing operations. Pertinent sampling information was recorded on purge forms including unusual conditions (colors, odors, surface sheens, etc.) observed during well purging or sampling. Sampling information was also recorded in the field logbook.

Groundwater samples were collected using a disposable Teflon bailer once three well volumes were removed or, if bailed dry, once the well recovered to at least 80 percent of the initial volume of water in the well. In Spring and Fall 2020, groundwater samples from well FTP-1 were analyzed for VOCs, SVOCs, TPH-G, TPH-D, and TPH-O. Samples aliquots for the analysis of volatile analytes (VOCs and TPH-G) were collected before the others.

2.1.2.2 Tracked Vehicle Repair/Old Mobilization and Training Equipment Site

Groundwater samples from the Pomona Well and the PAIC Well were collected from taps on each well while the pumps were running. Samples were collected for VOC analysis. Water quality parameters were not collected during sampling.

Monitoring wells at the TVR/Old MATES were sampled using disposable PDBs. PDBs were deployed into wells a minimum of two weeks prior to sampling to achieve aquifer equilibrium. A dedicated harness was used to position PDB samplers at approximately 2 to 5 feet above the bottom of each well screen. Following the two-week (minimum) equilibration period, the PDBs were extracted and samples were collected for VOC analysis. PDB installation dates and sampling information were recorded in the field logbook (Appendix A).

2.1.3 Equipment Decontamination Tasks

Non-disposable equipment that directly or indirectly contacted samples, such as electronic water level indicators, was decontaminated between well/sampling locations.

2.1.4 Investigation-Derived Waste

Investigation-derived waste generated during sampling activities was limited to purge water at the former FTP site, decontamination fluids, used PDBs, and personal protective equipment (e.g., nitrile gloves). Purge water and decontamination water was containerized and discharged to the oil water separator at the main vehicle washrack catch basin. Investigation-derived waste disposal was coordinated with YTC Wastewater Treatment Plant Operator prior to disposal. Personal protective equipment, used PDBs, and other garbage was disposed of in a designated collection bin as part of the normal solid waste stream.

2.1.5 Field Quality Control Tasks

Quality control (QC) tasks were overseen by EA's Field Team Leader and/or QC Manager. Field QC samples are intended to provide an indication of the consistency of samples collection and analyses over the course of the program. Field and laboratory QC samples included field duplicates, matrix spike/matrix spike duplicates, and trip blanks.

One field duplicate sample was collected annually at the FTP site, and one field duplicate sample was collected per sampling event at TVR/Old MATES. Matrix spike/matrix spike duplicate samples were collected at each site at a rate of 5 percent of project samples (1 set per 20 field samples). One laboratory-supplied trip blank accompanied each cooler containing samples sent to the laboratory for VOC analysis.

2.2 DEVIATIONS FROM THE UFP-QAPP

The monitoring network was updated in accordance with the approved recommendations from the 2019 Groundwater Monitoring Report (EA 2020). The report recommended that sampling at FTP site wells FTP-14, FTP-15, and FTP-16 and TVR/Old MATES site wells 815-2, MMP-1, TVR-2, and TVR-5 be discontinued. However, concurrence and approval for these modifications to the monitoring program was not received until after the Spring 2020 sampling event; therefore, these wells were sampled during the Spring 2020 sampling event and were not sampled during the Fall 2020 sampling event. Otherwise, the groundwater monitoring event was completed in general accordance with the UFP-QAPP (EA 2019).

3. RESULTS AND DISCUSSION

This section presents groundwater elevation measurements and the analytical results from the 2020 sampling events, as well as the results of statistical analysis performed on data from the former FTP site and TVR/Old MATES. Monitoring well construction details for wells from both sites are shown in Table 1. Copies of field notes, groundwater sampling logs, and laboratory analytical reports for both 2020 sampling events are included in Appendix A.

Histograms, linear regressions, and Mann-Kendall are presented in Appendix B. Graphs of historical TCE results for wells with fewer than half of all samples being non-detects for TVR/Old MATES are also included in Appendix B.

3.1 DATA QUALITY REVIEW AND VERIFICATION

A data quality review was completed on the laboratory data from the Spring and Fall 2020 sampling events. The data quality review documentation is included in Appendix A. The data was reviewed by a party independent from the laboratory for adherence to the project quality control requirements and for usability. The review found that the data quality objectives for both the FTP and TVR/Old MATES sites during the spring and fall events were met. The data are considered acceptable for use and for comparison with other site data.

3.2 FORMER FTP SITE

3.2.1 Groundwater Elevations and Sampling Results

Figure 3 presents inferred groundwater elevation contours and groundwater flow direction for the former FTP site based on depth-to-water elevations measured during the Spring and Fall 2020 monitoring events. No measurable amounts of light non-aqueous phase liquid or dense non-aqueous phase liquid were observed in well FTP-1 during either event; however, a petroleum odor was noted in well FTP-1 during the March sampling event. Tables 2 and 5 present depth-to-water measurements and summaries of contaminant concentrations compared to MTCA Method A and Standard Method B cleanup levels. Figures 4 and 5 present the TPH concentrations for the spring and fall sampling events, respectively.

Compared to groundwater samples from other FTP monitoring wells, groundwater samples from FTP-1 have the highest concentrations at the site. At downgradient wells, historical concentrations of TPH-G, TPH-D, and TPH-O are well below MTCA Method A cleanup levels. TPH concentrations near FTP-1 appear localized and do not appear to be migrating and suggest a residual contaminant source near the top of the weathered basalt. Historical TPH-G, TPH-D, and TPH-O concentrations in groundwater samples from well FTP-1 are presented on Figure 6.

3.2.1.1 TPH-G

TPH-G was detected at 2,890 µg/L (spring) and 1,510 µg/L (fall) in samples collected from FTP-1. These concentrations exceed the 800 µg/L MTCA Method A cleanup level for TPH-G.

During the Spring 2020 sampling event, TPH-G was detected below the MTCA Method A cleanup level in samples collected from FTP-14 (14.5 µg/L), FTP-15 (17.4 µg/L), and FTP-16 (15.2 µg/L).

3.2.1.2 TPH-D

TPH-D was detected at 37,000 µg/L (spring) and 30,000 µg/L (fall) in samples collected from FTP-1. These concentrations exceed the 500 µg/L MTCA Method A cleanup level for TPH-D. During the Spring 2020 sampling event, TPH-D was detected below the MTCA Method A cleanup level in samples collected from FTP-14 (140 µg/L), FTP-15 (94 µg/L), and FTP-16 (110 µg/L).

3.2.1.3 TPH-O

TPH-O was detected at 2,700 µg/L (spring) and 2,500 µg/L (fall) in samples collected from FTP-1. These concentrations exceed the 500 µg/L MTCA Method A cleanup level for TPH-O. During the Spring 2020 sampling event, TPH-O was detected below the MTCA Method A cleanup level in samples collected from FTP-14 (85 µg/L), FTP-15 (340 µg/L), and FTP-16 (210 µg/L).

3.2.1.4 Other Chemicals of Concern

Other COCs detected in groundwater samples from well FTP-1 include benzene at 1.6 µg/L (spring) and 3.5 µg/L (fall) and total naphthalenes at 72 µg/L (spring) and 104 µg/L (fall). Benzene and total naphthalenes concentrations did not exceed the MTCA Method A cleanup levels of 5 µg/L and 160 µg/L, respectively, during either 2020 sampling event.

Total polycyclic aromatic hydrocarbons (PAHs) were detected at 125.6 µg/L (spring) and 132.72 µg/L (fall) in samples collected from FTP-1. There is no cleanup level defined for total PAHs. While various PAHs were detected in spring and fall samples, no carcinogenic PAHs (cPAHs) were detected. In accordance with the UFP-QAPP, cPAHs are evaluated by converting to the total toxic equivalent concentration of benzo(a)pyrene. Since cPAHs were not detected, the corresponding total toxic equivalent concentration (as outlined by WAC Chapter 173-340-708(8)(e)) could not be calculated (i.e., was not detected) and, as such, did not exceed the MTCA Method A cleanup level of 0.1 µg/L.

3.2.2 Statistical Results

TPH data from FTP-1 was statistically analyzed as described in Appendix B. Statistical analysis was only performed on data from FTP-1 as it is the only well with TPH-G, TPH-D, and TPH-O concentrations above the MTCA Method A cleanup levels of 800 µg/L, 500 µg/L, and 500 µg/L, respectively. Histograms, linear regressions, and Mann–Kendall scatter plots are included in Appendix B. Results from the statistical analyses of the data are compiled in Table 6 and summarized below:

- A statistically significant downward trend for TPH-G concentrations in samples collected from FTP-1.

- A non-statistically significant upward trend in TPH-D concentrations in samples collected from FTP-1.

- A statistically significant upward trend in TPH-O concentrations in samples collected from FTP-1.

3.3 TVR/OLD MATES SITE

3.3.1 Groundwater Elevations and Sampling Results

Figure 7 presents inferred groundwater elevation contours and groundwater flow direction based on measured elevations from the Spring and Fall 2020 monitoring events for the TVR/Old MATES site. Figure 8 presents TCE concentrations of samples collected during the 2020 Spring and Fall sampling events. Table 5 presents both depth-to-water measurements and a summary of the concentrations of TCE and cis-1,2-dichloroethene (cis-DCE) for the site.

Cis-DCE was not detected above the MTCA Method B cleanup level of 16 µg/L in any well sampled during 2020. Groundwater samples from two of the monitoring wells (MTS-2 and TVR-1) had TCE concentrations above the 5 µg/L MTCA Method A cleanup level during both of the sampling events. TCE was detected below the cleanup level during one or both of the 2020 Spring and Fall events in samples from nine monitoring wells (815-2, MMP-1, MTS-1, MTS-4, TVR-2, TVR-3, TVR-5, TVR-6, and TVR-7). Overall, the TCE concentrations reported in groundwater are not significantly elevated. The highest TCE concentrations in 2020 was reported in well MTS-2 at 13.0 µg/L (fall).

Consistent with historical data, TCE and cis-DCE were not detected in samples collected from the Pomona and PAIC domestic production wells during 2020 sampling events.

3.3.2 Statistical Results

TCE data from TVR/Old MATES wells were statistically analyzed as described in Appendix B. Histograms, linear regressions, and a Mann–Kendall Correlation scatter plots are included in Appendix B. Results from the statistical analyses of the data are compiled in Table 6 and summarized below:

- Statistically significant downward trends for TCE concentrations were observed in eight TVR/Old MATES wells (815-2, MTS-1, MTS-2, MTS-4, TVR-1, TVR-2, TVR-3, TVR-5, and TVR-7).
- A non-statistically significant downward trend for TCE was observed in TVR/Old MATES well TVR-6.

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4. CONCLUSIONS AND RECOMMENDATIONS

4.1 FORMER FTP SITE

Groundwater levels and flow direction beneath the FTP site in Spring and Fall 2020 were consistent with observations from previous years.

Concentrations of TPH-G, TPH-D, and TPH-O in samples from well FTP-1 continue to be detected above MTCA Method A cleanup levels. TPH concentrations near FTP-1 are localized and do not appear to be migrating; the consistently elevated concentrations suggest a residual contaminant source near the top of the weathered basalt. It is recommended that monitoring at FTP-1 continue in accordance with the UFP-QAPP (EA 2019) as updated by the 2019 Groundwater Monitoring Report (EA 2020).

4.2 TVR/OLD MATES

Groundwater levels and flow direction beneath TVR/Old MATES in Spring and Fall 2020 were consistent with observations from previous years.

Since TCE concentrations are trending downward in samples collected from TVR/Old MATES monitoring wells, installing additional monitoring wells (per the 2017 periodic 5-year review [Regional Planning and Environmental Center, Fort Worth District, U.S. Army Corps of Engineers 2017]) is not warranted at this time. It is recommended that the sampling of the active TVR/OLD MATES monitoring wells continues in accordance with the UFP-QAPP (EA 2019) as updated by the 2019 Groundwater Monitoring Report (EA 2020).

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FIGURES

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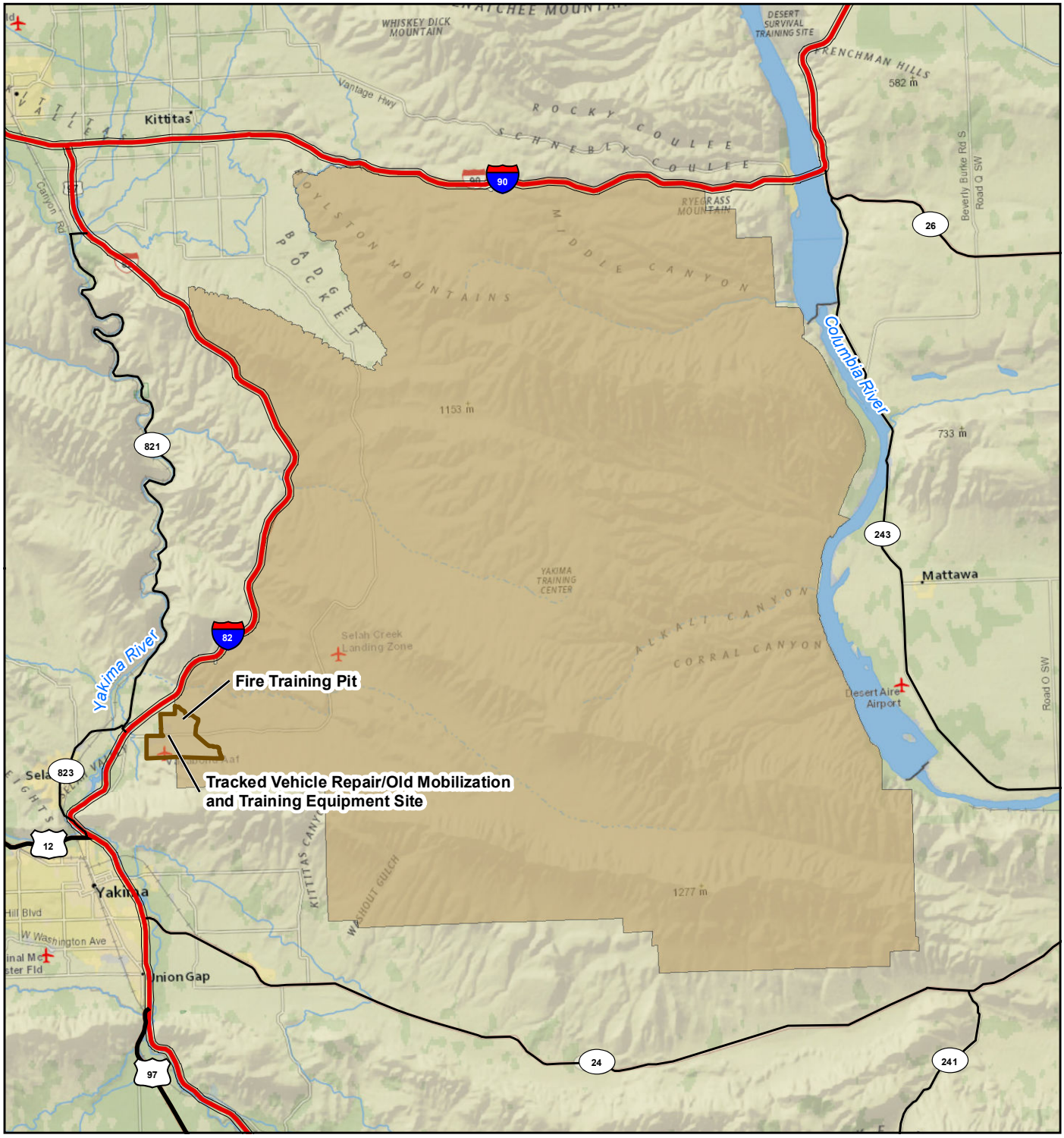
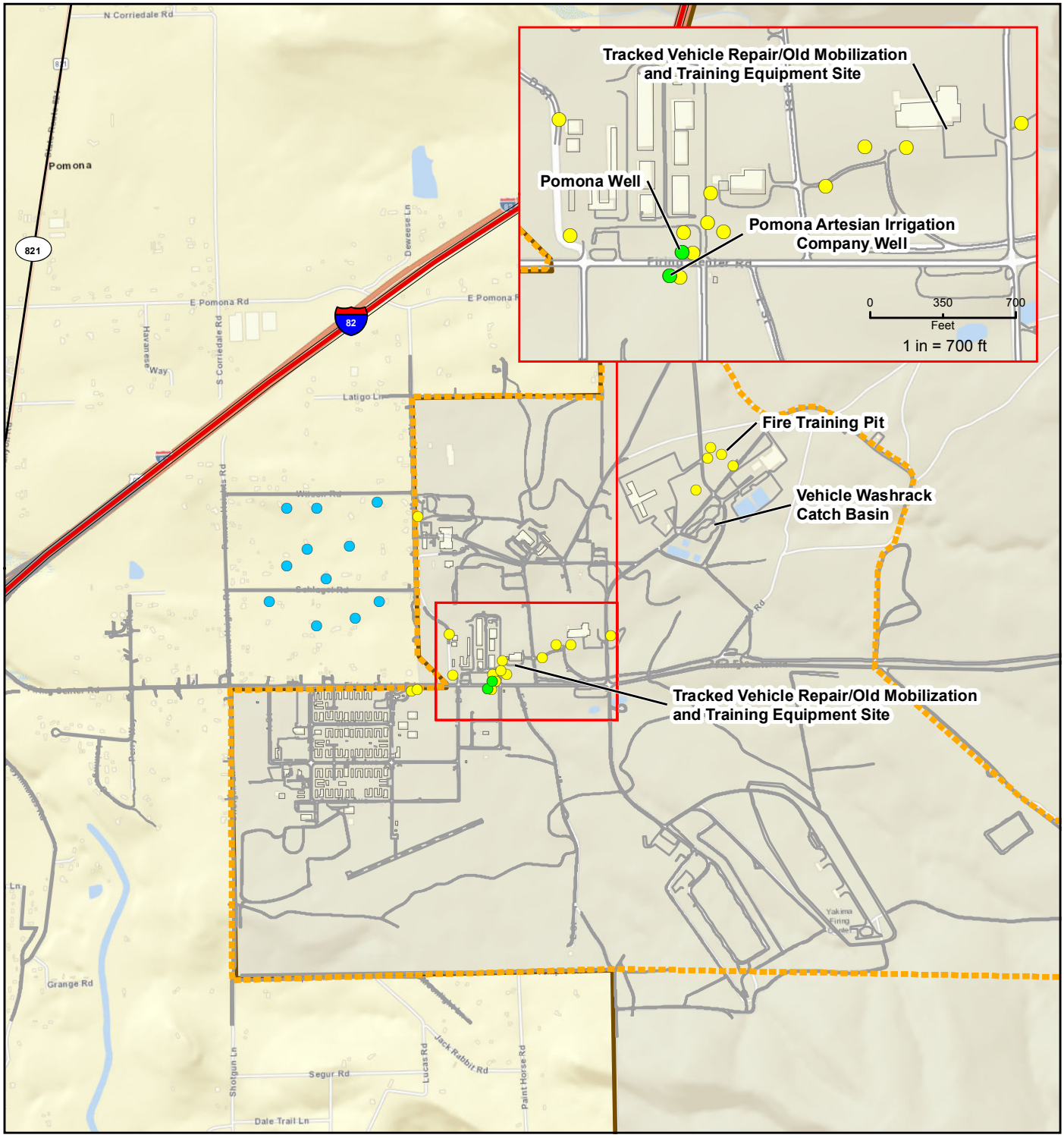


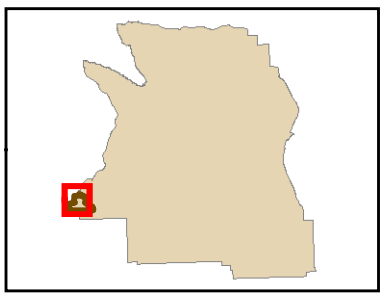
Legend

- Yakima Training Center
- Cantonment Area Boundary
- Interstate
- State Route
- US Route

FIGURE 1
YAKIMA TRAINING CENTER
LOCATION MAP

Map Date: 6/25/2018
Coordinate System: UTM Zone 10
Horizontal Datus: WGS 84





0 1,000 2,000 4,000
Feet

1 in = 2,000 ft

N

Legend

- Yakima Training Center
- Cantonment Area Boundary
- Building
- Monitoring Wells
- Residential Drinking Water Well
- Water Supply Well
- Interstate
- State Route
- US Route

FIGURE 2
SITE LOCATIONS MAP

Map Date: 8/15/2018
Coordinate System: UTM Zone 10
Horizontal Datus: WGS 84

\\Eafp\Departments\Federal\Kansas City PRAC 2016\Projects\JBLM\GIS\GWM Reports\YTC IRP GWM Report\2020\Figure3_FTPGroundwaterContours.mxd

Legend

- Monitoring Well
- Spring 2020 Groundwater Elevation Contours (ft AMSL)
- Fall 2020 Groundwater Elevation Contours (ft AMSL)
- 1,460.23 Spring 2020 Water Level (ft AMSL)
- 1,457.99 Fall 2020 Water Level (ft AMSL)

N

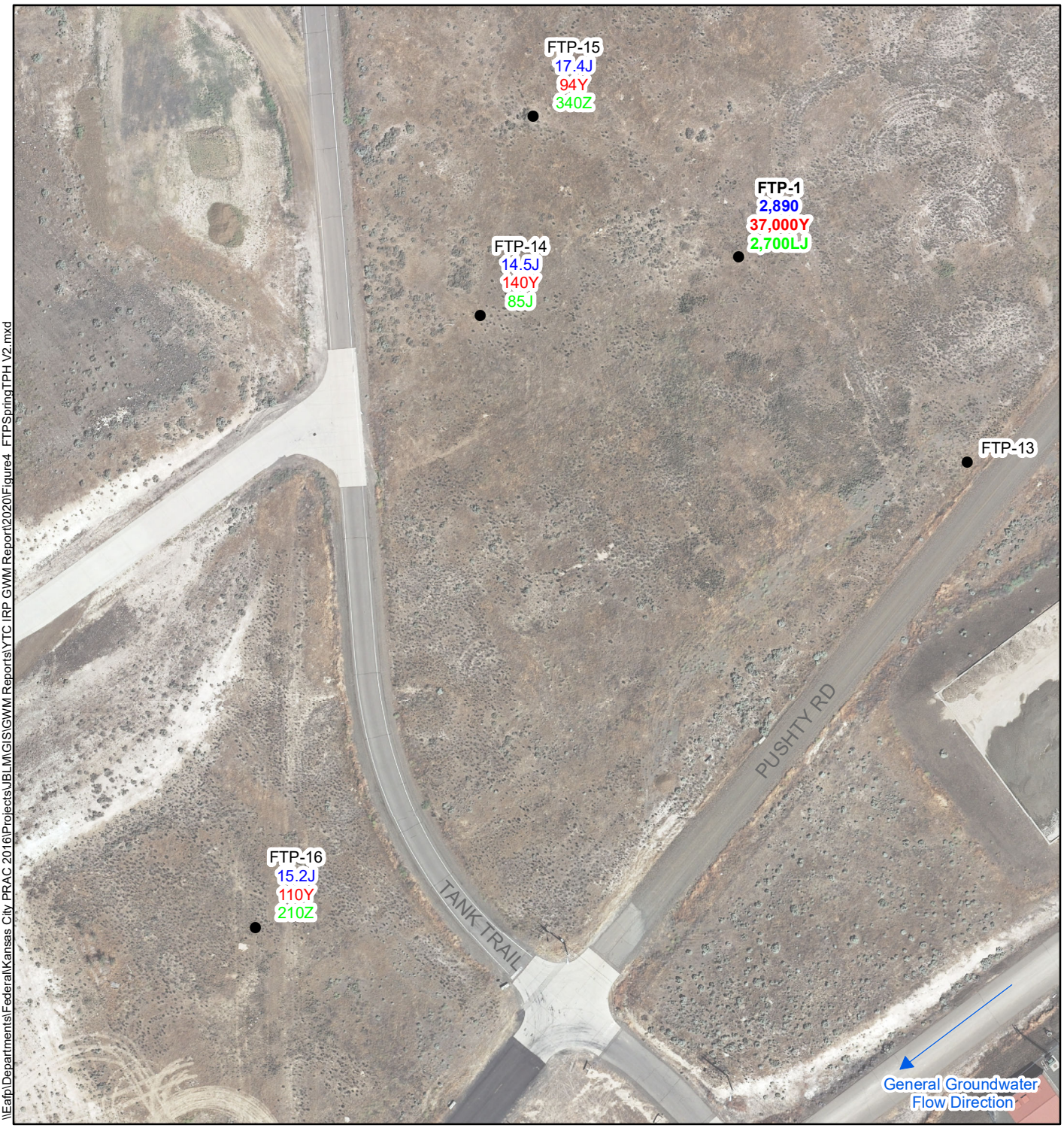
0 75 150

Feet

FIGURE 3
FORMER FIRE TRAINING PIT
SPRING/FALL GROUNDWATER ELEVATION CONTOURS

2020 ANNUAL GROUNDWATER MONITORING AND REPORTING

Map Date: 2/14/2021
Coordinate System: UTM Zone 10
Horizontal Datus: WGS 84



\\Eafp\Departments\Federal\Kansas City PRAC 2016\Projects\JBLM\GIS\GWM Reports\YTC IRP GWM Report\2020\Figure4_FTPSpringTPH V2.mxd

Legend

- ● Monitoring Well
- 14.5J Spring 2020 TPH-G Concentration (µg/L)
- 140Y Spring 2020 TPH-D Concentration (µg/L)
- 85J Spring 2020 TPH-O Concentration (µg/L)

Notes:
Exceedances are bolded.

Lab Data Qualifiers:
J - The result is an estimated value.
L - Refer to Table 2.
Y - Refer to Table 2.
Z - Refer to Table 2.

N

0 75 150
Feet

MTCA Method A Cleanup Levels:
TPH-G = 800 µg/L
TPH-D = 500 µg/L
TPH-O = 500 µg/L

FIGURE 4
FORMER FIRE TRAINING PIT
SPRING TOTAL PETROLEUM HYDROCARBON CONCENTRATIONS

2020 ANNUAL GROUNDWATER MONITORING AND REPORTING

Map Date: 2/14/2021
Coordinate System: UTM Zone 10
Horizontal Datum: WGS 84

\\Eafp\Departments\Federal\Kansas City PRAC 2016\Projects\JBLM\GIS\GWM Reports\YTC IRP GWM Report\2020\Figure5_FTPFallTPH.mxd

Legend

- ● Monitoring Well
- 250 Fall 2020 TPH-G Concentration (µg/L)
- 170 Fall 2020 TPH-D Concentration (µg/L)
- 200 Fall 2020 TPH-O Concentration (µg/L)

N

0 75 150

Feet

FIGURE 5
FORMER FIRE TRAINING PIT
FALL TOTAL PETROLEUM HYDROCARBON CONCENTRATIONS

2020 ANNUAL GROUNDWATER MONITORING AND REPORTING

Notes:
Exceedances are bolded.

Lab Data Qualifiers:
L - Refer to Table 2.
Y - Refer to Table 2.

MTCA Method A Cleanup Levels:
TPH-G = 800 µg/L
TPH-D = 500 µg/L
TPH-O = 500 µg/L

Map Date: 2/14/2021
Coordinate System: UTM Zone 10
Horizontal Datum: WGS 84

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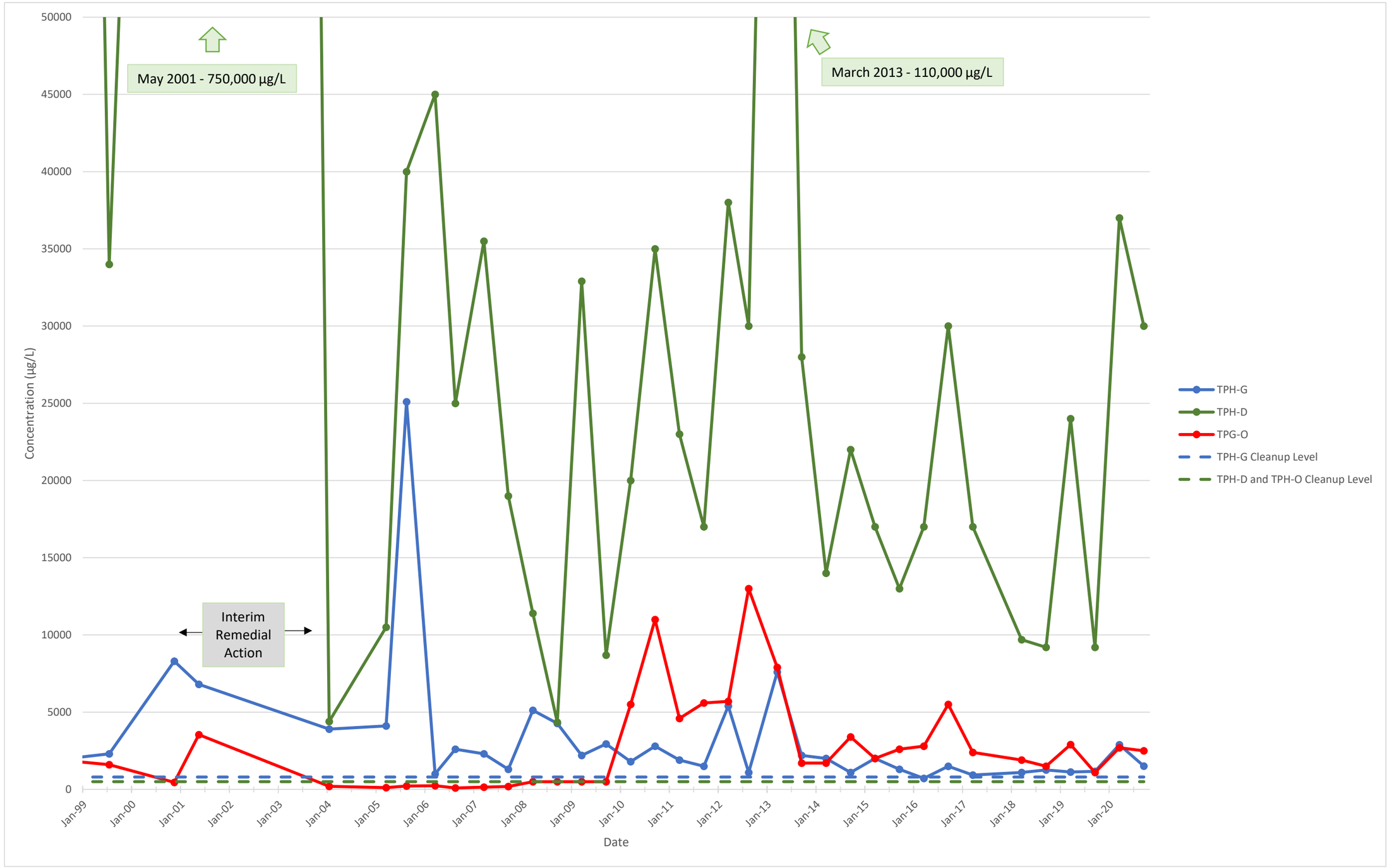
Figure 6 - Change in Total Petroleum Hydrocarbon Concentrations over Time in FTP-1

Fire Training Pit, Yakima Training Center, Washington



Legend

- Monitoring Well
- Production Well
- Spring 2020 Groundwater Elevation Contours (ft AMSL)
- Fall 2020 Groundwater Elevation Contours (ft AMSL)
- 1239.44 — Spring 2020 Water Level (ft AMSL)
- 1254.78 — Fall 2020 Water Level (ft AMSL)

N

0 225 450

Feet

Map Date: 2/14/2021
Coordinate System: UTM Zone 10
Horizontal Datum: WGS 84

FIGURE 7
TVR/OLD MATES AREA
SPRING/FALL GROUNDWATER ELEVATION CONTOURS

2020 ANNUAL GROUNDWATER MONITORING AND REPORTING

Legend

- Monitoring Well
- Production Well
- Inferred 5 µg/L TCE Concentration Contour
- 3.2 Spring 2020 TCE Concentration (µg/L)
- 2.9 Fall 2020 TCE Concentration (µg/L)

Notes:
Exceedances are bolded.

Lab Data Qualifiers:
U - Analyte not detected above result reporting limit.
J - The result is an estimated value.

MTCA Method A Cleanup Level:
TCE = 5 µg/L

N

0 225 450
Feet

Map Date: 2/19/2021
Coordinate System: UTM Zone 10
Horizontal Datum: WGS 84

FIGURE 8
TVR/OLD MATES AREA SPRING/FALL TCE CONCENTRATIONS

2020 ANNUAL GROUNDWATER MONITORING AND REPORTING

\\Eafp\Departments\Federal\Kansas City PRAC 2016\Projects\JBLM\GIS\GWM Reports\YTC IRP GWM Report\2020\Figure8_TVR_OldMATES_TCE.mxd

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TABLES

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Table 1
Monitoring Well Construction Details
Fire Training Pit and TVR/Old MATES, Yakima Training Center, Washington

Well ID	Elevation at TOC (ft AMSL)	Ground Surface Elevation (ft AMSL)	Easting UTM (m)	Northing UTM (m)	Total Depth (ft)	Screen Interval (ft bgs)
Fire Training Pit Monitoring Wells						
FTP-1	1,467.72	1,464.59	695828.3	5173198.0	21.00	8 – 18
FTP-13	1,473.07	1,470.96	695878.5	5173153.0	25.00	10 – 20
FTP-14	1,457.48	1,455.35	695771.4	5173185.2	22.00	12 – 22
FTP-15	1,460.88	1,458.72	695783.1	5173228.9	20.00	10 – 20
FTP-16	1,444.81	1,442.68	695722.0	5173050.7	30.00	20 – 30
TVR/Old Mates Monitoring Wells						
815-2	1,304.28	1,301.86	694687.7	5172445.5	132.00	115 – 130
MMP-1	1,301.37	1,298.39	694553.4	5172215.3	100.50	88 – 98
MMP-2	1,301.31	1,298.55	694529.6	5172207.9	75.50	64 – 74
MRC-2	1,312.11	1,309.64	694558.9	5172939.9	113.50	101 – 111
MTS-1	1,361.02	1,359.05	695196.9	5172404.6	127.00	115 – 125
MTS-2	1,351.88	1,348.79	695135.9	5172405.4	113.00	101 – 111
MTS-3	1,362.36	1,362.62	695366.1	5172439.6	72.00	62 – 72
MTS-4	1,331.88	1,332.14	695078.6	5172347.7	97.00	82 – 97
TVR-1	1,320.17	1,317.32	694936.0	5172286.6	105.00	93 – 103
TVR-2	1,317.56	1,314.18	694910.0	5172337.7	95.00	83 – 93
TVR-3	1,310.60	1,310.86	694872.9	5172282.5	158.00	143 – 158
TVR-5	1,302.04	1,299.42	694704.2	5172275.0	142.00	132 – 142
TVR-6	1,310.06	1,310.30	694866.4	5172214.0	139.00	139 – 149
TVR-7	1,310.95	1,311.63	694882.5	5172255.6	140.00	140 – 150

Abbreviations and Acronyms:

ft AMSL – feet above mean sea level

ft bgs – feet below ground surface

ID – identification

m – meter

TOC – top-of-casing

UTM – Universal Transverse Mercator

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Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-1	1-Mar-93	–	–	–	**2,600,000J**	**3,500**	50U	50U	**60.0**	**1,100.0**
1467.72	1-Jul-99	13.00	1454.72	**2,300**	**34,000J**	**1598J**	**7.5**	**0.074J**	**4.4**	**16.66J**
	1-Nov-00	11.40	1456.32	**8,300**	**140,000J**	**450**	**7.7**	**4.7J**	**3.0J**	**41.2J**
	1-May-01	14.21	1453.51	**6,800**	**750,000J**	**3540J**	3.7U	0.77U	1.6U	**52.0**
	30-Jan-04	12.93	1454.79	**3,900**	**4,400**	**193**	**10.6**	0.5U	**3.8**	**9.4**
	22-Mar-05	13.61	1454.11	**4,110**	**10,500**	**116**	**13.0**	2.5U	**4.6**	**2.8**
	22-Aug-05	13.43	1454.29	**25,100**	**40,000**	**218**	**22.5**	5U	**7.2**	10U
	21-Mar-06	15.53	1452.19	1,000U	**45,000**	**238**	5U	5U	5U	10U
	8-Aug-06	11.54	1456.18	**2,600**	**25,000**	**93**	**6.3**	1U	**3.6**	**1.3**
	21-Mar-07	15.59	1452.13	**2,300**	**35,500**	**150**	**4.0**	0.5U	**2.0**	**0.7**
	19-Sep-07	12.49	1455.23	**1,300**	**19,000**	**190**	**7.1**	0.5U	**3.4**	**2.5**
	18-Mar-08	13.21	1454.51	**5,120**	**11,400**	500U	**11.3**	**1.2**	**5.5**	**5.5**
Duplicate	18-Mar-08	13.21	1454.51	**4,830**	**8,230**	500U	–	–	–	–
	19-Sep-08	12.24	1455.48	**4,270**	**4,350**	500U	**10.9**	0.5U	**4.6**	**3.0**
Duplicate	19-Sep-08	12.24	1455.48	**4,480**	**5,000**	500U	-	–	–	–
	23-Mar-09	13.72	1454.00	**2,200**	**32,900**	500U	**5.7**	0.5U	**3.3**	**2.6**
Duplicate	23-Mar-09	13.72	1454.00	**1,950**	**28,800**	500U	–	–	–	–
	23-Sep-09	12.90	1454.82	**2,940**	**8,690**	500U	**10.7**	0.5U	**6.1**	**4.0**
Duplicate	23-Sep-09	12.90	1454.82	**2,940**	–	–	–	–	–	–
	16-Mar-10	13.82	1453.90	**1,800**	**20,000**	**5,500**	**6.6**	1U	**3.8**	**3.5**
Duplicate	16-Mar-10	13.82	1453.90	**1,800**	**19,000**	**5,400**	–	–	–	–
	28-Sep-10	11.33	1456.39	**2,800**	**35,000**	**11,000**	**9.4**	0.5U	**4.4**	**0.6**
Duplicate	28-Sep-10	11.33	1456.39	**2,600**	**28,000**	**11,000**	–	–	–	–
	22-Mar-11	13.00	1454.72	**1,900**	**23,000**	**4,600**	**4.7**	0.5U	**3.7**	**0.7**

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-1 (cont.)	21-Sep-11	11.34	1456.38	**1,500**	**17,000**	**5,600**	**7.4**	0.5U	**4.7**	**1.4**
1467.72	27-Mar-12	13.27	1454.45	**5,400**	**38,000**	**5,700**	**3.8**	0.5U	**3.8**	**0.9**
	20-Aug-12	11.21	1456.51	**1,100**	**30,000**	**13,000**	**6.5**	0.5U	**5.0**	**1.6**
	20-Mar-13	13.54	1454.18	**7,600**	**110,000**	**7,900**	**3.7**	**0.2**	**4.5**	**0.8**
	25-Sep-13	13.52	1454.20	**2,200**	**28,000**	**1,700**	**5.4**	**0.2**	**5.9**	**1.5**
	11-Mar-14	14.25	1453.47	**2,000**	**14,000**	**1,700**	**3.4**	**0.2**	**4.5**	**0.95**
	22-Sep-14	13.60	1454.12	**1,100**	**22,000**	**3,400**	**6.4**	**0.22J**	**6.6**	**1.49**
	19-Mar-15	14.00	1453.72	**2,000**	**17,000**	**2,000**	**4.3**	**0.26J**	**4.9**	**1.38**
	22-Sep-15	13.16	1454.56	**1,300**	**13,000**	**2,600**	**6.0**	**0.41J**	**6.0**	**1.51**
	16-Mar-16	14.03	1448.69	**710Y**	**17,000**	**2,800**	**3.1**	**0.52**	**3.5**	**0.18J**
Duplicate	16-Mar-16	14.03	1448.69	**680Y**	**14,000**	**2,700**	**2.9**	**0.25J**	**3.4**	**0.18J**
	21-Sep-16	11.59	1456.13	**1,500**	**30,000**	**5,500**	**5.1**	**0.16J**	**5.9**	**0.23J**
	29-Mar-17	13.60	1454.12	**930**	**17,000**	**2,400**	**1.3**	**0.14J**	**2.5**	**0.36J**
	12-Sep-17	10.96	1456.76	**1,000**	**35,000**	**4,000**	**4.1**	**0.54**	**6.4**	**0.78J**
	28-Mar-18	13.33	1454.39	**1,100Y**	**9,700Y**	**1900L**	**3.0**	**0.3J**	**5.0J**	**0.57**
	12-Sep-18	12.76	1454.96	**1,260**	**9,200Y**	**1,500**	**2.8**	**0.28**	**5.6**	**0.73**
	21-Mar-19	14.12	1453.60	**1,130**	**24,000Y**	**2,900L**	**2.2**	**1.0**	**3.4**	**0.44J**
	23-Sep-19	12.78	1454.94	**1,150**	**8,600Y**	**900L**	**2.2**	**0.34J**	**3.8**	**0.52**
Duplicate	23-Sep-19	12.78	1454.94	**1,170**	**9,200Y**	**1,100L**	**2.2**	**0.35J**	**3.7**	**0.65J**
	18-Mar-20	13.68	1454.04	**2,470**	**37,000Y**	**2,700JL**	**1.6**	**0.17J**	**1.5**	**0.73J**
Duplicate	18-Mar-20	13.68	1454.04	**2,890**	**34,000Y**	**2,500L**	**1.6**	**0.16J**	**1.2**	**0.47J**
	10-Sep-20	13.87	1453.85	**1,510**	**30,000Y**	**2,500L**	**3.5**	**0.29UJ**	**3.5**	**0.15J**
FTP-13	1-Jul-99	16.25	1456.82	100U	240U	**1**	0.4U	0.4U	0.4U	1.2U
1473.07	1-Nov-00	16.79	1456.28	ND	240U	0.19U	0.4U	0.4U	0.4U	1.2U

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-13 (cont.)	1-May-01	16.65	1456.42	100U	240U	0.192U	0.4U	0.4U	0.4U	1.2U
1473.07	30-Jan-04	15.50	1457.57	100U	100U	0.7U	0.5U	0.5U	0.5U	1U
	22-Mar-05	16.71	1456.36	100U	100U	1U	0.5U	0.5U	0.5U	1U
	22-Aug-05	16.80	1456.27	–	–	–	–	–	–	–
	21-Mar-06	12.66	1460.41	100U	100U	1U	0.5U	0.5U	0.5U	1U
	8-Aug-06	12.57	1460.50	–	–	–	–	–	–	–
	21-Mar-07	14.22	1458.85	250U	100U	1.5U	0.5U	0.5U	0.5U	1U
	19-Sep-07	15.14	1457.93	–	–	–	–	–	–	–
	18-Mar-08	15.05	1458.02	–	–	–	–	–	–	–
	19-Sep-08	15.54	1457.53	–	–	–	–	–	–	–
	23-Mar-09	16.06	1457.01	–	–	–	–	–	–	–
	23-Sep-09	15.15	1457.92	–	–	–	–	–	–	–
	16-Mar-10	14.72	1458.35	–	–	–	–	–	–	–
	28-Sep-10	11.85	1461.22	–	–	–	–	–	–	–
	22-Mar-11	13.02	1460.05	–	–	–	–	–	–	–
	21-Sep-11	12.22	1460.85	–	–	–	–	–	–	–
	27-Mar-12	13.85	1459.22	–	–	–	–	–	–	–
	20-Aug-12	11.27	1461.80	–	–	–	–	–	–	–
	20-Mar-13	13.90	1459.17	–	–	–	–	–	–	–
	25-Sep-13	13.47	1459.60	–	–	–	–	–	–	–
	11-Mar-14	16.50	1456.57	–	–	–	–	–	–	–
	22-Sep-14	–	–	–	–	–	–	–	–	–
	19-Mar-15	14.32	1458.75	–	–	–	–	–	–	–
	22-Sep-15	–	–	–	–	–	–	–	–	–

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-13 (cont.)	16-Mar-16	11.72	1461.35	–	–	–	–	–	–	–
1473.07	21-Sep-16	11.59	1461.48	–	–	–	–	–	–	–
	29-Mar-17	12.45	1460.60	–	–	–	–	–	–	–
	12-Sep-17	11.45	1461.62	–	–	–	–	–	–	–
	28-Mar-18	14.66	1458.41	–	–	–	–	–	–	–
	12-Sep-18	15.07	1458.00	–	–	–	–	–	–	–
	21-Mar-19	14.12	1458.95	–	–	–	–	–	–	–
	23-Sep-19	12.90	1460.17	–	–	–	–	–	–	–
	17-Mar-20	12.84	1460.23	–	–	–	–	–	–	–
	9-Sep-20	15.08	1457.99	–	–	–	–	–	–	–
FTP-14	1-Jul-99	17.63	1439.85	100U	**480J**	0.192U	0.4U	0.4U	0.4U	1.2U
1457.48	1-Nov-00	18.28	1439.20	100U	240U	0.19U	0.4U	**0.028J**	0.4U	1.2U
	1-May-01	18.69	1438.79	2,100U	**170J**	0.19U	0.4U	0.4U	0.4U	1.2U
	30-Jan-04	17.46	1440.02	100U	100U	0.7U	0.5U	0.5U	0.5U	1U
	22-Mar-05	17.83	1439.65	**310**	**400**	1U	0.5U	0.5U	0.5U	1U
	22-Aug-05	18.02	1439.46	**260**	**330**	1U	0.5U	0.5U	0.5U	1U
	21-Mar-06	17.92	1439.56	1,000U	**400**	1U	0.5U	0.5U	0.5U	1U
	8-Aug-06	17.49	1439.99	**200**	–	–	0.5U	0.5U	0.5U	1U
	21-Mar-07	17.59	1439.89	250U	100U	1.5U	0.5U	0.5U	0.5U	1U
	19-Sep-07	17.47	1440.01	500U	**250**	1.5U	0.5U	0.5U	0.5U	1U
	18-Mar-08	17.70	1439.78	**210**	**261**	500U	–	–	–	–
	19-Sep-08	17.58	1439.90	500U	100U	500U	–	–	–	–
	23-Mar-09	17.81	1439.67	500U	–	–	–	–	–	–
	23-Sep-09	17.84	1439.64	500U	**209**	500U	–	–	–	–

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-14 (cont.)	16-Mar-10	18.00	1439.48	**53**	**290**	**440**	–	–	–	–
1457.48	28-Sep-10	17.68	1439.80	**55**	**350**	**330**	–	–	–	–
	22-Mar-11	17.65	1439.83	**57**	**350**	240U	–	–	–	–
	21-Sep-11	17.64	1439.84	50U	–	–	–	–	–	–
	27-Mar-12	17.68	1439.80	**50**	**420**	**420**	–	–	–	–
	20-Aug-12	16.93	1440.55	**59**	**170**	**240**	–	–	–	–
	20-Mar-13	17.86	1439.62	250U	**150**	200U	–	–	–	–
	25-Sep-13	18.94	1438.54	250U	**240**	200U	–	–	–	–
	11-Mar-14	18.20	1439.28	250U	**250**	200U	–	–	–	–
Duplicate	11-Mar-14	18.20	1439.28	250U	**240**	200U	–	–	–	–
	22-Sep-14	18.60	1438.88	**22**	**290**	**360**	–	–	–	–
	19-Mar-15	18.76	1438.72	**83J**	**190**	**120J**	–	–	–	–
	22-Sep-15	18.81	1438.67	**46J**	**210**	**110**	–	–	–	–
	16-Mar-16	18.62	1438.86	**31**	**230**	**130**	–	–	–	–
	21-Sep-16	17.89	1439.59	**21J**	**170**	**160**	–	–	–	–
	29-Mar-17	18.15	1439.33	**50J**	**170J**	**90J**	–	–	–	–
	12-Sep-17	17.64	1439.84	**37J**	**220**	**110**	–	–	–	–
	11-Apr-18	18.25	1439.23	**19J**	**230**	**160**	–	–	–	–
Duplicate	11-Apr-18	18.25	1439.23	**14J**	**220**	**150**	–	–	–	–
	12-Sep-18	18.25	1439.23	**32.7J**	**200**	**160**	–	–	–	–
	21-Mar-19	18.46	1439.02	**23.4J**	**350Y**	**250J**	–	–	–	–
	23-Sep-19	18.46	1439.02	–	–	–	–	–	–	–
	17-Mar-20	18.52	1438.96	**14.5J**	**140Y**	**85J**	–	–	–	–
	9-Sep-20	18.68	1438.80	–	–	–	–	–	–	–

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-15	1-Jul-99	16.68	1444.20	100U	240U	0	0.4U	0.4U	0.4U	1.2U
1460.88	1-Nov-00	18.00	1442.88	100U	240U	0.19U	0.4U	**0.052J**	0.4U	**0.042J**
	1-May-01	17.98	1442.90	100U	240U	0.192U	0.4U	0.4U	0.4U	1.2U
	30-Jan-04	16.58	1444.30	100U	100U	0.7U	0.5U	0.5U	0.5U	1U
	22-Mar-05	17.89	1442.99	100U	100U	1U	0.5U	0.5U	0.5U	1U
	22-Aug-05	17.91	1442.97	100U	100U	1U	0.5U	0.5U	0.5U	1U
	21-Mar-06	17.93	1442.95	100U	100U	–	0.5U	0.5U	0.5U	1U
	8-Aug-06	16.79	1444.09	100U	100U	–	0.5U	0.5U	0.5U	1U
	21-Mar-07	17.91	1442.97	250U	100U	1.5U	0.5U	0.5U	0.5U	1U
	19-Sep-07	16.93	1443.95	500U	100U	–	0.5U	0.5U	0.5U	1U
	18-Mar-08	17.95	1442.93	100U	100U	500U	–	–	–	–
	19-Sep-08	17.31	1443.57	500U	100U	500U	–	–	–	–
	23-Mar-09	17.97	1442.91	500U	100U	500U	–	–	–	–
	23-Sep-09	17.87	1443.01	500U	100U	500U	–	–	–	–
	16-Mar-10	17.96	1442.92	50U	100U	240U	–	–	–	–
	28-Sep-10	16.62	1444.26	50U	**180**	**440**	–	–	–	–
	22-Mar-11	17.85	1443.03	50U	120U	240U	–	–	–	–
Duplicate	22-Mar-11	17.85	1443.03	50U	120U	240U	–	–	–	–
	21-Sep-11	16.81	1444.07	50U	–	–	–	–	–	–
	27-Mar-12	17.45	1443.43	50U	**150**	**370**	–	–	–	–
	20-Aug-12	16.03	1444.85	**150**	**120**	240U	–	–	–	–
Duplicate	20-Aug-12	16.03	1444.85	50U	**120**	240U	–	–	–	–
	20-Mar-13	16.77	1444.11	250U	**130**	200U	–	–	–	–
	25-Sep-13	16.62	1444.26	250U	100U	200U	–	–	–	–
Duplicate	25-Sep-13	16.62	1444.26	250U	**110**	200U	–	–	–	–

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Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-15 (cont.)	11-Mar-14	17.80	1443.08	250U	100U	200U	–	–	–	–
1460.88	22-Sep-14	18.30	1442.58	**14J**	**46J**	**110J**	–	–	–	–
	19-Mar-15	17.91	1442.97	250U	**55J**	**180J**	–	–	–	–
	22-Sep-15	16.22	1444.66	250U	**46J**	**80J**	–	–	–	–
	16-Mar-16	17.92	1442.96	250U	**55J**	**130**	–	–	–	–
	21-Sep-16	14.60	1446.28	250U	**150**	**210**	–	–	–	–
	29-Mar-17	16.66	1444.22	**14J**	**130J**	**120J**	–	–	–	–
	12-Sep-17	12.27	1448.60	**15J**	**210**	**130**	–	–	–	–
	11-Apr-18	14.88	1446.00	25U	**190**	**180**	–	–	–	–
	12-Sep-18	14.58	1446.30	**16.7**	**170**	**190**	–	–	–	–
	21-Mar-19	17.40	1443.48	**12.6J**	**130J**	**160J**	–	–	–	–
	23-Sep-19	16.23	1444.65	–	–	–	–	–	–	–
	17-Mar-20	17.22	1443.66	**17.4J**	**94Y**	**340Z**	–	–	–	–
	9-Sep-20	17.29	1443.59	–	–	–	–	–	–	–
FTP-16	1-Jul-99	26.32	1418.49	100U	**360J**	**2**	0.4U	0.4U	0.4U	1.2U
1444.81	1-Nov-00	26.51	1418.30	100U	**210J**	0.19U	0.4U	**0.064J**	0.4U	**0.043J**
	1-May-01	26.41	1418.40	100U	240U	0.188U	0.4U	0.4U	0.4U	1.2U
	30-Jan-04	26.34	1418.47	100U	100U	0.7U	0.5U	0.5U	0.5U	1U
	22-Mar-05	26.77	1418.04	100U	100U	1U	0.5U	0.5U	0.5U	1U
	22-Aug-05	26.49	1418.32	100U	100U	1U	0.5U	0.5U	0.5U	1U
	21-Mar-06	26.05	1418.76	100U	100U	1U	0.5U	0.5U	0.5U	1U
	8-Aug-06	26.11	1418.70	100U	**200**	1U	0.5U	0.5U	0.5U	1U
	21-Mar-07	26.15	1418.66	250U	100U	1.5U	0.5U	0.5U	0.5U	1U

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-16 (cont.)	19-Sep-07	26.12	1418.69	500U	100U	–	0.5U	0.5U	0.5U	1U
1444.81	18-Mar-08	26.09	1418.72	100U	100U	500U	–	–	–	–
	19-Sep-08	26.18	1418.63	500U	100U	500U	–	–	–	–
	23-Mar-09	26.20	1418.61	500U	100U	500U	–	–	–	–
	23-Sep-09	26.28	1418.53	500U	**140**	500U	–	–	–	–
	16-Mar-10	26.25	1418.56	50U	**180**	**470**	–	–	–	–
	28-Sep-10	26.05	1418.76	50U	**320**	**450**	–	–	–	–
	22-Mar-11	26.15	1418.66	50U	**310**	240U	–	–	–	–
	21-Sep-11	26.16	1418.65	50U	–	–	–	–	–	–
	27-Mar-12	26.15	1418.66	50U	**280**	**470**	–	–	–	–
	20-Aug-12	25.93	1418.88	50U	**200**	**350**	–	–	–	–
	20-Mar-13	26.29	1418.52	250U	**130**	200U	–	–	–	–
	25-Sep-13	26.50	1418.31	250U	**160**	200U	–	–	–	–
	11-Mar-14	26.30	1418.51	250U	**150**	200U	–	–	–	–
	22-Sep-14	26.35	1418.46	250U	**290**	**180**	–	–	–	–
	19-Mar-15	26.19	1418.62	250U	**110J**	**76J**	–	–	–	–
	22-Sep-15	26.09	1418.72	250U	**300**	540	–	–	–	–
	16-Mar-16	26.12	1422.69	250U	**200**	–	–	–	–	–
	21-Sep-16	26.00	1422.81	250U	**160**	–	–	–	–	–
	29-Mar-17	26.33	1418.48	250U	**130J**	**120J**	–	–	–	–
Duplicate	29-Mar-17	26.33	1418.48	250U	**120J**	**100J**	–	–	–	–
	12-Sep-17	25.97	1418.84	250U	**190**	**160**	–	–	–	–
	11-Apr-18	26.07	1418.74	25U	**170**	**200**	–	–	–	–
	12-Sep-18	26.20	1418.61	**12.9**	**180**	**210**	–	–	–	–

Table 2
Depth-to-Water Measurements and Chemical of Concern Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000
FTP-16 (cont.)	21-Mar-19	26.22	1418.59	**15.6J**	**200J**	**290J**	–	–	–	–
1444.81	23-Sep-19	26.20	1418.61	–	–	–	–	–	–	–
	18-Mar-20	26.25	1418.56	**15.2J**	**110Y**	**210Z**	–	–	–	–
	9-Sep-20	26.46	1418.35	–	–	–	–	–	–	–

Notes:

BOLD Analyte detected above laboratory reporting limit.

SHADE Analyte detected above Model Toxics Control Act (MTCA) cleanup level.

– Not applicable, not sampled

Abbreviations and Acronyms:

µg/L – micrograms per liter

DTW – depth-to-water

ft AMSL – feet above mean sea level

ft bgs – feet below ground surface

ID – identification

J – estimated concentration

L – The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.

ND – non-detect

TOC (ft AMSL) – top-of-casing elevation (feet above mean sea level)

TPH-D – total petroleum hydrocarbons – diesel range

TPH-G – total petroleum hydrocarbons – gasoline range

TPH-O – total petroleum hydrocarbons – heavy oil range

U – Analyte not detected above laboratory practical quantitation limit (PQL). Beginning in 2018, value listed is the reporting limit.

Y – The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

Z – The chromatographic fingerprint does not resemble a petroleum product.

Table 3
Selected VOC, PAH, and PCB Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	TCE (µg/L)	cis-DCE (µg/L)	Vinyl Chloride (µg/L)	Methylene Chloride (µg/L)	Bis-(2-ethylhexyl) phthalate (µg/L)	Fluorene (µg/L)	Total Naphthalenes[1] (µg/L)	Total PCBs (µg/L)
MTCA Method A Cleanup Level		5	–	0.2	5	–	–	160	0.1
MTCA Standard Method B Cleanup Level		–	70	–	–	6	640	–	–
FTP-1	1-Mar-93	50U	50U	100U	**110B,J**	**270B,J**	–	905U	70U
	1-Jul-99	**0.066J**	0.4U	0.4U	0.4U	**29J**	**7,600J**	**0.243J**	23.1U
	1-Nov-00	**32J**	70J	ND	**3.7J**	ND	**11,000J**	1.774U	ND
	1-May-01	4U	4U	4U	4U	**54J**	**46,000**	**5.02J**	0.81U
	30-Jan-04	0.5U	0.5U	0.5U	**1.3**	**6.0**	**48,300**	0.362U	–
	22-Mar-05	2.5U	2.5U	2.5U	12.5U	**1.0**	500U	0.905U	–
	22-Aug-05	5U	5U	5U	25U	0.5U	500U	0.905U	–
	21-Mar-06	5U	5U	5U	25U	5U	500U	9.05U	–
	8-Aug-06	1U	1U	1U	5U	**2.4**	500U	0.905U	–
	21-Mar-07	0.5U	0.5U	0.5U	2.5U	**3.6**	10,000U	**0.1**	–
	19-Sep-07	0.5U	0.5U	0.5U	2.5U	**2.7**	500U	0.905U	–
	18-Mar-08	0.5U	0.5U	0.5U	2.5U	10U	1,000U	**118.2**	
	19-Sep-08	0.5U	0.5U	0.5U	2.5U	–	500U	**52.6**	–
	23-Mar-09	0.5U	0.5U	0.5U	2.5U	–	**9.1**	**93.2**	–
Duplicate	23-Mar-09	0.5U	0.5U	0.5U	2.5U	–	–	–	–
	23-Sep-09	0.5U	0.5U	0.5U	2.5U	15U	**5.4**	**121.1**	–
Duplicate	23-Sep-09	0.5U	0.5U	0.5U	2.5U	15U	-	-	–
	16-Mar-10	0.5U	0.5U	0.5U	2.5U	15U	**3.3**	**13.9**	–
	28-Sep-10	0.5U	0.5U	0.5U	2.5U	–	**8.3**	**238**	–
	22-Mar-11	0.5U	0.5U	0.5U	2.5U	ND	**6.1**	**56.6**	–
	21-Sep-11	0.5U	0.5U	0.5U	2.5U	0.96U	**4.2**	**120**	–
	27-Mar-12	0.5U	0.5U	0.5U	0.5U	**5.6**	**10**	**66**	–
	20-Aug-12	0.5U	0.5U	0.5U	0.5U	14U	**5.5**	**242**	–

Table 3
Selected VOC, PAH, and PCB Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	TCE (µg/L)	cis-DCE (µg/L)	Vinyl Chloride (µg/L)	Methylene Chloride (µg/L)	Bis-(2-ethylhexyl) phthalate (µg/L)	Fluorene (µg/L)	Total Naphthalenes[1] (µg/L)	Total PCBs (µg/L)
MTCA Method A Cleanup Level		5	–	0.2	5	–	–	160	0.1
MTCA Standard Method B Cleanup Level		–	70	–	–	6	640	–	–
FTP-1	20-Mar-13	0.2U	0.2U	0.2U	1.0U	**6.3**	**27**	**94**	–
(cont.)	25-Sep-13	0.2U	0.2U	0.2U	1U	3U	**11**	**260**	–
	11-Mar-14	0.2U	0.2U	0.2U	1U	9U	**5.8**	**112**	–
	22-Sep-14	**0.11J**	0.5U	0.5U	2U	10U	**7.8**	**154**	–
	19-Mar-15	**0.12J**	0.2U	0.1U	0.2U	**4.9J**	**8.9J**	**105**	–
	22-Sep-15	**0.17J**	0.2U	0.1U	**0.12J**	2U	**9.4J**	**218**	–
	16-Mar-16	**0.13J**	0.2U	0.5U	2U	10U	**6.9J**	**111**	–
	21-Sep-16	**0.18J**	.02U	0.5U	2U	9.9U	**7.9J**	**57**	–
	29-Mar-17	**0.11J**	.02U	0.5U	2U	10U	10U	10U	–
	12-Sep-17	**0.10J**	.02U	0.5U	2U	**8.2J**	**9.9J**	**84**	–
	28-Mar-18	0.2U	0.2U	0.1U	0.2U	2.0U	**3.8J**	**82.3**	–
	12-Sep-18	0.2U	0.2U	0.1U	0.2U	1.9U	**5.1**	**242**	–
	21-Mar-19	0.2U	0.2U	0.1U	0.2U	20U	**6.5J**	**60J**	–
	23-Sep-19	0.1U	0.2U	0.1U	**0.10J**	1.0U	**6.6J**	**147**	–
Duplicate	23-Sep-19	0.1U	0.2U	0.1U	0.2U	1.0U	**5.9J**	**121**	–
	18-Mar-20	0.1U	0.2U	0.1U	0.2U	**5.0J**	**12J**	**72J**	–
Duplicate	18-Mar-20	0.1U	0.2U	0.1U	0.2U	3.8U	**2.9J**	**13J**	–
	10-Sep-20	0.1U	0.2U	0.1U	0.2U	2.2J	**9.9J**	**104J**	–
FTP-13	1-Mar-93	-	-	-	-	**6.3**	–	–	-
	1-Jul-99	0.4U	0.4U	0.4U	0.4U	0.5U	240J	0.172U	0.665U
	1-Nov-00	0.4U	0.4U	0.4U	0.4U	–	ND	0.172U	ND
	1-May-01	0.4U	0.4U	0.4U	0.4U	0.5U	480U	0.174U	0.076U
	30-Jan-04	0.5U	0.5U	0.5U	0.5U	–	500U	0.362U	–

Table 3
Selected VOC, PAH, and PCB Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	TCE (µg/L)	cis-DCE (µg/L)	Vinyl Chloride (µg/L)	Methylene Chloride (µg/L)	Bis-(2-ethylhexyl) phthalate (µg/L)	Fluorene (µg/L)	Total Naphthalenes[1] (µg/L)	Total PCBs (µg/L)
MTCA Method A Cleanup Level		5	–	0.2	5	–	–	160	0.1
MTCA Standard Method B Cleanup Level		–	70	–	–	6	640	–	–
FTP-13	22-Mar-05	0.5U	0.5U	0.5U	2.5U	0.5U	500U	0.905U	–
(cont.)	22-Aug-05	–	–	–	–	–	–	–	–
	21-Mar-06	0.5U	0.5U	0.5U	2.5U	0.96U	500U	0.905U	–
	8-Aug-06	–	–	–	–	9.5U	–	–	–
	21-Mar-07	0.5U	0.5U	0.5U	2.5U	0.95U	500U	**0.1**	–
FTP-14	1-Mar-93	–	–	–	–	**9.2**	–	–	–
	1-Jul-99	0.4U	0.4U	0.4U	0.4U	**5.2**	**480**	0.174U	0.665U
	1-Nov-00	ND	ND	ND	ND	**0.8**	480U	0.172U	0.076U
	1-May-01	0.4U	0.4U	0.4U	0.4U	0.5U	480U	0.172U	0.0766U
	30-Jan-04	0.5U	0.5U	0.5U	0.5U	–	**900**	0.362U	–
	22-Mar-05	0.5U	0.5U	0.5U	2.5U	**2.3**	500U	0.905U	–
	22-Aug-05	0.5U	0.5U	0.5U	2.5U	**30**	500U	0.905U	–
	21-Mar-06	0.5U	0.5U	0.5U	2.5U	–	500U	0.905U	–
	8-Aug-06	0.5U	0.5U	0.5U	2.5U	**2.1J**	–	–	–
	21-Mar-07	0.5U	0.5U	0.5U	2.5U	9.5U	500U	0.905U	
	19-Sep-07	0.5U	0.5U	0.5U	2.5U	0.96U	500U	0.905U	
FTP-15	1-Mar-93	–	–	–	–	**1.4**			
	1-Jul-99	0.4U	0.4U	0.4U	0.4U	**1.2**	**250J**	0.172U	0.665U
	1-Nov-00	ND	ND	ND	ND	**1.0**	480U	0.172U	0.076U
	1-May-01	0.4U	0.4U	0.4U	0.4U	–	470U	0.174U	0.076U
	30-Jan-04	0.5U	0.5U	0.5U	0.5U	–	**500**	0.362U	–
	22-Mar-05	0.5U	0.5U	0.5U	2.5U	**2.3**	500U	0.905U	–
	22-Aug-05	0.5U	0.5U	0.5U	2.5U	–	500U	0.905U	–

Table 3
Selected VOC, PAH, and PCB Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	TCE (µg/L)	cis-DCE (µg/L)	Vinyl Chloride (µg/L)	Methylene Chloride (µg/L)	Bis-(2-ethylhexyl) phthalate (µg/L)	Fluorene (µg/L)	Total Naphthalenes[1] (µg/L)	Total PCBs (µg/L)
MTCA Method A Cleanup Level		5	–	0.2	5	–	–	160	0.1
MTCA Standard Method B Cleanup Level		–	70	–	–	6	640	–	–
FTP-15	21-Mar-06	0.5U	0.5U	0.5U	2.5U	–	**600**	–	–
(cont.)	8-Aug-06	0.5U	0.5U	0.5U	2.5U	**0.9J**	500U	–	–
	21-Mar-07	0.5U	0.5U	0.5U	2.5U	ND	500U	0.905U	–
	19-Sep-07	0.5U	0.5U	0.5U	2.5U	**0.63J**	500U	–	–
FTP-16	1-Mar-93	–	–	–	–	**1.8**	–	–	–
	1-Jul-99	0.4U	0.4U	0.4U	0.4U	**1.5**	**600J**	0.172U	0.665U
	1-Nov-00	ND	0.4U	ND	ND	**0.8**	480U	0.172U	0.076U
	1-May-01	0.4U	0.4U	0.4U	0.4U	0.5U	470U	0.170U	0.0754U
	30-Jan-04	0.5U	0.5U	0.5U	0.5U	0.5U	**500**	0.362U	–
	22-Mar-05	0.5U	0.5U	0.5U	2.5U	**1.8**	500U	0.905U	–
	22-Aug-05	0.5U	0.5U	0.5U	2.5U	–	500U	0.905U	–
	21-Mar-06	0.5U	0.5U	0.5U	2.5U	–	500U	0.905U	–
	8-Aug-06	0.5U	0.5U	0.5U	2.5U	–	500U	0.905U	–
	21-Mar-07	0.5U	0.5U	0.5U	2.5U	–	500U	**0.1**	–
	19-Sep-07	0.5U	0.5U	0.5U	2.5U	–	500U	–	–

Notes:

BOLD Analyte detected above laboratory reporting limit.

SHADE Analyte detected above Model Toxics Control Act (MTCA) cleanup level.

(1) total naphthalenes – total of naphthalene and 2-methyl naphthalene.

Abbreviations and Acronyms:

– = Not applicable, not sampled

µg/L – micrograms per liter

Table 3
Selected VOC, PAH, and PCB Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	TCE (µg/L)	cis-DCE (µg/L)	Vinyl Chloride (µg/L)	Methylene Chloride (µg/L)	Bis-(2-ethylhexyl) phthalate (µg/L)	Fluorene (µg/L)	Total Naphthalenes[1] (µg/L)	Total PCBs (µg/L)
MTCA Method A Cleanup Level		5	–	0.2	5	–	–	160	0.1
MTCA Standard Method B Cleanup Level		–	70	–	–	6	640	–	–

B - The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC Standards.

cis-DCE – cis 1,2-dichloroetheylene

ID – identification

J – estimated concentration

ND – non-detect

PCBs – polychlorinated biphenyls

TCE – trichloroethylene

U – Analyte not detected above laboratory practical quantitation limit (PQL). Beginning in 2018, value listed is the reporting limit.

Table 4
Carcinogenic PAH and Total PAH Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	Benzo(a) anthracene	Benzo(a) pyrene (µg/L)	Benzo(b) fluoranthene (µg/L)	Benzo(k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h) anthracene (µg/L)	Indeno(1,2,3-cd) pyrene (µg/L)	TTEC Total[(1)] (µg/L)	Total PAHs[(2)] (µg/L)
MTCA Method A Cleanup Level		–	0.1	–	–	–	–	–	0.1	–
TEF		0.1	1	0.1	0.1	0.01	0.1	0.1	–	–
FTP-1	1-Mar-93	–	–	–	–	–	–	–	–	**1,100.0**
	1-Jul-99	–	–	–	–	–	–	–	–	**140J**
	1-Nov-00	–	–	–	–	–	–	–	–	**33.0**
	1-May-01	–	–	–	–	–	–	–	–	**450J**
	30-Jan-04	–	–	–	–	–	–	–	–	**9.1**
	22-Mar-05	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**5.0**
	22-Aug-05	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**5.7**
	21-Mar-06	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**33.4**
	8-Aug-06	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**4.9**
	21-Mar-07	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	**0.5**	**0.05**	**5.9**
	19-Sep-07	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**6.4**
	18-Mar-08	10U	10U	10U	10U	10U	10U	10U	ND	**89.6**
	19-Sep-08	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	ND	**158.8**
	23-Mar-09	0.1U	0.1U	0.1U	0.1U	**0.54**	0.1U	0.1U	**0.005**	**135.8**
	23-Sep-09	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	ND	**117.2**
	16-Mar-10	0.29U	0.19U	0.39U	0.29U	0.19U	0.29U	0.29U	ND	**107.2**
	28-Sep-10	0.29U	0.19U	0.39U	0.29U	**0.38**	0.29U	0.29U	**0.004**	**333.8**
	22-Mar-11	0.29U	0.19U	0.39U	0.29U	0.19U	0.29U	0.29U	ND	**269.5**
	21-Sep-11	0.28U	0.19U	0.38U	0.28U	0.19U	0.28U	0.28U	ND	**176.3**
	27-Mar-12	0.1U	0.1U	0.1U	0.1U	**0.64**	0.1U	0.1U	**0.01**	**246.14**
	20-Aug-12	0.29U	0.19U	0.38U	0.29U	0.19U	0.29U	0.29U	ND	**265.25**
	20-Mar-13	3.3U	3.3U	17U	17U	3.3U	3.3U	3.3U	ND	**165.43**
	25-Sep-13	1U	1U	5U	5U	1U	1U	1U	ND	**326.30**

Table 4
Carcinogenic PAH and Total PAH Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	Benzo(a) anthracene	Benzo(a) pyrene (µg/L)	Benzo(b) fluoranthene (µg/L)	Benzo(k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h) anthracene (µg/L)	Indeno(1,2,3-cd) pyrene (µg/L)	TTEC Total[(1)] (µg/L)	Total PAHs[(2)] (µg/L)
MTCA Method A Cleanup Level		–	0.1	–	–	–	–	–	0.1	–
TEF		0.1	1	0.1	0.1	0.01	0.1	0.1	–	–
FTP-1	11-Mar-14	3U	3U	15U	15U	3U	3U	3U	ND	**248.40**
(cont.)	22-Sep-14	10U	10U	10U	10U	10U	10U	10U	ND	**177.80**
	19-Mar-15	10U	10U	10U	10U	10U	10U	10U	ND	**140.1**
	22-Sep-15	10U	10U	10U	10U	10U	10U	10U	ND	**251**
	16-Mar-16	10U	10U	10U	10U	10U	10U	10U	ND	**124.5**
	21-Sep-16	9.9U	9.9U	9.9U	9.9U	9.9U	9.9U	9.9U	ND	**84.4**
	29-Mar-17	10U	10U	10U	10U	10U	10U	10U	ND	**ND**
	12-Sep-17	10U	10U	10U	10U	10U	10U	10U	ND	**126.1**
	28-Mar-18	0.63U	1.1U	0.62U	0.88U	0.84U	0.79U	0.72U	ND	**79.34J**
	12-Sep-18	0.63U	1.1U	0.62U	0.88U	0.84U	0.79U	0.72U	ND	**172.68J**
	21-Mar-19	6.1U	10U	6.0U	8.5U	8.1U	7.7U	7.0U	ND	**158.5J**
	23-Sep-19	0.50U	1.0U	1.0U	1.0U	0.50U	1.0U	1.0U	ND	**164.48J**
Duplicate	23-Sep-19	0.50U	1.0U	1.0U	1.0U	0.50U	1.0U	1.0U	ND	**136.51J**
	18-Mar-20	2.5U	3.8UJ	5.0U	3.8UJ	2.5U	3.8U	3.8U	ND	**125.6J**
Duplicate	18-Mar-20	2.5U	3.8U	5.0U	3.8U	2.5U	3.8U	3.8U	ND	**59.6J**
	10-Sep-20	0.52J	1.5UJ	2.0UJ	1.5UJ	1.0UJ	1.5UJ	1.5UJ	ND	**132.72J**
FTP-13	1-Mar-93	–	–	–	–	–	–	–	–	–
	1-Jul-99	–	–	–	–	–	–	–	–	**0.1**
	1-Nov-00	–	–	–	–	–	–	–	–	ND
	1-May-01	–	–	–	–	–	–	–	–	0.096U
	30-Jan-04	–	–	–	–	–	–	–	–	0.2U
	22-Mar-05	–	–	–	–	–	–	–	–	0.5U
	22-Aug-05	–	–	–	–	–	–	–	–	–

Table 4
Carcinogenic PAH and Total PAH Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	Benzo(a) anthracene	Benzo(a) pyrene (µg/L)	Benzo(b) fluoranthene (µg/L)	Benzo(k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h) anthracene (µg/L)	Indeno(1,2,3-cd) pyrene (µg/L)	TTEC Total[(1)] (µg/L)	Total PAHs[(2)] (µg/L)
MTCA Method A Cleanup Level		–	0.1	–	–	–	–	–	0.1	–
TEF		0.1	1	0.1	0.1	0.01	0.1	0.1	–	–
FTP-13	21-Mar-06	–	–	–	–	–	–	–	–	0.5U
(cont.)	8-Aug-06	–	–	–	–	–	–	–	–	–
	21-Mar-07	–	–	–	–	–	–	–	–	0.5U
FTP-14	1-Mar-93	–	–	–	–	–	–	–	–	–
	1-Jul-99	–	–	–	–	–	–	–	–	0.096U
	1-Nov-00	–	–	–	–	–	–	–	–	0.095U
	1-May-01	–	–	–	–	–	–	–	–	0.095U
	30-Jan-04	–	–	–	–	–	–	–	–	0.2U
	22-Mar-05	–	–	–	–	–	–	–	–	0.5U
	22-Aug-05	–	–	–	–	–	–	–	–	0.5U
	21-Mar-06	–	–	–	–	–	–	–	–	0.5U
	8-Aug-06	–	–	–	–	–	–	–	–	–
	21-Mar-07	–	–	–	–	–	–	–	–	0.5U
	19-Sep-07	–	–	–	–	–	–	–	–	0.5U
FTP-15	1-Mar-93	–	–	–	–	–	–	–	–	–
	1-Jul-99	–	–	–	–	–	–	–	–	0.095U
	1-Nov-00	–	–	–	–	–	–	–	–	0.095U
	1-May-01	–	–	–	–	–	–	–	–	0.096U
	30-Jan-04	–	–	–	–	–	–	–	–	0.2U
	22-Mar-05	–	–	–	–	–	–	–	–	0.5U
	22-Aug-05	–	–	–	–	–	–	–	–	0.5U
	21-Mar-06	–	–	–	–	–	–	–	–	–
	8-Aug-06	–	–	–	–	–	–	–	–	–

Table 4
Carcinogenic PAH and Total PAH Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	Benzo(a) anthracene	Benzo(a) pyrene (µg/L)	Benzo(b) fluoranthene (µg/L)	Benzo(k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h) anthracene (µg/L)	Indeno(1,2,3-cd) pyrene (µg/L)	TTEC Total[(1)] (µg/L)	Total PAHs[(2)] (µg/L)
MTCA Method A Cleanup Level		–	0.1	–	–	–	–	–	0.1	–
TEF		0.1	1	0.1	0.1	0.01	0.1	0.1	–	–
FTP-15 (cont.)	21-Mar-07	–	–	–	–	–	–	–	–	0.5U
FTP-16	1-Mar-93	–	–	–	–	–	–	–	–	–
	1-Jul-99	–	–	–	–	–	–	–	–	0.095U
	1-Nov-00	–	–	–	–	–	–	–	–	0.095U
	1-May-01	–	–	–	–	–	–	–	–	0.094U
	30-Jan-04	–	–	–	–	–	–	–	–	0.2U
	22-Mar-05	–	–	–	–	–	–	–	–	0.5U
	22-Aug-05	–	–	–	–	–	–	–	–	0.5U
	21-Mar-06	–	–	–	–	–	–	–	–	0.5U
	8-Aug-06	–	–	–	–	–	–	–	–	0.5U
	21-Mar-07	–	–	–	–	–	–	–	–	0.5U

Notes:

BOLD Analyte detected above laboratory reporting limit.

SHADE Analyte detected above Model Toxics Control Act (MTCA) cleanup level.

– = not applicable, not sampled

(1) TTEC = (Benzo[a]anthrace*0.1) + benzo[a]pyrene + (benzo[b]fluoranthene*0.1) + (benzo[k]fluoranthene*0.1) + (chrysene*0.01) + (dibenz[a, h]anthracene*0.1) + (indeno[1,2,3-cd]pyrene*0.1)

(2) Total PAHs includes naphthalene, 2-methylnaphthalene, acenaphthene. acenaphthylene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(123-cd)pyrene, dibenz(ah)anthracene, benzo(ghi)perylene. Beginning in 2018, non-detects are included in this total at the detection limit.

Abbreviations and Acronyms:

µg/L – micrograms per liter

Table 4
Carcinogenic PAH and Total PAH Concentrations
Fire Training Pit, Yakima Training Center, Washington

Well ID	Date	Benzo(a) anthracene	Benzo(a) pyrene (µg/L)	Benzo(b) fluoranthene (µg/L)	Benzo(k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h) anthracene (µg/L)	Indeno(1,2,3-cd) pyrene (µg/L)	TTEC Total[(1)] (µg/L)	Total PAHs[(2)] (µg/L)
MTCA Method A Cleanup Level		–	0.1	–	–	–	–	–	0.1	–
TEF		0.1	1	0.1	0.1	0.01	0.1	0.1	–	–

cPAH – carcinogenic polycyclic aromatic hydrocarbon

ID – identification

ND – non-detect

PAHs – polycyclic aromatic hydrocarbons

PCBs – polychlorinated biphenyls

TEF – toxicity equivalency factor. Used to convert the concentration of a cPAH to an equivilent concentration of benzo(a)pyrene for a given sample. Defined by Table 708-2 in WAC Chapter 173-340-900.

TTEC – total toxic equivalent concentration (TTEC) of cPAHs in benzo(a)pyrene, as defined by WAC Chapter 173-340-708(8)(e).

U – Analyte not detected above laboratory PQL. Beginning in 2018, value listed is the reporting limit.

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Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-815-2	21-Mar-06	66.35	1,237.93	**2.40**	0.5U
1304.28	1-Aug-06	54.17	1,250.11	**3.30**	0.5U
	21-Mar-07	64.02	1,240.26	**1.80**	0.5U
	19-Sep-07	55.56	1,248.72	**3.20**	0.5U
	18-Mar-08	62.99	1,241.29	**1.14**	0.5U
	19-Sep-08	54.95	1,249.33	**1.94**	0.5U
	23-Mar-09	64.72	1,239.56	**2.03**	0.5U
	23-Sep-09	58.03	1,246.25	**1.06**	0.5U
	15-Mar-10	65.65	1,238.63	1U	1U
	28-Sep-10	52.22	1,252.06	**0.74**	0.5U
	21-Mar-11	60.85	1,243.43	**1.00**	0.5U
	21-Sep-11	48.42	1,255.86	**1.20**	0.5U
	28-Mar-12	60.20	1,244.08	**0.89**	0.5U
	20-Aug-12	46.48	1,257.80	**0.97**	0.5U
Duplicate	20-Aug-12	46.48	1,257.80	**0.99**	0.5U
	19-Mar-13	58.62	1,245.66	**0.67**	0.2U
Duplicate	19-Mar-13	58.62	1,245.66	**0.66**	0.2U
	26-Sep-13	54.37	1,249.91	**0.65**	0.2U
Duplicate	26-Sep-13	54.37	1,249.91	**0.72**	0.2U
	12-Mar-14	62.75	1,241.53	**0.45**	0.2U
	23-Sep-14	53.90	1,250.38	**1.60**	0.5U
	19-Mar-15	62.89	1,241.39	**0.75**	0.2U
	22-Sep-15	54.42	1,249.86	**1.1**	0.2U
	16-Mar-16	56.91	1,247.37	**0.83**	0.2U
	21-Sep-16	52.42	1,251.86	**0.68**	0.2U
	30-Mar-17	56.20	1,248.08	**0.61**	0.2U
	12-Sep-17	48.42	1,255.84	**0.64**	0.2U
	29-Mar-18	61.21	1,243.07	**0.51**	0.2U
	13-Sep-18	48.72	1,255.56	**1.0**	0.2U
	20-Mar-19	61.85	1,242.43	**0.54**	0.2U
	24-Sep-19	50.22	1,254.06	**0.66**	0.2U
	19-Mar-20	64.84	1,239.44	**0.26J**	0.2U
	9-Sep-20	49.50	1,254.78	–	–
MMP-1	1-Mar-93	–	1,239.41	5U	5U
1301.37	28-Feb-95	–	–	–	–
	1997	–	–	–	–
	1-Aug-99	–	–	–	–
	1-Jan-04	–	1,239.70	1U	1U
	23-Mar-05	66.24	1,235.13	0.5U	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MMP-1 (cont.)	23-Aug-05	58.33	1,243.04	–	–
1301.37	21-Mar-06	64.27	1,237.10	0.5U	0.5U
	1-Aug-06	53.77	1,247.60	–	–
	21-Mar-07	62.02	1,239.35	0.5U	0.5U
	19-Sep-07	56.08	1,245.29	–	–
	18-Mar-08	61.12	1,240.25	0.5U	0.5U
	19-Sep-08	55.87	1,245.50	–	–
	23-Mar-09	62.83	1,238.54	0.5U	0.5U
	23-Sep-09	58.47	1,242.90	–	–
	15-Mar-10	63.37	1,238.00	1U	1U
	28-Sep-10	52.67	1,248.70	–	–
	21-Mar-11	59.02	1,242.35	0.5U	0.5U
	21-Sep-11	47.02	1,254.35	–	–
	28-Mar-12	57.83	1,243.54	0.5U	0.5U
	20-Aug-12	47.10	1,254.27	–	–
	19-Mar-13	55.90	1,245.47	0.2U	0.2U
	26-Sep-13	55.06	1,246.31	–	–
	12-Mar-14	59.80	1,241.57	0.2U	0.2U
	23-Sep-14	54.47	1,246.90	–	–
	19-Mar-15	60.04	1,241.33	–	–
	22-Sep-15	54.20	1,247.17	–	–
	16-Mar-16	55.50	1.245.87	–	–
	21-Sep-16	52.64	1,248.73	–	–
	30-Mar-17	55.45	1,245.92	–	–
	12-Sep-17	49.30	1,252.07	–	–
	29-Mar-18	59.52	1,241.85	**.10J**	0.2U
	13-Sep-18	50.55	1,250.82	0.2U	0.2U
	8-Apr-19	59.86	1,241.51	0.2U	0.2U
	24-Sep-19	50.12	1,251.25	–	–
	19-Mar-20	62.09	1,239.28	0.1U	0.2U
	9-Sep-20	50.36	1,251.01	–	–
MMP-2	1-Mar-93	–	1,239.35	5U	5U
1301.31	28-Feb-95	–	–	–	–
	1997	–	–	–	–
	1-Aug-99	–	–	–	–
	1-Jan-04	–	1,239.50	0.5U	0.5U
	23-Mar-05	66.25	1,235.06	0.5U	0.5U
	23-Aug-05	59.75	1,241.56	–	–
	21-Mar-06	64.54	1,236.77	0.5U	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MMP-2 (cont.)	1-Aug-06	55.69	1,245.62	–	–
1301.31	21-Mar-07	62.13	1,239.18	0.5U	0.5U
	19-Sep-07	57.12	1,244.19	–	–
	18-Mar-08	61.27	1,240.04	–	–
	19-Sep-08	56.95	1,244.36	–	–
	23-Mar-09	62.92	1,238.39	–	–
	23-Sep-09	59.23	1,242.08	–	–
	15-Mar-10	63.48	1,237.83	–	–
	28-Sep-10	54.22	1,247.09	–	–
	21-Mar-11	59.17	1,242.14	–	–
	21-Sep-11	50.44	1,250.87	–	–
	28-Mar-12	57.83	1,243.48	–	–
	20-Aug-12	48.51	1,252.80	–	–
	19-Mar-13	55.98	1,245.33	–	–
	26-Sep-13	–	–	–	–
	12-Mar-14	–	–	–	–
	23-Sep-14	55.70	1,245.61	–	–
	19-Mar-15	60.03	1,241.28	–	–
	22-Sep-15	55.90	1,245.41	–	–
	16-Mar-16	56.72	1,244.59	–	–
	21-Sep-16	55.05	1,246.26	–	–
	30-Mar-17	–	–	–	–
	12-Sep-17	–	–	–	–
MRC-2	1-Mar-93	–	1,236.27	5U	5U
1312.11	28-Feb-95	–	–	–	–
	1997	–	–	–	–
	1-Aug-99	–	–	–	–
	1-Jan-04	–	–	–	–
	23-Mar-05	81.82	1,230.29	–	–
	23-Aug-05	76.09	1,236.02	–	–
	21-Mar-06	–	–	–	–
	1-Aug-06	–	–	–	–
	21-Mar-07	–	–	0.5U [2]	0.5U [2]
	19-Sep-07	–	–	–	–
	18-Mar-08	74.59	1,237.52	0.5U	0.5U
	19-Sep-08	67.90	1,244.21	–	–
	23-Mar-09	75.90	1,236.21	0.5U	0.5U
	23-Sep-09	–	–	–	–
	16-Mar-10	77.38	1,234.73	1U	1U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MRC-2 (cont.)	28-Sep-10	67.00	1,245.11	–	–
1312.11	21-Mar-11	73.20	1,238.91	0.5U	0.5U
	21-Sep-11	63.07	1,249.04	–	–
	28-Mar-12	72.42	1,239.69	0.5U	0.5U
	20-Aug-12	61.93	1,250.18	–	–
	19-Mar-13	71.36	1,240.75	–	–
	26-Sep-13	–	–	–	–
	12-Mar-14	–	–	–	–
	23-Sep-14	68.05	1,244.06	–	–
	19-Mar-15	75.27	1,236.84	–	–
	22-Sep-15	69.02	1,243.09	–	–
	16-Mar-16	–	–	–	–
	21-Sep-16	68.90	1,243.21	–	–
MTS-1	1-Mar-93	–	1,257.88	**7.90**	5U
1361.02	28-Feb-95	–	–	–	–
	1997	–	–	–	–
	1-Aug-99	–	–	–	–
	1-Jan-04	–	1,261.96	**5.60**	0.5U
	23-Mar-05	104.71	1,256.31	**7.60**	0.5U
	23-Aug-05	95.98	1,265.04	**4.60**	0.5U
	21-Mar-06	100.98	1,260.04	**6.30**	0.5U
	1-Aug-06	93.82	1,267.20	**7.50**	0.5U
	21-Mar-07	99.62	1,261.40	**6.80**	0.5U
	19-Sep-07	94.08	1,266.94	**5.90**	0.5U
	18-Mar-08	99.36	1,261.66	**5.56**	0.5U
	19-Sep-08	95.47	1,265.55	**4.88**	0.5U
	23-Mar-09	100.72	1,260.30	**6.36**	0.5U
	23-Sep-09	94.90	1,266.12	**6.55**	0.5U
	16-Mar-10	99.92	1,261.10	**4.90**	1U
	28-Sep-10	91.30	1,269.72	**4.10**	0.5U
	21-Mar-11	96.35	1,264.67	**4.90**	0.5U
	21-Sep-11	91.44	1,269.58	**4.30**	0.5U
	28-Mar-12	95.98	1,265.04	**4.10**	0.5U
	20-Aug-12	91.38	1,269.64	**4.10**	0.5U
	19-Mar-13	95.43	1,265.59	**3.40**	0.2U
	26-Sep-13	93.85	1,267.17	**2.80**	0.2U
	12-Mar-14	97.35	1,263.67	**2.70**	0.2U
Duplicate	12-Mar-14	97.35	1,263.67	**2.80**	0.2U
	23-Sep-14	92.71	1,268.31	**3.50**	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MTS-1 (cont.)	19-Mar-15	97.47	1,263.55	**3.8**	0.2U
1361.02	22-Sep-15	92.74	1,268.28	**4.0**	0.2U
	16-Mar-16	94.73	1,266.29	**3.7**	0.2U
	21-Sep-16	92.90	1,268.12	**3.2**	0.2U
	30-Mar-17	94.84	1,266.18	**3.5**	0.2U
	12-Sep-17	92.97	1,268.05	**3.5**	0.2U
	29-Mar-18	98.43	1,262.59	**3.7**	0.2U
	13-Sep-18	93.84	1,267.18	**3.0**	0.2U
	20-Mar-19	99.55	1,261.47	**3.7**	0.2U
	24-Sep-19	94.87	1,266.15	**3.6**	0.2U
	18-Mar-20	102.27	1,258.75	**3.2**	0.2U
	9-Sep-20	94.86	1,266.16	**2.9**	0.2U
MTS-2	1-Mar-93	–	1,256.80	**7.4**	5U
1351.88	28-Feb-95	–	–	–	–
	1997	–	–	–	–
	1-Aug-99	–	–	–	–
	1-Jan-04	–	1,260.71	**12.0**	1U
	23-Mar-05	96.15	1,255.73	**25.0**	0.5U
	23-Aug-05	87.89	1,263.99	**38.0**	**0.50**
	21-Mar-06	92.33	1,259.55	**28.0**	**0.70**
	1-Aug-06	85.85	1,266.03	**76.0**	**1.90**
	21-Mar-07	90.96	1,260.92	**32.0**	**0.60**
	19-Sep-07	86.00	1,265.88	**55.0**	**1.40**
	18-Mar-08	90.68	1,261.20	**18.6**	**0.50**
	19-Sep-08	87.22	1,264.66	**38.2**	**1.26**
Duplicate	19-Sep-08	87.22	1,264.66	**37.3**	**1.21**
	23-Mar-09	92.07	1,259.81	**28.2**	**0.73**
	23-Sep-09	86.65	1,265.23	**43.2**	**1.01**
	16-Mar-10	91.22	1,260.66	**16.0**	1U
	28-Sep-10	83.75	1,268.13	**6.3**	0.5U
	21-Mar-11	87.70	1,264.18	**7.4**	0.5U
	21-Sep-11	83.79	1,268.09	**4.6**	0.5U
	28-Mar-12	87.26	1,264.62	**4.4**	0.5U
	20-Aug-12	83.67	1,268.21	**6.5**	0.5U
	19-Mar-13	86.76	1,265.12	**6.8**	0.2U
	26-Sep-13	85.65	1,266.23	**5.6**	0.2U
	12-Mar-14	88.60	1,263.28	**8.4**	0.2U
	23-Sep-14	84.68	1,267.20	**24**	**0.47J**
	19-Mar-15	88.66	1,263.22	**8**	**0.2J**

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MTS-2 (cont.)	22-Sep-15	89.81	1,262.07	**11**	**0.22J**
1351.88	16-Mar-16	86.13	1,265.75	**6.9**	**0.18J**
	21-Sep-16	84.79	1,267.09	**5.0**	**0.15**
	30-Mar-17	86.28	1,265.60	**7.9**	**0.18J**
	12-Sep-17	84.88	1,267.00	**5.3**	**0.12J**
	29-Mar-18	89.82	1,262.06	**8.0**	**0.19J**
	13-Sep-18	85.69	1,266.19	**11.0**	**0.19J**
	20-Mar-19	90.93	1,260.95	**6.9**	**0.14J**
	24-Sep-19	96.53	1,255.35	**5.6**	**0.13J**
	18-Mar-20	93.72	1,258.16	**9.2**	**0.19J**
	9-Sep-20	86.67	1,265.21	**13.0**	**0.59J**
MTS-3	23-Mar-05	29.14	1,333.22	0.5U	0.5U
1362.36	23-Aug-05	27.73	1,334.63	–	–
	21-Mar-06	29.00	1,333.36	0.5U	0.5U
	1-Aug-06	26.86	1,335.50	–	–
	21-Mar-07	28.90	1,333.46	0.5U	0.5U
	19-Sep-07	26.43	1,335.93	–	–
	18-Mar-08	28.67	1,333.69	–	–
	19-Sep-08	26.62	1,335.74	–	–
	23-Mar-09	28.70	1,333.66	–	–
	23-Sep-09	26.65	1,335.71	–	–
	16-Mar-10	28.74	1,333.62	–	–
	28-Sep-10	25.53	1,336.83	–	–
	21-Mar-11	27.58	1,334.78	–	–
	21-Sep-11	25.41	1,336.95	–	–
	28-Mar-12	27.60	1,334.76	–	–
	20-Aug-12	25.64	1,336.72	–	–
	19-Mar-13	27.87	1,334.49	–	–
	26-Sep-13	27.24	1,335.12	–	–
	12-Mar-14	28.50	1,333.86	–	–
	23-Sep-14	26.45	1,335.91	–	–
	19-Mar-15	28.03	1,334.33	–	–
	22-Sep-15	27.76	1,334.60	–	–
	16-Mar-16	27.95	1,334.41	–	–
	21-Sep-16	25.55	1,336.81	–	–
	30-Mar-17	27.65	1,334.71	–	–
	12-Sep-17	25.65	1,336.71	–	–
	29-Mar-18	28.19	1,334.17	–	–
	13-Sep-18	26.75	1,335.61	–	–

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
MTS-3 (cont.)	20-Mar-19	27.57	1,334.79	–	–
1362.36	24-Sep-19	26.68	1,335.68	–	–
	18-Mar-20	27.86	1,334.50		
	9-Sep-20	26.35	1,336.01	–	–
MTS-4	23-Mar-05	89.70	1,242.18	**15.0**	0.5U
1331.88	23-Aug-05	86.14	1,245.74	**9.4**	0.5U
	21-Mar-06	88.02	1,243.86	**13.0**	0.5U
	1-Aug-06	81.32	1,250.56	**12.0**	0.5U
	21-Mar-07	86.15	1,245.73	**13.0**	0.5U
	19-Sep-07	81.25	1,250.63	**8.2**	0.5U
	18-Mar-08	85.51	1,246.37	**10.1**	0.5U
	19-Sep-08	83.80	1,248.08	**7.6**	0.5U
	23-Mar-09	87.72	1,244.16	**0.52**	0.5U
	23-Sep-09	83.47	1,248.41	**10.7**	0.5U
	16-Mar-10	87.32	1,244.56	**8.9**	1U
	28-Sep-10	75.75	1,256.13	**6.4**	0.5U
	21-Mar-11	82.13	1,249.75	**7.7**	0.5U
	21-Sep-11	73.72	1,258.16	**6.0**	0.5U
	28-Mar-12	81.19	1,250.69	**7.3**	0.5U
	20-Aug-12	72.60	1,259.28	**5.3**	0.5U
	19-Mar-13	79.52	1,252.36	**6.2**	0.2U
	26-Sep-13	78.85	1,253.03	**4.9**	**0.23**
	12-Mar-14	83.70	1,248.18	**5.4**	0.2U
	23-Sep-14	79.06	1,252.82	**5.6**	**0.16J**
Duplicate	23-Sep-14	79.06	1,252.82	**6.0**	**0.18J**
	19-Mar-15	83.35	1,248.53	**8.0**	**0.25J**
	22-Sep-15	78.42	1,253.46	**5.6**	**0.18J**
	16-Mar-16	79.90	1,251.98	**7.3**	**0.27J**
	21-Sep-16	76.52	1,255.36	–	**0.19J**
	30-Mar-17	79.24	1,252.64	**5.5**	**0.21J**
	12-Sep-17	75.80	1,256.08	**5.1**	**0.17J**
	29-Mar-18	83.18	1,248.70	**6.1J+**	**0.19J**
	13-Sep-18	78.49	1,253.39	**5.0**	**0.19J**
	20-Mar-19	84.16	1,247.72	**4.5**	0.2U
	24-Sep-19	79.41	1,252.47	**5.4**	**0.25J**
	18-Mar-20	86.24	1,245.64	**4.3**	**0.14J**
	9-Sep-20	80.97	1,250.91	**4.1**	**0.19J**
TVR-1	1-Mar-93	–	1,246.81	**35.0**	5U
1320.17	28-Feb-95	–	–	–	–

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-1 (cont.)	1997	–	–	–	–
1320.17	1-Aug-99	–	–	–	–
	1-Jan-04	–	1,245.50	**12.0**	0.5U
	23-Mar-05	78.98	1,241.19	**9.8**	0.5U
	23-Aug-05	75.48	1,244.69	**6.2**	0.5U
	21-Mar-06	71.17	1,249.00	**8.4**	0.5U
	1-Aug-06	71.43	1,248.74	**12.0**	0.5U
	21-Mar-07	75.32	1,244.85	**12.0**	0.5U
	19-Sep-07	71.34	1,248.83	**12.0**	0.5U
	18-Mar-08	74.63	1,245.54	**9.2**	0.5U
	19-Sep-08	73.52	1,246.65	**9.0**	0.5U
	23-Mar-09	76.76	1,243.41	**8.8**	0.5U
Duplicate	23-Mar-09	76.76	1,243.41	**9.0**	0.5U
	23-Sep-09	73.40	1,246.77	**8.6**	0.5U
	16-Mar-10	76.50	1,243.67	**5.8**	1U
	29-Sep-10	67.05	1,253.12	**3.2**	0.5U
	21-Mar-11	71.58	1,248.59	**6.9**	0.5U
	21-Sep-11	64.61	1,255.56	**8.7**	0.5U
	28-Mar-12	70.63	1,249.54	**7.3**	0.5U
	20-Aug-12	63.45	1,256.72	**7.9**	0.5U
	19-Mar-13	69.00	1,251.17	**6.8**	0.2U
	26-Sep-13	69.35	1,250.82	**5.9**	0.2U
	12-Mar-14	73.10	1,247.07	**5.4**	0.2U
	22-Sep-14	70.45	1,249.72	**4.7**	0.5U
	19-Mar-15	72.60	1,247.57	**4.5**	0.2U
	22-Sep-15	69.70	1,250.47	**3.8**	0.2U
	16-Mar-16	69.90	1,250.27	**5.7**	0.2U
	21-Sep-16	67.12	1,253.05	**6.1**	0.08J
	29-Mar-17	69.46	1,250.71	**7.0**	0.2U
	12-Sep-17	66.35	1,253.82	**8.3**	0.2U
	29-Mar-18	70.45	1,249.72	**7.5**	0.2U
	13-Sep-18	68.61	1,251.56	**8.1**	0.2U
	20-Mar-19	73.36	1,246.81	**7.3**	0.2U
	24-Sep-19	69.16	1,251.01	**7.0**	0.2U
	18-Mar-20	75.51	1,244.66	**7.0**	0.2U
	9-Sep-20	70.42	1,249.75	**7.4**	0.2U
TVR-2	1-Mar-93	–	1,247.03	**14.0**	5U
1317.56	28-Feb-95	–	–	–	–
	1997	–	–	–	–

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-2 (cont.)	1-Aug-99	–	–	–	–
1317.56	1-Jan-04	–	1,245.30	**3.60**	1U
	23-Mar-05	76.96	1,240.60	**4.40**	0.5U
	23-Aug-05	72.13	1,245.43	**3.40**	0.5U
	21-Mar-06	74.22	1,243.34	**3.30**	0.5U
	1-Aug-06	67.69	1,249.87	**2.90**	0.5U
	21-Mar-07	72.55	1,245.01	**2.60**	0.5U
	19-Sep-07	68.19	1,249.37	**1.70**	0.5U
	18-Mar-08	71.91	1,245.65	**3.37**	0.5U
	19-Sep-08	70.15	1,247.41	–	–
	23-Mar-09	74.10	1,243.46	**3.54**	0.5U
	23-Sep-09	70.50	1,247.06	–	–
	16-Mar-10	73.75	1,243.81	**3.20**	1U
	29-Sep-10	63.72	1,253.84	–	–
	21-Mar-11	68.75	1,248.81	**2.90**	0.5U
	21-Sep-11	60.89	1,256.67	–	–
	28-Mar-12	68.06	1,249.50	**2.8**	0.5U
	20-Aug-12	59.84	1,257.72	–	–
	19-Mar-13	66.52	1,251.04	**2.6**	0.2U
	26-Sep-13	66.35	1,251.21	–	–
	12-Mar-14	70.55	1,247.01	**2.1**	0.2U
	22-Sep-14	67.58	1,249.98	–	–
	19-Mar-15	70.34	1,247.22	**2.6**	0.2U
	22-Sep-15	66.53	1,251.03	–	–
	16-Mar-16	66.40	1,251.16	**3.6**	0.2U
	21-Sep-16	63.96	1,253.60	–	–
	29-Mar-17	65.94	1,251.62	–	–
	12-Sep-17	66.46	1,251.10	–	–
	29-Mar-18	70.17	1,247.39	**2.3**	0.2U
	13-Sep-18	64.83	1,252.73	-	-
	20-Mar-19	70.59	1,246.97	**1.5**	0.2U
	24-Sep-19	65.34	1,252.22	-	-
	18-Mar-20	73.14	1,244.42	**2.4**	0.2U
	9-Sep-20	66.51	1,251.05	–	–
TVR-3	23-Mar-05	69.63	1,240.97	**43.0**	1.3
1310.60	23-Aug-05	64.98	1,245.62	**25.0**	0.5
	21-Mar-06	67.32	1,243.28	**26.0**	0.5U
	1-Aug-06	60.93	1,249.67	**17.0**	0.5U
	21-Mar-07	65.64	1,244.96	**33.0**	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-3 (cont.)	19-Sep-07	61.53	1,249.07	**15.0**	0.5U
1310.60	18-Mar-08	64.98	1,245.62	**21.0**	0.5U
	19-Sep-08	63.50	1,247.10	**10.0**	0.5U
	23-Mar-09	67.11	1,243.49	**14.8**	0.5U
	23-Sep-09	63.87	1,246.73	**14.3**	0.5U
Duplicate	23-Sep-09	63.87	1,246.73	**14.0**	0.5U
	16-Mar-10	66.83	1,243.77	**17.0**	1U
	29-Sep-10	57.00	1,253.60	**11.0**	0.5U
	21-Mar-11	61.80	1,248.80	**14.0**	0.5U
	21-Sep-11	54.07	1,256.53	**10.0**	0.5U
	28-Mar-12	61.20	1,249.40	**12.0**	0.5U
	20-Aug-12	53.12	1,257.48	**8.0**	0.5U
	19-Mar-13	59.52	1,251.08	**9.2**	0.2U
	26-Sep-13	59.65	1,250.95	**6.6**	0.2U
	12-Mar-14	63.50	1,247.10	**8.2**	0.2U
	22-Sep-14	60.90	1,249.70	**6.9**	**0.10J**
	19-Mar-15	63.31	1,247.29	**7.7**	**0.17J**
	22-Sep-15	59.75	1,250.85	**8.4**	**0.12J**
	16-Mar-16	59.57	1,251.03	**7.5**	**0.14J**
	21-Sep-16	57.21	1,253.39	**4.9**	**0.13J**
	30-Mar-17	59.35	1,251.25	**6.1**	**0.11J**
	12-Sep-17	56.16	1,254.44	**2.9**	0.2U
	29-Mar-18	63.30	1,247.30	**6.7**	0.12J
Duplicate	29-Mar-18	63.30	1,247.30	**6.5**	0.12J
	13-Sep-18	58.00	1,252.60	**2.6**	0.2U
	20-Mar-19	63.60	1,247.00	**3.9**	0.2U
Duplicate	20-Mar-19	63.60	1,247.00	**4.1**	0.2U
	24-Sep-19	58.52	1,252.08	**1.9**	0.2U
Duplicate	24-Sep-19	58.52	1,252.08	**2.0**	0.2U
	18-Mar-20	66.22	1,244.38	**4.3**	0.2U
Duplicate	18-Mar-20	66.22	1,244.38	**4.5**	**0.14J**
	9-Sep-20	59.73	1,250.87	**2.1**	0.2U
Duplicate	9-Sep-20	59.73	1,250.87	**2.0**	0.2U
TVR-5	21-Mar-06	60.48	1,241.56	**1.6**	0.5U
1302.04	1-Aug-06	51.50	1,250.54	**1.0**	0.5U
	21-Mar-07	58.53	1,243.51	**1.2**	0.5U
	19-Sep-07	53.35	1,248.69	**1.1**	0.5U
	18-Mar-08	57.81	1,244.23	**1.0**	0.5U
	19-Sep-08	54.31	1,247.73	**1.2**	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-5 (cont.)	23-Mar-09	59.85	1,242.19	**1.2**	0.5U
1302.04	23-Sep-09	55.81	1,246.23	**16.0**	0.5U
	16-Mar-10	59.91	1,242.13	**3.5**	0.5U
Duplicate	16-Mar-10	59.91	1,242.13	**3.5**	0.5U
	28-Sep-10	48.53	1,253.51	**11.0**	0.5U
Duplicate	28-Sep-10	48.53	1,253.51	**11.0**	0.5U
	21-Mar-11	54.90	1,247.14	**2.4**	0.5U
Duplicate	21-Mar-11	54.90	1,247.14	**2.4**	0.5U
	21-Sep-11	44.95	1,257.09	**0.7**	0.5U
Duplicate	21-Sep-11	44.95	1,257.09	**0.5**	0.5U
	28-Mar-12	54.25	1,247.79	**0.7**	0.5U
	28-Mar-12	54.25	1,247.79	**0.7**	0.5U
	20-Aug-12	44.17	1,257.87	0.5U	0.5U
	19-Mar-13	52.58	1,249.46	**0.4**	0.2U
	26-Sep-13	51.60	1,250.44	**3.7**	0.2U
	12-Mar-14	56.40	1,245.64	**0.4**	0.2U
	22-Sep-14	52.52	1,249.52	**6.6**	0.5U
	19-Mar-15	56.51	1,245.53	**0.8**	0.2U
	22-Sep-15	51.05	1,250.99	**4.4**	0.2U
	16-Mar-16	51.58	1,250.46	**0.49J**	0.2U
	21-Sep-16	48.73	1,253.31	**0.92**	0.2U
	31-Mar-17	51.05	1,250.99	**0.26J**	0.2U
	12-Sep-17	49.90	1,252.14	**0.12J**	0.2U
	29-Mar-18	56.38	1,245.66	**0.10J**	0.2U
	13-Sep-18	47.78	1,254.26	0.20U	0.2U
	20-Mar-19	56.24	1,245.80	0.20U	0.2U
	24-Sep-19	47.98	1,254.06	0.20U	0.2U
	18-Mar-20	59.22	1,242.82	0.1U	0.2U
	9-Sep-20	48.57	1,253.47	-	-
TVR-6	21-Mar-06	67.03	1,243.03	**6.8**	0.5U
1310.06	1-Aug-06	60.88	1,249.18	**7.7**	0.5U
	21-Mar-07	65.19	1,244.87	**5.0**	0.5U
	19-Sep-07	61.50	1,248.56	**2.8**	0.5U
	18-Mar-08	64.98	1,245.08	**2.9**	0.5U
	19-Sep-08	63.39	1,246.67	**1.7**	0.5U
	23-Mar-09	66.68	1,243.38	**2.2**	0.5U
	23-Sep-09	63.62	1,246.44	**10.6**	0.5U
	16-Mar-10	66.41	1,243.65	**4.6**	1U
	29-Sep-10	57.03	1,253.03	**13.0**	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-6 (cont.)	21-Mar-11	61.48	1,248.58	**11.0**	0.5U
1310.06	21-Sep-11	54.01	1,256.05	**5.2**	0.5U
	28-Mar-12	60.80	1,249.26	**4.2**	0.5U
	20-Aug-12	53.26	1,256.80	**2.9**	0.5U
	19-Mar-13	59.07	1,250.99	**5.4**	0.2U
	25-Sep-13	58.65	1,251.41	**10.0**	0.2U
	12-Mar-14	62.80	1,247.26	**8.8**	0.2U
	23-Sep-14	59.94	1,250.12	**11.0**	**0.090J**
	19-Mar-15	62.61	1,247.45	**8.0**	0.2U
	22-Sep-15	59.50	1,250.56	**9.9**	0.2U
	16-Mar-16	59.49	1,250.57	**8.0J**	0.2U
	21-Mar-16	57.02	1,253.04	**5.9**	0.2U
	29-Mar-17	59.30	1,250.76	**4.7**	0.2U
	12-Sep-17	56.10	1,253.96	**1.7**	0.2U
	29-Mar-18	61.96	1,248.10	**2.8J+**	0.2U
	13-Sep-18	57.71	1,252.35	**1.2**	0.2U
	20-Mar-19	63.10	1,246.96	**1.1**	0.2U
	24-Sep-19	59.86	1,250.20	**0.37J**	0.2U
	18-Mar-20	65.68	1,244.38	**0.54**	0.2U
	10-Sep-20	59.26	1,250.80	**0.13J**	0.2U
TVR-7	21-Mar-06	67.89	1,243.06	**38.0**	**1.30**
1310.95	1-Aug-06	61.82	1,249.13	**43.0**	**1.00**
	21-Mar-07	66.10	1,244.85	**42.0**	**0.80**
	19-Sep-07	62.31	1,248.64	**32.0**	**0.60**
	18-Mar-08	65.45	1,245.50	**28.3**	**0.77**
Duplicate	18-Mar-08	65.45	1,245.50	**29.0**	**0.80**
	19-Sep-08	64.30	1,246.65	**20.7**	0.5U
	23-Mar-09	67.51	1,243.44	**21.6**	**0.56**
	23-Sep-09	64.39	1,246.56	**26.6**	0.5U
	16-Mar-10	67.29	1,243.66	**20.0**	1U
	29-Sep-10	57.85	1,253.10	**21.0**	0.5U
	21-Mar-11	62.35	1,248.60	**21.0**	0.5U
	21-Sep-11	55.05	1,255.90	**18.0**	0.5U
	28-Mar-12	61.66	1,249.29	**15.0**	0.5U
	20-Aug-12	54.10	1,256.85	**13.0**	0.5U
	19-Mar-13	59.97	1,250.98	**0.4**	0.2U
	26-Sep-13	60.15	1,250.80	**9.8**	0.2U
	12-Mar-14	63.75	1,247.20	**6.2**	0.2U
	23-Sep-14	67.50	1,243.45	**12.0**	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
TVR-7 (cont.)	19-Mar-15	63.60	1,247.35	**10.0**	0.2U
Duplicate	19-Mar-15	63.60	1,247.35	**10.0**	0.2U
1310.95	22-Sep-15	60.45	1,250.50	**10.0**	0.2U
	16-Mar-16	60.43	1,250.52	**10.0**	0.2U
	21-Mar-16	57.92	1,253.03	**8.2**	0.2U
	30-Mar-17	60.27	1,250.68	**7.9**	0.2U
	12-Sep-17	57.04	1,253.91	**6.4**	0.2U
	29-Mar-18	63.17	1,247.78	**5.9**	0.2U
	13-Sep-18	58.87	1,252.08	**5.9**	0.2U
	20-Mar-19	64.04	1,246.91	**1.4**	0.2U
	24-Sep-19	59.42	1,251.53	**4.0**	0.2U
	18-Mar-20	66.49	1,244.46	**2.6**	0.2U
	9-Sep-20	60.60	1,250.35	**3.7**	0.2U
Marie Well	1-Mar-93	–	–	**1.20**	5U
PAIC Well	1-Mar-93	–	–	5U	5U
	28-Feb-95	–	–	0.1U	0.1U
	1997	–	–	0.5U	0.5U
	1-Aug-99	–	–	–	–
	1-Jan-04	–	–	–	–
	23-Mar-05	–	–	–	–
	23-Aug-05	–	–	–	–
	21-Mar-06	–	–	0.5U	0.5U
	1-Aug-06	–	–	–	–
	21-Mar-07	–	–	0.5U	0.5U
	19-Sep-07	–	–	0.5U	0.5U
	18-Mar-08	–	–	0.5U	0.5U
	19-Sep-08	–	–	0.5U	0.5U
	23-Mar-09	–	–	0.5U	0.5U
	23-Sep-09	–	–	0.5U	0.5U
	15-Mar-10	–	–	1U	1U
	29-Sep-10	–	–	0.5U	0.5U
	21-Mar-11	–	–	0.5U	0.5U
	22-Sep-11	–	–	0.5U	0.5U
	28-Mar-12	–	–	0.5U	0.5U
	20-Aug-12	–	–	0.5U	0.5U
	20-Mar-13	–	–	0.2U	0.2U
	25-Sep-13	–	–	0.2U	0.2U
	12-Mar-14	–	–	0.2U	0.2U
	23-Sep-14	–	–	0.5U	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
PAIC Well (cont.)	19-Mar-15	–	–	0.1U	0.2U
	22-Sep-15	–	–	0.1U	0.2U
	16-Mar-16	–	–	0.1U	0.2U
	21-Sep-16	–	–	0.1U	0.2U
	30-Mar-17	–	–	0.1U	0.2U
	12-Sep-17	–	–	0.1U	0.2U
	29-Mar-18	–	–	0.2U	0.2U
	13-Sep-18	–	–	0.2U	0.2U
	20-Mar-19	–	–	0.2U	0.2U
	23-Sep-19	–	–	0.1U	0.2U
	18-Mar-20	–	–	0.1U	0.2U
	9-Sep-20	–	–	0.1U	0.2U
Pomona Well	1-Mar-91	–	–	ND	ND
	1-Aug-92	–	–	0.5U	0.5U
	1-Mar-93	–	–	5U	5U
	28-Feb-95	–	–	–	–
	1997	–	–	ND	ND
	1-Aug-99	–	–	0.5U	0.5U
	1-Jan-04	–	–	–	–
	23-Mar-05	–	–	–	–
	23-Aug-05	–	–	–	–
	21-Mar-06	–	–	0.5U	0.5U
	1-Aug-06	–	–	0.5U	0.5U
	21-Mar-07	–	–	0.5U	0.5U
	19-Sep-07	–	–	0.5U	0.5U
	18-Mar-08	–	–	–	–
	19-Sep-08	–	–	0.5U	0.5U
	23-Mar-09	–	–	0.5U	0.5U
	23-Sep-09	–	–	0.5U	0.5U
	16-Mar-10	–	–	1U	1U
	29-Sep-10	–	–	0.5U	0.5U
	21-Mar-11	–	–	0.5U	0.5U
	21-Sep-11	–	–	0.5U	0.5U
	28-Mar-12	–	–	0.5U	0.5U
	20-Aug-12	–	–	0.5U	0.5U
	19-Mar-13	–	–	0.2U	0.2U
	26-Sep-13	–	–	0.2U	0.2U
	12-Mar-14	–	–	0.2U	0.2U
	23-Sep-14	–	–	0.5U	0.5U

Table 5
Depth-to-Water Measurements; TCE and cis-1,2-DCE Concentrations
TVR/Old MATES, Yakima Training Center, Washington

Well ID TOC (ft AMSL)	Date	DTW (ft bgs)	Groundwater Elevation (ft AMSL)	TCE (µg/L)	cis-1,2-DCE (µg/L)
MTCA Method A Cleanup Level		–	–	**5**	–
MTCA Method B Cleanup Level		–	–	–	**16**
Pamona Well (cont.)	19-Mar-15	–	–	0.1U	0.2U
	22-Sep-15	–	–	0.1U	0.2U
	16-Mar-16	–	–	0.1U	0.2U
	21-Sep-16	–	–	0.1U	0.2U
	30-Mar-17	–	–	0.1U	0.2U
	12-Sep-17	–	–	0.1U	0.2U
	29-Mar-18	–	–	0.2U	0.2U
	13-Sep-18	–	–	0.2U	0.2U
	21-Mar-19	–	–	0.2U	0.2U
	24-Sep-19	–	–	0.1U	0.2U
	18-Mar-20	–	–	0.1U	0.2U
	9-Sep-20	–	–	0.1U	0.2U

Notes:

BOLD Analyte detected above laboratory reporting limit.

SHADE Analyte detected above Model Toxics Control Act (MTCA) cleanup level.

– = not applicable, not sampled

Abbreviations and Acronyms:

µg/L – micrograms per liter

cis-DCE – cis 1,2-dichloroetheylene

DTW – depth-to-water

ft AMSL – feet above mean sea level

ft bgs – feet below ground surface

ID – identification

J – estimated concentration

J+ - the result was an estimated quantity, but the result may be biased high

ND – non-detect

TCE – trichloroethylene

TOC – top-of-casing elevation

U – Analyte not detected above laboratory PQL. Beginning in 2018, value listed is the reporting limit.

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Table 6
FTP-1 and TVR/Old MATES Statistics
Fire Training Pit and TVR/Old MATES, Yakima Training Center, Washington

Site	Fire Training Pit			TVR / Old MATES															
Well ID	FTP-1			815-2	MMP-1	MMP-2	MRC-2	MTS-1	MTS-2	MTS-3	MTS-4	TVR-1	TVR-2	TVR-3	TVR-5	TVR-6	TVR-7	PAIC Well	Pomona Well
Compound	TPH-G	TPH-D	TPH-O	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE	TCE
Descriptive Statistics																			
First Sample Date	30-Jan-04			21-Mar-06	1-Mar-93	1-Mar-93	1-Mar-93	1-Jan-04	1-Jan-04	23-Mar-05	23-Mar-05	1-Jan-04	1-Jan-04	23-Mar-05	21-Mar-06	21-Mar-06	21-Mar-06	1-Mar-93	1-Mar-91
Last Sample Date	10-Sep-20			19-Mar-20	19-Mar-20	12-Sep-17	21-Sep-16	9-Sep-20	9-Sep-20	21-Mar-07	9-Sep-20	9-Sep-20	18-Mar-20	9-Sep-20	18-Mar-20	10-Sep-20	9-Sep-20	9-Sep-20	9-Sep-20
Number of Samples	32			29	15	5	7	33	33	3	31	33	19	32	29	30	30	32	34
Number of Non-Detects	0	0	0	0	15	5	7	0	0	3	0	0	0	0	0	0	0	32	34
Sample Mean	3,054	24,570	2,844	1.16	-	-	-	4.49	17.62	-	7.23	7.59	2.89	11.91	2.14	5.34	15.49	-	-
Standard Deviation	4,314	19,155	3,166	0.77	-	-	-	1.39	16.81	-	3.10	2.27	0.72	9.31	3.55	3.72	11.96	-	-
Minimum Concentration	710	4,350	93	0.26	-	-	-	2.70	4.40	-	0.52	3.20	1.50	1.90	0.10	0.37	0.40	-	-
Maximum Concentration	25,100	110,000	13,000	3.30	-	-	-	7.60	76.00	-	15.00	12.00	4.40	43.00	16.00	13.00	43.00	-	-
Date*	22-Aug-05	20-Mar-13	20-Aug-12	1-Aug-06	-	-	-	23-Mar-05	1-Aug-06	-	23-Mar-05	19-Sep-07	23-Mar-05	23-Mar-05	23-Sep-09	28-Sep-10	1-Aug-06	-	-
Distribution of Data																			
P Value	<0.0001	<0.0001	<0.0001	0.0001	-	-	-	0.0074	<0.0001	-	0.0423	0.1693	0.9268	0.0003	<0.0001	0.1091	0.0097	-	-
Normally Distributed?	No	No	No	No	-	-	-	No	No	-	No	Yes	Yes	No	No	Yes	No	-	-
Log P Value	0.0093	0.4480	0.0619	0.4565	-	-	-	0.1254	0.0028	-	<0.0001	-	-	0.9011	0.5484	-	0.0277	-	-
Log Normally Distributed?	No	Yes	Yes	Yes	-	-	-	Yes	No	-	No	-	-	Yes	Yes	-	No	-	-
Trend Analysis (Linear Regression)																			
Linear Regression P Value	-	0.7858	0.0002	<0.0001	-	-	-	<0.0001	-	-	-	0.0022	0.0107	<0.0001	0.0008	0.0764	-	-	-
Slope	-	1.94E-05	4.94E-04	-3.00E-04	-	-	-	-1.37E-04	-	-	-	-6.54E-04	-2.23E-04	-4.16E-04	-5.08E-04	-7.58E-04	-	-	-
Trend**	-	Up	Up	Down	-	-	-	Down	-	-	-	Down	Down	Down	Down	Down	-	-	-
Statistically Significant?	-	No	Yes	Yes	-	-	-	Yes	-	-	-	Yes	Yes	Yes	Yes	No	-	-	-
Trend Analysis (Mann-Kendall Test for Trend)																			
Tau Statistic	-0.359	-	-	-	-	-	-	-	-0.335	-	-0.624	-	-	-	-	-	-0.814	-	-
Two Tailed P Value	0.0041	-	-	-	-	-	-	-	0.0064	-	<0.0001	-	-	-	-	-	<0.0001	-	-
Trend	Down	-	-	-	-	-	-	-	Down	-	Down	-	-	-	-	-	Down	-	-
Statistically Significant?	Yes	-	-	-	-	-	-	-	Yes	-	Yes	-	-	-	-	-	Yes	-	-

Notes:

* = Date sample with highest concentration of TCE was collected from monitoring well

** = Trend for entire dataset not taking discontinuities into consideration

TPH-G – gasoline range total petroleum hydrocarbons in micrograms per liter

TPH-D – diesel range total petroleum hydrocarbons in micrograms per liter

TPH-O – heavy oil range total petroleum hydrocarbons in micrograms per liter

TCE – trichloroethylene in micrograms per liter

- = Not applicable; analysis not performed. Statistical analysis not performed on datasets composed of greater than 50% non-detects.

Distribution of Data - Data was tested for normal distribution using the Shapiro-Wilk test for normality. P values were generated by the Shapiro-Wilk test; P values equal to or less than 0.05 were not considered normally distributed. Logarithmic transformation was performed on datasets not considered normally distributed and again tested for normality using the Shapiro-Wilk test.

Trend Analysis (Linear Regression) - Performed on datasets considered normally or log-normally distributed. Trends with a P Value of less than 0.05 were considered statistically significant.

Trend Analysis (Mann-Kendall Test for Trend) - Performed on datasets not considered normally or log-normally distributed (non-parametric data). Trends with a Two-Tailed P Value of less than 0.05 or greater than 0.95 were considered statistically significant.

Additional discussion of statistical approach is included in Appendix B.

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APPENDIX A

COMPLETED FIELD FORMS AND LABORATORY ANALYTICAL REPORTS

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Joint Base Lewis-McChord

Well Purging and Sampling Record

FTP-1A-20200318

Well ID: FTP-1 **Sample ID:** FTP-1-20200318 **Sample Date/Time:** 3/18/20/1515/1520

Casing diameter/type: 4" Well Site Name: YTC Weather: 50° Sunny

Initial depth to water (w/o pump): 13.68' Sampling personnel: H D, BN

Screened interval(s): 8-18' Sampling method: Low Flow, Conventional, PDB, Spigot, Bailer

Total depth: 23.6 Water level indicator: Solinst 101

Final depth to water (w/o pump): 15.67 Water quality meter:

Measuring point: **North side of casing** Pump depth: Pump type/model:

	Δ < 1° C	Δ < 10%		Δ <10%, or 3 < 0.5	Δ < 0.1 pH	Δ < 10 mV	Δ < 0.3 ft	< 1L/min	Δ < 10 NTU, or 3 < 10 NTU		
Time	**Temp (°C)**	**Conductivity (µS/cm)**	**DO (%)**	**DO (mg/L)**	**pH**	**ORP (mV)**	**Water Level (feet btoc)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Purge Volume (L)**	**Additional Comments**
1438	started	boiling	3/17/20								
1510	well Purged dry										
1510	DTW=	13.72	3/18/20								
1515	collect	sample - MS/MSD									
1520	collect	duplicate									

Note:

Parameter Stabilization Limits:
(3 consecutive readings) for percent difference type parameters
Percent difference formula =
ABS [(first reading - second reading)/first reading) x 100]
Ex: Readings 12, 16, 15, 13
((12-16)/12)*100 = 33% ((16-15)/16)*100 = 6%
((15-13)/15)*100 = 13% In example, stabilization has not occurred.
Water volume per ft. 2"=.16, 4"=.64

# of Bottles / Analysis:

____ VOCs by 8260C
____
____
____
____
____

Well Monument Condition:

Joint Base Lewis-McChord

Well Purging and Sampling Record

Well ID: FTP-14 **Sample ID:** FTP-14-20200317 **Sample Date/Time:** 3/17/20/1545

Casing diameter/type: 4" Well Site Name: YTC Weather: 50° sunny

Initial depth to water (w/o pump): 18.52 Sampling personnel: HD, BH

Screened interval(s): 12-22' Sampling method: Low Flow, Conventional, PDB, Spigot, Bailer

Total depth: 22.5' Water level indicator: Solinst 101

Final depth to water (w/o pump): 18.53 Water quality meter:

Measuring point: **North side of casing** Pump depth: 17' Pump type/model:

	Δ < 1° C	Δ < 10%		Δ <10%, or 3 < 0.5	Δ < 0.1 pH	Δ < 10 mV	Δ < 0.3 ft	< 1L/min	Δ < 10 NTU, or 3 < 10 NTU		
Time	**Temp (°C)**	**Conductivity (µS/cm)**	**DO (%)**	**DO (mg/L)**	**pH**	**ORP (mV)**	**Water Level (feet btoc)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Purge Volume (L)**	**Additional Comments**
1545	Finish	purging	7.83 gal, collect sample								

Note:

Parameter Stabilization Limits:
(3 consecutive readings) for percent difference type parameters
Percent difference formula =
ABS [(first reading - second reading)/first reading) x 100]
Ex: Readings 12, 16, 15, 13
((12-16)/12)*100 = 33% ((16-15)/16)*100 = 6%
((15-13)/15)*100 = 13% In example, stabilization has not occurred.
Water volume per ft. 2"=.16, 4"=.64

# of Bottles / Analysis:

____ VOCs by 8260C
____
____
____
____
____

Well Monument Condition:

Joint Base Lewis-McChord

Well Purging and Sampling Record

Well ID: FTP-15 **Sample ID:** FTP-15-20200317 **Sample Date/Time:** 3/17/20/1620

Casing diameter/type: 4" Well Site Name: YTC Weather: 45° Sunny

Initial depth to water (w/o pump): 17.22 Sampling personnel: HD, BH

Screened interval(s): 10-20' Sampling method: Low Flow, Conventional, PDB, Spigot, Bailer

Total depth: 22.4' Water level indicator: Solinst 101

Final depth to water (w/o pump): Water quality meter:

Measuring point: **North side of casing** Pump depth: Pump type/model:

	Δ < 1° C	Δ < 10%		Δ <10%, or 3 < 0.5	Δ < 0.1 pH	Δ < 10 mV	Δ < 0.3 ft	< 1L/min	Δ < 10 NTU, or 3 < 10 NTU		
Time	**Temp (°C)**	**Conductivity (µS/cm)**	**DO (%)**	**DO (mg/L)**	**pH**	**ORP (mV)**	**Water Level (feet btoc)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Purge Volume (L)**	**Additional Comments**
	Finished Purging 10.2 gal										
1620	collected Sample										

Note:

Parameter Stabilization Limits:
(3 consecutive readings) for percent difference type parameters
Percent difference formula =
ABS [(first reading - second reading)/first reading) x 100]
Ex: Readings 12, 16, 15, 13
((12-16)/12)*100 = 33% ((16-15)/16)*100 = 6%
((15-13)/15)*100 = 13% In example, stabilization has not occurred.
Water volume per ft. 2"=.16, 4"=.64

# of Bottles / Analysis:

____ VOCs by 8260C
____
____
____
____
____

Well Monument Condition:

Joint Base Lewis-McChord

Well Purging and Sampling Record

Well ID: FTP-16 **Sample ID:** FTP-16-20200318 **Sample Date/Time:** 3/18/20/1625

Casing diameter/type: 4" Well Site Name: YTC Weather: 50° Sunny

Initial depth to water (w/o pump): 26.25' Sampling personnel: HD, BH

Screened interval(s): 20-30' Sampling method: Low Flow, Conventional, PDB, Spigot, Bailer

Total depth: 30' Water level indicator: Solinst 101

Final depth to water (w/o pump): Water quality meter:

Measuring point: **North side of casing** Pump depth: 25' Pump type/model:

	Δ < 1° C	Δ < 10%		Δ <10%, or 3 < 0.5	Δ < 0.1 pH	Δ < 10 mV	Δ < 0.3 ft	< 1L/min	Δ < 10 NTU, or 3 < 10 NTU		
Time	**Temp (°C)**	**Conductivity (µS/cm)**	**DO (%)**	**DO (mg/L)**	**pH**	**ORP (mV)**	**Water Level (feet btoc)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Purge Volume (L)**	**Additional Comments**
1420	Bailed	DRY	before	3 well volumes	were	obtained					
3/18/20											
	DTW=	26.35									
1625	collect	sample									

Note: 3 well volumes = 11.67 gal

Parameter Stabilization Limits:
(3 consecutive readings) for percent difference type parameters
Percent difference formula =
ABS [(first reading - second reading)/first reading) x 100]
Ex: Readings 12, 16, 15, 13
((12-16)/12)*100 = 33% ((16-15)/16)*100 = 6%
((15-13)/15)*100 = 13% In example, stabilization has not occurred.
Water volume per ft. 2"=.16, 4"=.64

# of Bottles / Analysis:

____ VOCs by 8260C

____

____

____

____

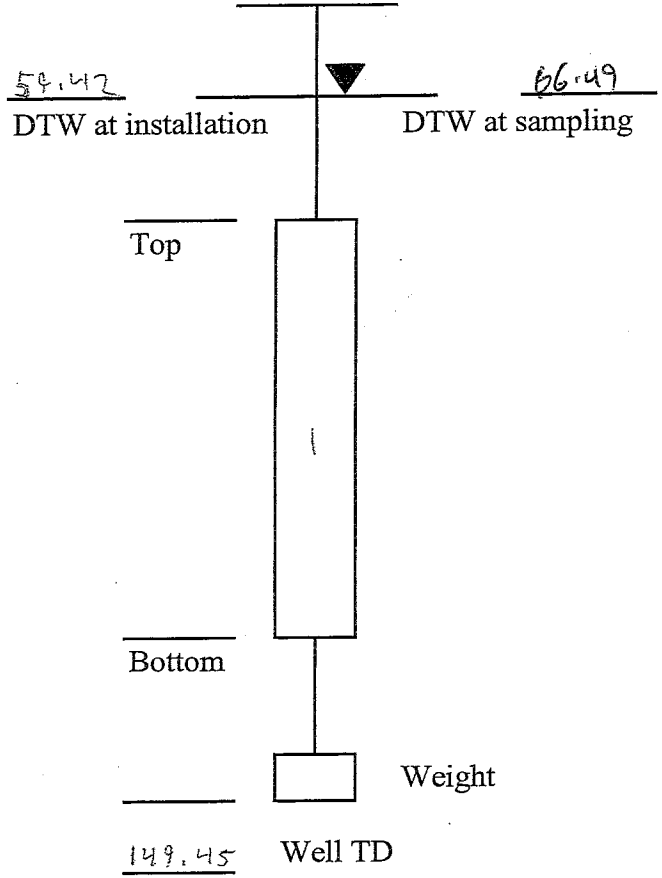
____

Well Monument Condition:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-7

Depth (BTOC)



Site Location: TVR

Project Number: 63044305

Well Diameter: 2"

PDB Installation Date: 9/24/19 Time: 0857

Sample Information

Sample No: TVR-7-20200318

Sample Date: 3/18/20 Time: 1412

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

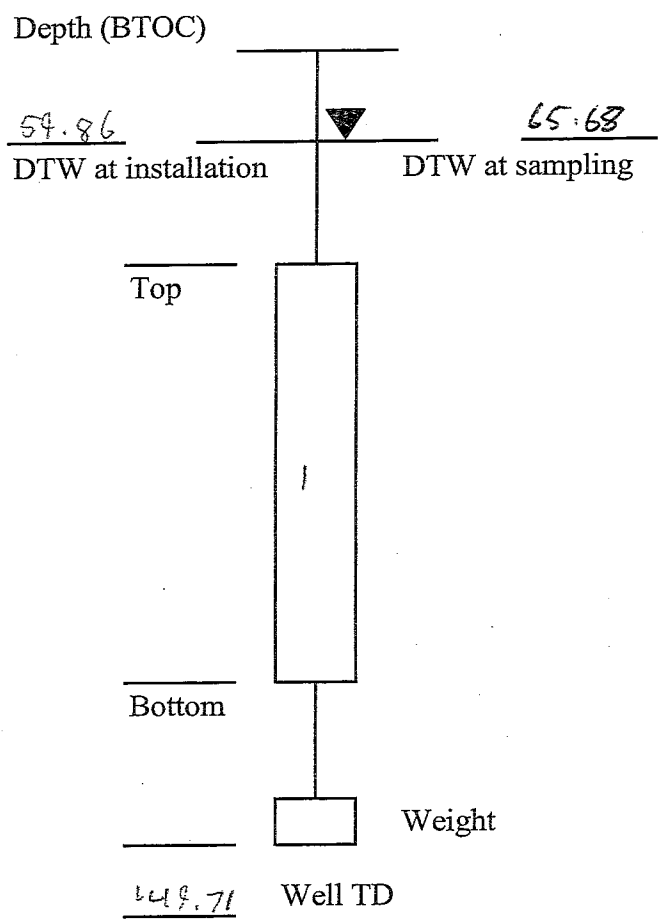
Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : WBC

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TUR-6



Site Location: TUR

Project Number: 6304305

Well Diameter: 2"

PDB Installation Date: 9/24/19 Time: 0940

Sample Information

Sample No: TUR-6-20200318

Sample Date: 3/18/20 Time: 1440

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-3

Depth (BTOC)

58.52 DTW at installation

66.22 DTW at sampling

Top

2

Bottom

Weight

57.63 Well TD

Site Location: TVR

Project Number: 630436S

Well Diameter: 4"

PDB Installation Date: 9/24/19 Time: 0912

Sample Information

Sample No: TVR-3A-20200318 TVR-3-20200318

Sample Date: 3/18/20 Time: 1422/1425

Sampling Personnel: HD, BIT

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) :

Well Casing Plug Locked and in Good Condition? Y

Comments: Put 2 PDB's back

Passive Diffusion Bag Sampling Form

Well Identification: MTS-4

Depth (BTOC)

79.41 — DTW at installation

86.24 — DTW at sampling

Top

Bottom

Weight

96.65 — Well TD

Site Location: TUR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 9/24/19 Time: 0844

Sample Information

Sample No: MTS-4-20200318

Sample Date: 3/18/20 Time: 1640

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: MTS-1

Depth (BTOC)

94.87 DTW at installation

102.27 DTW at sampling

Top

1

Bottom

Weight

127.71 Well TD

Site Location: TUR

Project Number: 6304605

Well Diameter: 4"

PDB Installation Date: 9/24/19 Time: 0815

Sample Information

Sample No: MTS-1-20200318

Sample Date: 3/18/20 Time: 1700

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: MTS-2

Depth (BTOC)

86.53 DTW at installation

93.72 DTW at sampling

Top

1

Bottom

Weight

113.39 Well TD

Site Location: TUR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 9/24/19 Time: 0822

Sample Information

Sample No: MTS-2-20200318

Sample Date: 3/18/20 Time: 1708

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments: ND weight

Passive Diffusion Bag Sampling Form

Well Identification: TUR-1

Depth (BTOC)

64.16 DTW at installation

75.51 DTW at sampling

Top

1

Bottom

Weight

106.43 Well TD

Site Location: TUR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 9/24/19 Time: 0930

Sample Information

Sample No: TUR-1-20200318

Sample Date: 3/18/20 Time: 1720

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

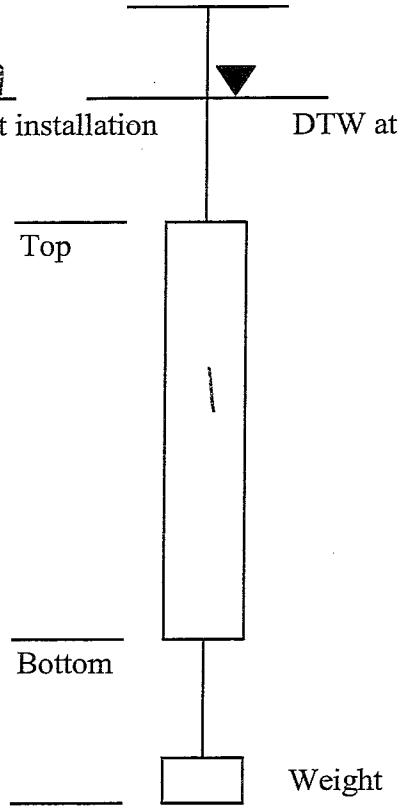
Passive Diffusion Bag Sampling Form

Well Identification: TVR-2

Depth (BTOC)

70.59 DTW at installation

73.14 DTW at sampling



96.85 Well TD

Site Location: TVR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: ~~3/29/18~~ 3/20/19 Time: 1605

Sample Information

Sample No: TVR-2-20200318

Sample Date: 3/18/20 Time: 1730

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-5

Depth (BTOC)

47.98 DTW at installation

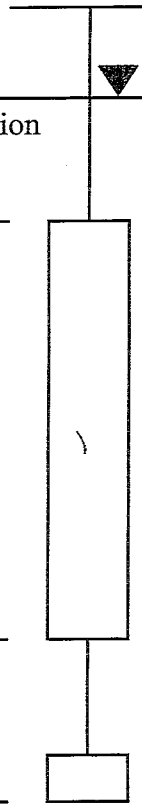
59.22 DTW at sampling

Top

Bottom

Weight

141.56 Well TD



Site Location: TVR

Project Number: 6304305

Well Diameter: 2"

PDB Installation Date: 9/24/19 Time: 0949

Sample Information

Sample No: TVR-5-20200318

Sample Date: 3/18/20 Time: 1738

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

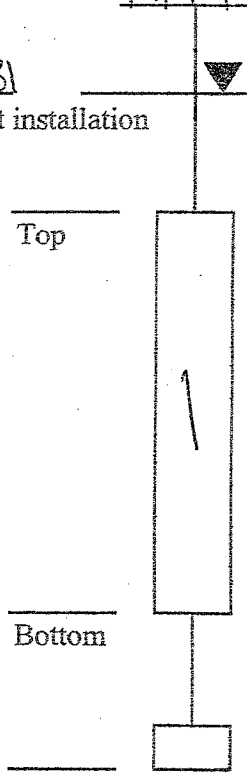
Passive Diffusion Bag Sampling Form

Well Identification: MMP-1

Depth (BTOC) ~~MMP-1~~

59.81 DTW at installation

62.09 DTW at sampling



102.26 Well TD

Site Location: YTC-TUR/Old MATES

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 4/8/19 Time: 1040

Sample Information

Sample No: TVR-MMP-1-20200319

Sample Date: 3/19/20 Time: 0835

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

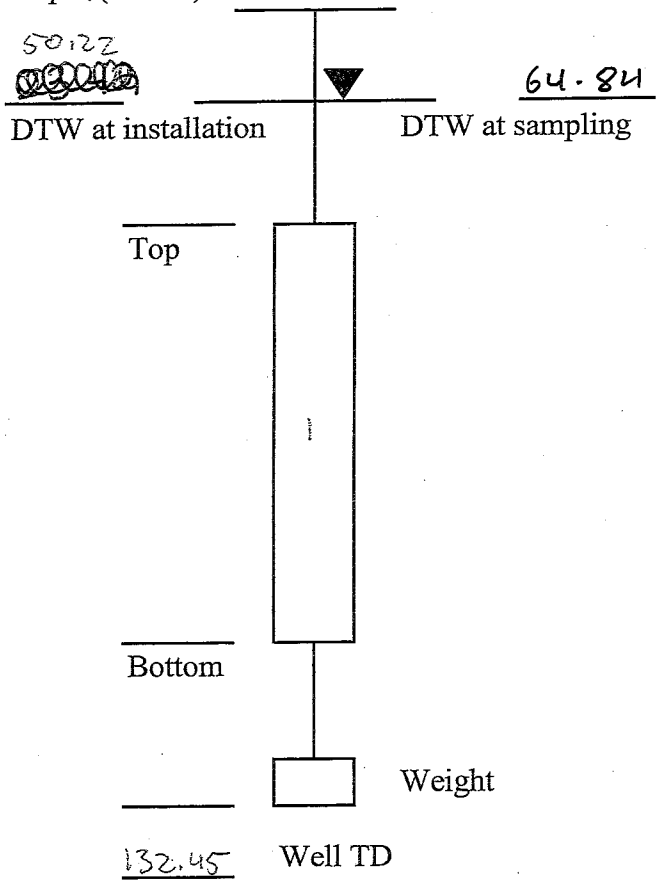
Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: [redacted] 815-Z



Site Location: TUR

Project Number: 630430S

Well Diameter: 2"

PDB Installation Date: 9/24/19 Time: 1000

Sample Information

Sample No: TUR-815-Z-20200319

Sample Date: ~~3/18/20~~ BH 3/19/20 Time: 0845

Sampling Personnel: HD, BH

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Y

Comments:

2 3/17/20 YTC

0943 Arrived on site at well MW-4
personnel: Hannah Demis, Brooke Haines
weather: 40° sunny
0950 Health and Safety meeting
0956 MW-4
DTW = 67.29
issues with generator, kinks in tubing had to pull pump up. Needs new Tubing
1050 Started pumping well.
1123 Hannah left to dump IDW.
1237 pumped well dry. MO6 to dump IDW at wash rack
1309 ~~MW-6~~ BH Decon pump
~~DTW~~ BH MW-6
1315 DTW = 39.31
1320 Pump on.
1341 MW-6 purged dry.
FTP-16
1355 DTW = 26.25 Well volume calc below:
32.2 - 26.25 = 5.95 = H R = 2"
~~3.14 · 2 · 5.95 =~~
r = 2" = 0.167'
$\pi r^2 h = \pi \cdot 0.167^2 \cdot 5.95 = 0.52\ ft^3$
1 well vol = 3.89 gal
3 well vol = 11.67 gal

BH

YTC 3/17/20 3

1400 Start bailing
1420 bailed dry, will sample at 80% recharge.
80% calculation: 5.95 x 0.80 = 4.76
32.2ft - 4.76ft = 27.44'
~~BH~~ FTP-1
1432 DTW = 13.68
well volume calculation
23.6' - 13.68' = 9.92' = H
r^2 2" = 0.167'
$\pi r^2 h = \pi \cdot 0.167^2 \cdot 9.92 = 0.869\ ft^3$
1 well volume = 6.5 gal
3 well vol = 19.5 gal
Pretty strong petroleum odor
1438 Started bailing
1510 well dry - purged
80% calculation: 9.92 · 0.80 = 7.94
23.6' - 7.94 = 15.66'
1512 FTP-13
DTW = 12.84
1528 FTP-14
DTW = 18.52 well volume calculation
22.5 - 18.52 = 3.98' = h
r^2 2" = 0.167'
$\pi r^2 h = \pi \cdot 0.167^2 \cdot 3.98 = 0.349\ ft^3$

BH

Rite in the Rain

4 3/17/20 YTC

1 well volume = 2.61 gal
3 well volumes = 7.83 gal
1545 collect sample after purging 7.83 gal.
FTP-14-20200317
Final DTW = 18.53
FTP-15
DTW = 17.22
well volume calculation
22.4 - 17.22 = 5.18 = h
r = 2" = 0.167'
$\pi r^2 h = \pi \cdot 0.672 \cdot 5.18 = 0.454 ft^3$
1 well volume = 3.40 gal
3 well volume = 10.2 gal
1620 Finished purging 10.2 gal, collected sample
FTP-15-20200317
~~1630~~ ~~1713~~ BH Got a flat tire, changed flat.
1713 Left Site.

BH

5 3/18/20 YTC

0950 Arrive at site, MW-4
0955 Health and safety meeting
1000 calibrate YSI:

	Initial	Final
pH_4	4.02	4.00
pH_7	7.21	7.00
pH_{10}	10.52	10.00
cond.	1342	1413

1025 MW-4
DTW = 84.94
1045 collect sample - MS/MSD
LPL-MW-4-20200318
1050 collect duplicate
LPL-MW-4A-20200318
1105 collect equipment blank
LPL-EB-001-20200318
1131 MW-5
DTW = Dry.
1136 MW-7
DTW = Dry
1145 MW-6
DTW = 42.41
1155 Collect sample
LPL-MW-6-20200318
1200 MO6 to buy ice and mail samples
1346 dumped IDW.

BH Rite in the Rain

6 3/18/20 YTC

1356	TVR-Pomona
1400	collect sample
	TVR-Pomona-20200318
1410	TVR-7
	DTW=66.49
1412	collect sample
	TVD-7-20200318
1420	TVR-3
	DTW=66.22
1422	collect sample
	TVR-3-20200318
1425	collect duplicate
	TVR-3A-20200318
	TVR-PAIC
1430	collect sample
	TVR-PAIC-20200318
1436	TVR-6
	DTW=65.68
1440	collect sample
	TVR-6-20200318
1510	FTP-1
	DTW=13.72
1515	collect sample-MS/MSD
	FTP-1-20200318

BH

YTC 3/18/20 7

1520	collect duplicate
	FTP-1A-20200318
1615	FTP-16
~~1625~~	DTW=26.35
~~1615~~ BH	collect sample
	FTP-16-20200318
1635	MTS-4
	DTW=86.24
1640	collect sample
	TVR-MTS-4-20200318
1651	MTS-3
	DTW=27.86
1655	MTS-1
	DTW=102.27
1700	collect sample-VOC
	TVR-MTS-1-20200318
1705	MTS-2
	DTW=93.72
1708	collect sample
	TVR-MTS-2-20200318
1716	TVR-1
	DTW=75.51
1720	collect sample
	TVR-1-20200318

BH

8 3/18/20 YTC

1724	TVR-2
	DTW = 73.14
1730	collect sample
	TVR-2-20200318
1734	~~815~~BH TVR-5
	DTW = 59.22
1738	collect sample
	TVR-5-20200318
1742	Left site to pick up ice and pack coolers.

BH

YTC 3/19/20 9

0823	Arrive on site.
	personnel: Hannah Dennis, Brooke Haines
	weather: 40° Sunny
0830	Health and safety meeting
0833	MMP-1
	DTW = 62.09
0835	collect sample
	TVR-MMP-1-20200319
0842	815-2
	DTW = 64.84
0845	collect sample
	TVR-815-2-20200319
0900	Dumped IDW. leaving site. Mob to mail samples in Seattle.

BH Rite in the Rain

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www.alsglobal.com

April 10, 2020

Analytical Report for Service Request No: K2002465

Garrett Lee
EA Engineering, Science and Technology
2200 6th Ave, Suite 707
Seattle, WA 98121

RE: JBLM / 6304305

Dear Garrett,

Enclosed are the results of the sample(s) submitted to our laboratory March 20, 2020
For your reference, these analyses have been assigned our service request number **K2002465.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mark Harris
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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ALS Environmental

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Date Received:** 03/20/2020
Sample Matrix: Water, Ground Water

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Six water, ground water samples were received for analysis at ALS Environmental on 03/20/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, Semivolatile Organic Compounds by GC/MS 04/01/2020: The upper control criterion was exceeded for N-Nitrosodiphenylamine and 2,2'-Oxybis(1-chloropropane) in the Initial Calibration Verification (ICV) for ICAL KC2000181. The field samples analyzed in this sequence did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Method 8270D, Semivolatile Organic Compounds by GC/MS 04/01/2020: The matrix spike recovery of several analytes for sample FTP-1-20200318 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.

Semivoa GC:

Method NWTPH-Dx, Diesel and Residual Range Organics 04/01/20: The control criteria for matrix spike and duplicate matrix spike recovery of diesel and residual range organics for sample FTP-1-20200318 were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Volatiles by GC/MS:

Method 8260C, Volatile Organic Compounds by GC/MS 04/01/2020: The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS13\0401F004.D: 2,2-Dichloropropane, Methyl Acetate, and 2-Hexanone. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Method 8260C, Volatile Organic Compounds by GC/MS 04/01/2020: The control criteria were exceeded for 4-Bromofluorobenzene and Toluene-d8 in Matrix Spike (MS) KQ2004533-01. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Method 8260C, Volatile Organic Compounds by GC/MS 04/01/2020: The matrix spike recovery of several analytes for sample FTP-1-20200318 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Method 8260C, Volatile Organic Compounds by GC/MS 04/01/2020: The Relative Percent Difference (RPD) for Toluene and trans-1,3-Dichloropropene in the replicate Laboratory Control Sample (LCS) analyses (KQ2004533-05 and KQ2004533-06) was outside control criteria: 21, 22, 20. Recovery in the Laboratory Control Samples (LCS/DLCS) was acceptable. The data was flagged to indicate the problem.

Approved by Noe D. Oanh Date 04/10/2020

Chain of Custody

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CHAIN OF CUSTODY

K2002465

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC # | Cooler # 1 of 1

Lab Quote # | Lab Job #:

Client / Reporting Information

Company Name: EA Engineering, Science, and Technology, Inc., PBC

Address: 2200 6th Ave., Suite 707

City: Seattle State: WA Zip: 98121

Project Contact: Tim McCormack and per contract

Phone #: 206-452-5350

Samplers's Name/Signature: Hannah Dennis Dennis

Project Information

Project Name: JBLM

Street:

City: Joint Base Lewis McChord State: WA

Project #: 6304305

Email: tmccormack@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com

Purchase Order #: 17578

Analytical Information

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Lab Sample ID	Sample ID	Collection Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
	FTP-1-20200318	18-Mar-2020	15:15	HD	GW	30	24							6	X	X	X	X	MS/MSD
	FTP-1A-20200318	18-Mar-2020	15:20	HD	GW	10	8							2	X	X	X	X	
	FTP-16-20200318	18-Mar-2020	16:25	HD	GW	5	5										X	X	
	FTP-14-20200317	17-Mar-2020	15:45	HD	GW	5	5										X	X	
	FTP-15-20200317	17-Mar-2020	16:20	HD	GW	5	5										X	X	
	FTP-TB-001-20200317	17-Mar-2020	15:45	HD	W	2	2										X		TRIP BLANK

Turnaround Time (Business days): standard

Data Deliverable Information: Level IV deliverable, Equis EDD and per contract

Comments / Remarks: Samples from Site IRP / Phase 2021H / Task 2021B.

Sample Custody must be documented below each time samples change possession.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Hannah Dennis	3/19/20/11:45	1 3/20/20 0946	2		2
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3 3		3	4		4
Relinquished by:	Date Time:	Received By:	On Ice Y / N	Trip Blank Y / N	Cooler Temp.
5 5		5	Labels Match Coc? Y / N		____ oC

PC MH

Cooler Receipt and Preservation Form

Client EA Eng Service Request K20 0 2465

Received: 3/20/20 Opened: 3/20/20 By: RR Unloaded: 3/20/20 By: RR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
4.1	–	–	–	–	398004888WS	1/2	391241484002	
4.6	–	–	–	–		2/4	391250309502	
1.8	–	–	–	–		2/2	391241484013	

4. Packing material: (*Inserts*) (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y (N)
12. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
Trip blank	2 40 VOA		X							

Notes, Discrepancies, & Resolutions: _____

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
FTP-1-20200318	K2002465-001	03/18/2020	03/20/2020
FTP-1A-20200318	K2002465-002	03/18/2020	03/20/2020
FTP-16-20200318	K2002465-003	03/18/2020	03/20/2020
FTP-14-20200317	K2002465-004	03/17/2020	03/20/2020
FTP-15-20200317	K2002465-005	03/17/2020	03/20/2020
FTP-1-20200318	KWG2000889-1	03/18/2020	03/20/2020
FTP-1-20200318MS	KWG2000889-2	03/18/2020	03/20/2020
FTP-1-20200318DMS	KWG2000889-3	03/18/2020	03/20/2020

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/2020
Sample Matrix:	Ground water	**Date Received:**	03/20/2020

Diesel and Residual Range Organics

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**37000**	Y	53	22	12	1	03/26/20	04/01/20	KWG2000889	
Residual Range Organics (RRO)	**2700**	L	110	53	21	1	03/26/20	04/01/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	104	56-125	04/01/20	Acceptable
n-Triacontane	78	50-150	04/01/20	Acceptable

Comments:

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/2020
Sample Matrix:	Ground water	**Date Received:**	03/20/2020

Diesel and Residual Range Organics

Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**34000**	Y	53	21	12	1	03/26/20	04/01/20	KWG2000889	
Residual Range Organics (RRO)	**2500**	L	110	53	20	1	03/26/20	04/01/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	56-125	04/01/20	Acceptable
n-Triacontane	75	50-150	04/01/20	Acceptable

Comments:

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/2020
Sample Matrix:	Ground water	**Date Received:**	03/20/2020

Diesel and Residual Range Organics

Sample Name:	FTP-16-20200318	**Units:**	ug/L
Lab Code:	K2002465-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**110**	Y	54	22	12	1	03/26/20	03/31/20	KWG2000889	
Residual Range Organics (RRO)	**210**	Z	110	54	21	1	03/26/20	03/31/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	79	56-125	03/31/20	Acceptable
n-Triacontane	82	50-150	03/31/20	Acceptable

Comments:

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/17/2020
Sample Matrix:	Ground water	**Date Received:**	03/20/2020

Diesel and Residual Range Organics

Sample Name:	FTP-14-20200317	**Units:**	ug/L
Lab Code:	K2002465-004	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**140**	Y	55	22	13	1	03/26/20	03/31/20	KWG2000889	
Residual Range Organics (RRO)	**85**	J	110	55	21	1	03/26/20	03/31/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	56-125	03/31/20	Acceptable
n-Triacontane	81	50-150	03/31/20	Acceptable

Comments:

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/17/2020
Sample Matrix:	Ground water	**Date Received:**	03/20/2020

Diesel and Residual Range Organics

Sample Name:	FTP-15-20200317	**Units:**	ug/L
Lab Code:	K2002465-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**94**	Y	54	22	12	1	03/26/20	03/31/20	KWG2000889	
Residual Range Organics (RRO)	**340**	Z	110	54	21	1	03/26/20	03/31/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	56-125	03/31/20	Acceptable
n-Triacontane	91	50-150	03/31/20	Acceptable

Comments:

Analytical Results

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground water	**Date Received:**	NA

Diesel and Residual Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG2000889-6	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**13**	J	50	20	11	1	03/26/20	03/31/20	KWG2000889	
Residual Range Organics (RRO)	**26**	J	100	50	19	1	03/26/20	03/31/20	KWG2000889	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	80	56-125	03/31/20	Acceptable
n-Triacontane	75	50-150	03/31/20	Acceptable

Comments:

QA/QC Report

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground water

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C **Units:** Percent
Analysis Method: NWTPH-Dx **Level:** Low

Sample Name	Lab Code	Sur1	Sur2
FTP-1-20200318	K2002465-001	104	78
FTP-1A-20200318	K2002465-002	85	75
FTP-16-20200318	K2002465-003	79	82
FTP-14-20200317	K2002465-004	87	81
FTP-15-20200317	K2002465-005	87	91
FTP-1-20200318DUP	KWG2000889-1	109	78
Method Blank	KWG2000889-6	80	75
FTP-1-20200318MS	KWG2000889-2	97	85
FTP-1-20200318DMS	KWG2000889-3	109	80
Lab Control Sample	KWG2000889-5	86	78

Surrogate Recovery Control Limits (%)

Sur1	o-Terphenyl	56-125
Sur2	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Extracted:**	03/26/2020
Sample Matrix:	Ground water	**Date Analyzed:**	04/01/2020

Matrix Spike/Duplicate Matrix Spike Summary
Diesel and Residual Range Organics

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG2000889

		FTP-1-20200318MS KWG2000889-2 Matrix Spike			FTP-1-20200318DMS KWG2000889-3 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	37000	42000	3370	138 #	40100	3400	81 #	36-132	5	30
Residual Range Organics (RRO)	2700	4800	1680	125 *	4710	1700	118 *	41-113	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Extracted:**	03/26/2020
Sample Matrix:	Ground water	**Date Analyzed:**	04/01/2020

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG2000889

				FTP-1-20200318DUP KWG2000889-1 Duplicate Sample			
Analyte Name	**LOQ**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	55	12	37000	37000	37000	0	30
Residual Range Organics (RRO)	110	21	2700	2800	2700	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Extracted:**	03/26/2020
Sample Matrix:	Ground water	**Date Analyzed:**	03/31/2020

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	NWTPH-Dx	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG2000889

Lab Control Sample
KWG2000889-5
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	3650	3200	114	36-132
Residual Range Organics (RRO)	1770	1600	111	41-113

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Extracted:**	03/26/2020
Sample Matrix:	Ground water	**Date Analyzed:**	03/31/2020
		Time Analyzed:	19:39

Method Blank Summary
Diesel and Residual Range Organics

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG2000889-6	**File ID:**	J:\GC21\DATA\033120F\0331F125.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG2000889

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG2000889-5	J:\GC21\DATA\033120F\0331F124.D	03/31/20	19:17
FTP-16-20200318	K2002465-003	J:\GC21\DATA\033120F\0331F126.D	03/31/20	20:02
FTP-14-20200317	K2002465-004	J:\GC21\DATA\033120F\0331F127.D	03/31/20	20:24
FTP-15-20200317	K2002465-005	J:\GC21\DATA\033120F\0331F131.D	03/31/20	21:54
FTP-1A-20200318	K2002465-002	J:\GC21\DATA\033120F\0331F138.D	04/01/20	00:31
FTP-1-20200318	K2002465-001	J:\GC21\DATA\033120F\0331F139.D	04/01/20	00:53
FTP-1-20200318DUP	KWG2000889-1	J:\GC21\DATA\033120F\0331F140.D	04/01/20	01:16
FTP-1-20200318MS	KWG2000889-2	J:\GC21\DATA\033120F\0331F146.D	04/01/20	03:30
FTP-1-20200318DMS	KWG2000889-3	J:\GC21\DATA\033120F\0331F147.D	04/01/20	03:53

QA/QC Report

Client:	EA Engineering, Science, and Technology	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Extracted:**	03/26/2020
Sample Matrix:	Ground water	**Date Analyzed:**	03/31/2020
		Time Analyzed:	19:17

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG2000889-5	**File ID:**	J:\GC21\DATA\033120F\0331F124.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG2000889

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG2000889-6	J:\GC21\DATA\033120F\0331F125.D	03/31/20	19:39
FTP-16-20200318	K2002465-003	J:\GC21\DATA\033120F\0331F126.D	03/31/20	20:02
FTP-14-20200317	K2002465-004	J:\GC21\DATA\033120F\0331F127.D	03/31/20	20:24
FTP-15-20200317	K2002465-005	J:\GC21\DATA\033120F\0331F131.D	03/31/20	21:54
FTP-1A-20200318	K2002465-002	J:\GC21\DATA\033120F\0331F138.D	04/01/20	00:31
FTP-1-20200318	K2002465-001	J:\GC21\DATA\033120F\0331F139.D	04/01/20	00:53
FTP-1-20200318DUP	KWG2000889-1	J:\GC21\DATA\033120F\0331F140.D	04/01/20	01:16
FTP-1-20200318MS	KWG2000889-2	J:\GC21\DATA\033120F\0331F146.D	04/01/20	03:30
FTP-1-20200318DMS	KWG2000889-3	J:\GC21\DATA\033120F\0331F147.D	04/01/20	03:53

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305 **Calibration Date:** 10/21/2019

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL16158 **Column:** ZB-1
Instrument ID: GC21

Level ID	File ID
A	J:\GC21\DATA\102119F\1021F105.D
B	J:\GC21\DATA\102119F\1021F106.D
C	J:\GC21\DATA\102119F\1021F107.D
D	J:\GC21\DATA\102119F\1021F108.D
E	J:\GC21\DATA\102119F\1021F112.D
F	J:\GC21\DATA\102119F\1021F113.D
G	J:\GC21\DATA\102119F\1021F114.D
H	J:\GC21\DATA\102119F\1021F115.D
I	J:\GC21\DATA\102119F\1021F116.D
J	J:\GC21\DATA\102119F\1021F120.D
K	J:\GC21\DATA\102119F\1021F121.D
L	J:\GC21\DATA\102119F\1021F122.D
M	J:\GC21\DATA\102119F\1021F123.D
N	J:\GC21\DATA\102119F\1021F124.D
O	J:\GC21\DATA\102119F\1021F125.D
P	J:\GC21\DATA\102119F\1021F126.D
Q	J:\GC21\DATA\102119F\1021F127.D
R	J:\GC21\DATA\102419F\1024F120.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)													J	20	1620
	K	50	1650	L	200	1560	M	500	1630	N	2000	1480	O	5000	1430
	P	20000	1320	Q	50000	1350									
Residual Range Organics (RRO)	A	200	990	B	500	922	C	2000	856	D	5000	819			
							R	50	991						
o-Terphenyl													J	1.0	2100
	K	2.5	1990	L	10	1940	M	25	1920	N	100	1820	O	250	1710
n-Triacontane													J	1.0	1740
	K	2.5	1520	L	10	1580	M	25	1440	N	100	1500	O	250	1320

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305 **Calibration Date:** 10/21/2019

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL16158 **Column:** ZB-1
Instrument ID: GC21

Analyte Name	Compound Type	Calibration Evaluation: Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	8.6		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	8.5		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	7.1		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	9.2		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305

Service Request: K2002465
Calibration Date: 10/21/2019
Date Analyzed: 10/22/2019 - 10/25/2019

Second Source Calibration Verification
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL16158
Units: ppm

File ID: J:\GC21\DATA\102119F\1021F118.D
J:\GC21\DATA\102119F\1021F129.D
J:\GC21\DATA\102519F\1025F110.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	960	1500	1440	-4	NA	± 20 %	AverageRF
Residual Range Organics (RRO)	1000	890	915	817	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305

Service Request: K2002465
Date Analyzed: 03/31/2020

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/21/2019
Calibration ID: CAL16158
Analysis Lot: KWG2000940
Units: ppm

File ID: J:\GC21\DATA\033120F\0331F111.D
J:\GC21\DATA\033120F\0331F112.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1500	1500	0	NA	± 20	AverageRF
Residual Range Organics (RRO)	1000	1000	915	957	5	NA	± 20	AverageRF
o-Terphenyl	50	49	1910	1880	-2	NA	± 20	AverageRF
n-Triacontane	50	46	1520	1390	-8	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305

Service Request: K2002465
Date Analyzed: 03/31/2020

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/21/2019
Calibration ID: CAL16158
Analysis Lot: KWG2000940
Units: ppm

File ID: J:\GC21\DATA\033120F\0331F128.D
J:\GC21\DATA\033120F\0331F129.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1500	1560	4	NA	± 20	AverageRF
Residual Range Organics (RRO)	1000	1100	915	964	5	NA	± 20	AverageRF
o-Terphenyl	50	51	1910	1940	2	NA	± 20	AverageRF
n-Triacontane	50	46	1520	1390	-9	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305

Service Request: K2002465
Date Analyzed: 04/01/2020

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/21/2019
Calibration ID: CAL16158
Analysis Lot: KWG2000940
Units: ppm

File ID: J:\GC21\DATA\033120F\0331F141.D
J:\GC21\DATA\033120F\0331F142.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1500	1660	11	NA	± 20	AverageRF
Residual Range Organics (RRO)	1000	1100	915	1000	9	NA	± 20	AverageRF
o-Terphenyl	50	53	1910	2020	5	NA	± 20	AverageRF
n-Triacontane	50	48	1520	1460	-4	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305

Service Request: K2002465
Date Analyzed: 04/01/2020

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 10/21/2019
Calibration ID: CAL16158
Analysis Lot: KWG2000940
Units: ppm

File ID: J:\GC21\DATA\033120F\0331F151.D
J:\GC21\DATA\033120F\0331F152.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1500	1530	2	NA	± 20	AverageRF
Residual Range Organics (RRO)	1000	1100	915	1010	10	NA	± 20	AverageRF
o-Terphenyl	50	50	1910	1900	-1	NA	± 20	AverageRF
n-Triacontane	50	47	1520	1430	-5	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305

Analysis Run Log
Diesel and Residual Range Organics

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG2000940
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0331F111.D	Continuing Calibration Verification	KWG2000940-1	3/31/2020	14:24		3/31/2020	14:40
0331F112.D	Continuing Calibration Verification	KWG2000940-1	3/31/2020	14:47		3/31/2020	15:03
0331F113.D	Instrument Blank	KWG2000940-5	3/31/2020	15:09		3/31/2020	15:25
0331F114.D	ZZZZZZ	ZZZZZZ	3/31/2020	15:32		3/31/2020	15:48
0331F115.D	ZZZZZZ	ZZZZZZ	3/31/2020	15:54		3/31/2020	16:10
0331F116.D	ZZZZZZ	ZZZZZZ	3/31/2020	16:17		3/31/2020	16:33
0331F117.D	ZZZZZZ	ZZZZZZ	3/31/2020	16:39		3/31/2020	16:55
0331F118.D	ZZZZZZ	ZZZZZZ	3/31/2020	17:02		3/31/2020	17:18
0331F119.D	ZZZZZZ	ZZZZZZ	3/31/2020	17:24		3/31/2020	17:40
0331F120.D	ZZZZZZ	ZZZZZZ	3/31/2020	17:47		3/31/2020	18:03
0331F121.D	ZZZZZZ	ZZZZZZ	3/31/2020	18:09		3/31/2020	18:25
0331F122.D	ZZZZZZ	ZZZZZZ	3/31/2020	18:32		3/31/2020	18:48
0331F123.D	ZZZZZZ	ZZZZZZ	3/31/2020	18:54		3/31/2020	19:10
0331F124.D	Lab Control Sample	KWG2000889-5	3/31/2020	19:17		3/31/2020	19:33
0331F125.D	Method Blank	KWG2000889-6	3/31/2020	19:39		3/31/2020	19:55
0331F126.D	FTP-16-20200318	K2002465-003	3/31/2020	20:02		3/31/2020	20:18
0331F127.D	FTP-14-20200317	K2002465-004	3/31/2020	20:24		3/31/2020	20:40
0331F128.D	Continuing Calibration Verification	KWG2000940-2	3/31/2020	20:47		3/31/2020	21:03
0331F129.D	Continuing Calibration Verification	KWG2000940-2	3/31/2020	21:09		3/31/2020	21:25
0331F130.D	Instrument Blank	KWG2000940-6	3/31/2020	21:32		3/31/2020	21:48
0331F131.D	FTP-15-20200317	K2002465-005	3/31/2020	21:54		3/31/2020	22:10
0331F132.D	ZZZZZZ	ZZZZZZ	3/31/2020	22:16		3/31/2020	22:32
0331F133.D	ZZZZZZ	ZZZZZZ	3/31/2020	22:39		3/31/2020	22:55
0331F134.D	ZZZZZZ	ZZZZZZ	3/31/2020	23:01		3/31/2020	23:17
0331F135.D	ZZZZZZ	ZZZZZZ	3/31/2020	23:24		3/31/2020	23:40
0331F136.D	ZZZZZZ	ZZZZZZ	3/31/2020	23:46		4/1/2020	00:02
0331F137.D	ZZZZZZ	ZZZZZZ	4/1/2020	00:08		4/1/2020	00:24
0331F138.D	FTP-1A-20200318	K2002465-002	4/1/2020	00:31		4/1/2020	00:47
0331F139.D	FTP-1-20200318	K2002465-001	4/1/2020	00:53		4/1/2020	01:09
0331F140.D	FTP-1-20200318DUP	KWG2000889-1	4/1/2020	01:16		4/1/2020	01:32
0331F141.D	Continuing Calibration Verification	KWG2000940-3	4/1/2020	01:38		4/1/2020	01:54
0331F142.D	Continuing Calibration Verification	KWG2000940-3	4/1/2020	02:01		4/1/2020	02:17
0331F143.D	Instrument Blank	KWG2000940-7	4/1/2020	02:23		4/1/2020	02:39
0331F144.D	ZZZZZZ	ZZZZZZ	4/1/2020	02:45		4/1/2020	03:01
0331F145.D	ZZZZZZ	ZZZZZZ	4/1/2020	03:08		4/1/2020	03:24

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: EA Engineering, Science, and Technology **Service Request:** K2002465
Project: JBLM/6304305

Analysis Run Log
Diesel and Residual Range Organics

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG2000940
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0331F146.D	FTP-1-20200318MS	KWG2000889-2	4/1/2020	03:30		4/1/2020	03:46
0331F147.D	FTP-1-20200318DMS	KWG2000889-3	4/1/2020	03:53		4/1/2020	04:09
0331F148.D	ZZZZZZ	ZZZZZZ	4/1/2020	04:15		4/1/2020	04:31
0331F149.D	ZZZZZZ	ZZZZZZ	4/1/2020	04:37		4/1/2020	04:53
0331F150.D	ZZZZZZ	ZZZZZZ	4/1/2020	05:00		4/1/2020	05:16
0331F151.D	Continuing Calibration Verification	KWG2000940-4	4/1/2020	05:22		4/1/2020	05:38
0331F152.D	Continuing Calibration Verification	KWG2000940-4	4/1/2020	05:45		4/1/2020	06:01
0331F153.D	Instrument Blank	KWG2000940-8	4/1/2020	06:07		4/1/2020	06:23
0401F103.D	Continuing Calibration Verification	KWG2000940-9	4/1/2020	12:51		4/1/2020	13:07
0401F104.D	Continuing Calibration Verification	KWG2000940-9	4/1/2020	13:13		4/1/2020	13:29
0401F105.D	Instrument Blank	KWG2000940-11	4/1/2020	13:36		4/1/2020	13:52
0401F106.D	ZZZZZZ	ZZZZZZ	4/1/2020	13:59		4/1/2020	14:15
0401F107.D	Continuing Calibration Verification	KWG2000940-10	4/1/2020	14:21		4/1/2020	14:37
0401F108.D	Continuing Calibration Verification	KWG2000940-10	4/1/2020	14:44		4/1/2020	15:00
0401F109.D	Instrument Blank	KWG2000940-12	4/1/2020	15:06		4/1/2020	15:22

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: EA Engineering, Science, and Technology
Project: JBLM/6304305
Sample Matrix: Ground water

Service Request: K2002465
Date Extracted: 03/26/2020

Extraction Prep Log
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Extraction Lot: KWG2000889
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
FTP-1-20200318	K2002465-001	03/18/20	03/20/20	475mL	1ml	NA	
FTP-1A-20200318	K2002465-002	03/18/20	03/20/20	480mL	1ml	NA	
FTP-16-20200318	K2002465-003	03/18/20	03/20/20	465mL	1ml	NA	
FTP-14-20200317	K2002465-004	03/17/20	03/20/20	455mL	1ml	NA	
FTP-15-20200317	K2002465-005	03/17/20	03/20/20	470mL	1ml	NA	
FTP-1-20200318DUP	KWG2000889-1	03/18/20	03/20/20	460mL	1ml	NA	
Method Blank	KWG2000889-6	NA	NA	500mL	1ml	NA	
FTP-1-20200318MS	KWG2000889-2	03/18/20	03/20/20	475mL	1ml	NA	
FTP-1-20200318DMS	KWG2000889-3	03/18/20	03/20/20	470mL	1ml	NA	
Lab Control Sample	KWG2000889-5	NA	NA	500mL	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:15
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	**2470**	1250	125	60.0	5	03/23/20 14:12	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	86	50 - 150	03/23/20 14:12	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	**2890**	1250	125	60.0	5	03/23/20 15:00	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	83	50 - 150	03/23/20 15:00	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 16:25
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-16-20200318	**Units:**	ug/L
Lab Code:	K2002465-003	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	**15.2 J**	250	25.0	12.0	1	03/23/20 16:12	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	86	50 - 150	03/23/20 16:12	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/17/20 15:45
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-14-20200317	**Units:**	ug/L
Lab Code:	K2002465-004	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	**14.5 J**	250	25.0	12.0	1	03/23/20 16:36	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	84	50 - 150	03/23/20 16:36	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/17/20 16:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-15-20200317	**Units:**	ug/L
Lab Code:	K2002465-005	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	**17.4 J**	250	25.0	12.0	1	03/23/20 13:49	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	85	50 - 150	03/23/20 13:49	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/17/20 15:45
Sample Matrix:	Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-TB-001-20200317	**Units:**	ug/L
Lab Code:	K2002465-006	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	ND U	250	25.0	12.0	1	03/23/20 11:26	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	85	50 - 150	03/23/20 11:26	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004028-05	**Basis:**	NA

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics-NWTPH	ND U	250	25.0	12.0	1	03/23/20 10:38	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	86	50 - 150	03/23/20 10:38	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx
Extraction Method: None

Sample Name	Lab Code	1,4-Difluorobenzene 50-150
FTP-1-20200318	K2002465-001	86
FTP-1A-20200318	K2002465-002	83
FTP-16-20200318	K2002465-003	86
FTP-14-20200317	K2002465-004	84
FTP-15-20200317	K2002465-005	85
FTP-1-20200318	KQ2004028-07	86
Method Blank	KQ2004028-05	86
Lab Control Sample	KQ2004028-06	87

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465

Project: JBLM/6304305

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY

Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx

Extraction Method: None

Sample Name	Lab Code	1,4-Difluorobenzene 50-150
FTP-TB-001-20200317	K2002465-006	85

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	03/23/20

Replicate Sample Summary

Volatile Petroleum Products Method for Soil and Water for the Northwest

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample KQ2004028-07 Result	Average	RPD	RPD Limit
Gasoline Range Organics-NWTPH	NWTPH-Gx	1250	125	60.0	2470	2230	2350	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method:	NWTPH-Gx	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	674286

Lab Control Sample
KQ2004028-06

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Gasoline Range Organics-NWTPH	470	500	94	80-119

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20 10:38
Sample Matrix:	Ground Water	**Date Extracted:**	

Method Blank Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Sample Name:	Method Blank	**Instrument ID:**	K-GC-39
Lab Code:	KQ2004028-05	**File ID:**	J:\GC39\DATA\032320\0323F006.D\
Analysis Method:	NWTPH-Gx	**Analysis Lot:**	674286
Prep Method:	None		

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2004028-06	J:\GC39\DATA\032320\0323F007.D\	03/23/20 11:02
FTP-TB-001-20200317	K2002465-006	J:\GC39\DATA\032320\0323F008.D\	03/23/20 11:26
FTP-15-20200317	K2002465-005	J:\GC39\DATA\032320\0323F014.D\	03/23/20 13:49
FTP-1-20200318	K2002465-001	J:\GC39\DATA\032320\0323F015.D\	03/23/20 14:12
FTP-1-20200318DUP	KQ2004028-07	J:\GC39\DATA\032320\0323F016.D\	03/23/20 14:36
FTP-1A-20200318	K2002465-002	J:\GC39\DATA\032320\0323F017.D\	03/23/20 15:00
FTP-16-20200318	K2002465-003	J:\GC39\DATA\032320\0323F020.D\	03/23/20 16:12
FTP-14-20200317	K2002465-004	J:\GC39\DATA\032320\0323F021.D\	03/23/20 16:36

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20 11:02
Sample Matrix:	Ground Water	**Date Extracted:**	

Lab Control Sample Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-39
Lab Code:	KQ2004028-06	**File ID:**	J:\GC39\DATA\032320\0323F007.D\
Analysis Method:	NWTPH-Gx	**Analysis Lot:**	674286
Prep Method:	None		

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ2004028-05	J:\GC39\DATA\032320\0323F006.D\	03/23/20 10:38
FTP-TB-001-20200317	K2002465-006	J:\GC39\DATA\032320\0323F008.D\	03/23/20 11:26
FTP-15-20200317	K2002465-005	J:\GC39\DATA\032320\0323F014.D\	03/23/20 13:49
FTP-1-20200318	K2002465-001	J:\GC39\DATA\032320\0323F015.D\	03/23/20 14:12
FTP-1-20200318DUP	KQ2004028-07	J:\GC39\DATA\032320\0323F016.D\	03/23/20 14:36
FTP-1A-20200318	K2002465-002	J:\GC39\DATA\032320\0323F017.D\	03/23/20 15:00
FTP-16-20200318	K2002465-003	J:\GC39\DATA\032320\0323F020.D\	03/23/20 16:12
FTP-14-20200317	K2002465-004	J:\GC39\DATA\032320\0323F021.D\	03/23/20 16:36

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 12/11/2019

Initial Calibration Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Calibration ID: KC1900546 **Signal ID:** DB-624
Instrument ID: K-GC-39

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900546-01	ICAL 50/20	J:\GC39\DATA\121119\1211F006.D	12/11/2019 09:55
02	KC1900546-02	ICAL 100/25	J:\GC39\DATA\121119\1211F007.D	12/11/2019 10:18
03	KC1900546-03	ICAL 200/50	J:\GC39\DATA\121119\1211F008.D	12/11/2019 10:42
04	KC1900546-04	ICAL 500/100	J:\GC39\DATA\121119\1211F009.D	12/11/2019 11:06
05	KC1900546-05	ICAL 1000/150	J:\GC39\DATA\121119\1211F010.D	12/11/2019 11:30
06	KC1900546-06	ICAL 5000	J:\GC39\DATA\121119\1211F011.D	12/11/2019 11:54
07	KC1900546-07	ICAL 10000	J:\GC39\DATA\121119\1211F012.D	12/11/2019 12:18

Analyte

1,4-Difluorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20.000	1.359E5	02	25.000	1.342E5	03	50.000	1.397E5	04	100.000	1.305E5
05	150.000	1.365E5									

Gasoline Range Organics-NWTPH

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	7.057E4	02	100.000	7.052E4	03	200.000	6.76E4	04	500.000	6.421E4
05	1000.000	6.607E4									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 12/11/2019

Initial Calibration Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Calibration ID: KC1900546 **Signal ID:** DB-624
Instrument ID: K-GC-39

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,4-Difluorobenzene	SURR	Average RF	% RSD	2.5	≤20	1.354E5	
Gasoline Range Organics-NWTPH	TRG	Average RF	% RSD	4.1	≤20	6.779E4	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 12/11/2019

Initial Calibration Verification Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Calibration ID: KC1900546 **Signal ID:** DB-624
Instrument ID: K-GC-39

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1900546-08	ICV 500/100	J:\GC39\DATA\121119\1211F015.D	12/11/2019 13:29
09	KC1900546-09	ICV 500/100	J:\GC39\DATA\121119\1211F016.D	12/11/2019 13:53

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	554	6.779E4	7.514E4	10.84	±20	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,4-Difluorobenzene	100	100	1.354E5	1.357E5	0.223	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20 09:50

Continuing Calibration Verification (CCV) Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method:	NWTPH-Gx	**Calibration Date:**	12/11/2019
File ID:	J:\GC39\DATA\032320\0323F004.D\	**Calibration ID:**	KC1900546
Signal ID:	DB-624	**Analysis Lot:**	674286
		Units:	ug/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	450	6.779E4	6.106E4	-9.9	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,4-Difluorobenzene	100	95.3	1.354E5	1.29E5	-4.7	NA	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20 15:24

Continuing Calibration Verification (CCV) Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method:	NWTPH-Gx	**Calibration Date:**	12/11/2019
File ID:	J:\GC39\DATA\032320\0323F018.D\	**Calibration ID:**	KC1900546
Signal ID:	DB-624	**Analysis Lot:**	674286
		Units:	ug/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	513	6.779E4	6.956E4	2.6	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,4-Difluorobenzene	100	88.6	1.354E5	1.199E5	-11.4	NA	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	03/23/20 17:00

Continuing Calibration Verification (CCV) Summary
Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method:	NWTPH-Gx	**Calibration Date:**	12/11/2019
File ID:	J:\GC39\DATA\032320\0323F022.D\	**Calibration ID:**	KC1900546
Signal ID:	DB-624	**Analysis Lot:**	674286
		Units:	ug/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	480	6.779E4	6.513E4	-3.9	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,4-Difluorobenzene	100	88.1	1.354E5	1.193E5	-11.9	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305

Analysis Run Log
Volatile Petroleum Products Method for Soil and Water for the Northwest

Analysis Method: NWTPH-Gx **Analysis Lot:**674286
Instrument ID:K-GC-39

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC39\DATA\032320\0323F004.D\	Continuing Calibration Verification	KQ2004028-01	3/23/2020	09:50:00	
J:\GC39\DATA\032320\0323F005.D\	Continuing Calibration Blank	KQ2004028-03	3/23/2020	10:14:00	
J:\GC39\DATA\032320\0323F006.D\	Method Blank	KQ2004028-05	3/23/2020	10:38:00	
J:\GC39\DATA\032320\0323F007.D\	Lab Control Sample	KQ2004028-06	3/23/2020	11:02:00	
J:\GC39\DATA\032320\0323F008.D\	FTP-TB-001-20200317	K2002465-006	3/23/2020	11:26:00	
J:\GC39\DATA\032320\0323F009.D\	FTP-1-20200318	K2002465-001	3/23/2020	11:49:00	
J:\GC39\DATA\032320\0323F010.D\	FTP-1-20200318 DUP	KQ2004028-07	3/23/2020	12:13:00	
J:\GC39\DATA\032320\0323F011.D\	FTP-1A-20200318	K2002465-002	3/23/2020	12:37:00	
J:\GC39\DATA\032320\0323F012.D\	FTP-16-20200318	K2002465-003	3/23/2020	13:01:00	
J:\GC39\DATA\032320\0323F013.D\	FTP-14-20200317	K2002465-004	3/23/2020	13:25:00	
J:\GC39\DATA\032320\0323F014.D\	FTP-15-20200317	K2002465-005	3/23/2020	13:49:00	
J:\GC39\DATA\032320\0323F015.D\	FTP-1-20200318	K2002465-001	3/23/2020	14:12:00	
J:\GC39\DATA\032320\0323F016.D\	FTP-1-20200318 DUP	KQ2004028-07	3/23/2020	14:36:00	
J:\GC39\DATA\032320\0323F017.D\	FTP-1A-20200318	K2002465-002	3/23/2020	15:00:00	
J:\GC39\DATA\032320\0323F018.D\	Continuing Calibration Verification	KQ2004028-02	3/23/2020	15:24:00	
J:\GC39\DATA\032320\0323F019.D\	Continuing Calibration Blank	KQ2004028-04	3/23/2020	15:48:00	
J:\GC39\DATA\032320\0323F020.D\	FTP-16-20200318	K2002465-003	3/23/2020	16:12:00	
J:\GC39\DATA\032320\0323F021.D\	FTP-14-20200317	K2002465-004	3/23/2020	16:36:00	
J:\GC39\DATA\032320\0323F022.D\	Continuing Calibration Verification	KQ2004028-09	3/23/2020	17:00:00	
J:\GC39\DATA\032320\0323F023.D\	Continuing Calibration Blank	KQ2004028-08	3/23/2020	17:24:00	

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:15
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**17**	**J**	20	10	3.3	1	04/01/20 12:52	
Benzene	**1.6**		0.50	0.10	0.062	1	04/01/20 12:52	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/01/20 12:52	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:52	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/01/20 12:52	
Bromoform	ND	U	0.50	0.30	0.16	1	04/01/20 12:52	
Bromomethane	ND	U	0.50	0.30	0.16	1	04/01/20 12:52	
2-Butanone (MEK)	**3.8**	**J**	20	4.0	1.9	1	04/01/20 12:52	
n-Butylbenzene	**0.86**	**J**	4.0	4.0	0.054	1	04/01/20 12:52	
sec-Butylbenzene	**0.95**	**J**	2.0	0.10	0.062	1	04/01/20 12:52	
tert-Butylbenzene	**0.23**	**J**	2.0	0.20	0.059	1	04/01/20 12:52	
Carbon Disulfide	**0.22**	**J**	0.50	0.20	0.069	1	04/01/20 12:52	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/01/20 12:52	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/01/20 12:52	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:52	
Chloroform	ND	U	0.50	0.20	0.072	1	04/01/20 12:52	
Chloromethane	**0.070**	**J**	0.50	0.20	0.068	1	04/01/20 12:52	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/01/20 12:52	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	04/01/20 12:52	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	04/01/20 12:52	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	04/01/20 12:52	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/01/20 12:52	
Dibromomethane	ND	U	0.50	0.30	0.15	1	04/01/20 12:52	
1,2-Dichlorobenzene	**0.70**		0.50	0.20	0.12	1	04/01/20 12:52	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/01/20 12:52	
1,4-Dichlorobenzene	**0.16**	**J**	0.50	0.20	0.12	1	04/01/20 12:52	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/01/20 12:52	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/01/20 12:52	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/01/20 12:52	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/01/20 12:52	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/01/20 12:52	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/01/20 12:52	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/01/20 12:52	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/01/20 12:52	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	04/01/20 12:52	*
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/01/20 12:52	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/01/20 12:52	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/01/20 12:52	
Ethylbenzene	**1.5**		0.50	0.10	0.050	1	04/01/20 12:52	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/01/20 12:52	
2-Hexanone	**8.1**	**J**	20	10	2.7	1	04/01/20 12:52	*
Isopropylbenzene	**1.6**	**J**	2.0	0.20	0.051	1	04/01/20 12:52	
4-Isopropyltoluene	**2.7**		2.0	0.20	0.060	1	04/01/20 12:52	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:15
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/01/20 12:52	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/01/20 12:52	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/01/20 12:52	
Naphthalene	**40**		2.0	0.30	0.088	1	04/01/20 12:52	
n-Propylbenzene	**1.8**	**J**	2.0	0.20	0.054	1	04/01/20 12:52	
Styrene	ND	U	0.50	0.20	0.089	1	04/01/20 12:52	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/01/20 12:52	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:52	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/01/20 12:52	
Toluene	**0.17**	**J**	0.50	0.10	0.054	1	04/01/20 12:52	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/01/20 12:52	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/01/20 12:52	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/01/20 12:52	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/01/20 12:52	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/01/20 12:52	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	04/01/20 12:52	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	04/01/20 12:52	
1,2,4-Trimethylbenzene	**36**		2.0	0.20	0.069	1	04/01/20 12:52	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/01/20 12:52	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/01/20 12:52	
o-Xylene	**0.58**		0.50	0.20	0.074	1	04/01/20 12:52	
m,p-Xylenes	**0.15**	**J**	0.50	0.20	0.11	1	04/01/20 12:52	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	91	85 - 114	04/01/20 12:52	
Dibromofluoromethane	95	80 - 119	04/01/20 12:52	
1,2-Dichloroethane-d4	89	81 - 118	04/01/20 12:52	
Toluene-d8	101	89 - 112	04/01/20 12:52	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**17**	**J**	20	10	3.3	1	04/01/20 12:26	
Benzene	**1.6**		0.50	0.10	0.062	1	04/01/20 12:26	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/01/20 12:26	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:26	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/01/20 12:26	
Bromoform	ND	U	0.50	0.30	0.16	1	04/01/20 12:26	
Bromomethane	ND	U	0.50	0.30	0.16	1	04/01/20 12:26	
2-Butanone (MEK)	**3.5**	**J**	20	4.0	1.9	1	04/01/20 12:26	
n-Butylbenzene	**0.78**	**J**	4.0	4.0	0.054	1	04/01/20 12:26	
sec-Butylbenzene	**0.81**	**J**	2.0	0.10	0.062	1	04/01/20 12:26	
tert-Butylbenzene	**0.21**	**J**	2.0	0.20	0.059	1	04/01/20 12:26	
Carbon Disulfide	**0.27**	**J**	0.50	0.20	0.069	1	04/01/20 12:26	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/01/20 12:26	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/01/20 12:26	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:26	
Chloroform	ND	U	0.50	0.20	0.072	1	04/01/20 12:26	
Chloromethane	**0.080**	**J**	0.50	0.20	0.068	1	04/01/20 12:26	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/01/20 12:26	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	04/01/20 12:26	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	04/01/20 12:26	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	04/01/20 12:26	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/01/20 12:26	
Dibromomethane	ND	U	0.50	0.30	0.15	1	04/01/20 12:26	
1,2-Dichlorobenzene	**0.60**		0.50	0.20	0.12	1	04/01/20 12:26	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/01/20 12:26	
1,4-Dichlorobenzene	**0.12**	**J**	0.50	0.20	0.12	1	04/01/20 12:26	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/01/20 12:26	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/01/20 12:26	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/01/20 12:26	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/01/20 12:26	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/01/20 12:26	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/01/20 12:26	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/01/20 12:26	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/01/20 12:26	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	04/01/20 12:26	*
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/01/20 12:26	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/01/20 12:26	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/01/20 12:26	
Ethylbenzene	**1.2**		0.50	0.10	0.050	1	04/01/20 12:26	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/01/20 12:26	
2-Hexanone	**8.3**	**J**	20	10	2.7	1	04/01/20 12:26	*
Isopropylbenzene	**1.2**	**J**	2.0	0.20	0.051	1	04/01/20 12:26	
4-Isopropyltoluene	**2.4**		2.0	0.20	0.060	1	04/01/20 12:26	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/01/20 12:26	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/01/20 12:26	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/01/20 12:26	
Naphthalene	**34**		2.0	0.30	0.088	1	04/01/20 12:26	
n-Propylbenzene	**1.4**	**J**	2.0	0.20	0.054	1	04/01/20 12:26	
Styrene	ND	U	0.50	0.20	0.089	1	04/01/20 12:26	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/01/20 12:26	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 12:26	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/01/20 12:26	
Toluene	**0.16**	**J**	0.50	0.10	0.054	1	04/01/20 12:26	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/01/20 12:26	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/01/20 12:26	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/01/20 12:26	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/01/20 12:26	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/01/20 12:26	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	04/01/20 12:26	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	04/01/20 12:26	
1,2,4-Trimethylbenzene	**33**		2.0	0.20	0.069	1	04/01/20 12:26	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/01/20 12:26	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/01/20 12:26	
o-Xylene	**0.47**	**J**	0.50	0.20	0.074	1	04/01/20 12:26	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/01/20 12:26	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 114	04/01/20 12:26	
Dibromofluoromethane	96	80 - 119	04/01/20 12:26	
1,2-Dichloroethane-d4	86	81 - 118	04/01/20 12:26	
Toluene-d8	101	89 - 112	04/01/20 12:26	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004533-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	ND	U	20	10	3.3	1	04/01/20 11:59	
Benzene	ND	U	0.50	0.10	0.062	1	04/01/20 11:59	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/01/20 11:59	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/01/20 11:59	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/01/20 11:59	
Bromoform	ND	U	0.50	0.30	0.16	1	04/01/20 11:59	
Bromomethane	ND	U	0.50	0.30	0.16	1	04/01/20 11:59	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	04/01/20 11:59	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	04/01/20 11:59	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	04/01/20 11:59	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	04/01/20 11:59	
Carbon Disulfide	**0.11**	**J**	0.50	0.20	0.069	1	04/01/20 11:59	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/01/20 11:59	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/01/20 11:59	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 11:59	
Chloroform	ND	U	0.50	0.20	0.072	1	04/01/20 11:59	
Chloromethane	ND	U	0.50	0.20	0.068	1	04/01/20 11:59	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/01/20 11:59	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	04/01/20 11:59	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	04/01/20 11:59	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	04/01/20 11:59	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/01/20 11:59	
Dibromomethane	ND	U	0.50	0.30	0.15	1	04/01/20 11:59	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/01/20 11:59	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/01/20 11:59	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/01/20 11:59	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/01/20 11:59	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/01/20 11:59	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/01/20 11:59	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/01/20 11:59	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/01/20 11:59	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/01/20 11:59	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/01/20 11:59	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/01/20 11:59	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	04/01/20 11:59	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/01/20 11:59	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/01/20 11:59	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/01/20 11:59	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/01/20 11:59	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/01/20 11:59	
2-Hexanone	ND	U	20	10	2.7	1	04/01/20 11:59	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	04/01/20 11:59	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	04/01/20 11:59	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004533-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/01/20 11:59	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/01/20 11:59	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/01/20 11:59	
Naphthalene	**0.13**	**J**	2.0	0.30	0.088	1	04/01/20 11:59	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	04/01/20 11:59	
Styrene	ND	U	0.50	0.20	0.089	1	04/01/20 11:59	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/01/20 11:59	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/01/20 11:59	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/01/20 11:59	
Toluene	ND	U	0.50	0.10	0.054	1	04/01/20 11:59	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/01/20 11:59	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/01/20 11:59	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/01/20 11:59	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/01/20 11:59	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/01/20 11:59	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	04/01/20 11:59	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	04/01/20 11:59	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	04/01/20 11:59	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/01/20 11:59	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/01/20 11:59	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/01/20 11:59	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/01/20 11:59	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	88	85 - 114	04/01/20 11:59	
Dibromofluoromethane	98	80 - 119	04/01/20 11:59	
1,2-Dichloroethane-d4	89	81 - 118	04/01/20 11:59	
Toluene-d8	102	89 - 112	04/01/20 11:59	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene 85-114	Dibromofluoromethane 80-119	1,2-Dichloroethane-d4 81-118
FTP-1-20200318	K2002465-001	91	95	89
FTP-1A-20200318	K2002465-002	92	96	86
Method Blank	KQ2004533-07	88	98	89
Lab Control Sample	KQ2004533-05	94	101	90
Duplicate Lab Control Sample	KQ2004533-06	92	101	89
FTP-1-20200318	KQ2004533-01	83*	98	90
FTP-1-20200318	KQ2004533-02	92	99	87

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	Toluene-d8 89-112
FTP-1-20200318	K2002465-001	101
FTP-1A-20200318	K2002465-002	101
Method Blank	KQ2004533-07	102
Lab Control Sample	KQ2004533-05	101
Duplicate Lab Control Sample	KQ2004533-06	101
FTP-1-20200318	KQ2004533-01	123*
FTP-1-20200318	KQ2004533-02	102

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 09:46

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\040120\0401F004.D\ **Lab Code:**KQ2004533-04
Instrument ID: K-MS-13 **Analysis Lot:**675480
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Calibration Verification	KQ2004533-04	84272	9.37	66802	11.96	226738	5.33
Lab Control Sample	KQ2004533-05	83249	9.37	66147	11.96	217245	5.33
Duplicate Lab Control Sample	KQ2004533-06	82398	9.37	69239	11.96	225933	5.33
Method Blank	KQ2004533-07	84794	9.37	63041	11.96	223365	5.33
FTP-1A-20200318	K2002465-002	80342	9.37	64751	11.96	207729	5.33
FTP-1-20200318	K2002465-001	82190	9.37	65265	11.96	205847	5.33
FTP-1-20200318MS	KQ2004533-01	92798	9.37	66847	11.96	219727	5.33
FTP-1-20200318DMS	KQ2004533-02	86790	9.37	67419	11.96	227251	5.33

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 20:24

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\040120\0401F028.D\ **Lab Code:**KQ2004533-08
Instrument ID: K-MS-13 **Analysis Lot:**675480
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Cal. Verification	KQ2004533-08	106005	9.37	71640	11.96	242852	5.33

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	04/1/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike KQ2004533-01			**Duplicate Matrix Spike** KQ2004533-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Acetone	17 J	82.1	50.0	130	97.8	50.0	161 *	39-160	17	20
Benzene	1.6	12.0	10.0	104	11.9	10.0	103	79-120	1	20
Bromobenzene	ND U	10.6	10.0	106	10.5	10.0	105	80-120	<1	20
Bromochloromethane	ND U	10.4	10.0	104	10.5	10.0	105	78-123	1	20
Bromodichloromethane	ND U	10.5	10.0	105	10.5	10.0	105	79-127	<1	20
Bromoform	ND U	10.2	10.0	102	10.8	10.0	108	66-130	6	20
Bromomethane	ND U	10.5	10.0	105	11.1	10.0	111	53-141	6	20
2-Butanone (MEK)	3.8 J	65.4	50.0	123	58.5	50.0	109	56-143	11	20
n-Butylbenzene	0.86 J	11.0	10.0	102	11.1	10.0	103	75-128	1	20
sec-Butylbenzene	0.95 J	10.5	10.0	95	10.3	10.0	94	77-126	2	20
tert-Butylbenzene	0.23 J	9.75	10.0	95	9.57	10.0	93	78-124	2	20
Carbon Disulfide	0.22 J	23.1	20.0	114	25.6	20.0	127	64-133	10	20
Carbon Tetrachloride	ND U	11.3	10.0	113	11.7	10.0	117	72-136	4	20
Chlorobenzene	ND U	9.42	10.0	94	9.89	10.0	99	82-118	5	20
Chloroethane	ND U	13.6	10.0	136	13.7	10.0	137	60-138	<1	20
Chloroform	ND U	10.3	10.0	103	10.5	10.0	105	79-124	2	20
Chloromethane	0.070 J	10.9	10.0	108	10.9	10.0	109	50-139	<1	20
2-Chlorotoluene	ND U	9.29	10.0	93	9.48	10.0	95	79-122	2	20
4-Chlorotoluene	ND U	9.48	10.0	95	9.32	10.0	93	78-122	2	20
1,2-Dibromo-3-chloropropane	ND U	25.7	10.0	257 *	36.2	10.0	362 *	62-128	34*	20
Dibromochloromethane	ND U	11.2	10.0	112	11.1	10.0	111	74-126	<1	20
1,2-Dibromoethane (EDB)	ND U	9.50	10.0	95	9.70	10.0	97	77-121	2	20
Dibromomethane	ND U	9.75	10.0	98	10.7	10.0	107	79-123	9	20
1,2-Dichlorobenzene	0.70	10.2	10.0	95	11.0	10.0	103	80-119	7	20
1,3-Dichlorobenzene	ND U	9.75	10.0	98	9.89	10.0	99	80-119	1	20
1,4-Dichlorobenzene	0.16 J	9.67	10.0	95	9.61	10.0	95	79-118	<1	20
Dichlorodifluoromethane	ND U	10.5	10.0	105	10.6	10.0	106	32-152	1	20
1,1-Dichloroethane	ND U	9.82	10.0	98	10.0	10.0	100	77-125	2	20
1,2-Dichloroethane (EDC)	ND U	9.47	10.0	95	9.14	10.0	91	73-128	4	20
1,1-Dichloroethene	ND U	9.89	10.0	99	11.7	10.0	117	71-131	17	20
cis-1,2-Dichloroethene	ND U	10.3	10.0	103	10.2	10.0	102	78-123	<1	20
trans-1,2-Dichloroethene	ND U	9.86	10.0	99	10.1	10.0	101	75-124	3	20
1,2-Dichloropropane	ND U	9.75	10.0	98	9.83	10.0	98	78-122	<1	20
1,3-Dichloropropane	ND U	9.78	10.0	98	9.63	10.0	96	80-119	2	20
2,2-Dichloropropane	ND U	9.04	10.0	90	8.62	10.0	86	60-139	5	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	04/1/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike			Duplicate Matrix Spike					
		KQ2004533-01			KQ2004533-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,1-Dichloropropene	ND U	10.6	10.0	106	10.5	10.0	105	79-125	1	20
cis-1,3-Dichloropropene	ND U	9.81	10.0	98	10.2	10.0	102	75-124	4	20
trans-1,3-Dichloropropene	ND U	10.1	10.0	101	8.72	10.0	87	73-127	15	20
Ethylbenzene	1.5	10.6	10.0	91	11.4	10.0	99	79-121	7	20
Hexachlorobutadiene	ND U	9.29	10.0	93	9.92	10.0	99	66-134	7	20
2-Hexanone	8.1 J	67.4	50.0	119	60.9	50.0	106	57-139	10	20
Isopropylbenzene	1.6 J	10.7	10.0	91	11.6	10.0	100	72-131	8	20
4-Isopropyltoluene	2.7	12.6	10.0	100	12.6	10.0	99	77-127	<1	20
Methyl tert-Butyl Ether	ND U	9.40	10.0	94	9.76	10.0	98	71-124	4	20
4-Methyl-2-pentanone (MIBK)	ND U	69.7	50.0	139 *	61.0	50.0	122	67-130	13	20
Methylene Chloride	ND U	9.74	10.0	97	9.83	10.0	98	74-124	<1	20
Naphthalene	40	51.4	10.0	116	54.8	10.0	151 *	61-128	6	20
n-Propylbenzene	1.8 J	11.9	10.0	101	12.0	10.0	101	76-126	<1	20
Styrene	ND U	9.07	10.0	91	10.1	10.0	101	78-123	11	20
1,1,1,2-Tetrachloroethane	ND U	8.82	10.0	88	10.0	10.0	100	78-124	13	20
1,1,2,2-Tetrachloroethane	ND U	9.75	10.0	98	10.5	10.0	105	71-121	7	20
Tetrachloroethene (PCE)	ND U	10.8	10.0	108	10.9	10.0	109	74-129	<1	20
Toluene	0.17 J	13.4	10.0	132 *	10.7	10.0	106	80-121	22*	20
1,2,3-Trichlorobenzene	ND U	9.45	10.0	95	11.0	10.0	110	69-129	15	20
1,2,4-Trichlorobenzene	ND U	9.49	10.0	95	11.9	10.0	119	69-130	22*	20
1,1,2-Trichloroethane	ND U	10.7	10.0	107	9.26	10.0	93	80-119	14	20
1,1,1-Trichloroethane (TCA)	ND U	10.3	10.0	103	10.3	10.0	103	74-131	<1	20
Trichloroethene (TCE)	ND U	10.8	10.0	108	10.4	10.0	104	79-123	3	20
Trichlorofluoromethane (CFC 11)	ND U	13.1	10.0	131	11.4	10.0	114	65-141	14	20
1,2,3-Trichloropropane	ND U	11.4	10.0	114	12.3	10.0	123 *	73-122	8	20
1,2,4-Trimethylbenzene	36	48.5	10.0	126 *	48.1	10.0	122	76-124	<1	20
1,3,5-Trimethylbenzene	ND U	9.65	10.0	97	9.58	10.0	96	75-124	<1	20
Vinyl Chloride	ND U	12.3	10.0	123	12.1	10.0	121	58-137	2	20
o-Xylene	0.58	9.65	10.0	91	10.3	10.0	97	78-122	6	20
m,p-Xylenes	0.15 J	17.9	20.0	89	23.1	20.0	115	80-121	25*	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675480

	Lab Control Sample KQ2004533-05			Duplicate Lab Control Sample KQ2004533-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,1,1,2-Tetrachloroethane	9.64	10.0	96	9.87	10.0	99	78-124	2	20
1,1,1-Trichloroethane (TCA)	9.21	10.0	92	9.12	10.0	91	74-131	<1	20
1,1,2,2-Tetrachloroethane	9.21	10.0	92	8.45	10.0	85	71-121	9	20
1,1,2-Trichloroethane	8.66	10.0	87	10.6	10.0	106	80-119	20	20
1,1-Dichloroethane	8.99	10.0	90	8.95	10.0	90	77-125	<1	20
1,1-Dichloroethene	8.36	10.0	84	8.74	10.0	87	71-131	4	20
1,1-Dichloropropene	9.15	10.0	92	9.34	10.0	93	79-125	2	20
1,2,3-Trichlorobenzene	9.89	10.0	99	9.48	10.0	95	69-129	4	20
1,2,3-Trichloropropane	9.84	10.0	98	8.61	10.0	86	73-122	13	20
1,2,4-Trichlorobenzene	9.47	10.0	95	9.41	10.0	94	69-130	<1	20
1,2,4-Trimethylbenzene	9.39	10.0	94	9.18	10.0	92	76-124	2	20
1,2-Dibromo-3-chloropropane	9.72	10.0	97	9.13	10.0	91	62-128	6	20
1,2-Dibromoethane (EDB)	8.95	10.0	90	9.81	10.0	98	77-121	9	20
1,2-Dichlorobenzene	9.80	10.0	98	9.39	10.0	94	80-119	4	20
1,2-Dichloroethane (EDC)	8.84	10.0	88	9.08	10.0	91	73-128	3	20
1,2-Dichloropropane	10.2	10.0	102	9.25	10.0	93	78-122	10	20
1,3,5-Trimethylbenzene	9.00	10.0	90	8.94	10.0	89	75-124	<1	20
1,3-Dichlorobenzene	9.44	10.0	94	9.12	10.0	91	80-119	3	20
1,3-Dichloropropane	9.27	10.0	93	10.6	10.0	106	80-119	14	20
1,4-Dichlorobenzene	9.54	10.0	95	9.04	10.0	90	79-118	5	20
2,2-Dichloropropane	7.44	10.0	74	7.81	10.0	78	60-139	5	20
2-Butanone (MEK)	53.8	50.0	108	54.3	50.0	109	56-143	<1	20
2-Chlorotoluene	8.78	10.0	88	8.73	10.0	87	79-122	<1	20
2-Hexanone	47.9	50.0	96	56.5	50.0	113	57-139	17	20
4-Chlorotoluene	8.93	10.0	89	8.79	10.0	88	78-122	2	20
4-Isopropyltoluene	9.44	10.0	94	9.31	10.0	93	77-127	1	20
4-Methyl-2-pentanone (MIBK)	50.7	50.0	101	52.0	50.0	104	67-130	3	20
Acetone	71.9	50.0	144	63.0	50.0	126	39-160	13	20
Benzene	9.25	10.0	93	9.24	10.0	92	79-120	<1	20
Bromobenzene	9.56	10.0	96	9.43	10.0	94	80-120	1	20
Bromochloromethane	10.4	10.0	104	10.1	10.0	101	78-123	2	20
Bromodichloromethane	10.0	10.0	100	10.0	10.0	100	79-127	<1	20
Bromoform	10.6	10.0	106	11.0	10.0	110	66-130	4	20
Bromomethane	9.69	10.0	97	9.99	10.0	100	53-141	3	20
Carbon Disulfide	21.3	20.0	107	19.8	20.0	99	64-133	7	20
Carbon Tetrachloride	10.3	10.0	103	10.4	10.0	104	72-136	<1	20
Chlorobenzene	8.96	10.0	90	9.40	10.0	94	82-118	5	20
Chloroethane	12.3	10.0	123	11.4	10.0	114	60-138	8	20
Chloroform	9.47	10.0	95	9.69	10.0	97	79-124	2	20
Chloromethane	9.07	10.0	91	9.16	10.0	92	50-139	<1	20
cis-1,2-Dichloroethene	9.43	10.0	94	9.51	10.0	95	78-123	<1	20

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675480

	Lab Control Sample KQ2004533-05			Duplicate Lab Control Sample KQ2004533-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
cis-1,3-Dichloropropene	9.17	10.0	92	9.43	10.0	94	75-124	3	20
Dibromochloromethane	10.9	10.0	109	12.6	10.0	126	74-126	15	20
Dibromomethane	9.47	10.0	95	9.02	10.0	90	79-123	5	20
Dichlorodifluoromethane	8.37	10.0	84	8.20	10.0	82	32-152	2	20
Ethylbenzene	8.82	10.0	88	9.36	10.0	94	79-121	6	20
Hexachlorobutadiene	11.0	10.0	110	11.1	10.0	111	66-134	1	20
Isopropylbenzene	9.20	10.0	92	9.59	10.0	96	72-131	4	20
m,p-Xylenes	18.1	20.0	91	18.8	20.0	94	80-121	4	20
Methyl tert-Butyl Ether	8.92	10.0	89	8.99	10.0	90	71-124	<1	20
Methylene Chloride	8.67	10.0	87	8.86	10.0	89	74-124	2	20
Naphthalene	8.85	10.0	89	8.63	10.0	86	61-128	3	20
n-Butylbenzene	9.05	10.0	91	8.93	10.0	89	75-128	1	20
n-Propylbenzene	9.46	10.0	95	9.02	10.0	90	76-126	5	20
o-Xylene	8.92	10.0	89	9.50	10.0	95	78-122	6	20
sec-Butylbenzene	9.03	10.0	90	9.10	10.0	91	77-126	<1	20
Styrene	9.33	10.0	93	9.66	10.0	97	78-123	3	20
tert-Butylbenzene	9.02	10.0	90	8.99	10.0	90	78-124	<1	20
Tetrachloroethene (PCE)	10.0	10.0	100	11.5	10.0	115	74-129	14	20
Toluene	9.31	10.0	93	11.5	10.0	115	80-121	21 *	20
trans-1,2-Dichloroethene	8.59	10.0	86	9.13	10.0	91	75-124	6	20
trans-1,3-Dichloropropene	8.23	10.0	82	10.3	10.0	103	73-127	22 *	20
Trichloroethene (TCE)	9.38	10.0	94	9.71	10.0	97	79-123	3	20
Trichlorofluoromethane (CFC 11)	10.6	10.0	106	10.1	10.0	101	65-141	5	20
Vinyl Chloride	9.99	10.0	100	9.94	10.0	99	58-137	<1	20

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20 11:59
Sample Matrix:	Ground Water	**Date Extracted:**	

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KQ2004533-07
Instrument ID: K-MS-13
File ID: J:\MS13\DATA\040120\0401F009.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 675480

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2004533-05	J:\MS13\DATA\040120\0401F005.D\	04/01/20 10:13
Duplicate Lab Control Sample	KQ2004533-06	J:\MS13\DATA\040120\0401F006.D\	04/01/20 10:39
FTP-1A-20200318	K2002465-002	J:\MS13\DATA\040120\0401F010.D\	04/01/20 12:26
FTP-1-20200318	K2002465-001	J:\MS13\DATA\040120\0401F011.D\	04/01/20 12:52
FTP-1-20200318MS	KQ2004533-01	J:\MS13\DATA\040120\0401F012.D\	04/01/20 13:19
FTP-1-20200318DMS	KQ2004533-02	J:\MS13\DATA\040120\0401F013.D\	04/01/20 13:45

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20 10:13
Sample Matrix:	Ground Water	**Date Extracted:**	

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Sample Name: Lab Control Sample
Lab Code: KQ2004533-05
Instrument ID: K-MS-13
File ID: J:\MS13\DATA\040120\0401F005.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 675480

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Duplicate Lab Control Sample	KQ2004533-06	J:\MS13\DATA\040120\0401F006.D\	04/01/20 10:39
Method Blank	KQ2004533-07	J:\MS13\DATA\040120\0401F009.D\	04/01/20 11:59
FTP-1A-20200318	K2002465-002	J:\MS13\DATA\040120\0401F010.D\	04/01/20 12:26
FTP-1-20200318	K2002465-001	J:\MS13\DATA\040120\0401F011.D\	04/01/20 12:52
FTP-1-20200318MS	KQ2004533-01	J:\MS13\DATA\040120\0401F012.D\	04/01/20 13:19
FTP-1-20200318DMS	KQ2004533-02	J:\MS13\DATA\040120\0401F013.D\	04/01/20 13:45

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 09:46

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\040120\0401F004.D\ **Analytical Method:** 8260C
Instrument ID: K-MS-13 **Analysis Lot:** 675480

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ2004533-04	J:\MS13\DATA\040120\0401F004.D\	04/01/20 09:46	
Lab Control Sample	KQ2004533-05	J:\MS13\DATA\040120\0401F005.D\	04/01/20 10:13	
Duplicate Lab Control Sample	KQ2004533-06	J:\MS13\DATA\040120\0401F006.D\	04/01/20 10:39	
Method Blank	KQ2004533-07	J:\MS13\DATA\040120\0401F009.D\	04/01/20 11:59	
FTP-1A-20200318	K2002465-002	J:\MS13\DATA\040120\0401F010.D\	04/01/20 12:26	
FTP-1-20200318	K2002465-001	J:\MS13\DATA\040120\0401F011.D\	04/01/20 12:52	
FTP-1-20200318	KQ2004533-01	J:\MS13\DATA\040120\0401F012.D\	04/01/20 13:19	
FTP-1-20200318	KQ2004533-02	J:\MS13\DATA\040120\0401F013.D\	04/01/20 13:45	
Continuing Cal. Verification	KQ2004533-08	J:\MS13\DATA\040120\0401F028.D\	04/01/20 20:24	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900305-01	CAL 0.1 PPB	I:\MS13\DATA\072519\0725F006.D	07/25/2019 09:26
02	KC1900305-02	CAL 0.2 PPB	I:\MS13\DATA\072519\0725F007.D	07/25/2019 09:52
03	KC1900305-03	CAL 0.5 PPB	I:\MS13\DATA\072519\0725F008.D	07/25/2019 10:19
04	KC1900305-04	CAL 1.0 PPB	I:\MS13\DATA\072519\0725F009.D	07/25/2019 10:45
05	KC1900305-05	CAL 2.0 PPB	I:\MS13\DATA\072519\0725F010.D	07/25/2019 11:12
06	KC1900305-06	CAL 5.0 PPB	I:\MS13\DATA\072519\0725F011.D	07/25/2019 11:38
07	KC1900305-07	CAL 10 PPB	I:\MS13\DATA\072519\0725F012.D	07/25/2019 12:04
08	KC1900305-08	CAL 40 PPB	I:\MS13\DATA\072519\0725F014.D	07/25/2019 12:57
09	KC1900305-09	CAL 60 PPB	I:\MS13\DATA\072519\0725F015.D	07/25/2019 13:24
10	KC1900305-10	CAL 80 PPB	I:\MS13\DATA\072519\0725F016.D	07/25/2019 13:50
11	KC1900305-11	CAL 20 PPB	I:\MS13\DATA\072519\0725F020.D	07/25/2019 15:37

Analyte

1,1,1,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5788	02	0.200	0.6941	03	0.500	0.5621	04	1.000	0.5542
05	2.000	0.5394	06	5.000	0.5919	07	10.000	0.6521	11	20.000	0.644
08	40.000	0.7323	09	60.000	0.7387	10	80.000	0.739			

1,1,1-Trichloroethane (TCA)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3816	02	0.200	0.4249	03	0.500	0.4148	04	1.000	0.3927
05	2.000	0.4022	06	5.000	0.4448	07	10.000	0.4676	11	20.000	0.4636
08	40.000	0.514	09	60.000	0.4972	10	80.000	0.4986			

1,1,2,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.7116	03	0.500	0.5801	04	1.000	0.5425	05	2.000	0.5169
06	5.000	0.6034	07	10.000	0.6106	11	20.000	0.5497	08	40.000	0.5855
09	60.000	0.5597	10	80.000	0.5462						

1,1,2-Trichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4182	03	0.500	0.4633	04	1.000	0.3869	05	2.000	0.3943
06	5.000	0.4317	07	10.000	0.4491	11	20.000	0.4233	08	40.000	0.4606
09	60.000	0.4547	10	80.000	0.436						

1,1-Dichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5704	02	0.200	0.4919	03	0.500	0.5431	04	1.000	0.5019
05	2.000	0.4932	06	5.000	0.5297	07	10.000	0.5519	11	20.000	0.5356
08	40.000	0.57	09	60.000	0.5556	10	80.000	0.5521			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

1,1-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1884	02	0.200	0.2911	03	0.500	0.298	04	1.000	0.2666
05	2.000	0.2712	06	5.000	0.2865	07	10.000	0.2847	11	20.000	0.2813
08	40.000	0.2955	09	60.000	0.2903	10	80.000	0.2995			

1,1-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3922	02	0.200	0.4166	03	0.500	0.4119	04	1.000	0.3781
05	2.000	0.3928	06	5.000	0.4271	07	10.000	0.4369	11	20.000	0.4254
08	40.000	0.464	09	60.000	0.4473	10	80.000	0.4437			

1,2,3-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9456	02	0.200	0.7174	03	0.500	0.7812	04	1.000	0.6885
05	2.000	0.6823	06	5.000	0.7742	07	10.000	0.8059	11	20.000	0.7555
08	40.000	0.7992	09	60.000	0.8036	10	80.000	0.7986			

1,2,3-Trichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.1308	04	1.000	0.1763	05	2.000	0.1661	06	5.000	0.1891
07	10.000	0.1916	11	20.000	0.1698	08	40.000	0.1829	09	60.000	0.1732
10	80.000	0.1665									

1,2,4-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.13	03	0.500	0.946	04	1.000	0.8997	05	2.000	0.833
06	5.000	0.941	07	10.000	0.9441	11	20.000	0.9395	08	40.000	1.003
09	60.000	0.9896	10	80.000	0.9825						

1,2,4-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.374	02	0.200	2.971	03	0.500	3.258	04	1.000	3.369
05	2.000	3.255	06	5.000	3.559	07	10.000	3.669	11	20.000	3.433
08	40.000	3.672	09	60.000	3.537	10	80.000	3.412			

1,2-Dibromo-3-chloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.05852	06	5.000	0.06588	07	10.000	0.06852	11	20.000	0.06746
08	40.000	0.07371	09	60.000	0.07331	10	80.000	0.07663			

1,2-Dibromoethane (EDB)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5317	03	0.500	0.4149	04	1.000	0.4279	05	2.000	0.3968
06	5.000	0.4527	07	10.000	0.4626	11	20.000	0.469	08	40.000	0.5152
09	60.000	0.5012	10	80.000	0.4826						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

1,2-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.573	02	0.200	1.518	03	0.500	1.566	04	1.000	1.551
05	2.000	1.441	06	5.000	1.653	07	10.000	1.661	11	20.000	1.568
08	40.000	1.686	09	60.000	1.651	10	80.000	1.596			

1,2-Dichloroethane (EDC)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4218	02	0.200	0.3337	03	0.500	0.369	04	1.000	0.3553
05	2.000	0.3236	06	5.000	0.3645	07	10.000	0.3599	11	20.000	0.3456
08	40.000	0.3694	09	60.000	0.3602	10	80.000	0.348			

1,2-Dichloroethane-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.2393	05	6.000	0.2404	06	8.000	0.2589	07	10.000	0.2635
11	12.000	0.2569	08	14.000	0.2776	09	16.000	0.2681	10	20.000	0.261

1,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.289	03	0.500	0.3274	04	1.000	0.2719	05	2.000	0.2777
06	5.000	0.3098	07	10.000	0.3084	11	20.000	0.2942	08	40.000	0.3207
09	60.000	0.3073	10	80.000	0.3029						

1,3,5-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.261	02	0.200	3.37	03	0.500	3.442	04	1.000	3.347
05	2.000	3.322	06	5.000	3.612	07	10.000	3.661	11	20.000	3.48
08	40.000	3.703	09	60.000	3.557	10	80.000	3.452			

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.244	02	0.200	1.825	03	0.500	1.868	04	1.000	1.745
05	2.000	1.678	06	5.000	1.868	07	10.000	1.87	11	20.000	1.779
08	40.000	1.913	09	60.000	1.874	10	80.000	1.825			

1,3-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.008	02	0.200	0.8052	03	0.500	0.9487	04	1.000	0.9357
05	2.000	0.8449	06	5.000	0.9331	07	10.000	0.9418	11	20.000	0.8938
08	40.000	0.9731	09	60.000	0.9543	10	80.000	0.9213			

1,4-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.094	02	0.200	2.02	03	0.500	1.832	04	1.000	1.803
05	2.000	1.668	06	5.000	1.855	07	10.000	1.856	11	20.000	1.757
08	40.000	1.936	09	60.000	1.882	10	80.000	1.827			

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Analyte

2,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4907	02	0.200	0.3959	03	0.500	0.4592	04	1.000	0.4278
05	2.000	0.4189	06	5.000	0.4494	07	10.000	0.4548	11	20.000	0.4901
08	40.000	0.4988	09	60.000	0.4853	10	80.000	0.4775			

2-Butanone (MEK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.01305	04	10.000	0.01435	05	20.000	0.01168	06	50.000	0.01303
07	100.000	0.01298	11	200.000	0.01257	08	400.000	0.0134	09	600.000	0.01373
10	800.000	0.0133									

2-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.259	02	0.200	3.113	03	0.500	3.022	04	1.000	2.988
05	2.000	2.897	06	5.000	3.109	07	10.000	3.017	11	20.000	2.848
08	40.000	3.009	09	60.000	2.88	10	80.000	2.791			

2-Hexanone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.000	0.05024	03	5.000	0.05074	04	10.000	0.04076	05	20.000	0.03945
06	50.000	0.04269	07	100.000	0.04572	11	200.000	0.04227	08	400.000	0.04553
09	600.000	0.04454	10	800.000	0.04264						

4-Bromofluorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.7102	05	6.000	0.7459	06	8.000	0.8099	07	10.000	0.884
11	12.000	0.8483	08	14.000	0.9184	09	16.000	0.9014	10	20.000	0.8605

4-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.372	02	0.200	3.434	03	0.500	3.391	04	1.000	3.466
05	2.000	3.321	06	5.000	3.586	07	10.000	3.609	11	20.000	3.314
08	40.000	3.513	09	60.000	3.39	10	80.000	3.268			

4-Isopropyltoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.211	02	0.200	3.075	03	0.500	3.431	04	1.000	3.314
05	2.000	3.306	06	5.000	3.699	07	10.000	3.784	11	20.000	3.601
08	40.000	3.869	09	60.000	3.712	10	80.000	3.606			

4-Methyl-2-pentanone (MIBK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.05302	02	2.000	0.05357	03	5.000	0.04948	04	10.000	0.05126
05	20.000	0.04625	06	50.000	0.05152	07	100.000	0.05107	11	200.000	0.04847
08	400.000	0.05155	09	600.000	0.04994	10	800.000	0.04838			

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Acetone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	10.000	0.0404	05	20.000	0.03496	06	50.000	0.03664	07	100.000	0.03708
11	200.000	0.03555	08	400.000	0.03723	09	600.000	0.03767	10	800.000	0.03669

Benzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.319	02	0.200	1.194	03	0.500	1.255	04	1.000	1.159
05	2.000	1.15	06	5.000	1.243	07	10.000	1.258	11	20.000	1.196
08	40.000	1.281	09	60.000	1.245	10	80.000	1.231			

Bromobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.8195	02	0.200	1.106	03	0.500	1.002	04	1.000	0.9333
05	2.000	0.9117	06	5.000	1.024	07	10.000	1.022	11	20.000	0.9583
08	40.000	0.9984	09	60.000	0.9922	10	80.000	0.9874			

Bromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1106	03	0.500	0.1246	04	1.000	0.124	05	2.000	0.1123
06	5.000	0.1301	07	10.000	0.1299	11	20.000	0.1286	08	40.000	0.1391
09	60.000	0.1387	10	80.000	0.1356						

Bromodichloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3065	02	0.200	0.2624	03	0.500	0.3047	04	1.000	0.2996
05	2.000	0.291	06	5.000	0.3235	07	10.000	0.3242	11	20.000	0.3283
08	40.000	0.3639	09	60.000	0.3616	10	80.000	0.3528			

Bromoform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1963	03	0.500	0.15	04	1.000	0.1875	05	2.000	0.1847
06	5.000	0.2236	07	10.000	0.2444	11	20.000	0.2524	08	40.000	0.3063
09	60.000	0.324	10	80.000	0.326						

Bromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.237	04	1.000	0.2285	05	2.000	0.2252	06	5.000	0.2248
07	10.000	0.222	11	20.000	0.2132	08	40.000	0.2204	09	60.000	0.2165
10	80.000	0.2154									

Carbon Disulfide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.8432	04	1.000	0.7338	05	2.000	0.7209	06	5.000	0.7501
07	10.000	0.7744	11	20.000	0.7339	08	40.000	0.7895	09	60.000	0.7685
10	80.000	0.7747									

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Analyte

Carbon Tetrachloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.324	02	0.200	0.3124	03	0.500	0.3236	04	1.000	0.334
05	2.000	0.3241	06	5.000	0.3497	07	10.000	0.3693	11	20.000	0.3879
08	40.000	0.4306	09	60.000	0.4261	10	80.000	0.4285			

Chlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.246	02	0.200	1.866	03	0.500	2.061	04	1.000	1.925
05	2.000	1.868	06	5.000	2.044	07	10.000	2.074	11	20.000	2.046
08	40.000	2.229	09	60.000	2.164	10	80.000	2.139			

Chloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1997	02	0.200	0.1939	03	0.500	0.219	04	1.000	0.2321
05	2.000	0.2275	06	5.000	0.2215	07	10.000	0.223	11	20.000	0.2149
08	40.000	0.2204	09	60.000	0.2084	10	80.000	0.2087			

Chloroform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5621	02	0.200	0.5065	03	0.500	0.459	04	1.000	0.4473
05	2.000	0.4629	06	5.000	0.4965	07	10.000	0.5054	11	20.000	0.4953
08	40.000	0.5347	09	60.000	0.5265	10	80.000	0.5203			

Chloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4571	02	0.200	0.4193	03	0.500	0.4088	04	1.000	0.3958
05	2.000	0.4047	06	5.000	0.393	07	10.000	0.3868	11	20.000	0.3604
08	40.000	0.3743	09	60.000	0.3616	10	80.000	0.3672			

Dibromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4931	03	0.500	0.417	04	1.000	0.3988	05	2.000	0.4255
06	5.000	0.493	07	10.000	0.5249	11	20.000	0.55			

Dibromofluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.1918	05	6.000	0.1983	06	8.000	0.2236	07	10.000	0.2269
11	12.000	0.2303	08	14.000	0.2471	09	16.000	0.2509	10	20.000	0.2449

Dibromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1515	03	0.500	0.1362	04	1.000	0.1293	05	2.000	0.1255
06	5.000	0.1294	07	10.000	0.1369	11	20.000	0.1291	08	40.000	0.1378
09	60.000	0.1366	10	80.000	0.1334						

Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3439	02	0.200	0.318	03	0.500	0.3588	04	1.000	0.3068

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Analyte

Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.3243	06	5.000	0.3463	07	10.000	0.3272	11	20.000	0.3321
08	40.000	0.3243	09	60.000	0.315	10	80.000	0.3261			

Ethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.174	02	0.200	1.134	03	0.500	1.184	04	1.000	1.083
05	2.000	1.11	06	5.000	1.179	07	10.000	1.209	11	20.000	1.173
08	40.000	1.313	09	60.000	1.263	10	80.000	1.25			

Hexachlorobutadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5056	03	0.500	0.4798	04	1.000	0.3654	05	2.000	0.4209
06	5.000	0.474	07	10.000	0.4814	11	20.000	0.46	08	40.000	0.5076
09	60.000	0.4942	10	80.000	0.5077						

Isopropylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.279	02	0.200	2.921	03	0.500	3.333	04	1.000	3.122
05	2.000	3.133	06	5.000	3.447	07	10.000	3.56	11	20.000	3.475
08	40.000	3.866	09	60.000	3.773	10	80.000	3.642			

Methyl tert-Butyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	0.5752	02	0.400	0.5363	03	1.000	0.5458	04	2.000	0.4945
05	4.000	0.4725	06	10.000	0.5419	07	20.000	0.5317	11	40.000	0.5263
08	80.000	0.563	09	120.000	0.571	10	160.000	0.5641			

Methylene Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.3351	04	1.000	0.3152	05	2.000	0.2873	06	5.000	0.2921
07	10.000	0.2797	11	20.000	0.2674	08	40.000	0.2736	09	60.000	0.2724
10	80.000	0.2689									

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.868	03	0.500	1.578	04	1.000	1.552	05	2.000	1.433
06	5.000	1.683	07	10.000	1.695	11	20.000	1.65	08	40.000	1.742
09	60.000	1.695	10	80.000	1.678						

Styrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.157	02	0.200	0.9802	03	0.500	0.9574	04	1.000	0.8673
05	2.000	0.9171	06	5.000	1.007	07	10.000	1.06	11	20.000	1.008
08	40.000	1.126	09	60.000	1.152	10	80.000	1.074			

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Analyte

Tetrachloroethene (PCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6296	02	0.200	0.601	03	0.500	0.6478	04	1.000	0.5824
05	2.000	0.6031	06	5.000	0.6351	07	10.000	0.6643	11	20.000	0.6581
08	40.000	0.7325	09	60.000	0.7023	10	80.000	0.7056			

Toluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6486	02	0.200	0.6778	03	0.500	0.7077	04	1.000	0.7018
05	2.000	0.7108	06	5.000	0.7494	07	10.000	0.7641	11	20.000	0.7271
08	40.000	0.7865	09	60.000	0.7678	10	80.000	0.7562			

Toluene-d8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.871	05	6.000	0.8991	06	8.000	0.9763	07	10.000	1.003
11	12.000	0.9751	08	14.000	1.012	09	16.000	1.016	10	20.000	1.007

Trichloroethene (TCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3058	02	0.200	0.2936	03	0.500	0.3093	04	1.000	0.2745
05	2.000	0.2848	06	5.000	0.296	07	10.000	0.3042	11	20.000	0.2976
08	40.000	0.3205	09	60.000	0.3134	10	80.000	0.3095			

Trichlorofluoromethane (CFC 11)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5357	02	0.200	0.5284	03	0.500	0.5256	04	1.000	0.5098
05	2.000	0.5165	06	5.000	0.5601	07	10.000	0.5632	11	20.000	0.5532
08	40.000	0.5738	09	60.000	0.5427	10	80.000	0.5567			

Vinyl Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3391	02	0.200	0.3474	03	0.500	0.3835	04	1.000	0.3532
05	2.000	0.3737	06	5.000	0.3938	07	10.000	0.3856	11	20.000	0.3722
08	40.000	0.3827	09	60.000	0.3661	10	80.000	0.3706			

cis-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2567	02	0.200	0.3138	03	0.500	0.3259	04	1.000	0.2778
05	2.000	0.2594	06	5.000	0.3063	07	10.000	0.3064	11	20.000	0.307
08	40.000	0.3268	09	60.000	0.3251	10	80.000	0.3207			

cis-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3909	02	0.200	0.3733	03	0.500	0.338	04	1.000	0.3478
05	2.000	0.3496	06	5.000	0.3878	07	10.000	0.4196	11	20.000	0.4105
08	40.000	0.4434	09	60.000	0.442	10	80.000	0.4322			

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Analyte

m,p-Xylenes

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	1.346	02	0.400	1.392	03	1.000	1.338	04	2.000	1.331
05	4.000	1.275	06	10.000	1.409	07	20.000	1.443	11	40.000	1.413
08	80.000	1.555	09	120.000	1.532	10	160.000	1.492			

n-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.611	02	0.200	3.307	03	0.500	3.136	04	1.000	2.956
05	2.000	2.932	06	5.000	3.253	07	10.000	3.349	11	20.000	3.235
08	40.000	3.429	09	60.000	3.262	10	80.000	3.163			

n-Propylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	4.634	02	0.200	4.743	03	0.500	4.943	04	1.000	5.111
05	2.000	4.845	06	5.000	5.377	07	10.000	5.359	11	20.000	5.029
08	40.000	5.318	09	60.000	5.042	10	80.000	4.93			

o-Xylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.315	02	0.200	1.113	03	0.500	1.251	04	1.000	1.24
05	2.000	1.219	06	5.000	1.34	07	10.000	1.334	11	20.000	1.332
08	40.000	1.461	09	60.000	1.421	10	80.000	1.379			

sec-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.987	02	0.200	4.202	03	0.500	4.184	04	1.000	4.109
05	2.000	4.14	06	5.000	4.495	07	10.000	4.525	11	20.000	4.321
08	40.000	4.578	09	60.000	4.374	10	80.000	4.224			

tert-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.662	02	0.200	2.782	03	0.500	3.097	04	1.000	3.013
05	2.000	2.951	06	5.000	3.187	07	10.000	3.201	11	20.000	2.993
08	40.000	3.192	09	60.000	3.055	10	80.000	2.974			

trans-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2876	02	0.200	0.2125	03	0.500	0.2664	04	1.000	0.2467
05	2.000	0.2484	06	5.000	0.2684	07	10.000	0.2749	11	20.000	0.2733
08	40.000	0.2998	09	60.000	0.2949	10	80.000	0.3004			

trans-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9585	02	0.200	0.8987	03	0.500	0.8123	04	1.000	0.7296
05	2.000	0.7481	06	5.000	0.8529	07	10.000	0.9029	11	20.000	0.9004
08	40.000	0.99	09	60.000	0.9984	10	80.000	0.9652			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,1,1,2-Tetrachloroethane	TRG	Average RF	% RSD	12.2	≤15	0.6388	0.01
1,1,1-Trichloroethane (TCA)	TRG	Average RF	% RSD	10.3	≤15	0.4456	.100
1,1,2,2-Tetrachloroethane	TRG	Average RF	% RSD	9.4	≤15	0.5806	.300
1,1,2-Trichloroethane	TRG	Average RF	% RSD	6.1	≤15	0.4318	.100
1,1-Dichloroethane	TRG	Average RF	% RSD	5.4	≤15	0.5359	.200
1,1-Dichloroethene	TRG	Average RF	% RSD	11.3	≤15	0.2775	.100
1,1-Dichloropropene	TRG	Average RF	% RSD	6.2	≤15	0.4215	0.01
1,2,3-Trichlorobenzene	TRG	Average RF	% RSD	9.3	≤15	0.7774	0.01
1,2,3-Trichloropropane	TRG	Average RF	% RSD	10.5	≤15	0.1718	0.01
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	8.0	≤15	0.9609	0.200
1,2,4-Trimethylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.41	0.01
1,2-Dibromo-3-chloropropane	TRG	Average RF	% RSD	8.8	≤15	0.06915	0.025
1,2-Dibromoethane (EDB)	TRG	Average RF	% RSD	9.4	≤15	0.4655	0.100
1,2-Dichlorobenzene	TRG	Average RF	% RSD	4.5	≤15	1.588	0.400
1,2-Dichloroethane (EDC)	TRG	Average RF	% RSD	7.0	≤15	0.3592	0.100
1,2-Dichloroethane-d4	SURR	Average RF	% RSD	5.0	≤15	0.2582	0.01
1,2-Dichloropropane	TRG	Average RF	% RSD	5.9	≤15	0.3009	0.100
1,3,5-Trimethylbenzene	TRG	Average RF	% RSD	4.2	≤15	3.473	0.01
1,3-Dichlorobenzene	TRG	Average RF	% RSD	7.7	≤15	1.862	0.600
1,3-Dichloropropane	TRG	Average RF	% RSD	6.2	≤15	0.9237	0.01
1,4-Dichlorobenzene	TRG	Average RF	% RSD	6.3	≤15	1.866	0.500
2,2-Dichloropropane	TRG	Average RF	% RSD	7.3	≤15	0.459	0.01
2-Butanone (MEK)	TRG	Average RF	% RSD	5.7	≤15	0.01312	0.01
2-Chlorotoluene	TRG	Average RF	% RSD	4.5	≤15	2.994	0.01
2-Hexanone	TRG	Average RF	% RSD	8.4	≤15	0.04446	0.015
4-Bromofluorobenzene	SURR	Average RF	% RSD	8.9	≤15	0.8348	0.01
4-Chlorotoluene	TRG	Average RF	% RSD	3.2	≤15	3.424	0.01
4-Isopropyltoluene	TRG	Average RF	% RSD	7.3	≤15	3.51	0.01
4-Methyl-2-pentanone (MIBK)	TRG	Average RF	% RSD	4.3	≤15	0.05041	0.01
Acetone	TRG	Average RF	% RSD	4.4	≤15	0.03703	0.01
Benzene	TRG	Average RF	% RSD	4.2	≤15	1.23	0.500
Bromobenzene	TRG	Average RF	% RSD	7.5	≤15	0.9778	0.01
Bromochloromethane	TRG	Average RF	% RSD	7.7	≤15	0.1274	0.01
Bromodichloromethane	TRG	Average RF	% RSD	9.8	≤15	0.3198	0.200

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Bromoform	TRG	Quadratic (0,0)	COD	0.9977	≥.990	0.2395	0.100
Bromomethane	TRG	Average RF	% RSD	3.3	≤15	0.2225	0.100
Carbon Disulfide	TRG	Average RF	% RSD	4.8	≤15	0.7654	0.100
Carbon Tetrachloride	TRG	Average RF	% RSD	12.8	≤15	0.3646	0.100
Chlorobenzene	TRG	Average RF	% RSD	6.4	≤15	2.06	0.500
Chloroethane	TRG	Average RF	% RSD	5.4	≤15	0.2154	0.100
Chloroform	TRG	Average RF	% RSD	6.9	≤15	0.5015	0.200
Chloromethane	TRG	Average RF	% RSD	7.3	≤15	0.3935	0.100
Dibromochloromethane	TRG	Average RF	% RSD	12.3	≤15	0.4717	0.100
Dibromofluoromethane	SURR	Average RF	% RSD	9.7	≤15	0.2267	0.01
Dibromomethane	TRG	Average RF	% RSD	5.4	≤15	0.1346	0.01
Dichlorodifluoromethane	TRG	Average RF	% RSD	4.6	≤15	0.3293	0.100
Ethylbenzene	TRG	Average RF	% RSD	5.7	≤15	1.188	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	9.6	≤15	0.4696	0.01
Isopropylbenzene	TRG	Average RF	% RSD	8.5	≤	3.414	
Methyl tert-Butyl Ether	TRG	Average RF	% RSD	5.9	≤15	0.5384	0.100
Methylene Chloride	TRG	Average RF	% RSD	8.0	≤15	0.288	0.100
Naphthalene	TRG	Average RF	% RSD	7.1	≤15	1.657	0.01
Styrene	TRG	Average RF	% RSD	9.3	≤15	1.028	0.300
Tetrachloroethene (PCE)	TRG	Average RF	% RSD	7.3	≤15	0.6511	0.200
Toluene	TRG	Average RF	% RSD	5.8	≤15	0.7271	0.400
Toluene-d8	SURR	Average RF	% RSD	5.7	≤15	0.97	0.01
Trichloroethene (TCE)	TRG	Average RF	% RSD	4.4	≤15	0.3008	0.200
Trichlorofluoromethane (CFC 11)	TRG	Average RF	% RSD	3.8	≤15	0.5423	0.100
Vinyl Chloride	TRG	Average RF	% RSD	4.6	≤15	0.3698	0.100
cis-1,2-Dichloroethene	TRG	Average RF	% RSD	8.6	≤15	0.3024	0.100
cis-1,3-Dichloropropene	TRG	Average RF	% RSD	9.8	≤15	0.3941	0.200
m,p-Xylenes	TRG	Average RF	% RSD	6.3	≤15	1.411	0.100
n-Butylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.239	0.01
n-Propylbenzene	TRG	Average RF	% RSD	4.9	≤15	5.03	0.01
o-Xylene	TRG	Average RF	% RSD	7.5	≤15	1.309	0.300
sec-Butylbenzene	TRG	Average RF	% RSD	4.4	≤15	4.285	0.01
tert-Butylbenzene	TRG	Average RF	% RSD	5.6	≤15	3.01	0.01
trans-1,2-Dichloroethene	TRG	Average RF	% RSD	9.9	≤15	0.2703	0.100
trans-1,3-Dichloropropene	TRG	Average RF	% RSD	10.4	≤15	0.887	0.100

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
12	KC1900305-12	ICV	I:\MS13\DATA\072519\0725F023.D	07/25/2019 16:56

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Acetone	50.0	54.7	3.703E-2	4.053E-2	9.46	±20	Average RF
Benzene	10.0	9.15	1.23E0	1.126E0	-8.489	±20	Average RF
Bromobenzene	10.0	9.34	9.778E-1	9.131E-1	-6.608	±20	Average RF
Bromochloromethane	10.0	9.16	1.274E-1	1.166E-1	-8.447	±20	Average RF
Bromodichloromethane	10.0	8.87	3.198E-1	2.837E-1	-11.312	±20	Average RF
Bromoform	10.0	8.71	2.395E-1	2.177E-1	-12.879	±20	Quadratic (0,0)
Bromomethane	10.0	9.36	2.225E-1	2.083E-1	-6.387	±20	Average RF
2-Butanone (MEK)	50.0	53.3	1.312E-2	1.399E-2	6.62	±20	Average RF
n-Butylbenzene	10.0	9.42	3.239E0	3.052E0	-5.772	±20	Average RF
sec-Butylbenzene	10.0	9.49	4.285E0	4.068E0	-5.070	±20	Average RF
tert-Butylbenzene	10.0	9.50	3.01E0	2.86E0	-4.982	±20	Average RF
Carbon Disulfide	20.0	18.9	7.654E-1	7.219E-1	-5.694	±20	Average RF
Carbon Tetrachloride	10.0	9.46	3.646E-1	3.45E-1	-5.353	±20	Average RF
Chlorobenzene	10.0	9.42	2.06E0	1.94E0	-5.824	±20	Average RF
Chloroethane	10.0	10.1	2.154E-1	2.177E-1	1.09	±20	Average RF
Chloroform	10.0	9.17	5.015E-1	4.596E-1	-8.349	±20	Average RF
Chloromethane	10.0	8.82	3.935E-1	3.471E-1	-11.802	±20	Average RF
2-Chlorotoluene	10.0	9.30	2.994E0	2.783E0	-7.032	±20	Average RF
4-Chlorotoluene	10.0	9.27	3.424E0	3.175E0	-7.283	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.26	6.915E-2	5.712E-2	-17.393	±20	Average RF
Dibromochloromethane	10.0	10.0	4.717E-1	4.722E-1	0.104	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	8.79	4.655E-1	4.089E-1	-12.149	±20	Average RF
Dibromomethane	10.0	8.80	1.346E-1	1.184E-1	-12.048	±20	Average RF
1,2-Dichlorobenzene	10.0	9.24	1.588E0	1.467E0	-7.594	±20	Average RF
1,3-Dichlorobenzene	10.0	9.13	1.862E0	1.7E0	-8.730	±20	Average RF
1,4-Dichlorobenzene	10.0	8.87	1.866E0	1.655E0	-11.312	±20	Average RF
Dichlorodifluoromethane	10.0	8.81	3.293E-1	2.903E-1	-11.852	±20	Average RF
1,1-Dichloroethane	10.0	9.43	5.359E-1	5.055E-1	-5.670	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	9.03	3.592E-1	3.244E-1	-9.672	±20	Average RF
1,1-Dichloroethene	10.0	9.09	2.775E-1	2.523E-1	-9.099	±20	Average RF
cis-1,2-Dichloroethene	10.0	9.28	3.024E-1	2.806E-1	-7.202	±20	Average RF
trans-1,2-Dichloroethene	10.0	9.13	2.703E-1	2.469E-1	-8.659	±20	Average RF
1,2-Dichloropropane	10.0	8.88	3.009E-1	2.673E-1	-11.166	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,3-Dichloropropane	10.0	9.24	9.237E-1	8.536E-1	-7.589	±20	Average RF
2,2-Dichloropropane	10.0	9.33	4.59E-1	4.281E-1	-6.715	±20	Average RF
1,1-Dichloropropene	10.0	9.37	4.215E-1	3.948E-1	-6.328	±20	Average RF
cis-1,3-Dichloropropene	10.0	9.20	3.941E-1	3.627E-1	-7.963	±20	Average RF
trans-1,3-Dichloropropene	10.0	9.30	8.87E-1	8.249E-1	-6.999	±20	Average RF
Ethylbenzene	10.0	9.51	1.188E0	1.13E0	-4.917	±20	Average RF
Hexachlorobutadiene	10.0	9.08	4.696E-1	4.266E-1	-9.176	±20	Average RF
2-Hexanone	50.0	51.5	4.446E-2	4.577E-2	2.96	±20	Average RF
Isopropylbenzene	10.0	9.61	3.414E0	3.28E0	-3.91828772050652363851		Average RF
4-Isopropyltoluene	10.0	9.91	3.51E0	3.477E0	-0.944	±20	Average RF
Methyl tert-Butyl Ether	10.0	9.05	5.384E-1	4.875E-1	-9.452	±20	Average RF
4-Methyl-2-pentanone (MIBK)	50.0	50.9	5.041E-2	5.129E-2	1.74	±20	Average RF
Methylene Chloride	10.0	8.84	2.88E-1	2.544E-1	-11.648	±20	Average RF
Naphthalene			1.657E0			±20	Average RF
n-Propylbenzene	10.0	9.44	5.03E0	4.751E0	-5.551	±20	Average RF
Styrene	10.0	9.53	1.028E0	9.797E-1	-4.672	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.20	6.388E-1	5.878E-1	-7.980	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.93	5.806E-1	5.186E-1	-10.676	±20	Average RF
Tetrachloroethene (PCE)	10.0	9.59	6.511E-1	6.243E-1	-4.109	±20	Average RF
Toluene	10.0	9.37	7.271E-1	6.815E-1	-6.263	±20	Average RF
1,2,3-Trichlorobenzene	10.0	8.79	7.774E-1	6.83E-1	-12.141	±20	Average RF
1,2,4-Trichlorobenzene			9.609E-1			±20	Average RF
1,1,2-Trichloroethane	10.0	9.31	4.318E-1	4.022E-1	-6.868	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	9.20	4.456E-1	4.1E-1	-7.996	±20	Average RF
Trichloroethene (TCE)	10.0	8.95	3.008E-1	2.692E-1	-10.524	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	8.35	5.423E-1	4.528E-1	-16.509	±20	Average RF
1,2,3-Trichloropropane	10.0	9.37	1.718E-1	1.609E-1	-6.337	±20	Average RF
1,2,4-Trimethylbenzene	10.0	9.41	3.41E0	3.21E0	-5.865	±20	Average RF
1,3,5-Trimethylbenzene	10.0	9.35	3.473E0	3.247E0	-6.521	±20	Average RF
Vinyl Chloride	10.0	9.52	3.698E-1	3.519E-1	-4.849	±20	Average RF
o-Xylene	10.0	9.46	1.309E0	1.238E0	-5.412	±20	Average RF
m,p-Xylenes	20.0	18.8	1.411E0	1.33E0	-5.759	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.42	8.348E-1	7.864E-1	-5.803	±20	Average RF
Dibromofluoromethane	10.0	9.59	2.267E-1	2.175E-1	-4.065	±20	Average RF
1,2-Dichloroethane-d4	10.0	8.64	2.582E-1	2.231E-1	-13.588	±20	Average RF
Toluene-d8	10.0	10.0	9.7E-1	9.723E-1	0.230	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 09:46

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\040120\0401F004.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675480
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	103	0.037	0.0381	3.0	NA	±20	Average RF
Benzene	10.0	9.57	1.23	1.1768	-4.3	NA	±20	Average RF
Bromobenzene	10.0	9.73	0.9778	0.9517	-2.7	NA	±20	Average RF
Bromochloromethane	10.0	9.88	0.1274	0.1259	-1.2	NA	±20	Average RF
Bromodichloromethane	10.0	10.4	0.3198	0.3332	4.2	NA	±20	Average RF
Bromoform	10.0	10.9	0.2395	0.2754	NA	9.0	±20	Quadratic (0,0)
Bromomethane	10.0	9.66	0.2225	0.2149	-3.4	NA	±20	Average RF
2-Butanone (MEK)	100	88.8	0.0131	0.0117	-11.2	NA	±20	Average RF
n-Butylbenzene	10.0	9.18	3.2393	2.9728	-8.2	NA	±20	Average RF
sec-Butylbenzene	10.0	9.36	4.2852	4.0113	-6.4	NA	±20	Average RF
tert-Butylbenzene	10.0	9.45	3.0096	2.8452	-5.5	NA	±20	Average RF
Carbon Disulfide	10.0	10.4	0.7654	0.7921	3.5	NA	±20	Average RF
Carbon Tetrachloride	10.0	10.3	0.3646	0.3756	3.0	NA	±20	Average RF
Chlorobenzene	10.0	9.41	2.06	1.9376	-5.9	NA	±20	Average RF
Chloroethane	10.0	9.95	0.2154	0.2142	-0.5	NA	±20	Average RF
Chloroform	10.0	9.74	0.5015	0.4882	-2.6	NA	±20	Average RF
Chloromethane	10.0	8.69	0.3935	0.3418	-13.1	NA	±20	Average RF
2-Chlorotoluene	10.0	9.14	2.9938	2.7366	-8.6	NA	±20	Average RF
4-Chlorotoluene	10.0	9.48	3.4241	3.2445	-5.2	NA	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.94	0.0691	0.0618	-10.6	NA	±20	Average RF
Dibromochloromethane	10.0	11.1	0.4717	0.5241	11.1	NA	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	9.33	0.4655	0.4342	-6.7	NA	±20	Average RF
Dibromomethane	10.0	9.67	0.1346	0.1302	-3.3	NA	±20	Average RF
1,2-Dichlorobenzene	10.0	9.59	1.5875	1.5227	-4.1	NA	±20	Average RF
1,3-Dichlorobenzene	10.0	10.0	1.8624	1.8629	0.0	NA	±20	Average RF
1,4-Dichlorobenzene	10.0	9.45	1.8664	1.7632	-5.5	NA	±20	Average RF
Dichlorodifluoromethane	10.0	9.00	0.3293	0.2964	-10.0	NA	±20	Average RF
1,1-Dichloroethane	10.0	9.64	0.5359	0.5168	-3.6	NA	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	9.22	0.3592	0.331	-7.8	NA	±20	Average RF
1,1-Dichloroethene	10.0	9.73	0.2775	0.27	-2.7	NA	±20	Average RF
cis-1,2-Dichloroethene	10.0	9.64	0.3024	0.2913	-3.6	NA	±20	Average RF
trans-1,2-Dichloroethene	10.0	9.51	0.2703	0.2571	-4.9	NA	±20	Average RF
1,2-Dichloropropane	10.0	9.92	0.3009	0.2986	-0.8	NA	±20	Average RF
1,3-Dichloropropane	10.0	9.43	0.9237	0.8712	-5.7	NA	±20	Average RF
2,2-Dichloropropane	10.0	7.95	0.459	0.3648	-20.5*	NA	±20	Average RF
1,1-Dichloropropene	10.0	9.45	0.4215	0.3982	-5.5	NA	±20	Average RF
cis-1,3-Dichloropropene	10.0	9.39	0.3941	0.3703	-6.1	NA	±20	Average RF
trans-1,3-Dichloropropene	10.0	8.91	0.887	0.7901	-10.9	NA	±20	Average RF
Ethylbenzene	10.0	9.40	1.1883	1.1165	-6.0	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 09:46

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\040120\0401F004.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675480
Units: ppb

Hexachlorobutadiene	10.0	10.6	0.4696	0.4982	6.1	NA	±20	Average RF
2-Hexanone	100	77.3	0.0445	0.0343	-22.8*	NA	±20	Average RF
Isopropylbenzene	10.0	9.57	3.4138	3.2657	-4.3	NA	±20	Average RF
4-Isopropyltoluene	10.0	9.97	3.5098	3.4999	-0.3	NA	±20	Average RF
Methyl tert-Butyl Ether	20.0	18.4	0.5384	0.4954	-8.0	NA	±20	Average RF
4-Methyl-2-pentanone (MIBK)	100	83.0	0.0504	0.0419	-17.0	NA	±20	Average RF
Methylene Chloride	10.0	9.48	0.288	0.2731	-5.2	NA	±20	Average RF
Naphthalene	10.0	8.21	1.6574	1.36	-17.9	NA	±20	Average RF
n-Propylbenzene	10.0	9.52	5.0302	4.7886	-4.8	NA	±20	Average RF
Styrene	10.0	10.1	1.0277	1.035	0.7	NA	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.56	0.6388	0.6108	-4.4	NA	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.79	0.5806	0.5104	-12.1	NA	±20	Average RF
Tetrachloroethene (PCE)	10.0	10.4	0.6511	0.6779	4.1	NA	±20	Average RF
Toluene	10.0	9.57	0.7271	0.6957	-4.3	NA	±20	Average RF
1,2,3-Trichlorobenzene	10.0	8.94	0.7774	0.6949	-10.6	NA	±20	Average RF
1,1,2-Trichloroethane	10.0	9.52	0.4318	0.4113	-4.8	NA	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	9.71	0.4456	0.4327	-2.9	NA	±20	Average RF
Trichloroethene (TCE)	10.0	9.65	0.3008	0.2904	-3.5	NA	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	11.6	0.5423	0.6315	16.4	NA	±20	Average RF
1,2,3-Trichloropropane	10.0	9.31	0.1718	0.16	-6.9	NA	±20	Average RF
1,2,4-Trimethylbenzene	10.0	9.44	3.4099	3.2185	-5.6	NA	±20	Average RF
1,3,5-Trimethylbenzene	10.0	9.41	3.4734	3.269	-5.9	NA	±20	Average RF
Vinyl Chloride	10.0	9.27	0.3698	0.3427	-7.3	NA	±20	Average RF
o-Xylene	10.0	9.45	1.3093	1.2369	-5.5	NA	±20	Average RF
m,p-Xylenes	20.0	18.5	1.4114	1.3026	-7.7	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.37	0.8348	0.7819	-6.3	NA	±20	Average RF
Dibromofluoromethane	10.0	10.2	0.2267	0.2318	2.2	NA	±20	Average RF
1,2-Dichloroethane-d4	10.0	8.70	0.2582	0.2246	-13.0	NA	±20	Average RF
Toluene-d8	10.0	10.1	0.97	0.976	0.6	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 20:24

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\040120\0401F028.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675480
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	137	0.037	0.0509	37.4	NA	±50	Average RF
Benzene	10.0	9.24	1.23	1.1359	-7.6	NA	±50	Average RF
Bromobenzene	10.0	9.43	0.9778	0.9224	-5.7	NA	±50	Average RF
Bromochloromethane	10.0	9.66	0.1274	0.123	-3.4	NA	±50	Average RF
Bromodichloromethane	10.0	9.94	0.3198	0.3178	-0.6	NA	±50	Average RF
Bromoform	10.0	8.62	0.2395	0.2152	NA	-13.8	±50	Quadratic (0,0)
Bromomethane	10.0	8.80	0.2225	0.1958	-12.0	NA	±50	Average RF
2-Butanone (MEK)	100	87.6	0.0131	0.0115	-12.4	NA	±50	Average RF
n-Butylbenzene	10.0	8.84	3.2393	2.8625	-11.6	NA	±50	Average RF
sec-Butylbenzene	10.0	9.03	4.2852	3.8696	-9.7	NA	±50	Average RF
tert-Butylbenzene	10.0	9.06	3.0096	2.7262	-9.4	NA	±50	Average RF
Carbon Disulfide	10.0	12.0	0.7654	0.915	19.5	NA	±50	Average RF
Carbon Tetrachloride	10.0	9.82	0.3646	0.358	-1.8	NA	±50	Average RF
Chlorobenzene	10.0	9.32	2.06	1.92	-6.8	NA	±50	Average RF
Chloroethane	10.0	10.1	0.2154	0.2165	0.5	NA	±50	Average RF
Chloroform	10.0	9.66	0.5015	0.4842	-3.4	NA	±50	Average RF
Chloromethane	10.0	8.55	0.3935	0.3364	-14.5	NA	±50	Average RF
2-Chlorotoluene	10.0	8.62	2.9938	2.5814	-13.8	NA	±50	Average RF
4-Chlorotoluene	10.0	8.99	3.4241	3.0766	-10.1	NA	±50	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.75	0.0691	0.0605	-12.5	NA	±50	Average RF
Dibromochloromethane	10.0	9.52	0.4717	0.449	-4.8	NA	±50	Average RF
1,2-Dibromoethane (EDB)	10.0	7.65	0.4655	0.3561	-23.5	NA	±50	Average RF
Dibromomethane	10.0	9.30	0.1346	0.1251	-7.0	NA	±50	Average RF
1,2-Dichlorobenzene	10.0	9.20	1.5875	1.4607	-8.0	NA	±50	Average RF
1,3-Dichlorobenzene	10.0	9.12	1.8624	1.6984	-8.8	NA	±50	Average RF
1,4-Dichlorobenzene	10.0	8.97	1.8664	1.6736	-10.3	NA	±50	Average RF
Dichlorodifluoromethane	10.0	8.47	0.3293	0.2789	-15.3	NA	±50	Average RF
1,1-Dichloroethane	10.0	9.49	0.5359	0.5086	-5.1	NA	±50	Average RF
1,2-Dichloroethane (EDC)	10.0	9.00	0.3592	0.3233	-10.0	NA	±50	Average RF
1,1-Dichloroethene	10.0	12.0	0.2775	0.3323	19.7	NA	±50	Average RF
cis-1,2-Dichloroethene	10.0	9.44	0.3024	0.2853	-5.6	NA	±50	Average RF
trans-1,2-Dichloroethene	10.0	9.62	0.2703	0.26	-3.8	NA	±50	Average RF
1,2-Dichloropropane	10.0	10.5	0.3009	0.3149	4.6	NA	±50	Average RF
1,3-Dichloropropane	10.0	7.68	0.9237	0.7091	-23.2	NA	±50	Average RF
2,2-Dichloropropane	10.0	7.22	0.459	0.3316	-27.8	NA	±50	Average RF
1,1-Dichloropropene	10.0	9.37	0.4215	0.395	-6.3	NA	±50	Average RF
cis-1,3-Dichloropropene	10.0	9.07	0.3941	0.3575	-9.3	NA	±50	Average RF
trans-1,3-Dichloropropene	10.0	7.32	0.887	0.6494	-26.8	NA	±50	Average RF
Ethylbenzene	10.0	8.85	1.1883	1.0512	-11.5	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 20:24

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\040120\0401F028.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675480
Units: ppb

Hexachlorobutadiene	10.0	10.4	0.4696	0.4888	4.1	NA	±50	Average RF
2-Hexanone	100	69.8	0.0445	0.031	-30.2	NA	±50	Average RF
Isopropylbenzene	10.0	7.86	3.4138	2.6832	-21.4	NA	±50	Average RF
4-Isopropyltoluene	10.0	9.28	3.5098	3.2556	-7.2	NA	±50	Average RF
Methyl tert-Butyl Ether	20.0	18.7	0.5384	0.5019	-6.8	NA	±50	Average RF
4-Methyl-2-pentanone (MIBK)	100	86.4	0.0504	0.0435	-13.6	NA	±50	Average RF
Methylene Chloride	10.0	10.4	0.288	0.2984	3.6	NA	±50	Average RF
Naphthalene	10.0	7.93	1.6574	1.3142	-20.7	NA	±50	Average RF
n-Propylbenzene	10.0	9.14	5.0302	4.5964	-8.6	NA	±50	Average RF
Styrene	10.0	7.58	1.0277	0.7795	-24.2	NA	±50	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.15	0.6388	0.5846	-8.5	NA	±50	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.49	0.5806	0.4927	-15.1	NA	±50	Average RF
Tetrachloroethene (PCE)	10.0	8.57	0.6511	0.558	-14.3	NA	±50	Average RF
Toluene	10.0	9.58	0.7271	0.6962	-4.2	NA	±50	Average RF
1,2,3-Trichlorobenzene	10.0	8.39	0.7774	0.6523	-16.1	NA	±50	Average RF
1,1,2-Trichloroethane	10.0	7.68	0.4318	0.3316	-23.2	NA	±50	Average RF
1,1,1-Trichloroethane (TCA)	10.0	9.27	0.4456	0.4132	-7.3	NA	±50	Average RF
Trichloroethene (TCE)	10.0	9.66	0.3008	0.2906	-3.4	NA	±50	Average RF
Trichlorofluoromethane (CFC 11)	10.0	10.7	0.5423	0.5783	6.6	NA	±50	Average RF
1,2,3-Trichloropropane	10.0	9.49	0.1718	0.1631	-5.1	NA	±50	Average RF
1,2,4-Trimethylbenzene	10.0	8.96	3.4099	3.0549	-10.4	NA	±50	Average RF
1,3,5-Trimethylbenzene	10.0	9.20	3.4734	3.1967	-8.0	NA	±50	Average RF
Vinyl Chloride	10.0	9.25	0.3698	0.342	-7.5	NA	±50	Average RF
o-Xylene	10.0	7.89	1.3093	1.0332	-21.1	NA	±50	Average RF
m,p-Xylenes	20.0	15.6	1.4114	1.099	-22.1	NA	±50	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	7.82	0.8348	0.6528	-21.8	NA	±50	Average RF
Dibromofluoromethane	10.0	9.98	0.2267	0.2263	-0.2	NA	±50	Average RF
1,2-Dichloroethane-d4	10.0	8.61	0.2582	0.2224	-13.9	NA	±50	Average RF
Toluene-d8	10.0	9.59	0.97	0.9305	-4.1	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305

Analysis Run Log
Volatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**675480
Instrument ID:K-MS-13

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS13\DATA\040120\0401F003.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	09:04:00	
J:\MS13\DATA\040120\0401F004.D\	Continuing Calibration Verification	KQ2004533-04	4/1/2020	09:46:00	
J:\MS13\DATA\040120\0401F005.D\	Lab Control Sample	KQ2004533-05	4/1/2020	10:13:00	
J:\MS13\DATA\040120\0401F006.D\	Duplicate Lab Control Sample	KQ2004533-06	4/1/2020	10:39:00	
J:\MS13\DATA\040120\0401F009.D\	Method Blank	KQ2004533-07	4/1/2020	11:59:00	
J:\MS13\DATA\040120\0401F010.D\	FTP-1A-20200318	K2002465-002	4/1/2020	12:26:00	
J:\MS13\DATA\040120\0401F011.D\	FTP-1-20200318	K2002465-001	4/1/2020	12:52:00	
J:\MS13\DATA\040120\0401F012.D\	FTP-1-20200318 MS	KQ2004533-01	4/1/2020	13:19:00	
J:\MS13\DATA\040120\0401F013.D\	FTP-1-20200318 DMS	KQ2004533-02	4/1/2020	13:45:00	
J:\MS13\DATA\040120\0401F016.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	15:05:00	
J:\MS13\DATA\040120\0401F017.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	15:32:00	
J:\MS13\DATA\040120\0401F018.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	15:58:00	
J:\MS13\DATA\040120\0401F019.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	16:25:00	
J:\MS13\DATA\040120\0401F020.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	16:52:00	
J:\MS13\DATA\040120\0401F021.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	17:18:00	
J:\MS13\DATA\040120\0401F022.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	17:45:00	
J:\MS13\DATA\040120\0401F023.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	18:11:00	
J:\MS13\DATA\040120\0401F024.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	18:38:00	
J:\MS13\DATA\040120\0401F025.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	19:04:00	
J:\MS13\DATA\040120\0401F026.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	19:31:00	
J:\MS13\DATA\040120\0401F027.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	19:58:00	
J:\MS13\DATA\040120\0401F028.D\	Continuing Cal. Verification	KQ2004533-08	4/1/2020	20:24:00	

Semi-Volatile Organic Compounds by GC/MS

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:15
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	49	3.8	0.50	5	04/01/20 07:10	3/23/20	
1,2-Dichlorobenzene	ND U	49	2.5	0.95	5	04/01/20 07:10	3/23/20	
1,2-Diphenylhydrazine	ND U	49	2.5	1.1	5	04/01/20 07:10	3/23/20	
1,3-Dichlorobenzene	ND U	49	2.5	1.1	5	04/01/20 07:10	3/23/20	
1,4-Dichlorobenzene	ND U	49	2.5	1.0	5	04/01/20 07:10	3/23/20	
2,4,5-Trichlorophenol	ND U	49	5.0	1.3	5	04/01/20 07:10	3/23/20	
2,4,6-Trichlorophenol	ND U	49	5.0	1.3	5	04/01/20 07:10	3/23/20	
2,4-Dichlorophenol	ND U	49	3.8	1.8	5	04/01/20 07:10	3/23/20	
2,4-Dimethylphenol	ND U	98	75	28	5	04/01/20 07:10	3/23/20	
2,4-Dinitrophenol	ND U	250	50	5.5	5	04/01/20 07:10	3/23/20	
2,4-Dinitrotoluene	ND U	49	3.8	1.2	5	04/01/20 07:10	3/23/20	
2,6-Dinitrotoluene	ND U	49	3.8	1.4	5	04/01/20 07:10	3/23/20	
2-Chloronaphthalene	ND U	49	2.5	1.1	5	04/01/20 07:10	3/23/20	
2-Chlorophenol	ND U	49	3.8	1.3	5	04/01/20 07:10	3/23/20	
2-Methyl-4,6-dinitrophenol	ND U	120	25	9.5	5	04/01/20 07:10	3/23/20	
2-Methylnaphthalene	**44 J**	49	3.8	1.5	5	04/01/20 07:10	3/23/20	
2-Methylphenol	ND U	49	7.5	3.3	5	04/01/20 07:10	3/23/20	
2-Nitroaniline	ND U	120	5.0	2.4	5	04/01/20 07:10	3/23/20	
2-Nitrophenol	ND U	49	3.8	1.9	5	04/01/20 07:10	3/23/20	
3,3'-Dichlorobenzidine	ND U	120	3.8	1.7	5	04/01/20 07:10	3/23/20	
3-Nitroaniline	ND U	120	3.8	1.3	5	04/01/20 07:10	3/23/20	
4-Bromophenyl Phenyl Ether	ND U	49	3.8	0.60	5	04/01/20 07:10	3/23/20	
4-Chloro-3-methylphenol	ND U	49	7.5	2.7	5	04/01/20 07:10	3/23/20	
4-Chloroaniline	ND U	49	5.0	2.4	5	04/01/20 07:10	3/23/20	
4-Chlorophenyl Phenyl Ether	ND U	49	3.8	1.5	5	04/01/20 07:10	3/23/20	
4-Methylphenol	ND U	49	7.5	3.7	5	04/01/20 07:10	3/23/20	
4-Nitroaniline	ND U	120	5.0	2.1	5	04/01/20 07:10	3/23/20	
4-Nitrophenol	ND U	120	20	8.5	5	04/01/20 07:10	3/23/20	
Acenaphthene	**3.0 J**	49	2.5	0.70	5	04/01/20 07:10	3/23/20	
Acenaphthylene	ND Ui	49	2.5	2.2	5	04/01/20 07:10	3/23/20	
Anthracene	ND U	49	3.8	1.7	5	04/01/20 07:10	3/23/20	
Benz(a)anthracene	ND U	49	2.5	0.70	5	04/01/20 07:10	3/23/20	
Benzo(a)pyrene	ND U	49	3.8	1.3	5	04/01/20 07:10	3/23/20	
Benzo(b)fluoranthene	ND U	49	5.0	1.9	5	04/01/20 07:10	3/23/20	
Benzo(g,h,i)perylene	ND U	49	2.5	1.2	5	04/01/20 07:10	3/23/20	
Benzo(k)fluoranthene	ND U	49	3.8	1.5	5	04/01/20 07:10	3/23/20	
Benzoic Acid	ND U	120	50	15	5	04/01/20 07:10	3/23/20	
Benzyl Alcohol	ND U	49	3.8	1.8	5	04/01/20 07:10	3/23/20	
Bis(2-chloroethoxy)methane	ND U	49	3.8	1.7	5	04/01/20 07:10	3/23/20	
Bis(2-chloroethyl) Ether	ND U	49	3.8	2.1	5	04/01/20 07:10	3/23/20	
Bis(2-ethylhexyl) Phthalate	**5.0 J**	49	3.8	1.4	5	04/01/20 07:10	3/23/20	
Butyl Benzyl Phthalate	ND U	49	3.8	1.9	5	04/01/20 07:10	3/23/20	
Carbazole	ND U	49	3.8	1.4	5	04/01/20 07:10	3/23/20	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:15
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	ND	U	49	2.5	1.0	5	04/01/20 07:10	3/23/20	
Dibenz(a,h)anthracene	ND	U	49	3.8	3.8	5	04/01/20 07:10	3/23/20	
Dibenzofuran	**6.4**	**J**	49	3.8	1.6	5	04/01/20 07:10	3/23/20	
Diethyl Phthalate	ND	U	49	3.8	1.5	5	04/01/20 07:10	3/23/20	
Dimethyl Phthalate	ND	U	49	3.8	1.3	5	04/01/20 07:10	3/23/20	
Di-n-butyl Phthalate	ND	U	49	2.5	1.2	5	04/01/20 07:10	3/23/20	
Di-n-octyl Phthalate	ND	U	49	3.8	1.4	5	04/01/20 07:10	3/23/20	
Fluoranthene	ND	U	49	2.5	0.85	5	04/01/20 07:10	3/23/20	
Fluorene	**12**	**J**	49	2.5	1.2	5	04/01/20 07:10	3/23/20	
Hexachlorobenzene	ND	U	49	3.8	1.8	5	04/01/20 07:10	3/23/20	
Hexachlorobutadiene	ND	U	49	7.5	1.1	5	04/01/20 07:10	3/23/20	
Hexachloroethane	ND	U	49	7.5	1.2	5	04/01/20 07:10	3/23/20	
Indeno(1,2,3-cd)pyrene	ND	U	49	3.8	1.5	5	04/01/20 07:10	3/23/20	
Isophorone	ND	U	49	3.8	2.3	5	04/01/20 07:10	3/23/20	
Naphthalene	**28**	**J**	49	3.8	1.3	5	04/01/20 07:10	3/23/20	
Nitrobenzene	ND	U	49	5.0	2.3	5	04/01/20 07:10	3/23/20	
N-Nitrosodimethylamine	ND	U	120	50	15	5	04/01/20 07:10	3/23/20	
N-Nitrosodi-n-propylamine	ND	U	49	7.5	3.0	5	04/01/20 07:10	3/23/20	
N-Nitrosodiphenylamine	ND	U	49	2.5	1.2	5	04/01/20 07:10	3/23/20	*
Pentachlorophenol	ND	U	120	50	18	5	04/01/20 07:10	3/23/20	
Phenanthrene	**11**	**J**	49	3.8	1.3	5	04/01/20 07:10	3/23/20	
Phenol	ND	U	49	2.5	1.3	5	04/01/20 07:10	3/23/20	
Pyrene	**4.4**	**J**	49	3.8	1.4	5	04/01/20 07:10	3/23/20	
2,2'-Oxybis(1-chloropropane)	ND	U	49	2.5	1.4	5	04/01/20 07:10	3/23/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	76	43 - 140	04/01/20 07:10	
2-Fluorobiphenyl	70	44 - 119	04/01/20 07:10	
2-Fluorophenol	76	19 - 119	04/01/20 07:10	
Nitrobenzene-d5	92	44 - 120	04/01/20 07:10	
Phenol-d6	78	38 - 107	04/01/20 07:10	
Terphenyl-d14	65	50 - 134	04/01/20 07:10	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	48	3.8	0.50	5	04/01/20 07:52	3/23/20	
1,2-Dichlorobenzene	ND U	48	2.5	0.95	5	04/01/20 07:52	3/23/20	
1,2-Diphenylhydrazine	ND U	48	2.5	1.1	5	04/01/20 07:52	3/23/20	
1,3-Dichlorobenzene	ND U	48	2.5	1.1	5	04/01/20 07:52	3/23/20	
1,4-Dichlorobenzene	ND U	48	2.5	1.0	5	04/01/20 07:52	3/23/20	
2,4,5-Trichlorophenol	ND U	48	5.0	1.3	5	04/01/20 07:52	3/23/20	
2,4,6-Trichlorophenol	ND U	48	5.0	1.3	5	04/01/20 07:52	3/23/20	
2,4-Dichlorophenol	ND U	48	3.8	1.8	5	04/01/20 07:52	3/23/20	
2,4-Dimethylphenol	ND U	95	75	28	5	04/01/20 07:52	3/23/20	
2,4-Dinitrophenol	ND U	240	50	5.5	5	04/01/20 07:52	3/23/20	
2,4-Dinitrotoluene	ND U	48	3.8	1.2	5	04/01/20 07:52	3/23/20	
2,6-Dinitrotoluene	ND U	48	3.8	1.4	5	04/01/20 07:52	3/23/20	
2-Chloronaphthalene	ND U	48	2.5	1.1	5	04/01/20 07:52	3/23/20	
2-Chlorophenol	ND U	48	3.8	1.3	5	04/01/20 07:52	3/23/20	
2-Methyl-4,6-dinitrophenol	ND U	120	25	9.5	5	04/01/20 07:52	3/23/20	
2-Methylnaphthalene	**2.0 J**	48	3.8	1.5	5	04/01/20 07:52	3/23/20	
2-Methylphenol	ND U	48	7.5	3.3	5	04/01/20 07:52	3/23/20	
2-Nitroaniline	ND U	120	5.0	2.4	5	04/01/20 07:52	3/23/20	
2-Nitrophenol	ND U	48	3.8	1.9	5	04/01/20 07:52	3/23/20	
3,3'-Dichlorobenzidine	ND U	120	3.8	1.7	5	04/01/20 07:52	3/23/20	
3-Nitroaniline	ND U	120	3.8	1.3	5	04/01/20 07:52	3/23/20	
4-Bromophenyl Phenyl Ether	ND U	48	3.8	0.60	5	04/01/20 07:52	3/23/20	
4-Chloro-3-methylphenol	ND U	48	7.5	2.7	5	04/01/20 07:52	3/23/20	
4-Chloroaniline	ND U	48	5.0	2.4	5	04/01/20 07:52	3/23/20	
4-Chlorophenyl Phenyl Ether	ND U	48	3.8	1.5	5	04/01/20 07:52	3/23/20	
4-Methylphenol	ND U	48	7.5	3.7	5	04/01/20 07:52	3/23/20	
4-Nitroaniline	ND U	120	5.0	2.1	5	04/01/20 07:52	3/23/20	
4-Nitrophenol	ND U	120	20	8.5	5	04/01/20 07:52	3/23/20	
Acenaphthene	ND U	48	2.5	0.70	5	04/01/20 07:52	3/23/20	
Acenaphthylene	ND U	48	2.5	0.90	5	04/01/20 07:52	3/23/20	
Anthracene	ND U	48	3.8	1.7	5	04/01/20 07:52	3/23/20	
Benz(a)anthracene	ND U	48	2.5	0.70	5	04/01/20 07:52	3/23/20	
Benzo(a)pyrene	ND U	48	3.8	1.3	5	04/01/20 07:52	3/23/20	
Benzo(b)fluoranthene	ND U	48	5.0	1.9	5	04/01/20 07:52	3/23/20	
Benzo(g,h,i)perylene	ND U	48	2.5	1.2	5	04/01/20 07:52	3/23/20	
Benzo(k)fluoranthene	ND U	48	3.8	1.5	5	04/01/20 07:52	3/23/20	
Benzoic Acid	ND U	120	50	15	5	04/01/20 07:52	3/23/20	
Benzyl Alcohol	ND U	48	3.8	1.8	5	04/01/20 07:52	3/23/20	
Bis(2-chloroethoxy)methane	ND U	48	3.8	1.7	5	04/01/20 07:52	3/23/20	
Bis(2-chloroethyl) Ether	ND U	48	3.8	2.1	5	04/01/20 07:52	3/23/20	
Bis(2-ethylhexyl) Phthalate	ND U	48	3.8	1.4	5	04/01/20 07:52	3/23/20	
Butyl Benzyl Phthalate	ND U	48	3.8	1.9	5	04/01/20 07:52	3/23/20	
Carbazole	ND U	48	3.8	1.4	5	04/01/20 07:52	3/23/20	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20 15:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	FTP-1A-20200318	**Units:**	ug/L
Lab Code:	K2002465-002	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	ND	U	48	2.5	1.0	5	04/01/20 07:52	3/23/20	
Dibenz(a,h)anthracene	ND	U	48	3.8	3.8	5	04/01/20 07:52	3/23/20	
Dibenzofuran	ND	U	48	3.8	1.6	5	04/01/20 07:52	3/23/20	
Diethyl Phthalate	ND	U	48	3.8	1.5	5	04/01/20 07:52	3/23/20	
Dimethyl Phthalate	ND	U	48	3.8	1.3	5	04/01/20 07:52	3/23/20	
Di-n-butyl Phthalate	ND	U	48	2.5	1.2	5	04/01/20 07:52	3/23/20	
Di-n-octyl Phthalate	ND	U	48	3.8	1.4	5	04/01/20 07:52	3/23/20	
Fluoranthene	ND	U	48	2.5	0.85	5	04/01/20 07:52	3/23/20	
Fluorene	**2.9**	**J**	48	2.5	1.2	5	04/01/20 07:52	3/23/20	
Hexachlorobenzene	ND	U	48	3.8	1.8	5	04/01/20 07:52	3/23/20	
Hexachlorobutadiene	ND	U	48	7.5	1.1	5	04/01/20 07:52	3/23/20	
Hexachloroethane	ND	U	48	7.5	1.2	5	04/01/20 07:52	3/23/20	
Indeno(1,2,3-cd)pyrene	ND	U	48	3.8	1.5	5	04/01/20 07:52	3/23/20	
Isophorone	ND	U	48	3.8	2.3	5	04/01/20 07:52	3/23/20	
Naphthalene	**11**	**J**	48	3.8	1.3	5	04/01/20 07:52	3/23/20	
Nitrobenzene	ND	U	48	5.0	2.3	5	04/01/20 07:52	3/23/20	
N-Nitrosodimethylamine	ND	U	120	50	15	5	04/01/20 07:52	3/23/20	
N-Nitrosodi-n-propylamine	ND	U	48	7.5	3.0	5	04/01/20 07:52	3/23/20	
N-Nitrosodiphenylamine	ND	U	48	2.5	1.2	5	04/01/20 07:52	3/23/20	*
Pentachlorophenol	ND	U	120	50	18	5	04/01/20 07:52	3/23/20	
Phenanthrene	ND	U	48	3.8	1.3	5	04/01/20 07:52	3/23/20	
Phenol	ND	U	48	2.5	1.3	5	04/01/20 07:52	3/23/20	
Pyrene	ND	U	48	3.8	1.4	5	04/01/20 07:52	3/23/20	
2,2'-Oxybis(1-chloropropane)	ND	U	48	2.5	1.4	5	04/01/20 07:52	3/23/20	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	83	43 - 140	04/01/20 07:52	
2-Fluorobiphenyl	77	44 - 119	04/01/20 07:52	
2-Fluorophenol	81	19 - 119	04/01/20 07:52	
Nitrobenzene-d5	85	44 - 120	04/01/20 07:52	
Phenol-d6	81	38 - 107	04/01/20 07:52	
Terphenyl-d14	77	50 - 134	04/01/20 07:52	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004024-04	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	9.5	0.75	0.10	1	04/01/20 04:23	3/23/20	
1,2-Dichlorobenzene	ND U	9.5	0.50	0.19	1	04/01/20 04:23	3/23/20	
1,2-Diphenylhydrazine	ND U	9.5	0.50	0.22	1	04/01/20 04:23	3/23/20	
1,3-Dichlorobenzene	ND U	9.5	0.50	0.22	1	04/01/20 04:23	3/23/20	
1,4-Dichlorobenzene	ND U	9.5	0.50	0.20	1	04/01/20 04:23	3/23/20	
2,4,5-Trichlorophenol	ND U	9.5	1.0	0.25	1	04/01/20 04:23	3/23/20	
2,4,6-Trichlorophenol	ND U	9.5	1.0	0.25	1	04/01/20 04:23	3/23/20	
2,4-Dichlorophenol	ND U	9.5	0.75	0.35	1	04/01/20 04:23	3/23/20	
2,4-Dimethylphenol	ND U	19	15	5.5	1	04/01/20 04:23	3/23/20	
2,4-Dinitrophenol	ND U	48	10	1.1	1	04/01/20 04:23	3/23/20	
2,4-Dinitrotoluene	ND U	9.5	0.75	0.23	1	04/01/20 04:23	3/23/20	
2,6-Dinitrotoluene	ND U	9.5	0.75	0.27	1	04/01/20 04:23	3/23/20	
2-Chloronaphthalene	ND U	9.5	0.50	0.21	1	04/01/20 04:23	3/23/20	
2-Chlorophenol	ND U	9.5	0.75	0.26	1	04/01/20 04:23	3/23/20	
2-Methyl-4,6-dinitrophenol	ND U	24	5.0	1.9	1	04/01/20 04:23	3/23/20	
2-Methylnaphthalene	ND U	9.5	0.75	0.30	1	04/01/20 04:23	3/23/20	
2-Methylphenol	ND U	9.5	1.5	0.66	1	04/01/20 04:23	3/23/20	
2-Nitroaniline	ND U	24	1.0	0.47	1	04/01/20 04:23	3/23/20	
2-Nitrophenol	ND U	9.5	0.75	0.37	1	04/01/20 04:23	3/23/20	
3,3'-Dichlorobenzidine	ND U	24	0.75	0.34	1	04/01/20 04:23	3/23/20	
3-Nitroaniline	ND U	24	0.75	0.25	1	04/01/20 04:23	3/23/20	
4-Bromophenyl Phenyl Ether	ND U	9.5	0.75	0.12	1	04/01/20 04:23	3/23/20	
4-Chloro-3-methylphenol	ND U	9.5	1.5	0.53	1	04/01/20 04:23	3/23/20	
4-Chloroaniline	ND U	9.5	1.0	0.47	1	04/01/20 04:23	3/23/20	
4-Chlorophenyl Phenyl Ether	ND U	9.5	0.75	0.30	1	04/01/20 04:23	3/23/20	
4-Methylphenol	ND U	9.5	1.5	0.74	1	04/01/20 04:23	3/23/20	
4-Nitroaniline	ND U	24	1.0	0.42	1	04/01/20 04:23	3/23/20	
4-Nitrophenol	ND U	24	4.0	1.7	1	04/01/20 04:23	3/23/20	
Acenaphthene	ND U	9.5	0.50	0.14	1	04/01/20 04:23	3/23/20	
Acenaphthylene	ND U	9.5	0.50	0.18	1	04/01/20 04:23	3/23/20	
Anthracene	ND U	9.5	0.75	0.33	1	04/01/20 04:23	3/23/20	
Benz(a)anthracene	ND U	9.5	0.50	0.14	1	04/01/20 04:23	3/23/20	
Benzo(a)pyrene	ND U	9.5	0.75	0.26	1	04/01/20 04:23	3/23/20	
Benzo(b)fluoranthene	ND U	9.5	1.0	0.38	1	04/01/20 04:23	3/23/20	
Benzo(g,h,i)perylene	ND U	9.5	0.50	0.23	1	04/01/20 04:23	3/23/20	
Benzo(k)fluoranthene	ND U	9.5	0.75	0.29	1	04/01/20 04:23	3/23/20	
Benzoic Acid	ND U	24	10	2.9	1	04/01/20 04:23	3/23/20	
Benzyl Alcohol	ND U	9.5	0.75	0.35	1	04/01/20 04:23	3/23/20	
Bis(2-chloroethoxy)methane	ND U	9.5	0.75	0.34	1	04/01/20 04:23	3/23/20	
Bis(2-chloroethyl) Ether	ND U	9.5	0.75	0.41	1	04/01/20 04:23	3/23/20	
Bis(2-ethylhexyl) Phthalate	ND U	9.5	0.75	0.27	1	04/01/20 04:23	3/23/20	
Butyl Benzyl Phthalate	ND U	9.5	0.75	0.37	1	04/01/20 04:23	3/23/20	
Carbazole	ND U	9.5	0.75	0.28	1	04/01/20 04:23	3/23/20	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004024-04	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Chrysene	ND U	9.5	0.50	0.20	1	04/01/20 04:23	3/23/20	
Dibenz(a,h)anthracene	ND U	9.5	0.75	0.75	1	04/01/20 04:23	3/23/20	
Dibenzofuran	ND U	9.5	0.75	0.31	1	04/01/20 04:23	3/23/20	
Diethyl Phthalate	ND U	9.5	0.75	0.29	1	04/01/20 04:23	3/23/20	
Dimethyl Phthalate	ND U	9.5	0.75	0.26	1	04/01/20 04:23	3/23/20	
Di-n-butyl Phthalate	ND U	9.5	0.50	0.23	1	04/01/20 04:23	3/23/20	
Di-n-octyl Phthalate	ND U	9.5	0.75	0.27	1	04/01/20 04:23	3/23/20	
Fluoranthene	ND U	9.5	0.50	0.17	1	04/01/20 04:23	3/23/20	
Fluorene	ND U	9.5	0.50	0.23	1	04/01/20 04:23	3/23/20	
Hexachlorobenzene	ND U	9.5	0.75	0.35	1	04/01/20 04:23	3/23/20	
Hexachlorobutadiene	ND U	9.5	1.5	0.21	1	04/01/20 04:23	3/23/20	
Hexachloroethane	ND U	9.5	1.5	0.23	1	04/01/20 04:23	3/23/20	
Indeno(1,2,3-cd)pyrene	ND U	9.5	0.75	0.29	1	04/01/20 04:23	3/23/20	
Isophorone	ND U	9.5	0.75	0.45	1	04/01/20 04:23	3/23/20	
Naphthalene	ND U	9.5	0.75	0.26	1	04/01/20 04:23	3/23/20	
Nitrobenzene	ND U	9.5	1.0	0.46	1	04/01/20 04:23	3/23/20	
N-Nitrosodimethylamine	ND U	24	10	3.0	1	04/01/20 04:23	3/23/20	
N-Nitrosodi-n-propylamine	ND U	9.5	1.5	0.59	1	04/01/20 04:23	3/23/20	
N-Nitrosodiphenylamine	ND U	9.5	0.50	0.24	1	04/01/20 04:23	3/23/20	
Pentachlorophenol	ND U	24	10	3.5	1	04/01/20 04:23	3/23/20	
Phenanthrene	ND U	9.5	0.75	0.26	1	04/01/20 04:23	3/23/20	
Phenol	ND U	9.5	0.50	0.25	1	04/01/20 04:23	3/23/20	
Pyrene	ND U	9.5	0.75	0.27	1	04/01/20 04:23	3/23/20	
2,2'-Oxybis(1-chloropropane)	ND U	9.5	0.50	0.28	1	04/01/20 04:23	3/23/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	80	43 - 140	04/01/20 04:23	
2-Fluorobiphenyl	80	44 - 119	04/01/20 04:23	
2-Fluorophenol	84	19 - 119	04/01/20 04:23	
Nitrobenzene-d5	87	44 - 120	04/01/20 04:23	
Phenol-d6	84	38 - 107	04/01/20 04:23	
Terphenyl-d14	108	50 - 134	04/01/20 04:23	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2,4,6-Tribromophenol 43-140	2-Fluorobiphenyl 44-119	2-Fluorophenol 19-119
FTP-1-20200318	K2002465-001	76	70	76
FTP-1A-20200318	K2002465-002	83	77	81
Method Blank	KQ2004024-04	80	80	84
Lab Control Sample	KQ2004024-03	85	84	76
FTP-1-20200318	KQ2004024-01	70	67	74
FTP-1-20200318	KQ2004024-02	75	70	74

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

		Nitrobenzene-d5	Phenol-d6	Terphenyl-d14
Sample Name	**Lab Code**	**44-120**	**38-107**	**50-134**
FTP-1-20200318	K2002465-001	92	78	65
FTP-1A-20200318	K2002465-002	85	81	77
Method Blank	KQ2004024-04	87	84	108
Lab Control Sample	KQ2004024-03	81	83	105
FTP-1-20200318	KQ2004024-01	88	78	53
FTP-1-20200318	KQ2004024-02	86	80	57

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 03:41

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS07\DATA\040120\0401F004.D\ **Lab Code:**KQ2004550-02
Instrument ID: K-MS-07 **Analysis Lot:**675525
Analysis Method: 8270D **Signal ID:**1

		1,4-Dichlorobenzene-d4		Acenaphthene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	32,295	9.12	63,951	14.07	129,648	20.86
	Upper Limit ==>	64,590	9.29	127,902	14.24	259,296	21.03
	Lower Limit ==>	16,148	8.95	31,976	13.90	64,824	20.69
Associated Analyses							
Continuing Calibration Verification	KQ2004550-02	41547	9.11	79689	14.08	163800	20.85
Method Blank	KQ2004024-04	30129	9.11	64046	14.07	114151	20.84
Lab Control Sample	KQ2004024-03	34384	9.12	67620	14.07	121909	20.85
FTP-1-20200318MS	KQ2004024-01	33904	9.12	61405	14.07	104030	20.84
FTP-1-20200318DMS	KQ2004024-02	33457	9.12	61586	14.07	110513	20.84
FTP-1-20200318	K2002465-001	29563	9.11	59706	14.07	106430	20.84
FTP-1A-20200318	K2002465-002	29875	9.12	61549	14.07	101835	20.84

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 03:41

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS07\DATA\040120\0401F004.D\ **Lab Code:**KQ2004550-02
Instrument ID: K-MS-07 **Analysis Lot:**675525
Analysis Method: 8270D **Signal ID:**1

		Naphthalene-d8		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	116,245	11.21	135,715	23.96	104,198	16.48
	Upper Limit ==>	232,490	11.38	271,430	24.13	208,396	16.65
	Lower Limit ==>	58,123	11.04	67,858	23.79	52,099	16.31
Associated Analyses							
Continuing Calibration Verification	KQ2004550-02	155031	11.22	166959	23.97	129319	16.48
Method Blank	KQ2004024-04	114334	11.21	139378	23.95	115781	16.47
Lab Control Sample	KQ2004024-03	125220	11.21	146808	23.96	116954	16.48
FTP-1-20200318MS	KQ2004024-01	124833	11.21	137208	23.95	107996	16.47
FTP-1-20200318DMS	KQ2004024-02	122709	11.21	141238	23.96	116826	16.48
FTP-1-20200318	K2002465-001	112268	11.21	141346	23.96	114630	16.48
FTP-1A-20200318	K2002465-002	117318	11.21	139993	23.95	101310	16.47

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 11:57

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS07\DATA\040120\0401F012.D\ **Lab Code:**KQ2004550-03
Instrument ID: K-MS-07 **Analysis Lot:**675525
Analysis Method: 8270D **Signal ID:**1

		1,4-Dichlorobenzene-d4		Acenaphthene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	32,295	9.12	63,951	14.07	129,648	20.86
	Upper Limit ==>	64,590	9.29	127,902	14.24	259,296	21.03
	Lower Limit ==>	16,148	8.95	31,976	13.90	64,824	20.69
Associated Analyses							
Continuing Cal. Verification	KQ2004550-03	37894	9.12	73789	14.08	162514	20.86

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 11:57

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS07\DATA\040120\0401F012.D\ **Lab Code:**KQ2004550-03
Instrument ID: K-MS-07 **Analysis Lot:**675525
Analysis Method: 8270D **Signal ID:**1

		Naphthalene-d8		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	116,245	11.21	135,715	23.96	104,198	16.48
	Upper Limit ==>	232,490	11.38	271,430	24.13	208,396	16.65
	Lower Limit ==>	58,123	11.04	67,858	23.79	52,099	16.31
Associated Analyses							
Continuing Cal. Verification	KQ2004550-03	140692	11.21	155791	23.97	126507	16.48

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	04/1/20
		Date Extracted:	03/23/20

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3520C		

		Matrix Spike KQ2004024-01			**Duplicate Matrix Spike** KQ2004024-02				
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,4-Trichlorobenzene	ND U	73.1	98.0	75	73.2	95.2	77	29-116	<1	20
1,2-Dichlorobenzene	ND U	79.3	98.0	81	80.8	95.2	85	32-111	2	20
1,2-Diphenylhydrazine	ND U	66.5	98.0	68	71.0	95.2	74	49-122	7	20
1,3-Dichlorobenzene	ND U	74.9	98.0	76	74.2	95.2	78	28-110	<1	20
1,4-Dichlorobenzene	ND U	76.1	98.0	78	77.4	95.2	81	29-112	2	20
2,4,5-Trichlorophenol	ND U	87.6	98.0	89	85.8	95.2	90	53-123	2	20
2,4,6-Trichlorophenol	ND U	90.5	98.0	92	92.8	95.2	97	50-125	2	20
2,4-Dichlorophenol	ND U	86.5	98.0	88	87.9	95.2	92	47-121	2	20
2,4-Dimethylphenol	ND U	95.2 J	98.0	97	97.0	95.2	102	31-124	2	20
2,4-Dinitrophenol	ND U	155 J	98.0	158 *	164 J	95.2	172 *	23-143	5	20
2,4-Dinitrotoluene	ND U	104	98.0	106	104	95.2	109	57-128	<1	20
2,6-Dinitrotoluene	ND U	91.0	98.0	93	97.9	95.2	103	57-124	7	20
2-Chloronaphthalene	ND U	77.4	98.0	79	77.0	95.2	81	40-116	<1	20
2-Chlorophenol	ND U	83.8	98.0	85	84.6	95.2	89	38-117	<1	20
2-Methyl-4,6-dinitrophenol	ND U	126	98.0	128	133	95.2	139 *	44-137	5	20
2-Methylnaphthalene	44 J	119	98.0	77	117	95.2	76	40-121	2	20
2-Methylphenol	ND U	88.5	98.0	90	86.6	95.2	91	30-117	2	20
2-Nitroaniline	ND U	95.8 J	98.0	98	100 J	95.2	105	55-127	4	20
2-Nitrophenol	ND U	87.1	98.0	89	88.9	95.2	93	47-123	2	20
3,3'-Dichlorobenzidine	ND U	ND U	98.0	0 *	ND U	95.2	0 *	27-129	NC	20
3-Nitroaniline	ND U	67.9 J	98.0	69	74.1 J	95.2	78	41-128	9	20
4-Bromophenyl Phenyl Ether	ND U	52.0	98.0	53 *	58.0	95.2	61	55-124	11	20
4-Chloro-3-methylphenol	ND U	93.8	98.0	96	93.0	95.2	98	52-119	<1	20
4-Chloroaniline	ND U	49.0 J	98.0	50	51.0	95.2	53	33-117	4	20
4-Chlorophenyl Phenyl Ether	ND U	60.2	98.0	61	66.6	95.2	70	53-121	10	20
4-Methylphenol	ND U	86.9	98.0	89	86.6	95.2	91	25-120	<1	20
4-Nitroaniline	ND U	62.8 J	98.0	64	75.1 J	95.2	79	48-133	18	20
4-Nitrophenol	ND U	113 J	98.0	115	119 J	95.2	125	52-132	5	20
Acenaphthene	3.0 J	77.8	98.0	76	81.4	95.2	82	47-122	5	20
Acenaphthylene	ND Ui	74.8	98.0	76	75.4	95.2	79	41-130	<1	20
Anthracene	ND U	52.1	98.0	53 *	56.9	95.2	60	57-123	9	20
Benz(a)anthracene	ND U	59.3	98.0	60	63.9	95.2	67	58-125	8	20
Benzo(a)pyrene	ND U	51.3	98.0	52 *	56.5	95.2	59	54-128	10	20
Benzo(b)fluoranthene	ND U	54.6	98.0	56	57.7	95.2	61	53-131	5	20
Benzo(g,h,i)perylene	ND U	53.4	98.0	54	58.7	95.2	62	50-134	9	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	04/1/20
		Date Extracted:	03/23/20

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200318	**Units:**	ug/L
Lab Code:	K2002465-001	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3520C		

		Matrix Spike KQ2004024-01			**Duplicate Matrix Spike** KQ2004024-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Benzo(k)fluoranthene	ND U	54.6	98.0	56 *	61.2	95.2	64	57-129	12	20
Benzoic Acid	ND U	171	98.0	174 *	160	95.2	168 *	28-128	7	20
Benzyl Alcohol	ND U	88.8	98.0	91	86.9	95.2	91	31-112	2	20
Bis(2-chloroethoxy)methane	ND U	91.8	98.0	94	87.8	95.2	92	48-120	5	20
Bis(2-chloroethyl) Ether	ND U	86.5	98.0	88	80.4	95.2	84	43-118	7	20
Bis(2-ethylhexyl) Phthalate	5.0 J	67.8	98.0	64	74.0	95.2	72	55-135	9	20
Butyl Benzyl Phthalate	ND U	66.9	98.0	68	72.3	95.2	76	53-134	8	20
Carbazole	ND U	92.6	98.0	94	91.8	95.2	96	60-122	<1	20
Chrysene	ND U	61.8	98.0	63	66.0	95.2	69	59-123	6	20
Dibenz(a,h)anthracene	ND U	50.0	98.0	51	55.8	95.2	59	51-134	11	20
Dibenzofuran	6.4 J	74.9	98.0	70	81.0	95.2	78	53-118	8	20
Diethyl Phthalate	ND U	80.0	98.0	82	85.1	95.2	89	56-125	6	20
Dimethyl Phthalate	ND U	90.9	98.0	93	93.0	95.2	98	45-127	2	20
Di-n-butyl Phthalate	ND U	68.1	98.0	69	71.5	95.2	75	59-127	5	20
Di-n-octyl Phthalate	ND U	54.0	98.0	55	59.1	95.2	62	51-140	9	20
Fluoranthene	ND U	62.4	98.0	64	63.4	95.2	67	57-128	2	20
Fluorene	12 J	77.9	98.0	67	84.4	95.2	76	52-124	8	20
Hexachlorobenzene	ND U	50.2	98.0	51 *	52.8	95.2	55	53-125	5	20
Hexachlorobutadiene	ND U	55.4	98.0	57	59.8	95.2	63	22-124	8	20
Hexachloroethane	ND U	74.8	98.0	76	78.1	95.2	82	21-115	4	20
Indeno(1,2,3-cd)pyrene	ND U	50.6	98.0	52	55.0	95.2	58	52-134	8	20
Isophorone	ND U	85.0	98.0	87	81.9	95.2	86	42-124	4	20
Naphthalene	28 J	111	98.0	84	108	95.2	83	40-121	3	20
Nitrobenzene	ND U	89.8	98.0	92	87.3	95.2	92	45-121	3	20
N-Nitrosodimethylamine	ND U	79.2 J	98.0	81	80.7 J	95.2	85	59-110	2	20
N-Nitrosodi-n-propylamine	ND U	93.6	98.0	95	93.8	95.2	98	49-119	<1	20
N-Nitrosodiphenylamine	ND U	67.6	98.0	69	78.1	95.2	82	51-123	14	20
Pentachlorophenol	ND U	134	98.0	137	134	95.2	141 *	35-138	<1	20
Phenanthrene	11 J	69.3	98.0	60	73.4	95.2	66	59-120	6	20
Phenol	ND U	83.0	98.0	85	84.0	95.2	88	54-105	1	20
Pyrene	4.4 J	60.2	98.0	57	67.3	95.2	66	57-126	11	20
2,2'-Oxybis(1-chloropropane)	ND U	86.6	98.0	88	90.9	95.2	95	37-130	5	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20
Sample Matrix:	Ground Water	**Date Extracted:**	03/23/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	675525

Lab Control Sample
KQ2004024-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,4-Trichlorobenzene	82.5	100	82	29-116
1,2-Dichlorobenzene	78.0	100	78	32-111
1,2-Diphenylhydrazine	89.2	100	89	49-122
1,3-Dichlorobenzene	75.2	100	75	28-110
1,4-Dichlorobenzene	75.7	100	76	29-112
2,2'-Oxybis(1-chloropropane)	85.4	100	85	37-130
2,4,5-Trichlorophenol	93.4	100	93	53-123
2,4,6-Trichlorophenol	95.8	100	96	50-125
2,4-Dichlorophenol	95.0	100	95	47-121
2,4-Dimethylphenol	61.2	100	61	31-124
2,4-Dinitrophenol	102	100	102	23-143
2,4-Dinitrotoluene	103	100	103	57-128
2,6-Dinitrotoluene	97.7	100	98	57-124
2-Chloronaphthalene	101	100	101	40-116
2-Chlorophenol	87.9	100	88	38-117
2-Methyl-4,6-dinitrophenol	97.1	100	97	44-137
2-Methylnaphthalene	91.3	100	91	40-121
2-Methylphenol	87.3	100	87	30-117
2-Nitroaniline	97.0	100	97	55-127
2-Nitrophenol	91.7	100	92	47-123
3,3'-Dichlorobenzidine	27.3	100	27	27-129
3-Nitroaniline	90.9	100	91	41-128
4-Bromophenyl Phenyl Ether	92.7	100	93	55-124
4-Chloro-3-methylphenol	99.6	100	100	52-119
4-Chloroaniline	69.1	100	69	33-117
4-Chlorophenyl Phenyl Ether	95.4	100	95	53-121
4-Methylphenol	88.0	100	88	25-120
4-Nitroaniline	95.0	100	95	48-133
4-Nitrophenol	92.7	100	93	52-132
Acenaphthene	95.2	100	95	47-122
Acenaphthylene	92.7	100	93	41-130
Anthracene	95.2	100	95	57-123
Benz(a)anthracene	104	100	104	58-125
Benzo(a)pyrene	94.4	100	94	54-128
Benzo(b)fluoranthene	98.1	100	98	53-131
Benzo(g,h,i)perylene	95.5	100	95	50-134
Benzo(k)fluoranthene	108	100	108	57-129
Benzoic Acid	95.2	100	95	28-128
Benzyl Alcohol	94.2	100	94	31-112
Bis(2-chloroethoxy)methane	94.4	100	94	48-120
Bis(2-chloroethyl) Ether	86.4	100	86	43-118

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20
Sample Matrix:	Ground Water	**Date Extracted:**	03/23/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	675525

Lab Control Sample
KQ2004024-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	106	100	106	55-135
Butyl Benzyl Phthalate	109	100	109	53-134
Carbazole	85.6	100	86	60-122
Chrysene	108	100	108	59-123
Dibenz(a,h)anthracene	95.8	100	96	51-134
Dibenzofuran	100	100	100	53-118
Diethyl Phthalate	94.7	100	95	56-125
Dimethyl Phthalate	96.0	100	96	45-127
Di-n-butyl Phthalate	90.7	100	91	59-127
Di-n-octyl Phthalate	89.9	100	90	51-140
Fluoranthene	94.8	100	95	57-128
Fluorene	99.4	100	99	52-124
Hexachlorobenzene	88.2	100	88	53-125
Hexachlorobutadiene	77.3	100	77	22-124
Hexachloroethane	69.7	100	70	21-115
Indeno(1,2,3-cd)pyrene	95.4	100	95	52-134
Isophorone	87.7	100	88	42-124
Naphthalene	88.1	100	88	40-121
Nitrobenzene	90.4	100	90	45-121
N-Nitrosodimethylamine	85.1	100	85	59-110
N-Nitrosodi-n-propylamine	91.0	100	91	49-119
N-Nitrosodiphenylamine	91.0	100	91	51-123
Pentachlorophenol	90.7	100	91	35-138
Phenanthrene	96.0	100	96	59-120
Phenol	89.3	100	89	54-105
Pyrene	122	100	122	57-126

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20 04:23
Sample Matrix:	Ground Water	**Date Extracted:**	03/23/20

Method Blank Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-07
Lab Code:	KQ2004024-04	**File ID:**	J:\MS07\DATA\040120\0401F005.D\
Analysis Method:	8270D	**Analysis Lot:**	675525
Prep Method:	EPA 3520C	**Extraction Lot:**	355729

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2004024-03	J:\MS07\DATA\040120\0401F006.D\	04/01/20 05:05
FTP-1-20200318MS	KQ2004024-01	J:\MS07\DATA\040120\0401F007.D\	04/01/20 05:46
FTP-1-20200318DMS	KQ2004024-02	J:\MS07\DATA\040120\0401F008.D\	04/01/20 06:28
FTP-1-20200318	K2002465-001	J:\MS07\DATA\040120\0401F009.D\	04/01/20 07:10
FTP-1A-20200318	K2002465-002	J:\MS07\DATA\040120\0401F010.D\	04/01/20 07:52

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002465
Project:	JBLM/6304305	**Date Analyzed:**	04/01/20 05:05
Sample Matrix:	Ground Water	**Date Extracted:**	03/23/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-07
Lab Code:	KQ2004024-03	**File ID:**	J:\MS07\DATA\040120\0401F006.D\
Analysis Method:	8270D	**Analysis Lot:**	675525
Prep Method:	EPA 3520C	**Extraction Lot:**	355729

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ2004024-04	J:\MS07\DATA\040120\0401F005.D\	04/01/20 04:23
FTP-1-20200318MS	KQ2004024-01	J:\MS07\DATA\040120\0401F007.D\	04/01/20 05:46
FTP-1-20200318DMS	KQ2004024-02	J:\MS07\DATA\040120\0401F008.D\	04/01/20 06:28
FTP-1-20200318	K2002465-001	J:\MS07\DATA\040120\0401F009.D\	04/01/20 07:10
FTP-1A-20200318	K2002465-002	J:\MS07\DATA\040120\0401F010.D\	04/01/20 07:52

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305 **Date Analyzed:**04/01/20 01:36

Tune Summary
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS07\DATA\040120\0401F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-07 **Analysis Lot:** 675525

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	47.73	14538	Pass
68	69	0	2	0.00	0	Pass
70	69	0	2	0.00	0	Pass
127	198	40	60	42.51	12949	Pass
197	198	0	1	0.00	0	Pass
198	198	100	100	100.00	30461	Pass
199	198	5	9	6.84	2085	Pass
275	198	10	30	29.74	9058	Pass
365	198	1.0	100	4.03	1229	Pass
441	443	0.01	100	80.15	3146	Pass
442	198	40	100	68.17	20766	Pass
443	442	17	23	18.90	3925	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ2004550-02	J:\MS07\DATA\040120\0401F004.D\	04/01/20 03:41	
Method Blank	KQ2004024-04	J:\MS07\DATA\040120\0401F005.D\	04/01/20 04:23	
Lab Control Sample	KQ2004024-03	J:\MS07\DATA\040120\0401F006.D\	04/01/20 05:05	
FTP-1-20200318	KQ2004024-01	J:\MS07\DATA\040120\0401F007.D\	04/01/20 05:46	
FTP-1-20200318	KQ2004024-02	J:\MS07\DATA\040120\0401F008.D\	04/01/20 06:28	
FTP-1-20200318	K2002465-001	J:\MS07\DATA\040120\0401F009.D\	04/01/20 07:10	
FTP-1A-20200318	K2002465-002	J:\MS07\DATA\040120\0401F010.D\	04/01/20 07:52	
Continuing Cal. Verification	KQ2004550-03	J:\MS07\DATA\040120\0401F012.D\	04/01/20 11:57	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2000181-01	8270/P ICAL @ 1.0ppm | SVM63-34A	J:\MS07\DATA\033120\0331F006.D	03/31/2020 16:35
02	KC2000181-02	8270/P ICAL @ 2.5ppm | SVM63-34B	J:\MS07\DATA\033120\0331F007.D	03/31/2020 17:17
03	KC2000181-03	8270/P ICAL @ 5.0ppm | SVM63-34C	J:\MS07\DATA\033120\0331F008.D	03/31/2020 17:59
04	KC2000181-04	8270/P ICAL @ 7.5ppm | SVM63-34D	J:\MS07\DATA\033120\0331F009.D	03/31/2020 18:41
05	KC2000181-05	8270/P ICAL @ 10ppm | SVM63-34E	J:\MS07\DATA\033120\0331F010.D	03/31/2020 19:22
06	KC2000181-06	8270/P ICAL @ 20ppm | SVM63-34F	J:\MS07\DATA\033120\0331F011.D	03/31/2020 20:03
07	KC2000181-07	8270/P ICAL @ 50ppm | SVM63-34G	J:\MS07\DATA\033120\0331F012.D	03/31/2020 20:45
08	KC2000181-08	8270/P ICAL @ 80ppm | SVM63-34H	J:\MS07\DATA\033120\0331F013.D	03/31/2020 21:27
09	KC2000181-09	8270/P ICAL @ 100ppm | SVM63-34I	J:\MS07\DATA\033120\0331F014.D	03/31/2020 22:08
10	KC2000181-10	8270/P ICAL @ 120ppm | SVM63-34J	J:\MS07\DATA\033120\0331F015.D	03/31/2020 22:50
11	KC2000181-11	8270/P ICAL @ 150ppm | SVM63-34K	J:\MS07\DATA\033120\0331F016.D	03/31/2020 23:31
12	KC2000181-12	8270/P ICAL @ 170ppm | SVM63-34L	J:\MS07\DATA\033120\0331F017.D	04/01/2020 00:13
13	KC2000181-13	8270/P ICAL @ 200ppm | SVM63-34M	J:\MS07\DATA\033120\0331F018.D	04/01/2020 00:54

Analyte

1,2,4-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.3374	02	2.500	0.308	03	5.000	0.3406	04	7.500	0.3654
05	10.000	0.3459	06	20.000	0.3511	07	50.000	0.3727	08	80.000	0.4062
09	100.000	0.4027	10	120.000	0.4142	11	150.000	0.4462	12	170.000	0.4665
13	200.000	0.4898									

1,2-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.198	02	2.500	1.205	03	5.000	1.333	04	7.500	1.472
05	10.000	1.319	06	20.000	1.423	07	50.000	1.485	08	80.000	1.49
09	100.000	1.529	10	120.000	1.447	11	150.000	1.567	12	170.000	1.626
13	200.000	1.624									

1,2-Diphenylhydrazine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	1.413	06	20.000	1.344	07	50.000	1.453	08	80.000	1.439
09	100.000	1.33	10	120.000	1.46	11	150.000	1.415	12	170.000	1.476
13	200.000	1.467									

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.345	02	2.500	1.276	03	5.000	1.395	04	7.500	1.527
05	10.000	1.401	06	20.000	1.412	07	50.000	1.496	08	80.000	1.545
09	100.000	1.544	10	120.000	1.489	11	150.000	1.612	12	170.000	1.622

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
13	200.000	1.682									

1,4-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.288	02	2.500	1.369	03	5.000	1.427	04	7.500	1.591
05	10.000	1.493	06	20.000	1.531	07	50.000	1.55	08	80.000	1.616
09	100.000	1.619	10	120.000	1.577	11	150.000	1.718	12	170.000	1.721
13	200.000	1.809									

2,2'-Oxybis(1-chloropropane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.04	02	2.500	1.002	03	5.000	1.079	04	7.500	1.155
05	10.000	1.08	06	20.000	1.13	07	50.000	1.164	08	80.000	1.202
09	100.000	1.236	10	120.000	1.187	11	150.000	1.256	12	170.000	1.258
13	200.000	1.247									

2,4,5-Trichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.4455	04	7.500	0.5003	05	10.000	0.4956	06	20.000	0.533
07	50.000	0.5752	08	80.000	0.6053	09	100.000	0.5976	10	120.000	0.6156
11	150.000	0.6352	12	170.000	0.6721	13	200.000	0.7022			

2,4,6-Tribromophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	7.500	0.2589	05	10.000	0.2483	06	20.000	0.3026	07	50.000	0.3158
08	80.000	0.3351	09	100.000	0.3273	10	120.000	0.3276	11	150.000	0.3413
12	170.000	0.3593	13	200.000	0.3413						

2,4,6-Trichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	7.500	0.4341	05	10.000	0.4008	06	20.000	0.4669	07	50.000	0.5006
08	80.000	0.5534	09	100.000	0.5458	10	120.000	0.5646	11	150.000	0.6074

2,4-Dichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.26	04	7.500	0.3013	05	10.000	0.284	06	20.000	0.3023
07	50.000	0.3382	08	80.000	0.3677	09	100.000	0.3568	10	120.000	0.358
11	150.000	0.3778	12	170.000	0.3874	13	200.000	0.3791			

2,4-Dimethylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.1825	02	2.500	0.226	03	5.000	0.2492	04	7.500	0.2785
05	10.000	0.2535	06	20.000	0.2792	07	50.000	0.2845	08	80.000	0.3161
09	100.000	0.2983	10	120.000	0.3028	11	150.000	0.312	12	170.000	0.3184
13	200.000	0.3149									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

2,4-Dinitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	20.000	0.05436	07	50.000	0.122	08	80.000	0.171	09	100.000	0.1876
10	120.000	0.2031	11	150.000	0.2232	12	170.000	0.2541	13	200.000	0.2714

2,4-Dinitrotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.2974	02	2.500	0.3328	03	5.000	0.4121	04	7.500	0.4282
05	10.000	0.412	06	20.000	0.4143	07	50.000	0.4237	08	80.000	0.4801
09	100.000	0.4571	10	120.000	0.4602	11	150.000	0.4893	12	170.000	0.5074
13	200.000	0.5218									

2,6-Dinitrotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.2242	02	2.500	0.2668	03	5.000	0.3203	04	7.500	0.3656
05	10.000	0.3408	06	20.000	0.3446	07	50.000	0.3407	08	80.000	0.365
09	100.000	0.3381	10	120.000	0.3506	11	150.000	0.3662	12	170.000	0.3821
13	200.000	0.3917									

2-Chloronaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	1.125	03	5.000	1.121	04	7.500	1.261	05	10.000	1.194
06	20.000	1.214	07	50.000	1.286	08	80.000	1.356	09	100.000	1.379
10	120.000	1.395	11	150.000	1.511	12	170.000	1.608	13	200.000	1.754

2-Chlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9399	02	2.500	1.002	03	5.000	1.232	04	7.500	1.289
05	10.000	1.198	06	20.000	1.305	07	50.000	1.337	08	80.000	1.404
09	100.000	1.432	10	120.000	1.402	11	150.000	1.489	12	170.000	1.519
13	200.000	1.503									

2-Fluorobiphenyl

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	1.4	03	5.000	1.4	04	7.500	1.543	05	10.000	1.426
06	20.000	1.478	07	50.000	1.579	08	80.000	1.691	09	100.000	1.749
10	120.000	1.783	11	150.000	1.947	12	170.000	2.041			

2-Fluorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.7234	03	5.000	0.829	04	7.500	0.9292	05	10.000	0.8364
06	20.000	0.8682	07	50.000	0.9371	08	80.000	1.036	09	100.000	1.038
10	120.000	1.012	11	150.000	1.069	12	170.000	1.081	13	200.000	1.079

2-Methyl-4,6-dinitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	0.09128	06	20.000	0.1612	07	50.000	0.2461	08	80.000	0.3147
09	100.000	0.3061	10	120.000	0.3309	11	150.000	0.3613	12	170.000	0.3796
13	200.000	0.4059									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

2-Methylnaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6177	02	2.500	0.648	03	5.000	0.6959	04	7.500	0.7213
05	10.000	0.668	06	20.000	0.712	07	50.000	0.7188	08	80.000	0.7953
09	100.000	0.7765	10	120.000	0.7852	11	150.000	0.8518	12	170.000	0.8651
13	200.000	0.8162									

2-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.7329	02	2.500	0.7403	03	5.000	0.832	04	7.500	0.9329
05	10.000	0.8207	06	20.000	0.8944	07	50.000	0.9508	08	80.000	0.9876
09	100.000	1.028	10	120.000	0.9743	11	150.000	1.049	12	170.000	1.073
13	200.000	1.032									

2-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.3385	03	5.000	0.3469	04	7.500	0.4346	05	10.000	0.4097
06	20.000	0.4312	07	50.000	0.4202	08	80.000	0.4355	09	100.000	0.4098
10	120.000	0.4174	11	150.000	0.412	12	170.000	0.4343	13	200.000	0.4297

2-Nitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.1571	04	7.500	0.1804	05	10.000	0.1752	06	20.000	0.194
07	50.000	0.2126	08	80.000	0.2244	09	100.000	0.224	10	120.000	0.2204
11	150.000	0.2272	12	170.000	0.2296	13	200.000	0.2356			

3,3'-Dichlorobenzidine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.422	02	2.500	0.4251	03	5.000	0.4299	04	7.500	0.454
05	10.000	0.437	06	20.000	0.4858	07	50.000	0.5537	08	80.000	0.6101
09	100.000	0.605	10	120.000	0.5685	11	150.000	0.5769	12	170.000	0.5706
13	200.000	0.5568									

3-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.2284	03	5.000	0.302	04	7.500	0.319	05	10.000	0.2954
06	20.000	0.3235	07	50.000	0.3284	08	80.000	0.3732	09	100.000	0.3418
10	120.000	0.3516	11	150.000	0.3583	12	170.000	0.3758	13	200.000	0.3602

4-Bromophenyl Phenyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.3002	02	2.500	0.2983	03	5.000	0.3054	04	7.500	0.354
05	10.000	0.3237	06	20.000	0.3534	07	50.000	0.3617	08	80.000	0.3854
09	100.000	0.3729	10	120.000	0.3606	11	150.000	0.3812	12	170.000	0.4031
13	200.000	0.3999									

4-Chloro-3-methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.2443	03	5.000	0.2733	04	7.500	0.2902	05	10.000	0.2955

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

4-Chloro-3-methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
06	20.000	0.3247	07	50.000	0.3337	08	80.000	0.3548	09	100.000	0.324
10	120.000	0.33	11	150.000	0.3367	12	170.000	0.3309	13	200.000	0.3165

4-Chloroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.3125	02	2.500	0.3563	03	5.000	0.423	04	7.500	0.4359
05	10.000	0.4181	06	20.000	0.4486	07	50.000	0.4611	08	80.000	0.511
09	100.000	0.4896	10	120.000	0.4857	11	150.000	0.5245	12	170.000	0.5392
13	200.000	0.4942									

4-Chlorophenyl Phenyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.7054	02	2.500	0.7799	03	5.000	0.8026	04	7.500	0.8324
05	10.000	0.7969	06	20.000	0.8055	07	50.000	0.841	08	80.000	0.922
09	100.000	0.8891	10	120.000	0.9281	11	150.000	0.9657	12	170.000	1.062
13	200.000	1.076									

4-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	1.037	03	5.000	1.216	04	7.500	1.254	05	10.000	1.252
06	20.000	1.331	07	50.000	1.349	08	80.000	1.433	09	100.000	1.48
10	120.000	1.448	11	150.000	1.537	12	170.000	1.51	13	200.000	1.491

4-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	7.500	0.2716	05	10.000	0.2415	06	20.000	0.2565	07	50.000	0.2898
08	80.000	0.3267	09	100.000	0.3276	10	120.000	0.3307	11	150.000	0.3478
12	170.000	0.3586	13	200.000	0.368						

4-Nitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.1405	04	7.500	0.2048	05	10.000	0.1942	06	20.000	0.2425
07	50.000	0.2984	08	80.000	0.3609	09	100.000	0.3525	10	120.000	0.3562
11	150.000	0.3825	12	170.000	0.3949	13	200.000	0.4107			

Acenaphthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.034	02	2.500	1.066	03	5.000	1.066	04	7.500	1.177
05	10.000	1.145	06	20.000	1.142	07	50.000	1.145	08	80.000	1.238
09	100.000	1.22	10	120.000	1.242	11	150.000	1.296	12	170.000	1.382
13	200.000	1.451									

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.574	02	2.500	1.717	03	5.000	1.73	04	7.500	1.895
05	10.000	1.774	06	20.000	1.837	07	50.000	1.832	08	80.000	1.975
09	100.000	1.945	10	120.000	1.932	11	150.000	2.095	12	170.000	2.2

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
13	200.000	2.187									

Anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9187	02	2.500	0.946	03	5.000	0.9981	04	7.500	1.062
05	10.000	0.9709	06	20.000	1.041	07	50.000	1.066	08	80.000	1.209
09	100.000	1.232	10	120.000	1.193	11	150.000	1.265	12	170.000	1.348
13	200.000	1.349									

Benz(a)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.077	02	2.500	0.9771	03	5.000	0.9585	04	7.500	1.025
05	10.000	0.9416	06	20.000	0.9868	07	50.000	1.038	08	80.000	1.049
09	100.000	0.9959	10	120.000	0.9413	11	150.000	0.9678	12	170.000	0.9809

Benzo(a)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.8368	04	7.500	0.8928	05	10.000	0.8523	06	20.000	0.9724
07	50.000	1.036	08	80.000	1.159	09	100.000	1.102	10	120.000	1.093
11	150.000	1.173	12	170.000	1.207	13	200.000	1.235			

Benzo(b)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	0.8689	06	20.000	1.019	07	50.000	1.123	08	80.000	1.29
09	100.000	1.238	10	120.000	1.264						

Benzo(g,h,i)perylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.949	02	2.500	0.9304	03	5.000	1.006	04	7.500	1.097
05	10.000	1.056	06	20.000	1.177	07	50.000	1.115	08	80.000	1.196
09	100.000	1.149	10	120.000	1.116	11	150.000	1.174	12	170.000	1.206
13	200.000	1.225									

Benzo(k)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.8127	03	5.000	0.8545	04	7.500	0.9624	05	10.000	0.8911
06	20.000	0.9941	07	50.000	1.147	08	80.000	1.195	09	100.000	1.237
10	120.000	1.146	11	150.000	1.148	12	170.000	1.213	13	200.000	1.178

Benzoic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	0.05791	06	20.000	0.1045	07	50.000	0.1303	08	80.000	0.1753
09	100.000	0.1739	10	120.000	0.1833	11	150.000	0.1936	12	170.000	0.2098
13	200.000	0.2028									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

Benzyl Alcohol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.4847	04	7.500	0.6308	05	10.000	0.5742	06	20.000	0.6721
07	50.000	0.7089	08	80.000	0.7555	09	100.000	0.7474	10	120.000	0.7471
11	150.000	0.7741	12	170.000	0.782	13	200.000	0.7301			

Bis(2-chloroethoxy)methane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.241	04	7.500	0.2843	05	10.000	0.2699	06	20.000	0.2948
07	50.000	0.304	08	80.000	0.3263	09	100.000	0.3216	10	120.000	0.3202
11	150.000	0.3212	12	170.000	0.334	13	200.000	0.3486			

Bis(2-chloroethyl) Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6899	02	2.500	0.7791	03	5.000	0.8387	04	7.500	0.8976
05	10.000	0.8145	06	20.000	0.8971	07	50.000	0.9103	08	80.000	0.941
09	100.000	0.9723	10	120.000	0.9248	11	150.000	0.9759	12	170.000	0.9948
13	200.000	0.968									

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6303	02	2.500	0.6188	03	5.000	0.6816	04	7.500	0.7286
05	10.000	0.6809	06	20.000	0.6884	07	50.000	0.7022	08	80.000	0.6838
09	100.000	0.6273	10	120.000	0.5996	11	150.000	0.5911	12	170.000	0.5864
13	200.000	0.5772									

Butyl Benzyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.4802	02	2.500	0.5052	03	5.000	0.4951	04	7.500	0.5385
05	10.000	0.4888	06	20.000	0.5483	07	50.000	0.5368	08	80.000	0.5099
09	100.000	0.4541	10	120.000	0.4232	11	150.000	0.41	12	170.000	0.4134
13	200.000	0.4125									

Carbazole

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	0.7355	06	20.000	0.8785	07	50.000	0.9624	08	80.000	1.19
09	100.000	1.182	10	120.000	1.183	11	150.000	1.258	12	170.000	1.337

Chrysene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9404	02	2.500	0.98	03	5.000	0.9871	04	7.500	1.053
05	10.000	1.005	06	20.000	1.017	07	50.000	1.025	08	80.000	1.033
09	100.000	1.003	10	120.000	0.97	11	150.000	0.9859	12	170.000	0.9899
13	200.000	1.016									

Di-n-butyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	7.500	1.222	05	10.000	1.046	06	20.000	1.196	07	50.000	1.323
08	80.000	1.573	09	100.000	1.548	10	120.000	1.575	11	150.000	1.702

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

Di-n-butyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
12	170.000	1.695	13	200.000	1.713						

Di-n-octyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.8961	04	7.500	0.989	05	10.000	0.9594	06	20.000	1.052
07	50.000	1.079	08	80.000	1.218	09	100.000	1.185	10	120.000	1.162
11	150.000	1.255	12	170.000	1.318	13	200.000	1.331			

Dibenz(a,h)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.893	03	5.000	0.9635	04	7.500	1.063	05	10.000	1.025
06	20.000	1.162	07	50.000	1.161	08	80.000	1.256	09	100.000	1.234
10	120.000	1.203	11	150.000	1.299	12	170.000	1.36	13	200.000	1.397

Dibenzofuran

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.619	02	2.500	1.651	03	5.000	1.744	04	7.500	1.859
05	10.000	1.746	06	20.000	1.805	07	50.000	1.857	08	80.000	1.98
09	100.000	1.926	10	120.000	1.969	11	150.000	2.088	12	170.000	2.178
13	200.000	2.141									

Diethyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.53	02	2.500	1.589	03	5.000	1.754	04	7.500	1.872
05	10.000	1.677	06	20.000	1.695	07	50.000	1.6	08	80.000	1.737
09	100.000	1.587	10	120.000	1.571	11	150.000	1.627	12	170.000	1.738
13	200.000	1.725									

Dimethyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.451	02	2.500	1.35	03	5.000	1.476	04	7.500	1.684
05	10.000	1.558	06	20.000	1.591	07	50.000	1.553	08	80.000	1.614
09	100.000	1.505	10	120.000	1.479	11	150.000	1.529	12	170.000	1.584
13	200.000	1.622									

Fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.9898	04	7.500	0.9912	05	10.000	0.862	06	20.000	1.009
07	50.000	1.18	08	80.000	1.408	09	100.000	1.375	10	120.000	1.384
11	150.000	1.443	12	170.000	1.568	13	200.000	1.526			

Fluorene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.16	02	2.500	1.224	03	5.000	1.319	04	7.500	1.418
05	10.000	1.322	06	20.000	1.359	07	50.000	1.373	08	80.000	1.484
09	100.000	1.417	10	120.000	1.426	11	150.000	1.461	12	170.000	1.554
13	200.000	1.606									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

Hexachlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.4329	02	2.500	0.4165	03	5.000	0.4235	04	7.500	0.4753
05	10.000	0.4404	06	20.000	0.473	07	50.000	0.4531	08	80.000	0.496
09	100.000	0.4757	10	120.000	0.4711	11	150.000	0.5023	12	170.000	0.5279
13	200.000	0.5219									

Hexachlorobutadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.305	02	2.500	0.2971	03	5.000	0.3165	04	7.500	0.3396
05	10.000	0.3214	06	20.000	0.3303	07	50.000	0.352	08	80.000	0.3792
09	100.000	0.3769	10	120.000	0.3727	11	150.000	0.4018	12	170.000	0.4209
13	200.000	0.4418									

Hexachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.7509	02	2.500	0.6857	03	5.000	0.7876	04	7.500	0.8864
05	10.000	0.7592	06	20.000	0.7783	07	50.000	0.8013	08	80.000	0.8508
09	100.000	0.8796	10	120.000	0.8527	11	150.000	0.8889	12	170.000	0.908
13	200.000	0.9194									

Indeno(1,2,3-cd)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.8733	02	2.500	0.8962	03	5.000	0.95	04	7.500	1.065
05	10.000	1.044	06	20.000	1.136	07	50.000	1.112	08	80.000	1.207
09	100.000	1.179	10	120.000	1.149	11	150.000	1.285	12	170.000	1.355
13	200.000	1.408									

Isophorone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.3847	02	2.500	0.4641	03	5.000	0.4655	04	7.500	0.5094
05	10.000	0.4886	06	20.000	0.5115	07	50.000	0.5428	08	80.000	0.5699
09	100.000	0.5438	10	120.000	0.5394	11	150.000	0.5443	12	170.000	0.5831
13	200.000	0.5519									

N-Nitrosodi-n-propylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.5728	03	5.000	0.6412	04	7.500	0.6579	05	10.000	0.5962
06	20.000	0.6584	07	50.000	0.6991	08	80.000	0.7128	09	100.000	0.7373
10	120.000	0.6888	11	150.000	0.7733	12	170.000	0.7779	13	200.000	0.8

N-Nitrosodimethylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	1.008	04	7.500	1.216	05	10.000	1.097	06	20.000	1.177
07	50.000	1.222	08	80.000	1.315	09	100.000	1.315	10	120.000	1.282
11	150.000	1.379	12	170.000	1.391	13	200.000	1.384			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

N-Nitrosodiphenylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.7098	02	2.500	0.8388	03	5.000	0.9128	04	7.500	0.971
05	10.000	0.8978	06	20.000	0.9084	07	50.000	0.9177	08	80.000	0.9835
09	100.000	0.9222	10	120.000	0.932	11	150.000	0.9762	12	170.000	1.033
13	200.000	1.037									

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.8624	02	2.500	0.9373	03	5.000	0.963	04	7.500	0.9947
05	10.000	0.9606	06	20.000	0.9504	07	50.000	0.9936	08	80.000	1.07
09	100.000	1.066	10	120.000	1.043	11	150.000	1.111	12	170.000	1.158
13	200.000	1.181									

Nitrobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.8819	02	2.500	1.111	03	5.000	1.16	04	7.500	1.286
05	10.000	1.176	06	20.000	1.24	07	50.000	1.292	08	80.000	1.321
09	100.000	1.328	10	120.000	1.264	11	150.000	1.375	12	170.000	1.374
13	200.000	1.301									

Nitrobenzene-d5

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.007	02	2.500	1.053	03	5.000	1.145	04	7.500	1.364
05	10.000	1.216	06	20.000	1.296	07	50.000	1.316	08	80.000	1.365
09	100.000	1.357	10	120.000	1.335	11	150.000	1.417	12	170.000	1.403
13	200.000	1.333									

Pentachlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10.000	0.1008	06	20.000	0.1485	07	50.000	0.2042	08	80.000	0.253
09	100.000	0.2553	10	120.000	0.266	11	150.000	0.2997	12	170.000	0.3247
13	200.000	0.3298									

Phenanthrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9354	02	2.500	0.9378	03	5.000	0.9449	04	7.500	1.041
05	10.000	0.9548	06	20.000	1.003	07	50.000	1.038	08	80.000	1.182
09	100.000	1.132	10	120.000	1.171	11	150.000	1.26	12	170.000	1.326
13	200.000	1.383									

Phenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.7771	03	5.000	0.9116	04	7.500	1.061	05	10.000	0.9876
06	20.000	1.075	07	50.000	1.109	08	80.000	1.225	09	100.000	1.204
10	120.000	1.173	11	150.000	1.271	12	170.000	1.277	13	200.000	1.269

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte

Phenol-d6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.500	0.8715	03	5.000	0.964	04	7.500	1.089	05	10.000	1.078
06	20.000	1.181	07	50.000	1.179	08	80.000	1.271	09	100.000	1.299
10	120.000	1.252	11	150.000	1.313	12	170.000	1.356	13	200.000	1.235

Pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9269	02	2.500	0.9997	03	5.000	0.9724	04	7.500	0.9806
05	10.000	0.8781	06	20.000	1.006	07	50.000	1.097	08	80.000	1.108
09	100.000	1.024	10	120.000	0.9491	11	150.000	0.9127	12	170.000	0.9069
13	200.000	0.8725									

Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.047	02	2.500	1.028	03	5.000	0.951	04	7.500	0.9833
05	10.000	0.85	06	20.000	0.9746	07	50.000	1.057	08	80.000	1.115
09	100.000	0.9943	10	120.000	0.9444	11	150.000	0.9233	12	170.000	0.8837
13	200.000	0.8364									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	14.2	≤15	0.3882	0.010
1,2-Dichlorobenzene	TRG	Average RF	% RSD	9.8	≤15	1.44	0.010
1,2-Diphenylhydrazine	TRG	Average RF	% RSD	3.7	≤15	1.422	0.010
1,3-Dichlorobenzene	TRG	Average RF	% RSD	7.9	≤15	1.488	0.010
1,4-Dichlorobenzene	TRG	Average RF	% RSD	9.3	≤15	1.562	0.010
2,2'-Oxybis(1-chloropropane)	TRG	Average RF	% RSD	7.4	≤15	1.157	0.010
2,4,5-Trichlorophenol	TRG	Average RF	% RSD	13.6	≤15	0.5798	0.200
2,4,6-Tribromophenol	SURR	Average RF	% RSD	11.5	≤15	0.3157	0.010
2,4,6-Trichlorophenol	TRG	Average RF	% RSD	13.9	≤15	0.5092	0.200
2,4-Dichlorophenol	TRG	Average RF	% RSD	12.9	≤15	0.3375	0.200
2,4-Dimethylphenol	TRG	Average RF	% RSD	14.6	≤15	0.2781	0.200
2,4-Dinitrophenol	TRG	Quadratic	COD	0.9986	≥0.990	0.1858	0.010
2,4-Dinitrotoluene	TRG	Average RF	% RSD	14.9	≤15	0.4336	0.200
2,6-Dinitrotoluene	TRG	Average RF	% RSD	13.7	≤15	0.3382	0.200
2-Chloronaphthalene	TRG	Average RF	% RSD	14.4	≤15	1.35	0.800
2-Chlorophenol	TRG	Average RF	% RSD	13.9	≤15	1.312	0.800
2-Fluorobiphenyl	SURR	Average RF	% RSD	13.5	≤15	1.64	0.010
2-Fluorophenol	SURR	Average RF	% RSD	12.4	≤15	0.9531	0.010
2-Methyl-4,6-dinitrophenol	TRG	Quadratic	COD	0.9993	≥0.990	0.2886	0.010
2-Methylnaphthalene	TRG	Average RF	% RSD	10.4	≤15	0.744	0.400
2-Methylphenol	TRG	Average RF	% RSD	12.4	≤15	0.9268	0.700
2-Nitroaniline	TRG	Average RF	% RSD	8.0	≤15	0.41	0.010
2-Nitrophenol	TRG	Average RF	% RSD	12.7	≤15	0.2073	0.100
3,3'-Dichlorobenzidine	TRG	Average RF	% RSD	14.3	≤15	0.515	0.010
3-Nitroaniline	TRG	Average RF	% RSD	12.5	≤15	0.3298	0.010
4-Bromophenyl Phenyl Ether	TRG	Average RF	% RSD	10.3	≤15	0.3538	0.100
4-Chloro-3-methylphenol	TRG	Average RF	% RSD	10.0	≤15	0.3129	0.010
4-Chloroaniline	TRG	Average RF	% RSD	14.5	≤15	0.4538	0.010
4-Chlorophenyl Phenyl Ether	TRG	Average RF	% RSD	12.6	≤15	0.8774	0.400
4-Methylphenol	TRG	Average RF	% RSD	11.0	≤15	1.361	0.600
4-Nitroaniline	TRG	Average RF	% RSD	14.2	≤15	0.3119	0.010
4-Nitrophenol	TRG	Quadratic	COD	0.9993	≥0.990	0.3035	0.010
Acenaphthene	TRG	Average RF	% RSD	10.3	≤15	1.2	0.900
Acenaphthylene	TRG	Average RF	% RSD	9.8	≤15	1.899	0.900

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Anthracene	TRG	Average RF	% RSD	13.4	≤15	1.123	0.700
Benz(a)anthracene	TRG	Average RF	% RSD	4.4	≤15	0.9948	0.800
Benzo(a)pyrene	TRG	Average RF	% RSD	13.7	≤15	1.051	0.700
Benzo(b)fluoranthene	TRG	Average RF	% RSD	14.5	≤15	1.134	0.700
Benzo(g,h,i)perylene	TRG	Average RF	% RSD	8.7	≤15	1.108	0.500
Benzo(k)fluoranthene	TRG	Average RF	% RSD	14.3	≤15	1.065	0.700
Benzoic Acid	TRG	Quadratic	COD	0.9958	≥0.990	0.159	0.010
Benzyl Alcohol	TRG	Average RF	% RSD	13.5	≤15	0.6915	0.010
Bis(2-chloroethoxy)methane	TRG	Average RF	% RSD	10.2	≤15	0.306	0.300
Bis(2-chloroethyl) Ether	TRG	Average RF	% RSD	10.0	≤15	0.8926	0.700
Bis(2-ethylhexyl) Phthalate	TRG	Average RF	% RSD	7.8	≤15	0.6458	0.010
Butyl Benzyl Phthalate	TRG	Average RF	% RSD	10.6	≤15	0.4781	0.010
Carbazole	TRG	Quadratic	COD	0.9980	≥0.990	1.091	0.010
Chrysene	TRG	Average RF	% RSD	2.9	≤15	1	0.700
Di-n-butyl Phthalate	TRG	Quadratic	COD	0.9985	≥0.990	1.459	0.010
Di-n-octyl Phthalate	TRG	Average RF	% RSD	13.0	≤15	1.131	0.010
Dibenz(a,h)anthracene	TRG	Average RF	% RSD	13.4	≤15	1.168	0.400
Dibenzofuran	TRG	Average RF	% RSD	9.4	≤15	1.889	0.800
Diethyl Phthalate	TRG	Average RF	% RSD	5.7	≤15	1.669	0.010
Dimethyl Phthalate	TRG	Average RF	% RSD	5.7	≤15	1.538	0.010
Fluoranthene	TRG	Quadratic	COD	0.9976	≥0.990	1.249	0.600
Fluorene	TRG	Average RF	% RSD	8.8	≤15	1.394	0.900
Hexachlorobenzene	TRG	Average RF	% RSD	7.6	≤15	0.47	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	12.7	≤15	0.3581	0.010
Hexachloroethane	TRG	Average RF	% RSD	8.7	≤15	0.8268	0.300
Indeno(1,2,3-cd)pyrene	TRG	Average RF	% RSD	14.6	≤15	1.128	0.500
Isophorone	TRG	Average RF	% RSD	10.5	≤15	0.5153	0.400
N-Nitrosodi-n-propylamine	TRG	Average RF	% RSD	10.3	≤15	0.693	0.500
N-Nitrosodimethylamine	TRG	Average RF	% RSD	9.9	≤15	1.253	0.010
N-Nitrosodiphenylamine	TRG	Linear	R2	0.9976	≥0.990	0.9261	0.010
Naphthalene	TRG	Average RF	% RSD	9.1	≤15	1.022	0.700
Nitrobenzene	TRG	Average RF	% RSD	10.8	≤15	1.239	0.200
Nitrobenzene-d5	SURR	Average RF	% RSD	10.4	≤15	1.277	0.010
Pentachlorophenol	TRG	Quadratic	COD	0.9980	≥0.990	0.2424	0.050
Phenanthrene	TRG	Average RF	% RSD	14.0	≤15	1.101	0.700

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Phenol	TRG	Average RF	% RSD	14.2	≤15	1.112	0.800
Phenol-d6	SURR	Average RF	% RSD	12.6	≤15	1.174	0.010
Pyrene	TRG	Quadratic	COD	0.9983	≥0.990	0.9719	0.600
Terphenyl-d14	SURR	Average RF	% RSD	8.5	≤15	0.9683	0.010

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

#	Lab Code	Sample Name	File Location	Acquisition Date
14	KC2000181-14	8270 only ICV @ 80ppm | SVM63-33D	J:\MS07\DATA\040120\0401F002.D	04/01/2020 02:18
15	KC2000181-15	Paper ICV @ 80ppm | SVM63-53A	J:\MS07\DATA\040120\0401F003.D	04/01/2020 03:00

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	85.0	3.882E-1	4.127E-1	6.31	±20	Average RF
1,2-Dichlorobenzene	80.0	86.3	1.44E0	1.553E0	7.84	±20	Average RF
1,2-Diphenylhydrazine	80.0	80.6	1.422E0	1.432E0	0.700	±20	Average RF
1,3-Dichlorobenzene	80.0	86.4	1.488E0	1.608E0	8.04	±20	Average RF
1,4-Dichlorobenzene	80.0	82.5	1.562E0	1.611E0	3.09	±20	Average RF
2,4,5-Trichlorophenol	80.0	83.6	5.798E-1	6.059E-1	4.51	±20	Average RF
2,4,6-Trichlorophenol	80.0	86.2	5.092E-1	5.484E-1	7.70	±20	Average RF
2,4-Dichlorophenol	80.0	85.4	3.375E-1	3.605E-1	6.81	±20	Average RF
2,4-Dimethylphenol	80.0	85.4	2.781E-1	2.969E-1	6.75	±20	Average RF
2,4-Dinitrophenol	80.0	86.0	1.858E-1	1.846E-1	7.51	±20	Quadratic
2,4-Dinitrotoluene	80.0	94.4	4.336E-1	5.116E-1	17.99	±20	Average RF
2,6-Dinitrotoluene	80.0	92.9	3.382E-1	3.928E-1	16.13	±20	Average RF
2-Chloronaphthalene	80.0	83.8	1.35E0	1.415E0	4.79	±20	Average RF
2-Chlorophenol	80.0	83.6	1.312E0	1.371E0	4.49	±20	Average RF
2-Methyl-4,6-dinitrophenol	80.0	86.4	2.886E-1	3.243E-1	8.01	±20	Quadratic
2-Methylnaphthalene	80.0	81.7	7.44E-1	7.602E-1	2.18	±20	Average RF
2-Methylphenol	80.0	82.1	9.268E-1	9.507E-1	2.59	±20	Average RF
2-Nitroaniline	80.0	84.5	4.1E-1	4.33E-1	5.62	±20	Average RF
2-Nitrophenol	80.0	86.2	2.073E-1	2.234E-1	7.74	±20	Average RF
3,3'-Dichlorobenzidine	80.0	93.8	5.15E-1	6.041E-1	17.30	±20	Average RF
3-Nitroaniline	80.0	90.4	3.298E-1	3.726E-1	12.98	±20	Average RF
4-Bromophenyl Phenyl Ether	80.0	86.3	3.538E-1	3.818E-1	7.90	±20	Average RF
4-Chloro-3-methylphenol	80.0	88.8	3.129E-1	3.472E-1	10.98	±20	Average RF
4-Chloroaniline	80.0	81.8	4.538E-1	4.639E-1	2.21	±20	Average RF
4-Chlorophenyl Phenyl Ether	80.0	86.3	8.774E-1	9.461E-1	7.83	±20	Average RF
4-Methylphenol	160	146	1.361E0	1.239E0	-8.975	±20	Average RF
4-Nitroaniline	80.0	82.0	3.119E-1	3.197E-1	2.51	±20	Average RF
4-Nitrophenol	80.0	80.2	3.035E-1	3.379E-1	0.263	±20	Quadratic
Acenaphthene	80.0	80.7	1.2E0	1.211E0	0.876	±20	Average RF
Acenaphthylene	80.0	91.5	1.899E0	2.174E0	14.43	±20	Average RF
Anthracene	80.0	87.2	1.123E0	1.224E0	8.97	±20	Average RF
Benz(a)anthracene	80.0	96.0	9.948E-1	1.193E0	19.94	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Benzo(a)pyrene	80.0	86.4	1.051E0	1.135E0	7.96	±20	Average RF
Benzo(b)fluoranthene	80.0	82.5	1.134E0	1.169E0	3.08	±20	Average RF
Benzo(g,h,i)perylene	80.0	82.3	1.108E0	1.139E0	2.85	±20	Average RF
Benzo(k)fluoranthene	80.0	90.0	1.065E0	1.198E0	12.52	±20	Average RF
Benzoic Acid	80.0	78.1	1.59E-1	1.615E-1	-2.402	±20	Quadratic
Benzyl Alcohol	80.0	85.2	6.915E-1	7.361E-1	6.44	±20	Average RF
Bis(2-chloroethoxy)methane	80.0	86.0	3.06E-1	3.291E-1	7.56	±20	Average RF
Bis(2-chloroethyl) Ether	80.0	83.3	8.926E-1	9.296E-1	4.15	±20	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	87.9	6.458E-1	7.098E-1	9.90	±20	Average RF
Butyl Benzyl Phthalate	80.0	90.6	4.781E-1	5.414E-1	13.24	±20	Average RF
Carbazole	80.0	74.4	1.091E0	1.028E0	-6.941	±20	Quadratic
Chrysene	80.0	86.7	1.0E0	1.084E0	8.34	±20	Average RF
Dibenz(a,h)anthracene	80.0	82.6	1.168E0	1.206E0	3.22	±20	Average RF
Dibenzofuran	80.0	82.1	1.889E0	1.938E0	2.59	±20	Average RF
Diethyl Phthalate	80.0	81.9	1.669E0	1.71E0	2.43	±20	Average RF
Dimethyl Phthalate	80.0	81.0	1.538E0	1.557E0	1.22	±20	Average RF
Di-n-butyl Phthalate	80.0	79.7	1.459E0	1.496E0	-0.403	±20	Quadratic
Di-n-octyl Phthalate	80.0	77.4	1.131E0	1.094E0	-3.283	±20	Average RF
Fluoranthene	80.0	82.9	1.249E0	1.374E0	3.64	±20	Quadratic
Fluorene	80.0	86.9	1.394E0	1.515E0	8.68	±20	Average RF
Hexachlorobenzene	80.0	82.9	4.7E-1	4.872E-1	3.66	±20	Average RF
Hexachlorobutadiene	80.0	90.0	3.581E-1	4.028E-1	12.49	±20	Average RF
Hexachloroethane	80.0	84.0	8.268E-1	8.678E-1	4.95	±20	Average RF
Indeno(1,2,3-cd)pyrene	80.0	80.0	1.128E0	1.127E0	-0.062	±20	Average RF
Isophorone	80.0	81.3	5.153E-1	5.235E-1	1.60	±20	Average RF
Naphthalene	80.0	84.2	1.022E0	1.076E0	5.23	±20	Average RF
Nitrobenzene	80.0	85.1	1.239E0	1.319E0	6.42	±20	Average RF
N-Nitrosodimethylamine	80.0	78.2	1.253E0	1.226E0	-2.211	±20	Average RF
N-Nitrosodi-n-propylamine	80.0	91.1	6.93E-1	7.894E-1	13.91	±20	Average RF
N-Nitrosodiphenylamine	80.0	102	9.261E-1	1.253E0	27.30*	±20	Linear
Pentachlorophenol	80.0	80.9	2.424E-1	2.449E-1	1.15	±20	Quadratic
Phenanthrene	80.0	85.7	1.101E0	1.179E0	7.12	±20	Average RF
Phenol	80.0	84.0	1.112E0	1.167E0	4.97	±20	Average RF
Pyrene	80.0	95.3	9.719E-1	1.201E0	19.15	±20	Quadratic
2,2'-Oxybis(1-chloropropane)	80.0	103	1.157E0	1.482E0	28.17*	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM **Calibration Date:** 3/31/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000181 **Signal ID:** 1
Instrument ID: K-MS-07

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4,6-Tribromophenol	80.0	77.9	3.157E-1	3.076E-1	-2.593	±20	Average RF
2-Fluorobiphenyl	80.0	76.6	1.64E0	1.571E0	-4.189	±20	Average RF
2-Fluorophenol	80.0	74.8	9.531E-1	8.909E-1	-6.525	±20	Average RF
Nitrobenzene-d5	80.0	80.1	1.277E0	1.279E0	0.115	±20	Average RF
Phenol-d6	80.0	80.2	1.174E0	1.177E0	0.226	±20	Average RF
Terphenyl-d14	80.0	87.3	9.683E-1	1.057E0	9.17	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 03:41

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 3/31/2020
File ID: J:\MS07\DATA\040120\0401F004.D\ **Calibration ID:** KC2000181
Signal ID: 1 **Analysis Lot:** 675525
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	82.8	0.3882	0.4019	3.5	NA	±20	Average RF
1,2-Dichlorobenzene	80.0	80.9	1.4398	1.4563	1.1	NA	±20	Average RF
1,2-Diphenylhydrazine	80.0	75.8	1.422	1.3477	-5.2	NA	±20	Average RF
1,3-Dichlorobenzene	80.0	81.1	1.4882	1.5083	1.4	NA	±20	Average RF
1,4-Dichlorobenzene	80.0	80.4	1.5623	1.5709	0.6	NA	±20	Average RF
2,4,5-Trichlorophenol	80.0	80.6	0.5798	0.584	0.7	NA	±20	Average RF
2,4,6-Trichlorophenol	80.0	82.0	0.5092	0.5222	2.6	NA	±20	Average RF
2,4-Dichlorophenol	80.0	83.3	0.3375	0.3515	4.1	NA	±20	Average RF
2,4-Dimethylphenol	80.0	81.8	0.2781	0.2846	2.3	NA	±20	Average RF
2,4-Dinitrophenol	80.0	89.9	0.1858	0.1973	NA	12.4	±20	Quadratic
2,4-Dinitrotoluene	80.0	81.9	0.4336	0.4441	2.4	NA	±20	Average RF
2,6-Dinitrotoluene	80.0	81.6	0.3382	0.3448	2.0	NA	±20	Average RF
2-Chloronaphthalene	80.0	79.4	1.3504	1.3405	-0.7	NA	±20	Average RF
2-Chlorophenol	80.0	86.5	1.3117	1.4184	8.1	NA	±20	Average RF
2-Methyl-4,6-dinitrophenol	80.0	84.9	0.2886	0.3168	NA	6.1	±20	Quadratic
2-Methylnaphthalene	80.0	77.4	0.744	0.72	-3.2	NA	±20	Average RF
2-Methylphenol	80.0	85.9	0.9268	0.9955	7.4	NA	±20	Average RF
2-Nitroaniline	80.0	75.4	0.41	0.3862	-5.8	NA	±20	Average RF
2-Nitrophenol	80.0	84.3	0.2073	0.2184	5.4	NA	±20	Average RF
3,3'-Dichlorobenzidine	80.0	91.0	0.515	0.5856	13.7	NA	±20	Average RF
3-Nitroaniline	80.0	80.9	0.3298	0.3335	1.1	NA	±20	Average RF
4-Bromophenyl Phenyl Ether	80.0	82.1	0.3538	0.3631	2.6	NA	±20	Average RF
4-Chloro-3-methylphenol	80.0	80.1	0.3129	0.3132	0.1	NA	±20	Average RF
4-Chloroaniline	80.0	78.3	0.4538	0.444	-2.2	NA	±20	Average RF
4-Chlorophenyl Phenyl Ether	80.0	79.1	0.8774	0.8678	-1.1	NA	±20	Average RF
4-Methylphenol	80.0	85.8	1.3614	1.4593	7.2	NA	±20	Average RF
4-Nitroaniline	80.0	79.6	0.3119	0.3102	-0.5	NA	±20	Average RF
4-Nitrophenol	80.0	79.8	0.3035	0.3357	NA	-0.3	±20	Quadratic
Acenaphthene	80.0	77.0	1.2004	1.156	-3.7	NA	±20	Average RF
Acenaphthylene	80.0	76.6	1.8994	1.8192	-4.2	NA	±20	Average RF
Anthracene	80.0	80.1	1.123	1.1236	0.1	NA	±20	Average RF
Benz(a)anthracene	80.0	79.9	0.9948	0.9929	-0.2	NA	±20	Average RF
Benzo(a)pyrene	80.0	81.0	1.0509	1.0644	1.3	NA	±20	Average RF
Benzo(b)fluoranthene	80.0	88.1	1.1338	1.2478	10.1	NA	±20	Average RF
Benzo(g,h,i)perylene	80.0	80.8	1.1075	1.1183	1.0	NA	±20	Average RF
Benzo(k)fluoranthene	80.0	86.2	1.0648	1.1477	7.8	NA	±20	Average RF
Benzoic Acid	80.0	84.4	0.159	0.1777	NA	5.6	±20	Quadratic
Benzyl Alcohol	80.0	86.3	0.6915	0.746	7.9	NA	±20	Average RF
Bis(2-chloroethoxy)methane	80.0	84.9	0.306	0.3247	6.1	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 03:41

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 3/31/2020
File ID: J:\MS07\DATA\040120\0401F004.D\ **Calibration ID:** KC2000181
Signal ID: 1 **Analysis Lot:** 675525
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	80.0	86.7	0.8926	0.9676	8.4	NA	±20	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	78.8	0.6458	0.6364	-1.5	NA	±20	Average RF
Butyl Benzyl Phthalate	80.0	78.0	0.4781	0.466	-2.5	NA	±20	Average RF
Carbazole	80.0	77.0	1.091	1.07	NA	-3.7	±20	Quadratic
Chrysene	80.0	79.1	1.0004	0.989	-1.1	NA	±20	Average RF
Dibenz(a,h)anthracene	80.0	82.2	1.168	1.2001	2.7	NA	±20	Average RF
Dibenzofuran	80.0	76.1	1.8895	1.7965	-4.9	NA	±20	Average RF
Diethyl Phthalate	80.0	74.8	1.6694	1.5617	-6.5	NA	±20	Average RF
Dimethyl Phthalate	80.0	76.7	1.5383	1.475	-4.1	NA	±20	Average RF
Di-n-butyl Phthalate	80.0	79.5	1.4593	1.4932	NA	-0.6	±20	Quadratic
Di-n-octyl Phthalate	80.0	82.4	1.1314	1.1657	3.0	NA	±20	Average RF
Fluoranthene	80.0	81.3	1.2486	1.3444	NA	1.7	±20	Quadratic
Fluorene	80.0	78.9	1.3942	1.3754	-1.3	NA	±20	Average RF
Hexachlorobenzene	80.0	77.6	0.47	0.4561	-3.0	NA	±20	Average RF
Hexachlorobutadiene	80.0	82.5	0.3581	0.3693	3.1	NA	±20	Average RF
Hexachloroethane	80.0	82.7	0.8268	0.855	3.4	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	80.0	81.6	1.1275	1.15	2.0	NA	±20	Average RF
Isophorone	80.0	81.6	0.5153	0.5253	1.9	NA	±20	Average RF
Naphthalene	80.0	81.9	1.0224	1.0469	2.4	NA	±20	Average RF
Nitrobenzene	80.0	85.8	1.2393	1.3292	7.3	NA	±20	Average RF
N-Nitrosodimethylamine	80.0	81.5	1.2533	1.2763	1.8	NA	±20	Average RF
N-Nitrosodi-n-propylamine	80.0	84.7	0.693	0.7336	5.9	NA	±20	Average RF
N-Nitrosodiphenylamine	80.0	74.5	0.9261	0.915	NA	-6.9	±20	Linear
Pentachlorophenol	80.0	82.1	0.2424	0.2497	NA	2.7	±20	Quadratic
Phenanthrene	80.0	80.9	1.1007	1.1125	1.1	NA	±20	Average RF
Phenol	80.0	87.2	1.1117	1.211	8.9	NA	±20	Average RF
Pyrene	80.0	79.5	0.9719	1.0224	NA	-0.6	±20	Quadratic
2,2'-Oxybis(1-chloropropane)	80.0	85.4	1.1565	1.2342	6.7	NA	±20	Average RF
2,4,6-Tribromophenol	80.0	76.5	0.3157	0.302	-4.3	NA	±20	Average RF
2-Fluorobiphenyl	80.0	81.0	1.6397	1.6607	1.3	NA	±20	Average RF
2-Fluorophenol	80.0	80.8	0.9531	0.9621	0.9	NA	±20	Average RF
Nitrobenzene-d5	80.0	83.3	1.2774	1.3306	4.2	NA	±20	Average RF
Phenol-d6	80.0	80.3	1.174	1.1788	0.4	NA	±20	Average RF
Terphenyl-d14	80.0	79.9	0.9683	0.9671	-0.1	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 11:57

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 3/31/2020
File ID: J:\MS07\DATA\040120\0401F012.D\ **Calibration ID:** KC2000181
Signal ID: 1 **Analysis Lot:** 675525
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	79.8	0.3882	0.387	-0.3	NA	±50	Average RF
1,2-Dichlorobenzene	80.0	81.0	1.4398	1.4573	1.2	NA	±50	Average RF
1,2-Diphenylhydrazine	80.0	88.8	1.422	1.5781	11.0	NA	±50	Average RF
1,3-Dichlorobenzene	80.0	80.3	1.4882	1.4939	0.4	NA	±50	Average RF
1,4-Dichlorobenzene	80.0	82.6	1.5623	1.6127	3.2	NA	±50	Average RF
2,4,5-Trichlorophenol	80.0	80.9	0.5798	0.5864	1.1	NA	±50	Average RF
2,4,6-Trichlorophenol	80.0	83.2	0.5092	0.5294	4.0	NA	±50	Average RF
2,4-Dichlorophenol	80.0	82.3	0.3375	0.347	2.8	NA	±50	Average RF
2,4-Dimethylphenol	80.0	82.5	0.2781	0.2868	3.1	NA	±50	Average RF
2,4-Dinitrophenol	80.0	90.3	0.1858	0.1985	NA	12.8	±50	Quadratic
2,4-Dinitrotoluene	80.0	86.8	0.4336	0.4704	8.5	NA	±50	Average RF
2,6-Dinitrotoluene	80.0	82.6	0.3382	0.3493	3.3	NA	±50	Average RF
2-Chloronaphthalene	80.0	81.1	1.3504	1.3697	1.4	NA	±50	Average RF
2-Chlorophenol	80.0	83.5	1.3117	1.3698	4.4	NA	±50	Average RF
2-Methyl-4,6-dinitrophenol	80.0	85.6	0.2886	0.3201	NA	6.9	±50	Quadratic
2-Methylnaphthalene	80.0	79.1	0.744	0.7351	-1.2	NA	±50	Average RF
2-Methylphenol	80.0	83.8	0.9268	0.971	4.8	NA	±50	Average RF
2-Nitroaniline	80.0	83.1	0.41	0.4259	3.9	NA	±50	Average RF
2-Nitrophenol	80.0	82.3	0.2073	0.2132	2.8	NA	±50	Average RF
3,3'-Dichlorobenzidine	80.0	90.8	0.515	0.5846	13.5	NA	±50	Average RF
3-Nitroaniline	80.0	84.9	0.3298	0.3499	6.1	NA	±50	Average RF
4-Bromophenyl Phenyl Ether	80.0	80.2	0.3538	0.3547	0.2	NA	±50	Average RF
4-Chloro-3-methylphenol	80.0	84.4	0.3129	0.3302	5.5	NA	±50	Average RF
4-Chloroaniline	80.0	79.2	0.4538	0.449	-1.1	NA	±50	Average RF
4-Chlorophenyl Phenyl Ether	80.0	81.7	0.8774	0.8955	2.1	NA	±50	Average RF
4-Methylphenol	80.0	83.8	1.3614	1.4258	4.7	NA	±50	Average RF
4-Nitroaniline	80.0	83.3	0.3119	0.3246	4.1	NA	±50	Average RF
4-Nitrophenol	80.0	81.3	0.3035	0.3434	NA	1.7	±50	Quadratic
Acenaphthene	80.0	81.5	1.2004	1.2235	1.9	NA	±50	Average RF
Acenaphthylene	80.0	78.1	1.8994	1.8545	-2.4	NA	±50	Average RF
Anthracene	80.0	81.2	1.123	1.1398	1.5	NA	±50	Average RF
Benz(a)anthracene	80.0	78.6	0.9948	0.9775	-1.7	NA	±50	Average RF
Benzo(a)pyrene	80.0	82.9	1.0509	1.0884	3.6	NA	±50	Average RF
Benzo(b)fluoranthene	80.0	88.3	1.1338	1.2513	10.4	NA	±50	Average RF
Benzo(g,h,i)perylene	80.0	83.8	1.1075	1.1602	4.8	NA	±50	Average RF
Benzo(k)fluoranthene	80.0	90.8	1.0648	1.208	13.4	NA	±50	Average RF
Benzoic Acid	80.0	87.3	0.159	0.1851	NA	9.1	±50	Quadratic
Benzyl Alcohol	80.0	83.6	0.6915	0.7222	4.4	NA	±50	Average RF
Bis(2-chloroethoxy)methane	80.0	82.2	0.306	0.3144	2.7	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002465
Project: JBLM/6304305 **Date Analyzed:** 04/01/20 11:57

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 3/31/2020
File ID: J:\MS07\DATA\040120\0401F012.D\ **Calibration ID:** KC2000181
Signal ID: 1 **Analysis Lot:** 675525
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	80.0	85.0	0.8926	0.9479	6.2	NA	±50	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	78.1	0.6458	0.6305	-2.4	NA	±50	Average RF
Butyl Benzyl Phthalate	80.0	79.0	0.4781	0.4723	-1.2	NA	±50	Average RF
Carbazole	80.0	78.4	1.091	1.0927	NA	-2.0	±50	Quadratic
Chrysene	80.0	79.4	1.0004	0.9924	-0.8	NA	±50	Average RF
Dibenz(a,h)anthracene	80.0	84.1	1.168	1.2277	5.1	NA	±50	Average RF
Dibenzofuran	80.0	80.2	1.8895	1.8935	0.2	NA	±50	Average RF
Diethyl Phthalate	80.0	80.4	1.6694	1.6782	0.5	NA	±50	Average RF
Dimethyl Phthalate	80.0	82.4	1.5383	1.5837	3.0	NA	±50	Average RF
Di-n-butyl Phthalate	80.0	81.0	1.4593	1.5241	NA	1.3	±50	Quadratic
Di-n-octyl Phthalate	80.0	86.7	1.1314	1.226	8.4	NA	±50	Average RF
Fluoranthene	80.0	82.2	1.2486	1.3596	NA	2.7	±50	Quadratic
Fluorene	80.0	83.0	1.3942	1.4464	3.7	NA	±50	Average RF
Hexachlorobenzene	80.0	75.1	0.47	0.4409	-6.2	NA	±50	Average RF
Hexachlorobutadiene	80.0	79.3	0.3581	0.3548	-0.9	NA	±50	Average RF
Hexachloroethane	80.0	83.6	0.8268	0.8636	4.4	NA	±50	Average RF
Indeno(1,2,3-cd)pyrene	80.0	85.1	1.1275	1.1996	6.4	NA	±50	Average RF
Isophorone	80.0	82.3	0.5153	0.5298	2.8	NA	±50	Average RF
Naphthalene	80.0	80.3	1.0224	1.0267	0.4	NA	±50	Average RF
Nitrobenzene	80.0	83.3	1.2393	1.2899	4.1	NA	±50	Average RF
N-Nitrosodimethylamine	80.0	80.5	1.2533	1.2606	0.6	NA	±50	Average RF
N-Nitrosodi-n-propylamine	80.0	82.6	0.693	0.7156	3.3	NA	±50	Average RF
N-Nitrosodiphenylamine	80.0	81.2	0.9261	0.9977	NA	1.5	±50	Linear
Pentachlorophenol	80.0	76.8	0.2424	0.229	NA	-4.0	±50	Quadratic
Phenanthrene	80.0	82.1	1.1007	1.1299	2.7	NA	±50	Average RF
Phenol	80.0	85.6	1.1117	1.1897	7.0	NA	±50	Average RF
Pyrene	80.0	78.4	0.9719	1.0102	NA	-2.0	±50	Quadratic
2,2'-Oxybis(1-chloropropane)	80.0	83.9	1.1565	1.2131	4.9	NA	±50	Average RF
2,4,6-Tribromophenol	80.0	74.8	0.3157	0.2952	-6.5	NA	±50	Average RF
2-Fluorobiphenyl	80.0	81.0	1.6397	1.6599	1.2	NA	±50	Average RF
2-Fluorophenol	80.0	82.4	0.9531	0.9814	3.0	NA	±50	Average RF
Nitrobenzene-d5	80.0	82.8	1.2774	1.3219	3.5	NA	±50	Average RF
Phenol-d6	80.0	79.9	1.174	1.1728	-0.1	NA	±50	Average RF
Terphenyl-d14	80.0	78.4	0.9683	0.9492	-2.0	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305

Analysis Run Log
Semivolatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**675525
Instrument ID:K-MS-07

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS07\DATA\040120\0401F001.D\	ZZZZZZZ	ZZZZZZZ	4/1/2020	01:36:00	
J:\MS07\DATA\040120\0401F004.D\	Continuing Calibration Verification	KQ2004550-02	4/1/2020	03:41:00	
J:\MS07\DATA\040120\0401F005.D\	Method Blank	KQ2004024-04	4/1/2020	04:23:00	
J:\MS07\DATA\040120\0401F006.D\	Lab Control Sample	KQ2004024-03	4/1/2020	05:05:00	
J:\MS07\DATA\040120\0401F007.D\	FTP-1-20200318 MS	KQ2004024-01	4/1/2020	05:46:00	
J:\MS07\DATA\040120\0401F008.D\	FTP-1-20200318 DMS	KQ2004024-02	4/1/2020	06:28:00	
J:\MS07\DATA\040120\0401F009.D\	FTP-1-20200318	K2002465-001	4/1/2020	07:10:00	
J:\MS07\DATA\040120\0401F010.D\	FTP-1A-20200318	K2002465-002	4/1/2020	07:52:00	
J:\MS07\DATA\040120\0401F012.D\	Continuing Cal. Verification	KQ2004550-03	4/1/2020	11:57:00	

Prep Summary Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002465
Project: JBLM/6304305
Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Prep Method: EPA 3520C **Extraction Lot:** 355729
Analytical Method: 8270D **Extraction Date:** 03/23/20 10:28

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
FTP-1-20200318	K2002465-001	3/18/20	3/20/20	1020.0000	1 mL	
FTP-1A-20200318	K2002465-002	3/18/20	3/20/20	1050.0000	1 mL	
Matrix Spike	KQ2004024-01MS	3/18/20	3/20/20	1020.0000	1 mL	
Duplicate Matrix Spike	KQ2004024-02DMS	3/18/20	3/20/20	1050.0000	1 mL	
Lab Control Sample	KQ2004024-03LCS	NA	NA	1000 mL	1 mL	
Method Blank	KQ2004024-04MB	NA	NA	1050.0000	1 mL	

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DATA VALIDATION REPORT COVER
SAMPLE DELIVERY GROUP: K2002465

PROJECT NAME: Environmental Remediation Program Services, Joint Base Lewis McChord and Yakima Training Center, Washington

SITE NAME: Former Fire Training Pit, Yakima Training Center, Washington

LABORATORY: ALS Environmental Laboratories, Inc., Kelso, Washington

REPORT DATE: 10 April 2020

PROJECT MANAGER: Garrett Lee, EA Engineering, Science, and Technology, Inc., PBC (email: glee@eaest.com)

CONTRACTOR OFFICE: EA Engineering, Science, and Technology, Inc., PBC
2200 6th Avenue, Suite 707, Seattle, Washington, 98121

REVIEWER: Sean Arnold, Project Scientist, EA Engineering, Science, and Technology, Inc., PBC (email: sarnold@eaest.com)

VALIDATION STAGE: S2AVM

REVIEW DATE: 30 April 2020

Four groundwater sample as well as one field duplicate and one trip blank were collected on 17 and 18 March 2020 in support of the Environmental Remediation Program Services for Yakima Training Center in Washington. The samples were delivered to ALS Environmental in Kelso, Washington for the analyses indicated in the table below. Table 1 below provides a list of the field sample identification (ID), sample ID, matrix, sample collection date, and analyses performed.

Table 1. Sample Summary Table

Field Sample ID	Lab Sample ID	Matrix	Date Collected	Analyses Performed
FTP-1-20200318	K2002465-001	Groundwater	18 March 2020	VOCs, SVOCs, GRO, DRO, and RRO
FTP-1A-20200318	K2002465-002	Field duplicate	18 March 2020	VOCs, SVOCs, GRO, DRO, and RRO
FTP-16-20200318	K2002465-003	Groundwater	18 March 2020	GRO, DRO, and RRO
FTP-14-20200317	K2002465-004	Groundwater	17 March 2020	GRO, DRO, and RRO
FTP-15-20200317	K2002465-005	Groundwater	17 March 2020	GRO, DRO, and RRO
FTP-TB-001-20200317	K2002465-006	Trip blank	17 March 2020	GRO

Notes:
VOCs – volatile organic compounds
SVOCs – semivolatile organic compounds
GRO – gasoline range organics
DRO/RRO – diesel range organics and residual range organics

1. DATA VALIDATION REPORT

The analytical data presented in Sample Delivery Group (SDG) K2002465 were reviewed with respect to quality assurance/quality control (QC) parameters specified in the 2018 *Programmatic Quality Assurance Project Plan* for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington (QAPP). In addition, the following guidance documents were used while assessing the validity of these data: U.S. Department of Defense (DoD), General Data Validation Guidelines, November 2019; DoD Quality Systems Manual, Version 5.1, January 2017; U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Superfund Organic Methods Data Review, 2017; and the USEPA Office of Solid Waste, SW-846 Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, April 1998 and updates, as well as the referenced methodology.

Section 1 of this data validation report identifies the criteria reviewed for analyses of target analytes by the corresponding method. Section 2 provides definitions of data qualifiers that may be applied to analytical results based on the validation process. Section 3 provides an assessment of the overall data quality and a summary of final data qualification if any, and Section 4 provides the references to the guidelines and documents used in performing the data review.

The items listed below were evaluated for the Stage 2A (S2AVM) manual validation review as defined in the DoD General Data Validation Guidelines (2019), as applicable to the analytical method.

- Deliverables
- Condition of sample at laboratory receipt
- Holding times
- Method blanks
- Matrix spikes (MSs), matrix spike duplicates (MSDs), and laboratory replicates
- Surrogates
- Laboratory control samples (LCSs)
- Field QC samples
- Overall assessment of data.

2. GLOSSARY OF DATA QUALIFIERS

The following definitions provide a brief explanation for the data qualifiers that may be used during the review process. The definitions are consistent with the DoD Data Validation Guidelines (2019).

No Qualifier	Indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was not detected and is reported as less than the limit of detection (LOD). The LOD is been adjusted for dilution or concentration of the sample.
J	The reported result is an estimated value.
UJ	The analyte was not detected and is reported as less than the associated estimated numerical value.
R	The sample results are unusable to achieve project data quality objectives based on certain QC criteria outside of acceptance limits. The analyte may or may not be present in the sample.

3. DATA VALIDATION SUMMARY

Analytical results were reviewed for the criteria listed in Section 1.0. A discussion of the data is presented below.

3.1 DELIVERABLES

The data package for this SDG is complete.

3.2 CONDITION OF SAMPLE AT LABORATORY RECEIPT

The sample cooler(s) and the samples contained within were received at the laboratory with the proper chemical preservative at temperatures within the recommended range of $\leq$6 degrees Celsius and not frozen. Note that the volatile organic analyte vials received for GRO analysis were received with headspace. No qualification of sample data is necessary on the basis of the condition upon sample receipt or chain of custody.

3.3 VOLATILE ORGANIC COMPOUNDS

Project samples were prepared and analyzed for volatile organic compounds (VOCs) according to SW8260C.

3.3.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.3.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (< ½ limit of quantitation [LOQ]). However, there are low-level detectable results for carbon disulfide and naphthalene in the method blank. The detectable results for carbon disulfide for project samples are less than five times the associated blank results and have been flagged with the UJ qualifier. No qualification has been performed for naphthalene as the results for project samples are greater than five times the method blank result.

3.3.3 Matrix Spikes

Sample FTP-1-20200318 was selected for spiking for the MS/MSD samples. The percent recoveries (%Rs) and relative percent differences (RPDs) are within the QAPP-specified QC limits, with the following exceptions.

- %Rs for acetone (MSD only), 1,2-dibromo-3-chloropropane (MS/MSD), 4-methyl-2-pentanone naphthalene (MSD only), toluene (MS only), 1,2,3-trimethylbenzene (MSD only), and 1,2,4-trimethylbenzene (MS only) are above the QAPP-specified QC criteria for MS and/or MSD. The associated sample results that are above the LOQ have been flagged with the J qualifier due to evidence of potential high bias.

- RPDs for MS/MSD results are outside QAPP-specified QC limits for 1,2-dibromo-3-chloropropane, toluene, 1,2,4-trichlorobenzene, and m- and p-xylenes. The associated sample results are nondetectable and no qualification has been performed on the basis of MS/MSD RPDs.

3.3.4 Surrogates

Surrogates were added to environmental and QC samples and standards for the analysis of VOCs as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits for project samples.

3.3.5 Laboratory Control Samples

LCSs (one set per preparation batch) were prepared and analyzed as recommended by the referenced method. The %Rs and RPDs for LCSs are within the QAPP-specified QC limits, with the following exception. The RPDs for toluene and trans-1,3-dichloropropene are above the QAPP-specified QC limits for the LCS set associated with project samples. The associated sample results are nondetectable and no qualification has been performed.

3.3.6 Field Quality Control Samples

A field duplicate was collected and identified as FTP-1A-20200318 and the associated parent sample is FTP-1-20200318. The RPDs between the parent and duplicate sample results are within the QAPP-specified QC limits.

The trip blank that was included with this sample shipment was not analyzed for VOCs.

3.4 SEMIVOLATILE ORGANIC COMPOUNDS

Project samples were prepared and analyzed for semivolatile organic compounds (SVOC) according to SW8270D.

3.4.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.4.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank result is within the QAPP-specified QC limit (< ½ limit of quantitation [LOQ]).

3.4.3 Matrix Spikes

Sample FTP-1-20190923 was selected for spiking for the MS and matrix spike duplicate (MSD) samples. The %Rs and RPDs are within the QAPP-specified QC limits, or %Rs are above QC limits, and the associate sample results are nondetectable, with the following exceptions.

%Rs for MS and/or MSD are below the QAPP-specified QC limits for 3,3'-dichlorobenzidine (MS/MSD), 4-bromophenyl phenyl ether (MS only), anthracene (MS only), benzo(a)pyrene (MS

only), benzo(k)fluoranthene (MS only), and hexachlorobenzene (MS only). These target analytes were not detected in the spiked project sample. For %Rs above 20 percent, the sample results are flagged UJ, indicating that the analyte was not detected and was reported as less than the associated estimated numerical value. For %Rs below 20 percent, the sample results are flagged R indicating that the results are unusable to achieve project data quality objectives.

3.4.4 Surrogates

Surrogates were added to environmental and QC samples and standards as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits for samples reported within this SDG.

3.4.5 Laboratory Control Samples

An LCS (one per preparation batch) was prepared and analyzed as recommended by the referenced method. The %Rs for LCS are within the QAPP-specified QC limits.

3.4.6 Field Quality Control Samples

A field duplicate was collected and identified as FTP-1A-20200318 and the associated parent sample is FTP-1-20200318. The RPDs between the parent and duplicate sample results were not calculated as the results were below the LOQ.

3.5 GASOLINE RANGE ORGANICS

Project samples were prepared and analyzed for gasoline range organics (GRO) according to NWTPH-Gx.

3.5.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.5.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (<½LOQ).

3.5.3 Laboratory Replicate

Sample FTP-1-20190923 was selected for the preparation of a laboratory replicate. The laboratory replicate RPD is within the QAPP-specified QC limits.

3.5.4 Surrogates

A surrogate was added to environmental and QC samples and standards for the analysis of GRO as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits.

3.5.5 Laboratory Control Samples

An LCS was prepared and analyzed as recommended by the referenced method. The %R for the LCS is within the QAPP-specified QC limits.

3.5.6 Field Quality Control Samples

One field duplicate was collected and identified as FTP-1A-20200318 and the associated parent sample FTP-1-20200318. The RPDs between the parent and duplicate sample results are within the QAPP-specified QC limits.

One trip blank was included in this SDG (FTP-TB-001-20200317). The analytical result for the trip blank is nondetectable and below ½ LOQ.

3.6 DIESEL RANGE ORGANICS AND RESIDUAL RANGE ORGANICS

Project samples were prepared and analyzed for diesel range organics (DRO) and residual range organics (RRO) according to NWTPH-Dx.

3.6.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.6.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (<½ LOQ).

3.6.3 Matrix Spikes and Laboratory Duplicate

Sample FTP-1-20190923 was selected for spiking of the MS/MSD samples and for the preparation of a laboratory duplicate. The %Rs and RPDs for the results of these QC samples are within the QAPP-specified QC limits, with the following exceptions.

- The %R for DRO for the MS was reported above the QAPP-specified QC criteria. The associated sample result was greater than four times the spike amount; therefore, no qualification has been performed.
- The %Rs for RRO for the MS/MSD were reported above the QAPP-specified QC criteria. The associated sample result for the sample selected for spiking is flagged with the J qualifier as estimated with potential high bias.

3.6.4 Surrogates

Surrogates were added to environmental and QC samples and standards for the analysis of organic compounds as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits.

3.6.5 Laboratory Control Samples

An LCS was prepared and analyzed as recommended by the referenced method. The %Rs for the LCS are within the QAPP-specified QC limits.

3.6.6 Field Quality Control Samples

One field duplicate was collected and identified as FTP-1A-20200318 and the associated parent sample FTP-1-20200318. The RPDs between the parent and duplicate sample results are within the QAPP-specified QC limits.

4. OVERALL ASSESSMENT OF DATA

The qualification of sample results was performed during data validation, as necessary. The data are acceptable and meet the project data quality objectives and are usable to support project decision-making, with the except of a result that is flagged with the R qualifier as unusable. Note that one sample result for 3,3'-dichlorobenzidine was flagged with R qualifier. 3,3'-dichlorobenzidine has been identified as a poor performer.

The qualifiers added during data validation are summarized in Table 2.

Table 2. Qualifier Summary Table

Field Sample ID	Lab Sample ID	Analyte	Result (µg/L)	Validation Qualifier	Reason
FTP-1-20200318	K2002465-001	carbon disulfide	0.22 J	0.22 UJ	method blank
FTP-1-20200318	K2002465-001	naphthalene	40	J	MSD %R
FTP-1-20200318	K2002465-001	1,2,4-trimethylbenzene	36	J	MS %R
FTP-1-20200318	K2002465-001	3,3'-dichlorobenzidine	ND	R	MS/MSD %R<20%
FTP-1-20200318	K2002465-001	4-bromophenyl phenyl ether	ND	UJ	MS %R
FTP-1-20200318	K2002465-001	anthracene	ND	UJ	MS %R
FTP-1-20200318	K2002465-001	benzo(a)pyrene	ND	UJ	MS %R
FTP-1-20200318	K2002465-001	benzo(k)fluoranthene	ND	UJ	MS %R
FTP-1-20200318	K2002465-001	hexachlorobenzene	ND	UJ	MS %R
FTP-1-20200318	K2002465-001	RRO	2,700	J	MS/MSD %R
FTP-1A-2020318	K2002465-002	carbon disulfide	0.27 J	0.27 UJ	method blank

Notes:
µg/L = microgram(s) per liter
ND = non-detect
%R = percent recovery
RPD = relative percent difference

5. REFERENCES

EA Engineering, Science, and Technology, Inc., PBC. 2018. *Programmatic Quality Assurance Project Plan for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington*.

U.S. Department of Defense (DoD). 2019. *General Data Validation Guidelines*. Environmental Data Quality Workgroup. November.

———. 2017. *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 5.1*. January.

U.S. Environmental Protection Agency. 2017. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. OLEM 9355.0-136. EPA-540-R-2017-002. January.

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April 02, 2020 **Analytical Report for Service Request No:** K2002474

Garrett Lee
EA Engineering, Science and Technology
2200 6th Ave, Suite 707
Seattle, WA 98121

RE: JBLM / 6304305

Dear Garrett,

Enclosed are the results of the sample(s) submitted to our laboratory March 20, 2020
For your reference, these analyses have been assigned our service request number **K2002474.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mark Harris
Project Manager

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    Volatile Organic Compounds

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: EA Engineering, Science, and Technology (EAEST)
Project: JBLM
Sample Matrix: Water, Ground Water

Service Request: K2002474
Date Received: 03/20/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Fifteen water, ground water samples were received for analysis at ALS Environmental on 03/20/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Volatiles by GC/MS:

Method 8260C, Volatile Organic Compounds by GC/MS 03/31/2020: The Relative Percent Difference (RPD) for 1,2-Dibromo-3-chloropropane and Trichlorofluoromethane (CFC 11) in the replicate matrix spike analyses of sample TVR-7-20200318 was outside control criteria:25, and 21, of 20. All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Approved by _____ Date 04/02/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

CHAIN OF CUSTODY

K2002474 Page 1 of 2

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC #	Cooler # 1 of 1
Lab Quote #	Lab Job #:

Client / Reporting Information

Company Name	EA Engineering, Science, and Technology, Inc., PBC
Address	2200 6th Ave., Suite 707
City / State / Zip	Seattle / WA / 98121
Project Contact	Tim McCormack and per contract
Phone #	206-452-5350
Samplers's Name/Signature	Hannah Dennis Hannah Dennis

Project Information

Project Name	JBLM
Street	
City / State	Joint Base Lewis McChord / WA
Project #	6304305
Email	tmccormack@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com
Purchase Order #	17578

Lab Sample ID	Sample ID	Collection: Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	Analytical Information: 8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
1	TVR-POMONA-20200318	18-Mar-2020	14:00	HD	GW	3	3								X				
2	TVR-7-20200318	18-Mar-2020	14:12	HD	GW	3	3								X				
3	TVR-3-20200318	18-Mar-2020	14:22	HD	GW	3	3								X				
4	TVR-3A-20200318	18-Mar-2020	14:25	HD	GW	3	3								X				
5	TVR-PAIC-20200318	18-Mar-2020	14:30	HD	GW	3	3								X				
6	TVR-6-20200318	18-Mar-2020	14:40	HD	GW	3	3								X				
7	TVR-MTS-4-20200318	18-Mar-2020	16:40	HD	GW	3	3								X				
8	TVR-MTS-1-20200318	18-Mar-2020	17:00	HD	GW	3	3								X				
9	TVR-MTS-2-20200318	18-Mar-2020	17:08	HD	GW	3	3								X				
10	TVR-1-20200318	18-Mar-2020	17:20	HD	GW	3	3								X				
11	TVR-2-20200318	18-Mar-2020	17:30	HD	GW	3	3								X				

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Turnaround Time (Business days)	Data Deliverable Information	Comments / Remarks
standard	Level IV deliverable, Equis EDD and per contract	Samples from Site IRP / Phase 2021H / Task 2021B.

Sample Custody must be documented below each time samples change possession.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Hannah Dennis	3/19/20 11:45	1	2		2
3	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
			3	4		4
5	Relinquished by:	Date Time:	Received By:	On Ice Y / N	Trip Blank Y / N	Cooler Temp.
			5	Labels Match Coc? Y / N		____ oC

CHAIN OF CUSTODY

K2002474 Page 2 of 2

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC #	Cooler # 1 of 1
Lab Quote #	Lab Job #:

Client / Reporting Information

Company Name	EA Engineering, Science, and Technology, Inc., PBC
Address	2200 6th Ave., Suite 707
City / State / Zip	Seattle / WA / 98121
Project Contact	Tim McCormack and per contract
Phone #	206-452-5350
Samplers's Name/Signature	Hannah Dennis

Project Information

Project Name	JBLM
Street	
City / State	Joint Base Lewis McChord / WA
Project #	6304305
Email	tmccormack@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com
Purchase Order #	17578

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Lab Sample ID	Sample ID	Collection: Date	Collection: Time	Collection: Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	Analytical Information: 8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
12	TVR-5-20200318	18-Mar-2020	17:38	HD	GW	3	3								X				
13	TVR-MMP-1-20200319	19-Mar-2020	0835	HD	GW	3	3								X				
14	TVR-815-2-20200319	19-Mar-2020	08:45	HD	GW	3	3								X				
15	TVR-TB-001-20200318	18-Mar-2020	14:00	HD	W	2	2								X				TRIP BLANK

Turnaround Time (Business days): standard

Data Deliverable Information: Level IV deliverable, Equis EDD and per contract

Comments / Remarks: Samples from Site IRP / Phase 2021H / Task 2021B.

Sample Custody must be documented below each time samples change possession.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Hannah Dennis	3/19/20/11:45	1 0940 3/20/20	2		2
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3 3		3	4		4
Relinquished by:	Date Time:	Received By:	On Ice Y / N	Trip Blank Y / N	Cooler Temp.
5 5		5	Labels Match Coc? Y / N		____ °C

PC MH

Cooler Receipt and Preservation Form

Client EA Eng Service Request K20 024774

Received: 3/20/20 Opened: 3/20/20 By: BK Unloaded: 3/20/20 By: BK

1. Samples were received via? *USPS* *(Fed Ex)* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
4.1	–	–	–	–	398004880	1/2	391241484002	
4.6	–	–	–	–		2/4	391250309502	
1.8	–	–	–	–		2/2	391241484013	

4. Packing material: *Inserts* *(Baggies)* *(Bubble Wrap)* *Gel Packs* *(Wet Ice)* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y (N)
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
Trip blank	2 40mlVOA		X							

Notes, Discrepancies, & Resolutions: _____

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:00
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-POMONA-20200318	**Units:**	ug/L
Lab Code:	K2002474-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**5.5**	**J**	20	10	3.3	1	03/31/20 11:58	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 11:58	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 11:58	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 11:58	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 11:58	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 11:58	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 11:58	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 11:58	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 11:58	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 11:58	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 11:58	
Carbon Disulfide	**0.10**	**J**	0.50	0.20	0.069	1	03/31/20 11:58	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 11:58	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 11:58	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 11:58	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 11:58	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 11:58	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 11:58	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 11:58	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 11:58	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 11:58	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 11:58	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 11:58	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 11:58	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 11:58	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 11:58	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 11:58	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 11:58	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 11:58	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 11:58	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 11:58	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 11:58	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 11:58	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 11:58	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 11:58	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 11:58	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 11:58	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 11:58	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 11:58	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 11:58	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 11:58	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 11:58	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 11:58	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:00
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-POMONA-20200318	**Units:**	ug/L
Lab Code:	K2002474-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 11:58	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 11:58	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 11:58	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 11:58	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 11:58	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 11:58	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 11:58	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 11:58	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 11:58	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 11:58	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 11:58	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 11:58	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 11:58	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 11:58	
Trichloroethene (TCE)	ND U	0.50	0.10	0.10	1	03/31/20 11:58	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 11:58	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 11:58	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 11:58	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 11:58	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 11:58	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 11:58	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 11:58	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 114	03/31/20 11:58	
Dibromofluoromethane	97	80 - 119	03/31/20 11:58	
1,2-Dichloroethane-d4	87	81 - 118	03/31/20 11:58	
Toluene-d8	102	89 - 112	03/31/20 11:58	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:12
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-7-20200318	**Units:**	ug/L
Lab Code:	K2002474-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**19**	**J**	20	10	3.3	1	03/31/20 12:25	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 12:25	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 12:25	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 12:25	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 12:25	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 12:25	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 12:25	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 12:25	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 12:25	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 12:25	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 12:25	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	03/31/20 12:25	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 12:25	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 12:25	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 12:25	
Chloroform	**0.090**	**J**	0.50	0.20	0.072	1	03/31/20 12:25	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 12:25	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 12:25	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 12:25	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 12:25	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 12:25	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 12:25	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 12:25	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 12:25	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 12:25	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 12:25	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 12:25	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 12:25	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 12:25	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 12:25	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 12:25	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 12:25	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 12:25	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 12:25	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 12:25	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 12:25	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 12:25	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 12:25	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 12:25	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 12:25	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 12:25	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 12:25	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 12:25	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:12
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-7-20200318	**Units:**	ug/L
Lab Code:	K2002474-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 12:25	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 12:25	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 12:25	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 12:25	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 12:25	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 12:25	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 12:25	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 12:25	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 12:25	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 12:25	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 12:25	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 12:25	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 12:25	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 12:25	
Trichloroethene (TCE)	**2.6**	0.50	0.10	0.10	1	03/31/20 12:25	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 12:25	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 12:25	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 12:25	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 12:25	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 12:25	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 12:25	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 12:25	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	89	85 - 114	03/31/20 12:25	
Dibromofluoromethane	95	80 - 119	03/31/20 12:25	
1,2-Dichloroethane-d4	88	81 - 118	03/31/20 12:25	
Toluene-d8	101	89 - 112	03/31/20 12:25	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:22
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-3-20200318	**Units:**	ug/L
Lab Code:	K2002474-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**24**		20	10	3.3	1	03/31/20 14:11	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 14:11	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 14:11	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:11	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 14:11	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 14:11	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 14:11	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 14:11	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 14:11	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 14:11	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 14:11	
Carbon Disulfide	**0.11**	**J**	0.50	0.20	0.069	1	03/31/20 14:11	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 14:11	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 14:11	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:11	
Chloroform	**0.13**	**J**	0.50	0.20	0.072	1	03/31/20 14:11	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 14:11	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 14:11	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 14:11	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 14:11	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 14:11	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 14:11	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 14:11	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 14:11	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 14:11	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 14:11	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 14:11	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 14:11	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 14:11	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 14:11	
cis-1,2-Dichloroethene	**0.14**	**J**	0.50	0.20	0.067	1	03/31/20 14:11	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 14:11	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 14:11	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 14:11	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 14:11	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 14:11	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 14:11	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 14:11	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 14:11	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 14:11	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 14:11	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 14:11	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 14:11	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:22
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-3-20200318	**Units:**	ug/L
Lab Code:	K2002474-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 14:11	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 14:11	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 14:11	
Naphthalene	**0.24**	**J**	2.0	0.30	0.088	1	03/31/20 14:11	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 14:11	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 14:11	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 14:11	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:11	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 14:11	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 14:11	
1,2,3-Trichlorobenzene	**0.24**	**J**	2.0	0.40	0.11	1	03/31/20 14:11	
1,2,4-Trichlorobenzene	**0.10**	**J**	2.0	0.30	0.096	1	03/31/20 14:11	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 14:11	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 14:11	
Trichloroethene (TCE)	**4.3**		0.50	0.10	0.10	1	03/31/20 14:11	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 14:11	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 14:11	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 14:11	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 14:11	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 14:11	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 14:11	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 14:11	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 114	03/31/20 14:11	
Dibromofluoromethane	95	80 - 119	03/31/20 14:11	
1,2-Dichloroethane-d4	87	81 - 118	03/31/20 14:11	
Toluene-d8	97	89 - 112	03/31/20 14:11	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:25
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-3A-20200318	**Units:**	ug/L
Lab Code:	K2002474-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**26**		20	10	3.3	1	03/31/20 14:37	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 14:37	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 14:37	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:37	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 14:37	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 14:37	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 14:37	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 14:37	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 14:37	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 14:37	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 14:37	
Carbon Disulfide	**0.10**	**J**	0.50	0.20	0.069	1	03/31/20 14:37	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 14:37	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 14:37	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:37	
Chloroform	**0.13**	**J**	0.50	0.20	0.072	1	03/31/20 14:37	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 14:37	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 14:37	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 14:37	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 14:37	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 14:37	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 14:37	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 14:37	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 14:37	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 14:37	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 14:37	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 14:37	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 14:37	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 14:37	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 14:37	
cis-1,2-Dichloroethene	**0.14**	**J**	0.50	0.20	0.067	1	03/31/20 14:37	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 14:37	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 14:37	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 14:37	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 14:37	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 14:37	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 14:37	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 14:37	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 14:37	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 14:37	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 14:37	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 14:37	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 14:37	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:25
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-3A-20200318	**Units:**	ug/L
Lab Code:	K2002474-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 14:37	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 14:37	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 14:37	
Naphthalene	**0.090**	**J**	2.0	0.30	0.088	1	03/31/20 14:37	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 14:37	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 14:37	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 14:37	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 14:37	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 14:37	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 14:37	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 14:37	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 14:37	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 14:37	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 14:37	
Trichloroethene (TCE)	**4.5**		0.50	0.10	0.10	1	03/31/20 14:37	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 14:37	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 14:37	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 14:37	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 14:37	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 14:37	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 14:37	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 14:37	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 114	03/31/20 14:37	
Dibromofluoromethane	101	80 - 119	03/31/20 14:37	
1,2-Dichloroethane-d4	90	81 - 118	03/31/20 14:37	
Toluene-d8	102	89 - 112	03/31/20 14:37	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:30
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-PAIC-20200318	**Units:**	ug/L
Lab Code:	K2002474-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**3.7**	**J**	20	10	3.3	1	03/31/20 15:04	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 15:04	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 15:04	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:04	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 15:04	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 15:04	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 15:04	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 15:04	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 15:04	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 15:04	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 15:04	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	03/31/20 15:04	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 15:04	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 15:04	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:04	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 15:04	
Chloromethane	**0.070**	**J**	0.50	0.20	0.068	1	03/31/20 15:04	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 15:04	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 15:04	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 15:04	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 15:04	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 15:04	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 15:04	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:04	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 15:04	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:04	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 15:04	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 15:04	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 15:04	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 15:04	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 15:04	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 15:04	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 15:04	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 15:04	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 15:04	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 15:04	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 15:04	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 15:04	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 15:04	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 15:04	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 15:04	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 15:04	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 15:04	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:30
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-PAIC-20200318	**Units:**	ug/L
Lab Code:	K2002474-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 15:04	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 15:04	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 15:04	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 15:04	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 15:04	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 15:04	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 15:04	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 15:04	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 15:04	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 15:04	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 15:04	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 15:04	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 15:04	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 15:04	
Trichloroethene (TCE)	ND U	0.50	0.10	0.10	1	03/31/20 15:04	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 15:04	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 15:04	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 15:04	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 15:04	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 15:04	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 15:04	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 15:04	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	90	85 - 114	03/31/20 15:04	
Dibromofluoromethane	98	80 - 119	03/31/20 15:04	
1,2-Dichloroethane-d4	86	81 - 118	03/31/20 15:04	
Toluene-d8	101	89 - 112	03/31/20 15:04	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:40
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-6-20200318	**Units:**	ug/L
Lab Code:	K2002474-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**19**	**J**	20	10	3.3	1	03/31/20 15:30	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 15:30	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 15:30	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:30	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 15:30	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 15:30	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 15:30	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 15:30	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 15:30	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 15:30	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 15:30	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	03/31/20 15:30	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 15:30	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 15:30	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:30	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 15:30	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 15:30	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 15:30	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 15:30	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 15:30	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 15:30	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 15:30	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 15:30	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:30	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 15:30	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:30	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 15:30	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 15:30	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 15:30	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 15:30	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 15:30	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 15:30	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 15:30	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 15:30	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 15:30	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 15:30	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 15:30	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 15:30	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 15:30	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 15:30	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 15:30	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 15:30	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 15:30	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:40
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-6-20200318	**Units:**	ug/L
Lab Code:	K2002474-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 15:30	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 15:30	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 15:30	
Naphthalene	ND	U	2.0	0.30	0.088	1	03/31/20 15:30	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 15:30	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 15:30	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 15:30	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:30	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 15:30	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 15:30	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 15:30	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 15:30	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 15:30	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 15:30	
Trichloroethene (TCE)	**0.54**		0.50	0.10	0.10	1	03/31/20 15:30	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 15:30	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 15:30	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 15:30	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 15:30	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 15:30	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 15:30	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 15:30	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 114	03/31/20 15:30	
Dibromofluoromethane	96	80 - 119	03/31/20 15:30	
1,2-Dichloroethane-d4	87	81 - 118	03/31/20 15:30	
Toluene-d8	98	89 - 112	03/31/20 15:30	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 16:40
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-4-20200318	**Units:**	ug/L
Lab Code:	K2002474-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**17**	**J**	20	10	3.3	1	03/31/20 15:57	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 15:57	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 15:57	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:57	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 15:57	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 15:57	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 15:57	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 15:57	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 15:57	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 15:57	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 15:57	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	03/31/20 15:57	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 15:57	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 15:57	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:57	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 15:57	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 15:57	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 15:57	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 15:57	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 15:57	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 15:57	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 15:57	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 15:57	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:57	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 15:57	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 15:57	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 15:57	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 15:57	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 15:57	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 15:57	
cis-1,2-Dichloroethene	**0.14**	**J**	0.50	0.20	0.067	1	03/31/20 15:57	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 15:57	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 15:57	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 15:57	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 15:57	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 15:57	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 15:57	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 15:57	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 15:57	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 15:57	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 15:57	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 15:57	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 15:57	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 16:40
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-4-20200318	**Units:**	ug/L
Lab Code:	K2002474-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 15:57	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 15:57	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 15:57	
Naphthalene	ND	U	2.0	0.30	0.088	1	03/31/20 15:57	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 15:57	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 15:57	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 15:57	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 15:57	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 15:57	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 15:57	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 15:57	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 15:57	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 15:57	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 15:57	
Trichloroethene (TCE)	**4.3**		0.50	0.10	0.10	1	03/31/20 15:57	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 15:57	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 15:57	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 15:57	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 15:57	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 15:57	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 15:57	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 15:57	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	91	85 - 114	03/31/20 15:57	
Dibromofluoromethane	97	80 - 119	03/31/20 15:57	
1,2-Dichloroethane-d4	86	81 - 118	03/31/20 15:57	
Toluene-d8	104	89 - 112	03/31/20 15:57	

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:00
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-1-20200318	**Units:**	ug/L
Lab Code:	K2002474-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**18**	**J**	20	10	3.3	1	03/31/20 16:24	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 16:24	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 16:24	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 16:24	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 16:24	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 16:24	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 16:24	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 16:24	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 16:24	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 16:24	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 16:24	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	03/31/20 16:24	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 16:24	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 16:24	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 16:24	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 16:24	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 16:24	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 16:24	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 16:24	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 16:24	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 16:24	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 16:24	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 16:24	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 16:24	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 16:24	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 16:24	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 16:24	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 16:24	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 16:24	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 16:24	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 16:24	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 16:24	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 16:24	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 16:24	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 16:24	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 16:24	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 16:24	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 16:24	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 16:24	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 16:24	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 16:24	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 16:24	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 16:24	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:00
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-1-20200318	**Units:**	ug/L
Lab Code:	K2002474-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 16:24	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 16:24	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 16:24	
Naphthalene	ND	U	2.0	0.30	0.088	1	03/31/20 16:24	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 16:24	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 16:24	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 16:24	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 16:24	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 16:24	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 16:24	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 16:24	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 16:24	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 16:24	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 16:24	
Trichloroethene (TCE)	**3.2**		0.50	0.10	0.10	1	03/31/20 16:24	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 16:24	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 16:24	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 16:24	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 16:24	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 16:24	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 16:24	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 16:24	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	88	85 - 114	03/31/20 16:24	
Dibromofluoromethane	95	80 - 119	03/31/20 16:24	
1,2-Dichloroethane-d4	86	81 - 118	03/31/20 16:24	
Toluene-d8	101	89 - 112	03/31/20 16:24	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:08
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-2-20200318	**Units:**	ug/L
Lab Code:	K2002474-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**19**	**J**	20	10	3.3	1	03/31/20 16:50	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 16:50	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 16:50	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 16:50	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 16:50	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 16:50	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 16:50	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 16:50	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 16:50	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 16:50	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 16:50	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	03/31/20 16:50	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 16:50	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 16:50	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 16:50	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 16:50	
Chloromethane	**0.090**	**J**	0.50	0.20	0.068	1	03/31/20 16:50	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 16:50	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 16:50	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 16:50	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 16:50	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 16:50	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 16:50	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 16:50	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 16:50	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 16:50	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 16:50	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 16:50	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 16:50	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 16:50	
cis-1,2-Dichloroethene	**0.19**	**J**	0.50	0.20	0.067	1	03/31/20 16:50	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 16:50	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 16:50	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 16:50	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 16:50	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 16:50	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 16:50	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 16:50	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 16:50	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 16:50	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 16:50	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 16:50	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 16:50	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:08
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MTS-2-20200318	**Units:**	ug/L
Lab Code:	K2002474-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 16:50	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 16:50	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 16:50	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 16:50	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 16:50	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 16:50	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 16:50	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 16:50	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 16:50	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 16:50	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 16:50	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 16:50	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 16:50	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 16:50	
Trichloroethene (TCE)	**9.2**	0.50	0.10	0.10	1	03/31/20 16:50	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 16:50	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 16:50	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 16:50	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 16:50	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 16:50	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 16:50	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 16:50	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 114	03/31/20 16:50	
Dibromofluoromethane	93	80 - 119	03/31/20 16:50	
1,2-Dichloroethane-d4	89	81 - 118	03/31/20 16:50	
Toluene-d8	106	89 - 112	03/31/20 16:50	

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-1-20200318	**Units:**	ug/L
Lab Code:	K2002474-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**46**		20	10	3.3	1	03/31/20 17:17	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 17:17	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 17:17	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 17:17	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 17:17	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 17:17	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 17:17	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 17:17	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 17:17	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 17:17	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 17:17	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	03/31/20 17:17	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 17:17	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 17:17	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 17:17	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 17:17	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 17:17	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 17:17	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 17:17	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 17:17	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 17:17	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 17:17	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 17:17	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 17:17	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 17:17	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 17:17	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 17:17	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 17:17	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 17:17	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 17:17	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 17:17	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 17:17	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 17:17	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 17:17	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 17:17	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 17:17	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 17:17	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 17:17	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 17:17	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 17:17	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 17:17	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 17:17	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 17:17	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-1-20200318	**Units:**	ug/L
Lab Code:	K2002474-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 17:17	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 17:17	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 17:17	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 17:17	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 17:17	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 17:17	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 17:17	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 17:17	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 17:17	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 17:17	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 17:17	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 17:17	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 17:17	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 17:17	
Trichloroethene (TCE)	**7.0**	0.50	0.10	0.10	1	03/31/20 17:17	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 17:17	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 17:17	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 17:17	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 17:17	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 17:17	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 17:17	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 17:17	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	89	85 - 114	03/31/20 17:17	
Dibromofluoromethane	95	80 - 119	03/31/20 17:17	
1,2-Dichloroethane-d4	88	81 - 118	03/31/20 17:17	
Toluene-d8	102	89 - 112	03/31/20 17:17	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:30
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-2-20200318	**Units:**	ug/L
Lab Code:	K2002474-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**6.8**	**J**	20	10	3.3	1	03/31/20 17:43	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 17:43	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 17:43	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 17:43	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 17:43	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 17:43	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 17:43	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 17:43	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 17:43	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 17:43	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 17:43	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	03/31/20 17:43	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 17:43	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 17:43	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 17:43	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 17:43	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 17:43	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 17:43	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 17:43	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 17:43	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 17:43	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 17:43	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 17:43	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 17:43	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 17:43	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 17:43	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 17:43	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 17:43	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 17:43	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 17:43	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 17:43	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 17:43	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 17:43	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 17:43	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 17:43	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 17:43	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 17:43	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 17:43	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 17:43	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 17:43	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 17:43	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 17:43	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 17:43	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:30
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-2-20200318	**Units:**	ug/L
Lab Code:	K2002474-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 17:43	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 17:43	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 17:43	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 17:43	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 17:43	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 17:43	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 17:43	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 17:43	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 17:43	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 17:43	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 17:43	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 17:43	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 17:43	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 17:43	
Trichloroethene (TCE)	**2.4**	0.50	0.10	0.10	1	03/31/20 17:43	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 17:43	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 17:43	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 17:43	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 17:43	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 17:43	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 17:43	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 17:43	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	89	85 - 114	03/31/20 17:43	
Dibromofluoromethane	100	80 - 119	03/31/20 17:43	
1,2-Dichloroethane-d4	90	81 - 118	03/31/20 17:43	
Toluene-d8	103	89 - 112	03/31/20 17:43	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:38
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-5-20200318	**Units:**	ug/L
Lab Code:	K2002474-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**22**		20	10	3.3	1	03/31/20 18:10	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 18:10	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 18:10	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 18:10	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 18:10	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 18:10	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 18:10	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 18:10	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 18:10	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 18:10	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 18:10	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	03/31/20 18:10	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 18:10	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 18:10	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 18:10	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 18:10	
Chloromethane	**0.10**	**J**	0.50	0.20	0.068	1	03/31/20 18:10	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 18:10	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 18:10	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 18:10	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 18:10	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 18:10	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 18:10	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 18:10	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 18:10	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 18:10	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 18:10	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 18:10	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 18:10	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 18:10	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 18:10	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 18:10	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 18:10	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 18:10	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 18:10	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 18:10	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 18:10	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 18:10	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 18:10	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 18:10	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 18:10	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 18:10	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 18:10	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 17:38
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-5-20200318	**Units:**	ug/L
Lab Code:	K2002474-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 18:10	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 18:10	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 18:10	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 18:10	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 18:10	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 18:10	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 18:10	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 18:10	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 18:10	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 18:10	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 18:10	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 18:10	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 18:10	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 18:10	
Trichloroethene (TCE)	ND U	0.50	0.10	0.10	1	03/31/20 18:10	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 18:10	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 18:10	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 18:10	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 18:10	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 18:10	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 18:10	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 18:10	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	03/31/20 18:10	
Dibromofluoromethane	98	80 - 119	03/31/20 18:10	
1,2-Dichloroethane-d4	90	81 - 118	03/31/20 18:10	
Toluene-d8	99	89 - 112	03/31/20 18:10	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/19/20 08:35
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MMP-1-20200319	**Units:**	ug/L
Lab Code:	K2002474-013	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**7.7**	**J**	20	10	3.3	1	03/31/20 18:36	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 18:36	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 18:36	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 18:36	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 18:36	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 18:36	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 18:36	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 18:36	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 18:36	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 18:36	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 18:36	
Carbon Disulfide	**0.090**	**J**	0.50	0.20	0.069	1	03/31/20 18:36	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 18:36	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 18:36	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 18:36	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 18:36	
Chloromethane	**0.10**	**J**	0.50	0.20	0.068	1	03/31/20 18:36	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 18:36	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 18:36	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 18:36	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 18:36	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 18:36	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 18:36	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 18:36	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 18:36	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 18:36	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 18:36	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 18:36	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 18:36	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 18:36	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 18:36	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 18:36	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 18:36	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 18:36	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 18:36	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 18:36	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 18:36	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 18:36	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 18:36	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 18:36	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 18:36	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 18:36	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 18:36	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/19/20 08:35
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-MMP-1-20200319	**Units:**	ug/L
Lab Code:	K2002474-013	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND U	0.50	0.30	0.11	1	03/31/20 18:36	
4-Methyl-2-pentanone (MIBK)	ND U	20	10	2.6	1	03/31/20 18:36	
Methylene Chloride	ND U	2.0	0.20	0.10	1	03/31/20 18:36	
Naphthalene	ND U	2.0	0.30	0.088	1	03/31/20 18:36	
n-Propylbenzene	ND U	2.0	0.20	0.054	1	03/31/20 18:36	
Styrene	ND U	0.50	0.20	0.089	1	03/31/20 18:36	
1,1,1,2-Tetrachloroethane	ND U	0.50	0.20	0.11	1	03/31/20 18:36	
1,1,2,2-Tetrachloroethane	ND U	0.50	0.20	0.16	1	03/31/20 18:36	
Tetrachloroethene (PCE)	ND U	0.50	0.20	0.099	1	03/31/20 18:36	
Toluene	ND U	0.50	0.10	0.054	1	03/31/20 18:36	
1,2,3-Trichlorobenzene	ND U	2.0	0.40	0.11	1	03/31/20 18:36	
1,2,4-Trichlorobenzene	ND U	2.0	0.30	0.096	1	03/31/20 18:36	
1,1,2-Trichloroethane	ND U	0.50	0.40	0.14	1	03/31/20 18:36	
1,1,1-Trichloroethane (TCA)	ND U	0.50	0.20	0.075	1	03/31/20 18:36	
Trichloroethene (TCE)	ND U	0.50	0.10	0.10	1	03/31/20 18:36	
Trichlorofluoromethane (CFC 11)	ND U	0.50	0.20	0.12	1	03/31/20 18:36	
1,2,3-Trichloropropane	ND U	0.50	0.30	0.20	1	03/31/20 18:36	
1,2,4-Trimethylbenzene	ND U	2.0	0.20	0.069	1	03/31/20 18:36	
1,3,5-Trimethylbenzene	ND U	2.0	0.20	0.089	1	03/31/20 18:36	
Vinyl Chloride	ND U	0.50	0.10	0.075	1	03/31/20 18:36	
o-Xylene	ND U	0.50	0.20	0.074	1	03/31/20 18:36	
m,p-Xylenes	ND U	0.50	0.20	0.11	1	03/31/20 18:36	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	88	85 - 114	03/31/20 18:36	
Dibromofluoromethane	97	80 - 119	03/31/20 18:36	
1,2-Dichloroethane-d4	89	81 - 118	03/31/20 18:36	
Toluene-d8	99	89 - 112	03/31/20 18:36	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/19/20 08:45
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-815-2-20200319	**Units:**	ug/L
Lab Code:	K2002474-014	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**19**	**J**	20	10	3.3	1	03/31/20 19:03	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 19:03	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 19:03	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:03	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 19:03	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 19:03	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 19:03	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 19:03	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 19:03	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 19:03	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 19:03	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	03/31/20 19:03	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 19:03	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 19:03	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:03	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 19:03	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 19:03	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 19:03	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 19:03	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 19:03	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 19:03	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 19:03	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 19:03	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 19:03	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 19:03	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 19:03	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 19:03	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 19:03	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 19:03	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 19:03	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 19:03	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 19:03	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 19:03	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 19:03	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 19:03	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 19:03	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 19:03	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 19:03	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 19:03	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 19:03	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 19:03	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 19:03	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 19:03	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/19/20 08:45
Sample Matrix:	Ground Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-815-2-20200319	**Units:**	ug/L
Lab Code:	K2002474-014	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 19:03	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 19:03	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	03/31/20 19:03	
Naphthalene	ND	U	2.0	0.30	0.088	1	03/31/20 19:03	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 19:03	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 19:03	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 19:03	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:03	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 19:03	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 19:03	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 19:03	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 19:03	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 19:03	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 19:03	
Trichloroethene (TCE)	**0.26**	**J**	0.50	0.10	0.10	1	03/31/20 19:03	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 19:03	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 19:03	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 19:03	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 19:03	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 19:03	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 19:03	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 19:03	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	88	85 - 114	03/31/20 19:03	
Dibromofluoromethane	96	80 - 119	03/31/20 19:03	
1,2-Dichloroethane-d4	88	81 - 118	03/31/20 19:03	
Toluene-d8	103	89 - 112	03/31/20 19:03	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:00
Sample Matrix:	Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-TB-001-20200318	**Units:**	ug/L
Lab Code:	K2002474-015	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**6.6**	**J**	20	10	3.3	1	03/31/20 19:30	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 19:30	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 19:30	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:30	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 19:30	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 19:30	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 19:30	
2-Butanone (MEK)	**2.5**	**J**	20	4.0	1.9	1	03/31/20 19:30	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 19:30	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 19:30	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 19:30	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	03/31/20 19:30	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 19:30	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 19:30	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:30	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 19:30	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 19:30	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 19:30	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 19:30	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 19:30	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 19:30	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 19:30	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 19:30	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 19:30	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 19:30	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 19:30	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 19:30	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 19:30	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 19:30	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 19:30	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 19:30	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 19:30	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 19:30	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 19:30	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 19:30	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 19:30	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 19:30	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 19:30	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 19:30	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 19:30	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 19:30	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 19:30	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 19:30	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20 14:00
Sample Matrix:	Water	**Date Received:**	03/20/20 09:40
Sample Name:	TVR-TB-001-20200318	**Units:**	ug/L
Lab Code:	K2002474-015	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 19:30	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 19:30	
Methylene Chloride	**0.22**	**J**	2.0	0.20	0.10	1	03/31/20 19:30	
Naphthalene	ND	U	2.0	0.30	0.088	1	03/31/20 19:30	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 19:30	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 19:30	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 19:30	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 19:30	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 19:30	
Toluene	**0.15**	**J**	0.50	0.10	0.054	1	03/31/20 19:30	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 19:30	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 19:30	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 19:30	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 19:30	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	03/31/20 19:30	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 19:30	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 19:30	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 19:30	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 19:30	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 19:30	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 19:30	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 19:30	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	89	85 - 114	03/31/20 19:30	
Dibromofluoromethane	96	80 - 119	03/31/20 19:30	
1,2-Dichloroethane-d4	89	81 - 118	03/31/20 19:30	
Toluene-d8	101	89 - 112	03/31/20 19:30	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004457-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	ND	U	20	10	3.3	1	03/31/20 11:31	
Benzene	ND	U	0.50	0.10	0.062	1	03/31/20 11:31	
Bromobenzene	ND	U	2.0	0.20	0.12	1	03/31/20 11:31	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	03/31/20 11:31	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	03/31/20 11:31	
Bromoform	ND	U	0.50	0.30	0.16	1	03/31/20 11:31	
Bromomethane	ND	U	0.50	0.30	0.16	1	03/31/20 11:31	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	03/31/20 11:31	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	03/31/20 11:31	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	03/31/20 11:31	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	03/31/20 11:31	
Carbon Disulfide	**0.10**	**J**	0.50	0.20	0.069	1	03/31/20 11:31	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	03/31/20 11:31	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	03/31/20 11:31	
Chloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 11:31	
Chloroform	ND	U	0.50	0.20	0.072	1	03/31/20 11:31	
Chloromethane	ND	U	0.50	0.20	0.068	1	03/31/20 11:31	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	03/31/20 11:31	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	03/31/20 11:31	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	03/31/20 11:31	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	03/31/20 11:31	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	03/31/20 11:31	
Dibromomethane	ND	U	0.50	0.30	0.15	1	03/31/20 11:31	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 11:31	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	03/31/20 11:31	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	03/31/20 11:31	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	03/31/20 11:31	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	03/31/20 11:31	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	03/31/20 11:31	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	03/31/20 11:31	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	03/31/20 11:31	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	03/31/20 11:31	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	03/31/20 11:31	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	03/31/20 11:31	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	03/31/20 11:31	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	03/31/20 11:31	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	03/31/20 11:31	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	03/31/20 11:31	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	03/31/20 11:31	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	03/31/20 11:31	
2-Hexanone	ND	U	20	10	2.7	1	03/31/20 11:31	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	03/31/20 11:31	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	03/31/20 11:31	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2004457-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	03/31/20 11:31	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	03/31/20 11:31	
Methylene Chloride	**0.17**	**J**	2.0	0.20	0.10	1	03/31/20 11:31	
Naphthalene	**0.10**	**J**	2.0	0.30	0.088	1	03/31/20 11:31	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	03/31/20 11:31	
Styrene	ND	U	0.50	0.20	0.089	1	03/31/20 11:31	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	03/31/20 11:31	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	03/31/20 11:31	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	03/31/20 11:31	
Toluene	ND	U	0.50	0.10	0.054	1	03/31/20 11:31	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	03/31/20 11:31	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	03/31/20 11:31	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	03/31/20 11:31	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	03/31/20 11:31	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	03/31/20 11:31	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	03/31/20 11:31	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	03/31/20 11:31	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	03/31/20 11:31	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	03/31/20 11:31	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	03/31/20 11:31	
o-Xylene	ND	U	0.50	0.20	0.074	1	03/31/20 11:31	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	03/31/20 11:31	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 114	03/31/20 11:31	
Dibromofluoromethane	96	80 - 119	03/31/20 11:31	
1,2-Dichloroethane-d4	88	81 - 118	03/31/20 11:31	
Toluene-d8	101	89 - 112	03/31/20 11:31	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene 85-114	Dibromofluoromethane 80-119	1,2-Dichloroethane-d4 81-118
TVR-POMONA-20200318	K2002474-001	92	97	87
TVR-7-20200318	K2002474-002	89	95	88
TVR-3-20200318	K2002474-003	92	95	87
TVR-3A-20200318	K2002474-004	93	101	90
TVR-PAIC-20200318	K2002474-005	90	98	86
TVR-6-20200318	K2002474-006	93	96	87
TVR-MTS-4-20200318	K2002474-007	91	97	86
TVR-MTS-1-20200318	K2002474-008	88	95	86
TVR-MTS-2-20200318	K2002474-009	93	93	89
TVR-1-20200318	K2002474-010	89	95	88
TVR-2-20200318	K2002474-011	89	100	90
TVR-5-20200318	K2002474-012	86	98	90
TVR-MMP-1-20200319	K2002474-013	88	97	89
TVR-815-2-20200319	K2002474-014	88	96	88
Method Blank	KQ2004457-07	92	96	88
Lab Control Sample	KQ2004457-05	92	102	89
Duplicate Lab Control Sample	KQ2004457-06	94	105	87
TVR-7-20200318	KQ2004457-01	94	101	86
TVR-7-20200318	KQ2004457-02	90	98	87

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	Toluene-d8 89-112
TVR-POMONA-20200318	K2002474-001	102
TVR-7-20200318	K2002474-002	101
TVR-3-20200318	K2002474-003	97
TVR-3A-20200318	K2002474-004	102
TVR-PAIC-20200318	K2002474-005	101
TVR-6-20200318	K2002474-006	98
TVR-MTS-4-20200318	K2002474-007	104
TVR-MTS-1-20200318	K2002474-008	101
TVR-MTS-2-20200318	K2002474-009	106
TVR-1-20200318	K2002474-010	102
TVR-2-20200318	K2002474-011	103
TVR-5-20200318	K2002474-012	99
TVR-MMP-1-20200319	K2002474-013	99
TVR-815-2-20200319	K2002474-014	103
Method Blank	KQ2004457-07	101
Lab Control Sample	KQ2004457-05	102
Duplicate Lab Control Sample	KQ2004457-06	102
TVR-7-20200318	KQ2004457-01	100
TVR-7-20200318	KQ2004457-02	100

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene 85-114	Dibromofluoromethane 80-119	1,2-Dichloroethane-d4 81-118
TVR-TB-001-20200318	K2002474-015	89	96	89

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	Toluene-d8 89-112
TVR-TB-001-20200318	K2002474-015	101

QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002474
Project: JBLM/6304305 **Date Analyzed:**03/31/20 09:18

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\033120\0331F004.D\ **Lab Code:**KQ2004457-04
Instrument ID: K-MS-13 **Analysis Lot:**675290
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Calibration Verification	KQ2004457-04	84116	9.37	68646	11.96	231592	5.33
Lab Control Sample	KQ2004457-05	86794	9.37	70772	11.96	230435	5.33
Duplicate Lab Control Sample	KQ2004457-06	89042	9.37	72139	11.96	236406	5.33
Method Blank	KQ2004457-07	85668	9.37	68916	11.96	230425	5.33
TVR-POMONA-20200318	K2002474-001	86330	9.37	65289	11.96	231852	5.33
TVR-7-20200318	K2002474-002	82002	9.37	62714	11.96	218905	5.33
TVR-7-20200318MS	KQ2004457-01	83034	9.37	71524	11.96	231986	5.33
TVR-7-20200318DMS	KQ2004457-02	86913	9.37	70057	11.96	232536	5.33
TVR-3-20200318	K2002474-003	82154	9.37	63831	11.96	232149	5.33
TVR-3A-20200318	K2002474-004	82063	9.37	65830	11.96	222023	5.33
TVR-PAIC-20200318	K2002474-005	80693	9.37	65050	11.96	222301	5.33
TVR-6-20200318	K2002474-006	82713	9.37	65740	11.96	230938	5.33
TVR-MTS-4-20200318	K2002474-007	81244	9.37	64347	11.96	225764	5.33
TVR-MTS-1-20200318	K2002474-008	83519	9.37	65036	11.96	230683	5.33
TVR-MTS-2-20200318	K2002474-009	84890	9.37	65834	11.96	232260	5.33
TVR-1-20200318	K2002474-010	80316	9.37	63577	11.96	213942	5.33
TVR-2-20200318	K2002474-011	79936	9.37	60753	11.96	212243	5.33
TVR-5-20200318	K2002474-012	80892	9.37	64346	11.96	211974	5.33
TVR-MMP-1-20200319	K2002474-013	78722	9.37	59914	11.96	209629	5.33
TVR-815-2-20200319	K2002474-014	79071	9.37	59389	11.96	207226	5.33
TVR-TB-001-20200318	K2002474-015	79790	9.37	63064	11.96	212259	5.33

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002474
Project: JBLM/6304305 **Date Analyzed:**03/31/20 19:56

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\033120\0331F028.D\ **Lab Code:**KQ2004457-08
Instrument ID: K-MS-13 **Analysis Lot:**675290
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Cal. Verification	KQ2004457-08	83736	9.37	68330	11.96	225302	5.33

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	03/31/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	TVR-7-20200318	**Units:**	ug/L
Lab Code:	K2002474-002	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike KQ2004457-01			Duplicate Matrix Spike KQ2004457-02				
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Acetone	19 J	77.7	50.0	117	76.6	50.0	115	39-160	1	20
Benzene	ND U	10.0	10.0	100	9.54	10.0	95	79-120	5	20
Bromobenzene	ND U	9.78	10.0	98	10.1	10.0	101	80-120	3	20
Bromochloromethane	ND U	10.1	10.0	101	10.5	10.0	105	78-123	4	20
Bromodichloromethane	ND U	10.2	10.0	102	10.1	10.0	101	79-127	2	20
Bromoform	ND U	10.7	10.0	107	10.8	10.0	108	66-130	<1	20
Bromomethane	ND U	10.0	10.0	100	9.68	10.0	97	53-141	3	20
2-Butanone (MEK)	ND U	56.0	50.0	112	56.9	50.0	114	56-143	2	20
n-Butylbenzene	ND U	9.31	10.0	93	9.38	10.0	94	75-128	<1	20
sec-Butylbenzene	ND U	9.51	10.0	95	10.2	10.0	102	77-126	7	20
tert-Butylbenzene	ND U	9.70	10.0	97	10.1	10.0	101	78-124	4	20
Carbon Disulfide	0.080 J	21.3	20.0	106	20.0	20.0	100	64-133	6	20
Carbon Tetrachloride	ND U	11.1	10.0	111	10.6	10.0	106	72-136	4	20
Chlorobenzene	ND U	10.2	10.0	102	9.35	10.0	94	82-118	9	20
Chloroethane	ND U	12.2	10.0	122	11.6	10.0	116	60-138	5	20
Chloroform	0.090 J	10.2	10.0	101	9.71	10.0	96	79-124	5	20
Chloromethane	ND U	9.82	10.0	98	9.63	10.0	96	50-139	2	20
2-Chlorotoluene	ND U	9.03	10.0	90	9.39	10.0	94	79-122	4	20
4-Chlorotoluene	ND U	9.26	10.0	93	9.08	10.0	91	78-122	2	20
1,2-Dibromo-3-chloropropane	ND U	7.08	10.0	71	9.13	10.0	91	62-128	25*	20
Dibromochloromethane	ND U	11.7	10.0	117	10.6	10.0	106	74-126	9	20
1,2-Dibromoethane (EDB)	ND U	9.43	10.0	94	9.04	10.0	90	77-121	4	20
Dibromomethane	ND U	9.47	10.0	95	9.25	10.0	93	79-123	2	20
1,2-Dichlorobenzene	ND U	9.48	10.0	95	9.65	10.0	97	80-119	2	20
1,3-Dichlorobenzene	ND U	9.46	10.0	95	9.52	10.0	95	80-119	<1	20
1,4-Dichlorobenzene	ND U	9.52	10.0	95	9.50	10.0	95	79-118	<1	20
Dichlorodifluoromethane	ND U	9.20	10.0	92	8.48	10.0	85	32-152	8	20
1,1-Dichloroethane	ND U	9.66	10.0	97	9.21	10.0	92	77-125	5	20
1,2-Dichloroethane (EDC)	ND U	8.99	10.0	90	8.89	10.0	89	73-128	1	20
1,1-Dichloroethene	ND U	9.35	10.0	94	9.31	10.0	93	71-131	<1	20
cis-1,2-Dichloroethene	ND U	10.1	10.0	101	9.51	10.0	95	78-123	6	20
trans-1,2-Dichloroethene	ND U	9.51	10.0	95	9.08	10.0	91	75-124	5	20
1,2-Dichloropropane	ND U	9.54	10.0	95	9.30	10.0	93	78-122	3	20
1,3-Dichloropropane	ND U	9.78	10.0	98	9.07	10.0	91	80-119	8	20
2,2-Dichloropropane	ND U	8.24	10.0	82	8.19	10.0	82	60-139	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Collected:**	03/18/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	03/31/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	TVR-7-20200318	**Units:**	ug/L
Lab Code:	K2002474-002	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike KQ2004457-01			**Duplicate Matrix Spike** KQ2004457-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,1-Dichloropropene	ND U	10.3	10.0	103	9.71	10.0	97	79-125	6	20
cis-1,3-Dichloropropene	ND U	9.57	10.0	96	9.09	10.0	91	75-124	5	20
trans-1,3-Dichloropropene	ND U	8.70	10.0	87	8.55	10.0	86	73-127	2	20
Ethylbenzene	ND U	10.3	10.0	103	9.40	10.0	94	79-121	9	20
Hexachlorobutadiene	ND U	11.1	10.0	111	11.2	10.0	112	66-134	1	20
2-Hexanone	ND U	50.0	50.0	100	45.8	50.0	92	57-139	9	20
Isopropylbenzene	ND U	10.5	10.0	105	9.86	10.0	99	72-131	6	20
4-Isopropyltoluene	ND U	9.92	10.0	99	9.95	10.0	100	77-127	<1	20
Methyl tert-Butyl Ether	ND U	8.85	10.0	89	8.82	10.0	88	71-124	<1	20
4-Methyl-2-pentanone (MIBK)	ND U	51.9	50.0	104	51.5	50.0	103	67-130	<1	20
Methylene Chloride	ND U	9.16	10.0	92	8.92	10.0	89	74-124	3	20
Naphthalene	ND U	7.75	10.0	78	8.70	10.0	87	61-128	12	20
n-Propylbenzene	ND U	9.78	10.0	98	9.85	10.0	99	76-126	<1	20
Styrene	ND U	10.1	10.0	101	9.52	10.0	95	78-123	6	20
1,1,1,2-Tetrachloroethane	ND U	10.5	10.0	105	9.91	10.0	99	78-124	6	20
1,1,2,2-Tetrachloroethane	ND U	9.09	10.0	91	9.30	10.0	93	71-121	2	20
Tetrachloroethene (PCE)	ND U	11.7	10.0	117	10.8	10.0	108	74-129	8	20
Toluene	ND U	10.2	10.0	102	9.77	10.0	98	80-121	4	20
1,2,3-Trichlorobenzene	ND U	8.74	10.0	87	9.31	10.0	93	69-129	6	20
1,2,4-Trichlorobenzene	ND U	9.53	10.0	95	9.56	10.0	96	69-130	<1	20
1,1,2-Trichloroethane	ND U	9.81	10.0	98	9.41	10.0	94	80-119	4	20
1,1,1-Trichloroethane (TCA)	ND U	9.95	10.0	100	9.31	10.0	93	74-131	7	20
Trichloroethene (TCE)	2.6	12.9	10.0	103	11.8	10.0	92	79-123	9	20
Trichlorofluoromethane (CFC 11)	ND U	12.9	10.0	129	10.4	10.0	104	65-141	21*	20
1,2,3-Trichloropropane	ND U	9.10	10.0	91	10.4	10.0	104	73-122	13	20
1,2,4-Trimethylbenzene	ND U	9.57	10.0	96	9.83	10.0	98	76-124	3	20
1,3,5-Trimethylbenzene	ND U	9.41	10.0	94	9.32	10.0	93	75-124	<1	20
Vinyl Chloride	ND U	11.0	10.0	110	10.7	10.0	107	58-137	3	20
o-Xylene	ND U	9.92	10.0	99	9.50	10.0	95	78-122	4	20
m,p-Xylenes	ND U	20.6	20.0	103	18.9	20.0	94	80-121	9	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Analyzed:**	03/31/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675290

	Lab Control Sample KQ2004457-05			Duplicate Lab Control Sample KQ2004457-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,1,1,2-Tetrachloroethane	9.26	10.0	93	9.39	10.0	94	78-124	1	20
1,1,1-Trichloroethane (TCA)	8.81	10.0	88	8.94	10.0	89	74-131	1	20
1,1,2,2-Tetrachloroethane	8.72	10.0	87	8.34	10.0	83	71-121	4	20
1,1,2-Trichloroethane	9.13	10.0	91	8.86	10.0	89	80-119	3	20
1,1-Dichloroethane	8.64	10.0	86	8.69	10.0	87	77-125	<1	20
1,1-Dichloroethene	7.72	10.0	77	8.12	10.0	81	71-131	5	20
1,1-Dichloropropene	9.16	10.0	92	9.11	10.0	91	79-125	<1	20
1,2,3-Trichlorobenzene	9.33	10.0	93	9.39	10.0	94	69-129	<1	20
1,2,3-Trichloropropane	8.28	10.0	83	8.81	10.0	88	73-122	6	20
1,2,4-Trichlorobenzene	9.16	10.0	92	9.36	10.0	94	69-130	2	20
1,2,4-Trimethylbenzene	8.99	10.0	90	8.96	10.0	90	76-124	<1	20
1,2-Dibromo-3-chloropropane	9.22	10.0	92	8.26	10.0	83	62-128	11	20
1,2-Dibromoethane (EDB)	8.97	10.0	90	9.07	10.0	91	77-121	1	20
1,2-Dichlorobenzene	9.32	10.0	93	9.27	10.0	93	80-119	<1	20
1,2-Dichloroethane (EDC)	8.81	10.0	88	8.43	10.0	84	73-128	4	20
1,2-Dichloropropane	9.23	10.0	92	8.66	10.0	87	78-122	6	20
1,3,5-Trimethylbenzene	8.84	10.0	88	8.82	10.0	88	75-124	<1	20
1,3-Dichlorobenzene	9.16	10.0	92	9.01	10.0	90	80-119	2	20
1,3-Dichloropropane	8.76	10.0	88	8.90	10.0	89	80-119	2	20
1,4-Dichlorobenzene	8.93	10.0	89	9.02	10.0	90	79-118	1	20
2,2-Dichloropropane	7.48	10.0	75	7.55	10.0	76	60-139	<1	20
2-Butanone (MEK)	54.5	50.0	109	56.5	50.0	113	56-143	4	20
2-Chlorotoluene	8.58	10.0	86	8.53	10.0	85	79-122	<1	20
2-Hexanone	45.4	50.0	91	47.4	50.0	95	57-139	4	20
4-Chlorotoluene	8.58	10.0	86	8.62	10.0	86	78-122	<1	20
4-Isopropyltoluene	9.13	10.0	91	9.15	10.0	92	77-127	<1	20
4-Methyl-2-pentanone (MIBK)	50.5	50.0	101	49.6	50.0	99	67-130	2	20
Acetone	58.3	50.0	117	59.6	50.0	119	39-160	2	20
Benzene	9.02	10.0	90	8.98	10.0	90	79-120	<1	20
Bromobenzene	9.55	10.0	96	9.26	10.0	93	80-120	3	20
Bromochloromethane	9.82	10.0	98	9.79	10.0	98	78-123	<1	20
Bromodichloromethane	9.65	10.0	97	9.50	10.0	95	79-127	2	20
Bromoform	10.4	10.0	104	10.2	10.0	102	66-130	2	20
Bromomethane	8.80	10.0	88	9.13	10.0	91	53-141	4	20
Carbon Disulfide	18.6	20.0	93	19.0	20.0	95	64-133	2	20
Carbon Tetrachloride	9.80	10.0	98	10.1	10.0	101	72-136	3	20
Chlorobenzene	9.04	10.0	90	8.93	10.0	89	82-118	1	20
Chloroethane	10.5	10.0	105	10.6	10.0	106	60-138	<1	20
Chloroform	9.30	10.0	93	9.40	10.0	94	79-124	1	20
Chloromethane	8.95	10.0	90	8.97	10.0	90	50-139	<1	20
cis-1,2-Dichloroethene	9.34	10.0	93	9.20	10.0	92	78-123	2	20

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Analyzed:**	03/31/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675290

	Lab Control Sample KQ2004457-05			Duplicate Lab Control Sample KQ2004457-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
cis-1,3-Dichloropropene	9.01	10.0	90	8.93	10.0	89	75-124	<1	20
Dibromochloromethane	11.0	10.0	110	10.7	10.0	107	74-126	3	20
Dibromomethane	8.86	10.0	89	9.02	10.0	90	79-123	2	20
Dichlorodifluoromethane	8.31	10.0	83	8.51	10.0	85	32-152	2	20
Ethylbenzene	9.09	10.0	91	8.78	10.0	88	79-121	3	20
Hexachlorobutadiene	10.4	10.0	104	10.6	10.0	106	66-134	2	20
Isopropylbenzene	9.16	10.0	92	9.08	10.0	91	72-131	<1	20
m,p-Xylenes	17.7	20.0	88	17.7	20.0	89	80-121	<1	20
Methyl tert-Butyl Ether	8.46	10.0	85	8.63	10.0	86	71-124	2	20
Methylene Chloride	8.65	10.0	87	8.74	10.0	87	74-124	1	20
Naphthalene	8.39	10.0	84	8.35	10.0	84	61-128	<1	20
n-Butylbenzene	8.63	10.0	86	8.66	10.0	87	75-128	<1	20
n-Propylbenzene	8.97	10.0	90	8.76	10.0	88	76-126	2	20
o-Xylene	9.34	10.0	93	8.92	10.0	89	78-122	5	20
sec-Butylbenzene	8.72	10.0	87	8.88	10.0	89	77-126	2	20
Styrene	9.02	10.0	90	8.94	10.0	89	78-123	<1	20
tert-Butylbenzene	8.81	10.0	88	8.77	10.0	88	78-124	<1	20
Tetrachloroethene (PCE)	9.71	10.0	97	10.0	10.0	100	74-129	3	20
Toluene	9.53	10.0	95	9.18	10.0	92	80-121	4	20
trans-1,2-Dichloroethene	8.58	10.0	86	8.56	10.0	86	75-124	<1	20
trans-1,3-Dichloropropene	8.16	10.0	82	8.03	10.0	80	73-127	2	20
Trichloroethene (TCE)	9.13	10.0	91	9.48	10.0	95	79-123	4	20
Trichlorofluoromethane (CFC 11)	9.52	10.0	95	9.53	10.0	95	65-141	<1	20
Vinyl Chloride	10.1	10.0	101	10.1	10.0	101	58-137	<1	20

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Analyzed:**	03/31/20 11:31
Sample Matrix:	Ground Water	**Date Extracted:**	

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KQ2004457-07
Instrument ID: K-MS-13
File ID: J:\MS13\DATA\033120\0331F009.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 675290

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2004457-05	J:\MS13\DATA\033120\0331F005.D\	03/31/20 09:45
Duplicate Lab Control Sample	KQ2004457-06	J:\MS13\DATA\033120\0331F006.D\	03/31/20 10:11
TVR-POMONA-20200318	K2002474-001	J:\MS13\DATA\033120\0331F010.D\	03/31/20 11:58
TVR-7-20200318	K2002474-002	J:\MS13\DATA\033120\0331F011.D\	03/31/20 12:25
TVR-7-20200318MS	KQ2004457-01	J:\MS13\DATA\033120\0331F012.D\	03/31/20 12:51
TVR-7-20200318DMS	KQ2004457-02	J:\MS13\DATA\033120\0331F013.D\	03/31/20 13:18
TVR-3-20200318	K2002474-003	J:\MS13\DATA\033120\0331F015.D\	03/31/20 14:11
TVR-3A-20200318	K2002474-004	J:\MS13\DATA\033120\0331F016.D\	03/31/20 14:37
TVR-PAIC-20200318	K2002474-005	J:\MS13\DATA\033120\0331F017.D\	03/31/20 15:04
TVR-6-20200318	K2002474-006	J:\MS13\DATA\033120\0331F018.D\	03/31/20 15:30
TVR-MTS-4-20200318	K2002474-007	J:\MS13\DATA\033120\0331F019.D\	03/31/20 15:57
TVR-MTS-1-20200318	K2002474-008	J:\MS13\DATA\033120\0331F020.D\	03/31/20 16:24
TVR-MTS-2-20200318	K2002474-009	J:\MS13\DATA\033120\0331F021.D\	03/31/20 16:50
TVR-1-20200318	K2002474-010	J:\MS13\DATA\033120\0331F022.D\	03/31/20 17:17
TVR-2-20200318	K2002474-011	J:\MS13\DATA\033120\0331F023.D\	03/31/20 17:43
TVR-5-20200318	K2002474-012	J:\MS13\DATA\033120\0331F024.D\	03/31/20 18:10
TVR-MMP-1-20200319	K2002474-013	J:\MS13\DATA\033120\0331F025.D\	03/31/20 18:36
TVR-815-2-20200319	K2002474-014	J:\MS13\DATA\033120\0331F026.D\	03/31/20 19:03
TVR-TB-001-20200318	K2002474-015	J:\MS13\DATA\033120\0331F027.D\	03/31/20 19:30

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Analyzed:**	03/31/20 09:45
Sample Matrix:	Ground Water	**Date Extracted:**	

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Sample Name: Lab Control Sample
Lab Code: KQ2004457-05
Instrument ID: K-MS-13
File ID: J:\MS13\DATA\033120\0331F005.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 675290

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Duplicate Lab Control Sample	KQ2004457-06	J:\MS13\DATA\033120\0331F006.D\	03/31/20 10:11
Method Blank	KQ2004457-07	J:\MS13\DATA\033120\0331F009.D\	03/31/20 11:31
TVR-POMONA-20200318	K2002474-001	J:\MS13\DATA\033120\0331F010.D\	03/31/20 11:58
TVR-7-20200318	K2002474-002	J:\MS13\DATA\033120\0331F011.D\	03/31/20 12:25
TVR-7-20200318MS	KQ2004457-01	J:\MS13\DATA\033120\0331F012.D\	03/31/20 12:51
TVR-7-20200318DMS	KQ2004457-02	J:\MS13\DATA\033120\0331F013.D\	03/31/20 13:18
TVR-3-20200318	K2002474-003	J:\MS13\DATA\033120\0331F015.D\	03/31/20 14:11
TVR-3A-20200318	K2002474-004	J:\MS13\DATA\033120\0331F016.D\	03/31/20 14:37
TVR-PAIC-20200318	K2002474-005	J:\MS13\DATA\033120\0331F017.D\	03/31/20 15:04
TVR-6-20200318	K2002474-006	J:\MS13\DATA\033120\0331F018.D\	03/31/20 15:30
TVR-MTS-4-20200318	K2002474-007	J:\MS13\DATA\033120\0331F019.D\	03/31/20 15:57
TVR-MTS-1-20200318	K2002474-008	J:\MS13\DATA\033120\0331F020.D\	03/31/20 16:24
TVR-MTS-2-20200318	K2002474-009	J:\MS13\DATA\033120\0331F021.D\	03/31/20 16:50
TVR-1-20200318	K2002474-010	J:\MS13\DATA\033120\0331F022.D\	03/31/20 17:17
TVR-2-20200318	K2002474-011	J:\MS13\DATA\033120\0331F023.D\	03/31/20 17:43
TVR-5-20200318	K2002474-012	J:\MS13\DATA\033120\0331F024.D\	03/31/20 18:10
TVR-MMP-1-20200319	K2002474-013	J:\MS13\DATA\033120\0331F025.D\	03/31/20 18:36
TVR-815-2-20200319	K2002474-014	J:\MS13\DATA\033120\0331F026.D\	03/31/20 19:03
TVR-TB-001-20200318	K2002474-015	J:\MS13\DATA\033120\0331F027.D\	03/31/20 19:30

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002474
Project: JBLM/6304305 **Date Analyzed:**03/31/20 09:18

Tune Summary
Volatile Organic Compounds by GC/MS

File ID: J:\MS13\DATA\033120\0331F004.D\ **Analytical Method:** 8260C
Instrument ID: K-MS-13 **Analysis Lot:** 675290

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ2004457-04	J:\MS13\DATA\033120\0331F004.D\	03/31/20 09:18	
Lab Control Sample	KQ2004457-05	J:\MS13\DATA\033120\0331F005.D\	03/31/20 09:45	
Duplicate Lab Control Sample	KQ2004457-06	J:\MS13\DATA\033120\0331F006.D\	03/31/20 10:11	
Method Blank	KQ2004457-07	J:\MS13\DATA\033120\0331F009.D\	03/31/20 11:31	
TVR-POMONA-20200318	K2002474-001	J:\MS13\DATA\033120\0331F010.D\	03/31/20 11:58	
TVR-7-20200318	K2002474-002	J:\MS13\DATA\033120\0331F011.D\	03/31/20 12:25	
TVR-7-20200318	KQ2004457-01	J:\MS13\DATA\033120\0331F012.D\	03/31/20 12:51	
TVR-7-20200318	KQ2004457-02	J:\MS13\DATA\033120\0331F013.D\	03/31/20 13:18	
TVR-3-20200318	K2002474-003	J:\MS13\DATA\033120\0331F015.D\	03/31/20 14:11	
TVR-3A-20200318	K2002474-004	J:\MS13\DATA\033120\0331F016.D\	03/31/20 14:37	
TVR-PAIC-20200318	K2002474-005	J:\MS13\DATA\033120\0331F017.D\	03/31/20 15:04	
TVR-6-20200318	K2002474-006	J:\MS13\DATA\033120\0331F018.D\	03/31/20 15:30	
TVR-MTS-4-20200318	K2002474-007	J:\MS13\DATA\033120\0331F019.D\	03/31/20 15:57	
TVR-MTS-1-20200318	K2002474-008	J:\MS13\DATA\033120\0331F020.D\	03/31/20 16:24	
TVR-MTS-2-20200318	K2002474-009	J:\MS13\DATA\033120\0331F021.D\	03/31/20 16:50	
TVR-1-20200318	K2002474-010	J:\MS13\DATA\033120\0331F022.D\	03/31/20 17:17	
TVR-2-20200318	K2002474-011	J:\MS13\DATA\033120\0331F023.D\	03/31/20 17:43	
TVR-5-20200318	K2002474-012	J:\MS13\DATA\033120\0331F024.D\	03/31/20 18:10	
TVR-MMP-1-20200319	K2002474-013	J:\MS13\DATA\033120\0331F025.D\	03/31/20 18:36	
TVR-815-2-20200319	K2002474-014	J:\MS13\DATA\033120\0331F026.D\	03/31/20 19:03	
TVR-TB-001-20200318	K2002474-015	J:\MS13\DATA\033120\0331F027.D\	03/31/20 19:30	
Continuing Cal. Verification	KQ2004457-08	J:\MS13\DATA\033120\0331F028.D\	03/31/20 19:56	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900305-01	CAL 0.1 PPB	I:\MS13\DATA\072519\0725F006.D	07/25/2019 09:26
02	KC1900305-02	CAL 0.2 PPB	I:\MS13\DATA\072519\0725F007.D	07/25/2019 09:52
03	KC1900305-03	CAL 0.5 PPB	I:\MS13\DATA\072519\0725F008.D	07/25/2019 10:19
04	KC1900305-04	CAL 1.0 PPB	I:\MS13\DATA\072519\0725F009.D	07/25/2019 10:45
05	KC1900305-05	CAL 2.0 PPB	I:\MS13\DATA\072519\0725F010.D	07/25/2019 11:12
06	KC1900305-06	CAL 5.0 PPB	I:\MS13\DATA\072519\0725F011.D	07/25/2019 11:38
07	KC1900305-07	CAL 10 PPB	I:\MS13\DATA\072519\0725F012.D	07/25/2019 12:04
08	KC1900305-08	CAL 40 PPB	I:\MS13\DATA\072519\0725F014.D	07/25/2019 12:57
09	KC1900305-09	CAL 60 PPB	I:\MS13\DATA\072519\0725F015.D	07/25/2019 13:24
10	KC1900305-10	CAL 80 PPB	I:\MS13\DATA\072519\0725F016.D	07/25/2019 13:50
11	KC1900305-11	CAL 20 PPB	I:\MS13\DATA\072519\0725F020.D	07/25/2019 15:37

Analyte

1,1,1,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5788	02	0.200	0.6941	03	0.500	0.5621	04	1.000	0.5542
05	2.000	0.5394	06	5.000	0.5919	07	10.000	0.6521	11	20.000	0.644
08	40.000	0.7323	09	60.000	0.7387	10	80.000	0.739			

1,1,1-Trichloroethane (TCA)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3816	02	0.200	0.4249	03	0.500	0.4148	04	1.000	0.3927
05	2.000	0.4022	06	5.000	0.4448	07	10.000	0.4676	11	20.000	0.4636
08	40.000	0.514	09	60.000	0.4972	10	80.000	0.4986			

1,1,2,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.7116	03	0.500	0.5801	04	1.000	0.5425	05	2.000	0.5169
06	5.000	0.6034	07	10.000	0.6106	11	20.000	0.5497	08	40.000	0.5855
09	60.000	0.5597	10	80.000	0.5462						

1,1,2-Trichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4182	03	0.500	0.4633	04	1.000	0.3869	05	2.000	0.3943
06	5.000	0.4317	07	10.000	0.4491	11	20.000	0.4233	08	40.000	0.4606
09	60.000	0.4547	10	80.000	0.436						

1,1-Dichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5704	02	0.200	0.4919	03	0.500	0.5431	04	1.000	0.5019
05	2.000	0.4932	06	5.000	0.5297	07	10.000	0.5519	11	20.000	0.5356
08	40.000	0.57	09	60.000	0.5556	10	80.000	0.5521			

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1,1-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1884	02	0.200	0.2911	03	0.500	0.298	04	1.000	0.2666
05	2.000	0.2712	06	5.000	0.2865	07	10.000	0.2847	11	20.000	0.2813
08	40.000	0.2955	09	60.000	0.2903	10	80.000	0.2995			

1,1-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3922	02	0.200	0.4166	03	0.500	0.4119	04	1.000	0.3781
05	2.000	0.3928	06	5.000	0.4271	07	10.000	0.4369	11	20.000	0.4254
08	40.000	0.464	09	60.000	0.4473	10	80.000	0.4437			

1,2,3-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9456	02	0.200	0.7174	03	0.500	0.7812	04	1.000	0.6885
05	2.000	0.6823	06	5.000	0.7742	07	10.000	0.8059	11	20.000	0.7555
08	40.000	0.7992	09	60.000	0.8036	10	80.000	0.7986			

1,2,3-Trichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.1308	04	1.000	0.1763	05	2.000	0.1661	06	5.000	0.1891
07	10.000	0.1916	11	20.000	0.1698	08	40.000	0.1829	09	60.000	0.1732
10	80.000	0.1665									

1,2,4-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.13	03	0.500	0.946	04	1.000	0.8997	05	2.000	0.833
06	5.000	0.941	07	10.000	0.9441	11	20.000	0.9395	08	40.000	1.003
09	60.000	0.9896	10	80.000	0.9825						

1,2,4-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.374	02	0.200	2.971	03	0.500	3.258	04	1.000	3.369
05	2.000	3.255	06	5.000	3.559	07	10.000	3.669	11	20.000	3.433
08	40.000	3.672	09	60.000	3.537	10	80.000	3.412			

1,2-Dibromo-3-chloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.05852	06	5.000	0.06588	07	10.000	0.06852	11	20.000	0.06746
08	40.000	0.07371	09	60.000	0.07331	10	80.000	0.07663			

1,2-Dibromoethane (EDB)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5317	03	0.500	0.4149	04	1.000	0.4279	05	2.000	0.3968
06	5.000	0.4527	07	10.000	0.4626	11	20.000	0.469	08	40.000	0.5152
09	60.000	0.5012	10	80.000	0.4826						

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1,2-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.573	02	0.200	1.518	03	0.500	1.566	04	1.000	1.551
05	2.000	1.441	06	5.000	1.653	07	10.000	1.661	11	20.000	1.568
08	40.000	1.686	09	60.000	1.651	10	80.000	1.596			

1,2-Dichloroethane (EDC)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4218	02	0.200	0.3337	03	0.500	0.369	04	1.000	0.3553
05	2.000	0.3236	06	5.000	0.3645	07	10.000	0.3599	11	20.000	0.3456
08	40.000	0.3694	09	60.000	0.3602	10	80.000	0.348			

1,2-Dichloroethane-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.2393	05	6.000	0.2404	06	8.000	0.2589	07	10.000	0.2635
11	12.000	0.2569	08	14.000	0.2776	09	16.000	0.2681	10	20.000	0.261

1,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.289	03	0.500	0.3274	04	1.000	0.2719	05	2.000	0.2777
06	5.000	0.3098	07	10.000	0.3084	11	20.000	0.2942	08	40.000	0.3207
09	60.000	0.3073	10	80.000	0.3029						

1,3,5-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.261	02	0.200	3.37	03	0.500	3.442	04	1.000	3.347
05	2.000	3.322	06	5.000	3.612	07	10.000	3.661	11	20.000	3.48
08	40.000	3.703	09	60.000	3.557	10	80.000	3.452			

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.244	02	0.200	1.825	03	0.500	1.868	04	1.000	1.745
05	2.000	1.678	06	5.000	1.868	07	10.000	1.87	11	20.000	1.779
08	40.000	1.913	09	60.000	1.874	10	80.000	1.825			

1,3-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.008	02	0.200	0.8052	03	0.500	0.9487	04	1.000	0.9357
05	2.000	0.8449	06	5.000	0.9331	07	10.000	0.9418	11	20.000	0.8938
08	40.000	0.9731	09	60.000	0.9543	10	80.000	0.9213			

1,4-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.094	02	0.200	2.02	03	0.500	1.832	04	1.000	1.803
05	2.000	1.668	06	5.000	1.855	07	10.000	1.856	11	20.000	1.757
08	40.000	1.936	09	60.000	1.882	10	80.000	1.827			

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2,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4907	02	0.200	0.3959	03	0.500	0.4592	04	1.000	0.4278
05	2.000	0.4189	06	5.000	0.4494	07	10.000	0.4548	11	20.000	0.4901
08	40.000	0.4988	09	60.000	0.4853	10	80.000	0.4775			

2-Butanone (MEK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.01305	04	10.000	0.01435	05	20.000	0.01168	06	50.000	0.01303
07	100.000	0.01298	11	200.000	0.01257	08	400.000	0.0134	09	600.000	0.01373
10	800.000	0.0133									

2-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.259	02	0.200	3.113	03	0.500	3.022	04	1.000	2.988
05	2.000	2.897	06	5.000	3.109	07	10.000	3.017	11	20.000	2.848
08	40.000	3.009	09	60.000	2.88	10	80.000	2.791			

2-Hexanone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.000	0.05024	03	5.000	0.05074	04	10.000	0.04076	05	20.000	0.03945
06	50.000	0.04269	07	100.000	0.04572	11	200.000	0.04227	08	400.000	0.04553
09	600.000	0.04454	10	800.000	0.04264						

4-Bromofluorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.7102	05	6.000	0.7459	06	8.000	0.8099	07	10.000	0.884
11	12.000	0.8483	08	14.000	0.9184	09	16.000	0.9014	10	20.000	0.8605

4-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.372	02	0.200	3.434	03	0.500	3.391	04	1.000	3.466
05	2.000	3.321	06	5.000	3.586	07	10.000	3.609	11	20.000	3.314
08	40.000	3.513	09	60.000	3.39	10	80.000	3.268			

4-Isopropyltoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.211	02	0.200	3.075	03	0.500	3.431	04	1.000	3.314
05	2.000	3.306	06	5.000	3.699	07	10.000	3.784	11	20.000	3.601
08	40.000	3.869	09	60.000	3.712	10	80.000	3.606			

4-Methyl-2-pentanone (MIBK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.05302	02	2.000	0.05357	03	5.000	0.04948	04	10.000	0.05126
05	20.000	0.04625	06	50.000	0.05152	07	100.000	0.05107	11	200.000	0.04847
08	400.000	0.05155	09	600.000	0.04994	10	800.000	0.04838			

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Acetone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	10.000	0.0404	05	20.000	0.03496	06	50.000	0.03664	07	100.000	0.03708
11	200.000	0.03555	08	400.000	0.03723	09	600.000	0.03767	10	800.000	0.03669

Benzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.319	02	0.200	1.194	03	0.500	1.255	04	1.000	1.159
05	2.000	1.15	06	5.000	1.243	07	10.000	1.258	11	20.000	1.196
08	40.000	1.281	09	60.000	1.245	10	80.000	1.231			

Bromobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.8195	02	0.200	1.106	03	0.500	1.002	04	1.000	0.9333
05	2.000	0.9117	06	5.000	1.024	07	10.000	1.022	11	20.000	0.9583
08	40.000	0.9984	09	60.000	0.9922	10	80.000	0.9874			

Bromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1106	03	0.500	0.1246	04	1.000	0.124	05	2.000	0.1123
06	5.000	0.1301	07	10.000	0.1299	11	20.000	0.1286	08	40.000	0.1391
09	60.000	0.1387	10	80.000	0.1356						

Bromodichloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3065	02	0.200	0.2624	03	0.500	0.3047	04	1.000	0.2996
05	2.000	0.291	06	5.000	0.3235	07	10.000	0.3242	11	20.000	0.3283
08	40.000	0.3639	09	60.000	0.3616	10	80.000	0.3528			

Bromoform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1963	03	0.500	0.15	04	1.000	0.1875	05	2.000	0.1847
06	5.000	0.2236	07	10.000	0.2444	11	20.000	0.2524	08	40.000	0.3063
09	60.000	0.324	10	80.000	0.326						

Bromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.237	04	1.000	0.2285	05	2.000	0.2252	06	5.000	0.2248
07	10.000	0.222	11	20.000	0.2132	08	40.000	0.2204	09	60.000	0.2165
10	80.000	0.2154									

Carbon Disulfide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.8432	04	1.000	0.7338	05	2.000	0.7209	06	5.000	0.7501
07	10.000	0.7744	11	20.000	0.7339	08	40.000	0.7895	09	60.000	0.7685
10	80.000	0.7747									

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Carbon Tetrachloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.324	02	0.200	0.3124	03	0.500	0.3236	04	1.000	0.334
05	2.000	0.3241	06	5.000	0.3497	07	10.000	0.3693	11	20.000	0.3879
08	40.000	0.4306	09	60.000	0.4261	10	80.000	0.4285			

Chlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.246	02	0.200	1.866	03	0.500	2.061	04	1.000	1.925
05	2.000	1.868	06	5.000	2.044	07	10.000	2.074	11	20.000	2.046
08	40.000	2.229	09	60.000	2.164	10	80.000	2.139			

Chloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1997	02	0.200	0.1939	03	0.500	0.219	04	1.000	0.2321
05	2.000	0.2275	06	5.000	0.2215	07	10.000	0.223	11	20.000	0.2149
08	40.000	0.2204	09	60.000	0.2084	10	80.000	0.2087			

Chloroform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5621	02	0.200	0.5065	03	0.500	0.459	04	1.000	0.4473
05	2.000	0.4629	06	5.000	0.4965	07	10.000	0.5054	11	20.000	0.4953
08	40.000	0.5347	09	60.000	0.5265	10	80.000	0.5203			

Chloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4571	02	0.200	0.4193	03	0.500	0.4088	04	1.000	0.3958
05	2.000	0.4047	06	5.000	0.393	07	10.000	0.3868	11	20.000	0.3604
08	40.000	0.3743	09	60.000	0.3616	10	80.000	0.3672			

Dibromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4931	03	0.500	0.417	04	1.000	0.3988	05	2.000	0.4255
06	5.000	0.493	07	10.000	0.5249	11	20.000	0.55			

Dibromofluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.1918	05	6.000	0.1983	06	8.000	0.2236	07	10.000	0.2269
11	12.000	0.2303	08	14.000	0.2471	09	16.000	0.2509	10	20.000	0.2449

Dibromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1515	03	0.500	0.1362	04	1.000	0.1293	05	2.000	0.1255
06	5.000	0.1294	07	10.000	0.1369	11	20.000	0.1291	08	40.000	0.1378
09	60.000	0.1366	10	80.000	0.1334						

Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3439	02	0.200	0.318	03	0.500	0.3588	04	1.000	0.3068

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Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.3243	06	5.000	0.3463	07	10.000	0.3272	11	20.000	0.3321
08	40.000	0.3243	09	60.000	0.315	10	80.000	0.3261			

Ethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.174	02	0.200	1.134	03	0.500	1.184	04	1.000	1.083
05	2.000	1.11	06	5.000	1.179	07	10.000	1.209	11	20.000	1.173
08	40.000	1.313	09	60.000	1.263	10	80.000	1.25			

Hexachlorobutadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5056	03	0.500	0.4798	04	1.000	0.3654	05	2.000	0.4209
06	5.000	0.474	07	10.000	0.4814	11	20.000	0.46	08	40.000	0.5076
09	60.000	0.4942	10	80.000	0.5077						

Isopropylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.279	02	0.200	2.921	03	0.500	3.333	04	1.000	3.122
05	2.000	3.133	06	5.000	3.447	07	10.000	3.56	11	20.000	3.475
08	40.000	3.866	09	60.000	3.773	10	80.000	3.642			

Methyl tert-Butyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	0.5752	02	0.400	0.5363	03	1.000	0.5458	04	2.000	0.4945
05	4.000	0.4725	06	10.000	0.5419	07	20.000	0.5317	11	40.000	0.5263
08	80.000	0.563	09	120.000	0.571	10	160.000	0.5641			

Methylene Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.3351	04	1.000	0.3152	05	2.000	0.2873	06	5.000	0.2921
07	10.000	0.2797	11	20.000	0.2674	08	40.000	0.2736	09	60.000	0.2724
10	80.000	0.2689									

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.868	03	0.500	1.578	04	1.000	1.552	05	2.000	1.433
06	5.000	1.683	07	10.000	1.695	11	20.000	1.65	08	40.000	1.742
09	60.000	1.695	10	80.000	1.678						

Styrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.157	02	0.200	0.9802	03	0.500	0.9574	04	1.000	0.8673
05	2.000	0.9171	06	5.000	1.007	07	10.000	1.06	11	20.000	1.008
08	40.000	1.126	09	60.000	1.152	10	80.000	1.074			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

Tetrachloroethene (PCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6296	02	0.200	0.601	03	0.500	0.6478	04	1.000	0.5824
05	2.000	0.6031	06	5.000	0.6351	07	10.000	0.6643	11	20.000	0.6581
08	40.000	0.7325	09	60.000	0.7023	10	80.000	0.7056			

Toluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6486	02	0.200	0.6778	03	0.500	0.7077	04	1.000	0.7018
05	2.000	0.7108	06	5.000	0.7494	07	10.000	0.7641	11	20.000	0.7271
08	40.000	0.7865	09	60.000	0.7678	10	80.000	0.7562			

Toluene-d8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.871	05	6.000	0.8991	06	8.000	0.9763	07	10.000	1.003
11	12.000	0.9751	08	14.000	1.012	09	16.000	1.016	10	20.000	1.007

Trichloroethene (TCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3058	02	0.200	0.2936	03	0.500	0.3093	04	1.000	0.2745
05	2.000	0.2848	06	5.000	0.296	07	10.000	0.3042	11	20.000	0.2976
08	40.000	0.3205	09	60.000	0.3134	10	80.000	0.3095			

Trichlorofluoromethane (CFC 11)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5357	02	0.200	0.5284	03	0.500	0.5256	04	1.000	0.5098
05	2.000	0.5165	06	5.000	0.5601	07	10.000	0.5632	11	20.000	0.5532
08	40.000	0.5738	09	60.000	0.5427	10	80.000	0.5567			

Vinyl Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3391	02	0.200	0.3474	03	0.500	0.3835	04	1.000	0.3532
05	2.000	0.3737	06	5.000	0.3938	07	10.000	0.3856	11	20.000	0.3722
08	40.000	0.3827	09	60.000	0.3661	10	80.000	0.3706			

cis-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2567	02	0.200	0.3138	03	0.500	0.3259	04	1.000	0.2778
05	2.000	0.2594	06	5.000	0.3063	07	10.000	0.3064	11	20.000	0.307
08	40.000	0.3268	09	60.000	0.3251	10	80.000	0.3207			

cis-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3909	02	0.200	0.3733	03	0.500	0.338	04	1.000	0.3478
05	2.000	0.3496	06	5.000	0.3878	07	10.000	0.4196	11	20.000	0.4105
08	40.000	0.4434	09	60.000	0.442	10	80.000	0.4322			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

m,p-Xylenes

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	1.346	02	0.400	1.392	03	1.000	1.338	04	2.000	1.331
05	4.000	1.275	06	10.000	1.409	07	20.000	1.443	11	40.000	1.413
08	80.000	1.555	09	120.000	1.532	10	160.000	1.492			

n-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.611	02	0.200	3.307	03	0.500	3.136	04	1.000	2.956
05	2.000	2.932	06	5.000	3.253	07	10.000	3.349	11	20.000	3.235
08	40.000	3.429	09	60.000	3.262	10	80.000	3.163			

n-Propylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	4.634	02	0.200	4.743	03	0.500	4.943	04	1.000	5.111
05	2.000	4.845	06	5.000	5.377	07	10.000	5.359	11	20.000	5.029
08	40.000	5.318	09	60.000	5.042	10	80.000	4.93			

o-Xylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.315	02	0.200	1.113	03	0.500	1.251	04	1.000	1.24
05	2.000	1.219	06	5.000	1.34	07	10.000	1.334	11	20.000	1.332
08	40.000	1.461	09	60.000	1.421	10	80.000	1.379			

sec-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.987	02	0.200	4.202	03	0.500	4.184	04	1.000	4.109
05	2.000	4.14	06	5.000	4.495	07	10.000	4.525	11	20.000	4.321
08	40.000	4.578	09	60.000	4.374	10	80.000	4.224			

tert-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.662	02	0.200	2.782	03	0.500	3.097	04	1.000	3.013
05	2.000	2.951	06	5.000	3.187	07	10.000	3.201	11	20.000	2.993
08	40.000	3.192	09	60.000	3.055	10	80.000	2.974			

trans-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2876	02	0.200	0.2125	03	0.500	0.2664	04	1.000	0.2467
05	2.000	0.2484	06	5.000	0.2684	07	10.000	0.2749	11	20.000	0.2733
08	40.000	0.2998	09	60.000	0.2949	10	80.000	0.3004			

trans-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9585	02	0.200	0.8987	03	0.500	0.8123	04	1.000	0.7296
05	2.000	0.7481	06	5.000	0.8529	07	10.000	0.9029	11	20.000	0.9004
08	40.000	0.99	09	60.000	0.9984	10	80.000	0.9652			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,1,1,2-Tetrachloroethane	TRG	Average RF	% RSD	12.2	≤15	0.6388	0.01
1,1,1-Trichloroethane (TCA)	TRG	Average RF	% RSD	10.3	≤15	0.4456	.100
1,1,2,2-Tetrachloroethane	TRG	Average RF	% RSD	9.4	≤15	0.5806	.300
1,1,2-Trichloroethane	TRG	Average RF	% RSD	6.1	≤15	0.4318	.100
1,1-Dichloroethane	TRG	Average RF	% RSD	5.4	≤15	0.5359	.200
1,1-Dichloroethene	TRG	Average RF	% RSD	11.3	≤15	0.2775	.100
1,1-Dichloropropene	TRG	Average RF	% RSD	6.2	≤15	0.4215	0.01
1,2,3-Trichlorobenzene	TRG	Average RF	% RSD	9.3	≤15	0.7774	0.01
1,2,3-Trichloropropane	TRG	Average RF	% RSD	10.5	≤15	0.1718	0.01
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	8.0	≤15	0.9609	0.200
1,2,4-Trimethylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.41	0.01
1,2-Dibromo-3-chloropropane	TRG	Average RF	% RSD	8.8	≤15	0.06915	0.025
1,2-Dibromoethane (EDB)	TRG	Average RF	% RSD	9.4	≤15	0.4655	0.100
1,2-Dichlorobenzene	TRG	Average RF	% RSD	4.5	≤15	1.588	0.400
1,2-Dichloroethane (EDC)	TRG	Average RF	% RSD	7.0	≤15	0.3592	0.100
1,2-Dichloroethane-d4	SURR	Average RF	% RSD	5.0	≤15	0.2582	0.01
1,2-Dichloropropane	TRG	Average RF	% RSD	5.9	≤15	0.3009	0.100
1,3,5-Trimethylbenzene	TRG	Average RF	% RSD	4.2	≤15	3.473	0.01
1,3-Dichlorobenzene	TRG	Average RF	% RSD	7.7	≤15	1.862	0.600
1,3-Dichloropropane	TRG	Average RF	% RSD	6.2	≤15	0.9237	0.01
1,4-Dichlorobenzene	TRG	Average RF	% RSD	6.3	≤15	1.866	0.500
2,2-Dichloropropane	TRG	Average RF	% RSD	7.3	≤15	0.459	0.01
2-Butanone (MEK)	TRG	Average RF	% RSD	5.7	≤15	0.01312	0.01
2-Chlorotoluene	TRG	Average RF	% RSD	4.5	≤15	2.994	0.01
2-Hexanone	TRG	Average RF	% RSD	8.4	≤15	0.04446	0.015
4-Bromofluorobenzene	SURR	Average RF	% RSD	8.9	≤15	0.8348	0.01
4-Chlorotoluene	TRG	Average RF	% RSD	3.2	≤15	3.424	0.01
4-Isopropyltoluene	TRG	Average RF	% RSD	7.3	≤15	3.51	0.01
4-Methyl-2-pentanone (MIBK)	TRG	Average RF	% RSD	4.3	≤15	0.05041	0.01
Acetone	TRG	Average RF	% RSD	4.4	≤15	0.03703	0.01
Benzene	TRG	Average RF	% RSD	4.2	≤15	1.23	0.500
Bromobenzene	TRG	Average RF	% RSD	7.5	≤15	0.9778	0.01
Bromochloromethane	TRG	Average RF	% RSD	7.7	≤15	0.1274	0.01
Bromodichloromethane	TRG	Average RF	% RSD	9.8	≤15	0.3198	0.200

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Bromoform	TRG	Quadratic (0,0)	COD	0.9977	≥.990	0.2395	0.100
Bromomethane	TRG	Average RF	% RSD	3.3	≤15	0.2225	0.100
Carbon Disulfide	TRG	Average RF	% RSD	4.8	≤15	0.7654	0.100
Carbon Tetrachloride	TRG	Average RF	% RSD	12.8	≤15	0.3646	0.100
Chlorobenzene	TRG	Average RF	% RSD	6.4	≤15	2.06	0.500
Chloroethane	TRG	Average RF	% RSD	5.4	≤15	0.2154	0.100
Chloroform	TRG	Average RF	% RSD	6.9	≤15	0.5015	0.200
Chloromethane	TRG	Average RF	% RSD	7.3	≤15	0.3935	0.100
Dibromochloromethane	TRG	Average RF	% RSD	12.3	≤15	0.4717	0.100
Dibromofluoromethane	SURR	Average RF	% RSD	9.7	≤15	0.2267	0.01
Dibromomethane	TRG	Average RF	% RSD	5.4	≤15	0.1346	0.01
Dichlorodifluoromethane	TRG	Average RF	% RSD	4.6	≤15	0.3293	0.100
Ethylbenzene	TRG	Average RF	% RSD	5.7	≤15	1.188	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	9.6	≤15	0.4696	0.01
Isopropylbenzene	TRG	Average RF	% RSD	8.5	≤	3.414	
Methyl tert-Butyl Ether	TRG	Average RF	% RSD	5.9	≤15	0.5384	0.100
Methylene Chloride	TRG	Average RF	% RSD	8.0	≤15	0.288	0.100
Naphthalene	TRG	Average RF	% RSD	7.1	≤15	1.657	0.01
Styrene	TRG	Average RF	% RSD	9.3	≤15	1.028	0.300
Tetrachloroethene (PCE)	TRG	Average RF	% RSD	7.3	≤15	0.6511	0.200
Toluene	TRG	Average RF	% RSD	5.8	≤15	0.7271	0.400
Toluene-d8	SURR	Average RF	% RSD	5.7	≤15	0.97	0.01
Trichloroethene (TCE)	TRG	Average RF	% RSD	4.4	≤15	0.3008	0.200
Trichlorofluoromethane (CFC 11)	TRG	Average RF	% RSD	3.8	≤15	0.5423	0.100
Vinyl Chloride	TRG	Average RF	% RSD	4.6	≤15	0.3698	0.100
cis-1,2-Dichloroethene	TRG	Average RF	% RSD	8.6	≤15	0.3024	0.100
cis-1,3-Dichloropropene	TRG	Average RF	% RSD	9.8	≤15	0.3941	0.200
m,p-Xylenes	TRG	Average RF	% RSD	6.3	≤15	1.411	0.100
n-Butylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.239	0.01
n-Propylbenzene	TRG	Average RF	% RSD	4.9	≤15	5.03	0.01
o-Xylene	TRG	Average RF	% RSD	7.5	≤15	1.309	0.300
sec-Butylbenzene	TRG	Average RF	% RSD	4.4	≤15	4.285	0.01
tert-Butylbenzene	TRG	Average RF	% RSD	5.6	≤15	3.01	0.01
trans-1,2-Dichloroethene	TRG	Average RF	% RSD	9.9	≤15	0.2703	0.100
trans-1,3-Dichloropropene	TRG	Average RF	% RSD	10.4	≤15	0.887	0.100

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
12	KC1900305-12	ICV	I:\MS13\DATA\072519\0725F023.D	07/25/2019 16:56

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Acetone	50.0	54.7	3.703E-2	4.053E-2	9.46	±20	Average RF
Benzene	10.0	9.15	1.23E0	1.126E0	-8.489	±20	Average RF
Bromobenzene	10.0	9.34	9.778E-1	9.131E-1	-6.608	±20	Average RF
Bromochloromethane	10.0	9.16	1.274E-1	1.166E-1	-8.447	±20	Average RF
Bromodichloromethane	10.0	8.87	3.198E-1	2.837E-1	-11.312	±20	Average RF
Bromoform	10.0	8.71	2.395E-1	2.177E-1	-12.879	±20	Quadratic (0,0)
Bromomethane	10.0	9.36	2.225E-1	2.083E-1	-6.387	±20	Average RF
2-Butanone (MEK)	50.0	53.3	1.312E-2	1.399E-2	6.62	±20	Average RF
n-Butylbenzene	10.0	9.42	3.239E0	3.052E0	-5.772	±20	Average RF
sec-Butylbenzene	10.0	9.49	4.285E0	4.068E0	-5.070	±20	Average RF
tert-Butylbenzene	10.0	9.50	3.01E0	2.86E0	-4.982	±20	Average RF
Carbon Disulfide	20.0	18.9	7.654E-1	7.219E-1	-5.694	±20	Average RF
Carbon Tetrachloride	10.0	9.46	3.646E-1	3.45E-1	-5.353	±20	Average RF
Chlorobenzene	10.0	9.42	2.06E0	1.94E0	-5.824	±20	Average RF
Chloroethane	10.0	10.1	2.154E-1	2.177E-1	1.09	±20	Average RF
Chloroform	10.0	9.17	5.015E-1	4.596E-1	-8.349	±20	Average RF
Chloromethane	10.0	8.82	3.935E-1	3.471E-1	-11.802	±20	Average RF
2-Chlorotoluene	10.0	9.30	2.994E0	2.783E0	-7.032	±20	Average RF
4-Chlorotoluene	10.0	9.27	3.424E0	3.175E0	-7.283	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.26	6.915E-2	5.712E-2	-17.393	±20	Average RF
Dibromochloromethane	10.0	10.0	4.717E-1	4.722E-1	0.104	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	8.79	4.655E-1	4.089E-1	-12.149	±20	Average RF
Dibromomethane	10.0	8.80	1.346E-1	1.184E-1	-12.048	±20	Average RF
1,2-Dichlorobenzene	10.0	9.24	1.588E0	1.467E0	-7.594	±20	Average RF
1,3-Dichlorobenzene	10.0	9.13	1.862E0	1.7E0	-8.730	±20	Average RF
1,4-Dichlorobenzene	10.0	8.87	1.866E0	1.655E0	-11.312	±20	Average RF
Dichlorodifluoromethane	10.0	8.81	3.293E-1	2.903E-1	-11.852	±20	Average RF
1,1-Dichloroethane	10.0	9.43	5.359E-1	5.055E-1	-5.670	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	9.03	3.592E-1	3.244E-1	-9.672	±20	Average RF
1,1-Dichloroethene	10.0	9.09	2.775E-1	2.523E-1	-9.099	±20	Average RF
cis-1,2-Dichloroethene	10.0	9.28	3.024E-1	2.806E-1	-7.202	±20	Average RF
trans-1,2-Dichloroethene	10.0	9.13	2.703E-1	2.469E-1	-8.659	±20	Average RF
1,2-Dichloropropane	10.0	8.88	3.009E-1	2.673E-1	-11.166	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,3-Dichloropropane	10.0	9.24	9.237E-1	8.536E-1	-7.589	±20	Average RF
2,2-Dichloropropane	10.0	9.33	4.59E-1	4.281E-1	-6.715	±20	Average RF
1,1-Dichloropropene	10.0	9.37	4.215E-1	3.948E-1	-6.328	±20	Average RF
cis-1,3-Dichloropropene	10.0	9.20	3.941E-1	3.627E-1	-7.963	±20	Average RF
trans-1,3-Dichloropropene	10.0	9.30	8.87E-1	8.249E-1	-6.999	±20	Average RF
Ethylbenzene	10.0	9.51	1.188E0	1.13E0	-4.917	±20	Average RF
Hexachlorobutadiene	10.0	9.08	4.696E-1	4.266E-1	-9.176	±20	Average RF
2-Hexanone	50.0	51.5	4.446E-2	4.577E-2	2.96	±20	Average RF
Isopropylbenzene	10.0	9.61	3.414E0	3.28E0	-3.91828772050652363851		Average RF
4-Isopropyltoluene	10.0	9.91	3.51E0	3.477E0	-0.944	±20	Average RF
Methyl tert-Butyl Ether	10.0	9.05	5.384E-1	4.875E-1	-9.452	±20	Average RF
4-Methyl-2-pentanone (MIBK)	50.0	50.9	5.041E-2	5.129E-2	1.74	±20	Average RF
Methylene Chloride	10.0	8.84	2.88E-1	2.544E-1	-11.648	±20	Average RF
Naphthalene			1.657E0			±20	Average RF
n-Propylbenzene	10.0	9.44	5.03E0	4.751E0	-5.551	±20	Average RF
Styrene	10.0	9.53	1.028E0	9.797E-1	-4.672	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.20	6.388E-1	5.878E-1	-7.980	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.93	5.806E-1	5.186E-1	-10.676	±20	Average RF
Tetrachloroethene (PCE)	10.0	9.59	6.511E-1	6.243E-1	-4.109	±20	Average RF
Toluene	10.0	9.37	7.271E-1	6.815E-1	-6.263	±20	Average RF
1,2,3-Trichlorobenzene	10.0	8.79	7.774E-1	6.83E-1	-12.141	±20	Average RF
1,2,4-Trichlorobenzene			9.609E-1			±20	Average RF
1,1,2-Trichloroethane	10.0	9.31	4.318E-1	4.022E-1	-6.868	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	9.20	4.456E-1	4.1E-1	-7.996	±20	Average RF
Trichloroethene (TCE)	10.0	8.95	3.008E-1	2.692E-1	-10.524	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	8.35	5.423E-1	4.528E-1	-16.509	±20	Average RF
1,2,3-Trichloropropane	10.0	9.37	1.718E-1	1.609E-1	-6.337	±20	Average RF
1,2,4-Trimethylbenzene	10.0	9.41	3.41E0	3.21E0	-5.865	±20	Average RF
1,3,5-Trimethylbenzene	10.0	9.35	3.473E0	3.247E0	-6.521	±20	Average RF
Vinyl Chloride	10.0	9.52	3.698E-1	3.519E-1	-4.849	±20	Average RF
o-Xylene	10.0	9.46	1.309E0	1.238E0	-5.412	±20	Average RF
m,p-Xylenes	20.0	18.8	1.411E0	1.33E0	-5.759	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.42	8.348E-1	7.864E-1	-5.803	±20	Average RF
Dibromofluoromethane	10.0	9.59	2.267E-1	2.175E-1	-4.065	±20	Average RF
1,2-Dichloroethane-d4	10.0	8.64	2.582E-1	2.231E-1	-13.588	±20	Average RF
Toluene-d8	10.0	10.0	9.7E-1	9.723E-1	0.230	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305 **Date Analyzed:** 03/31/20 09:18

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\033120\0331F004.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675290
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	105	0.037	0.039	5.4	NA	±20	Average RF
Benzene	10.0	9.59	1.23	1.1797	-4.1	NA	±20	Average RF
Bromobenzene	10.0	10.0	0.9778	0.9786	0.1	NA	±20	Average RF
Bromochloromethane	10.0	9.99	0.1274	0.1272	-0.1	NA	±20	Average RF
Bromodichloromethane	10.0	10.4	0.3198	0.3322	3.9	NA	±20	Average RF
Bromoform	10.0	10.9	0.2395	0.2762	NA	9.3	±20	Quadratic (0,0)
Bromomethane	10.0	8.54	0.2225	0.1902	-14.6	NA	±20	Average RF
2-Butanone (MEK)	100	98.4	0.0131	0.0129	-1.6	NA	±20	Average RF
n-Butylbenzene	10.0	9.17	3.2393	2.9703	-8.3	NA	±20	Average RF
sec-Butylbenzene	10.0	9.51	4.2852	4.0749	-4.9	NA	±20	Average RF
tert-Butylbenzene	10.0	9.42	3.0096	2.8344	-5.8	NA	±20	Average RF
Carbon Disulfide	10.0	9.74	0.7654	0.7457	-2.6	NA	±20	Average RF
Carbon Tetrachloride	10.0	10.6	0.3646	0.3854	5.7	NA	±20	Average RF
Chlorobenzene	10.0	9.69	2.06	1.9967	-3.1	NA	±20	Average RF
Chloroethane	10.0	9.87	0.2154	0.2125	-1.3	NA	±20	Average RF
Chloroform	10.0	9.92	0.5015	0.4973	-0.8	NA	±20	Average RF
Chloromethane	10.0	9.05	0.3935	0.3561	-9.5	NA	±20	Average RF
2-Chlorotoluene	10.0	8.92	2.9938	2.6693	-10.8	NA	±20	Average RF
4-Chlorotoluene	10.0	9.23	3.4241	3.1618	-7.7	NA	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.54	0.0691	0.0591	-14.6	NA	±20	Average RF
Dibromochloromethane	10.0	11.7	0.4717	0.553	17.2	NA	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	9.62	0.4655	0.4477	-3.8	NA	±20	Average RF
Dibromomethane	10.0	9.76	0.1346	0.1313	-2.4	NA	±20	Average RF
1,2-Dichlorobenzene	10.0	9.58	1.5875	1.5207	-4.2	NA	±20	Average RF
1,3-Dichlorobenzene	10.0	9.75	1.8624	1.8151	-2.5	NA	±20	Average RF
1,4-Dichlorobenzene	10.0	9.54	1.8664	1.7803	-4.6	NA	±20	Average RF
Dichlorodifluoromethane	10.0	9.53	0.3293	0.3139	-4.7	NA	±20	Average RF
1,1-Dichloroethane	10.0	9.39	0.5359	0.503	-6.1	NA	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	9.34	0.3592	0.3355	-6.6	NA	±20	Average RF
1,1-Dichloroethene	10.0	9.32	0.2775	0.2587	-6.8	NA	±20	Average RF
cis-1,2-Dichloroethene	10.0	10.0	0.3024	0.3035	0.4	NA	±20	Average RF
trans-1,2-Dichloroethene	10.0	9.82	0.2703	0.2653	-1.8	NA	±20	Average RF
1,2-Dichloropropane	10.0	9.38	0.3009	0.2824	-6.2	NA	±20	Average RF
1,3-Dichloropropane	10.0	9.15	0.9237	0.8452	-8.5	NA	±20	Average RF
2,2-Dichloropropane	10.0	8.00	0.459	0.3674	-20.0	NA	±20	Average RF
1,1-Dichloropropene	10.0	9.80	0.4215	0.4131	-2.0	NA	±20	Average RF
cis-1,3-Dichloropropene	10.0	9.50	0.3941	0.3744	-5.0	NA	±20	Average RF
trans-1,3-Dichloropropene	10.0	8.89	0.887	0.7887	-11.1	NA	±20	Average RF
Ethylbenzene	10.0	9.56	1.1883	1.1358	-4.4	NA	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2002474
Project:	JBLM/6304305	**Date Analyzed:**	03/31/20 09:18

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Calibration Date:**	7/25/2019
File ID:	J:\MS13\DATA\033120\0331F004.D\	**Calibration ID:**	KC1900305
Signal ID:	1	**Analysis Lot:**	675290
		Units:	ppb

Hexachlorobutadiene	10.0	10.8	0.4696	0.509	8.4	NA	±20	Average RF
2-Hexanone	100	88.6	0.0445	0.0394	-11.4	NA	±20	Average RF
Isopropylbenzene	10.0	9.83	3.4138	3.3544	-1.7	NA	±20	Average RF
4-Isopropyltoluene	10.0	9.44	3.5098	3.3131	-5.6	NA	±20	Average RF
Methyl tert-Butyl Ether	20.0	18.2	0.5384	0.4899	-9.0	NA	±20	Average RF
4-Methyl-2-pentanone (MIBK)	100	94.3	0.0504	0.0475	-5.7	NA	±20	Average RF
Methylene Chloride	10.0	9.64	0.288	0.2775	-3.6	NA	±20	Average RF
Naphthalene	10.0	8.33	1.6574	1.3811	-16.7	NA	±20	Average RF
n-Propylbenzene	10.0	9.55	5.0302	4.8043	-4.5	NA	±20	Average RF
Styrene	10.0	9.63	1.0277	0.9898	-3.7	NA	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	10.0	0.6388	0.641	0.3	NA	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	9.20	0.5806	0.534	-8.0	NA	±20	Average RF
Tetrachloroethene (PCE)	10.0	10.7	0.6511	0.6944	6.7	NA	±20	Average RF
Toluene	10.0	9.82	0.7271	0.7141	-1.8	NA	±20	Average RF
1,2,3-Trichlorobenzene	10.0	9.14	0.7774	0.7108	-8.6	NA	±20	Average RF
1,1,2-Trichloroethane	10.0	9.74	0.4318	0.4206	-2.6	NA	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	10.1	0.4456	0.4482	0.6	NA	±20	Average RF
Trichloroethene (TCE)	10.0	9.87	0.3008	0.297	-1.3	NA	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	10.1	0.5423	0.5496	1.3	NA	±20	Average RF
1,2,3-Trichloropropane	10.0	9.55	0.1718	0.164	-4.5	NA	±20	Average RF
1,2,4-Trimethylbenzene	10.0	9.43	3.4099	3.2141	-5.7	NA	±20	Average RF
1,3,5-Trimethylbenzene	10.0	9.50	3.4734	3.3008	-5.0	NA	±20	Average RF
Vinyl Chloride	10.0	9.94	0.3698	0.3678	-0.6	NA	±20	Average RF
o-Xylene	10.0	9.51	1.3093	1.2448	-4.9	NA	±20	Average RF
m,p-Xylenes	20.0	19.4	1.4114	1.3664	-3.2	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.55	0.8348	0.7976	-4.5	NA	±20	Average RF
Dibromofluoromethane	10.0	10.4	0.2267	0.2349	3.6	NA	±20	Average RF
1,2-Dichloroethane-d4	10.0	8.72	0.2582	0.2252	-12.8	NA	±20	Average RF
Toluene-d8	10.0	9.88	0.97	0.958	-1.2	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305 **Date Analyzed:** 03/31/20 19:56

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\033120\0331F028.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675290
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	133	0.037	0.0494	33.4	NA	±50	Average RF
Benzene	10.0	9.44	1.23	1.1615	-5.6	NA	±50	Average RF
Bromobenzene	10.0	9.61	0.9778	0.94	-3.9	NA	±50	Average RF
Bromochloromethane	10.0	9.81	0.1274	0.1249	-1.9	NA	±50	Average RF
Bromodichloromethane	10.0	10.4	0.3198	0.3315	3.6	NA	±50	Average RF
Bromoform	10.0	10.7	0.2395	0.2703	NA	7.1	±50	Quadratic (0,0)
Bromomethane	10.0	8.61	0.2225	0.1917	-13.9	NA	±50	Average RF
2-Butanone (MEK)	100	95.7	0.0131	0.0126	-4.3	NA	±50	Average RF
n-Butylbenzene	10.0	8.47	3.2393	2.7426	-15.3	NA	±50	Average RF
sec-Butylbenzene	10.0	8.89	4.2852	3.8082	-11.1	NA	±50	Average RF
tert-Butylbenzene	10.0	9.17	3.0096	2.7583	-8.3	NA	±50	Average RF
Carbon Disulfide	10.0	11.6	0.7654	0.8909	16.4	NA	±50	Average RF
Carbon Tetrachloride	10.0	10.3	0.3646	0.3764	3.3	NA	±50	Average RF
Chlorobenzene	10.0	9.57	2.06	1.9716	-4.3	NA	±50	Average RF
Chloroethane	10.0	10.1	0.2154	0.2171	0.8	NA	±50	Average RF
Chloroform	10.0	9.81	0.5015	0.4922	-1.9	NA	±50	Average RF
Chloromethane	10.0	8.95	0.3935	0.3521	-10.5	NA	±50	Average RF
2-Chlorotoluene	10.0	9.47	2.9938	2.8347	-5.3	NA	±50	Average RF
4-Chlorotoluene	10.0	9.09	3.4241	3.1136	-9.1	NA	±50	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.65	0.0691	0.0598	-13.5	NA	±50	Average RF
Dibromochloromethane	10.0	11.3	0.4717	0.5308	12.5	NA	±50	Average RF
1,2-Dibromoethane (EDB)	10.0	9.25	0.4655	0.4306	-7.5	NA	±50	Average RF
Dibromomethane	10.0	8.92	0.1346	0.12	-10.8	NA	±50	Average RF
1,2-Dichlorobenzene	10.0	9.15	1.5875	1.4529	-8.5	NA	±50	Average RF
1,3-Dichlorobenzene	10.0	9.05	1.8624	1.6854	-9.5	NA	±50	Average RF
1,4-Dichlorobenzene	10.0	8.96	1.8664	1.672	-10.4	NA	±50	Average RF
Dichlorodifluoromethane	10.0	9.26	0.3293	0.3049	-7.4	NA	±50	Average RF
1,1-Dichloroethane	10.0	9.54	0.5359	0.5111	-4.6	NA	±50	Average RF
1,2-Dichloroethane (EDC)	10.0	9.43	0.3592	0.3387	-5.7	NA	±50	Average RF
1,1-Dichloroethene	10.0	11.2	0.2775	0.3111	12.1	NA	±50	Average RF
cis-1,2-Dichloroethene	10.0	9.78	0.3024	0.2958	-2.2	NA	±50	Average RF
trans-1,2-Dichloroethene	10.0	9.97	0.2703	0.2695	-0.3	NA	±50	Average RF
1,2-Dichloropropane	10.0	9.36	0.3009	0.2816	-6.4	NA	±50	Average RF
1,3-Dichloropropane	10.0	9.31	0.9237	0.8596	-6.9	NA	±50	Average RF
2,2-Dichloropropane	10.0	7.19	0.459	0.3299	-28.1	NA	±50	Average RF
1,1-Dichloropropene	10.0	9.74	0.4215	0.4104	-2.6	NA	±50	Average RF
cis-1,3-Dichloropropene	10.0	9.31	0.3941	0.367	-6.9	NA	±50	Average RF
trans-1,3-Dichloropropene	10.0	8.23	0.887	0.73	-17.7	NA	±50	Average RF
Ethylbenzene	10.0	9.46	1.1883	1.1239	-5.4	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2002474
Project: JBLM/6304305 **Date Analyzed:** 03/31/20 19:56

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: J:\MS13\DATA\033120\0331F028.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 675290
Units: ppb

Hexachlorobutadiene	10.0	10.3	0.4696	0.4839	3.0	NA	±50	Average RF
2-Hexanone	100	76.5	0.0445	0.034	-23.5	NA	±50	Average RF
Isopropylbenzene	10.0	9.57	3.4138	3.2666	-4.3	NA	±50	Average RF
4-Isopropyltoluene	10.0	8.93	3.5098	3.1327	-10.7	NA	±50	Average RF
Methyl tert-Butyl Ether	20.0	18.8	0.5384	0.5048	-6.2	NA	±50	Average RF
4-Methyl-2-pentanone (MIBK)	100	85.2	0.0504	0.0429	-14.8	NA	±50	Average RF
Methylene Chloride	10.0	9.51	0.288	0.2738	-4.9	NA	±50	Average RF
Naphthalene	10.0	7.75	1.6574	1.2847	-22.5	NA	±50	Average RF
n-Propylbenzene	10.0	9.05	5.0302	4.5515	-9.5	NA	±50	Average RF
Styrene	10.0	10.4	1.0277	1.0733	4.4	NA	±50	Average RF
1,1,1,2-Tetrachloroethane	10.0	10.1	0.6388	0.645	1.0	NA	±50	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.75	0.5806	0.5083	-12.5	NA	±50	Average RF
Tetrachloroethene (PCE)	10.0	10.2	0.6511	0.6647	2.1	NA	±50	Average RF
Toluene	10.0	9.84	0.7271	0.7153	-1.6	NA	±50	Average RF
1,2,3-Trichlorobenzene	10.0	8.43	0.7774	0.655	-15.7	NA	±50	Average RF
1,1,2-Trichloroethane	10.0	9.36	0.4318	0.4042	-6.4	NA	±50	Average RF
1,1,1-Trichloroethane (TCA)	10.0	10.1	0.4456	0.449	0.8	NA	±50	Average RF
Trichloroethene (TCE)	10.0	9.60	0.3008	0.2887	-4.0	NA	±50	Average RF
Trichlorofluoromethane (CFC 11)	10.0	10.8	0.5423	0.5828	7.5	NA	±50	Average RF
1,2,3-Trichloropropane	10.0	9.63	0.1718	0.1654	-3.7	NA	±50	Average RF
1,2,4-Trimethylbenzene	10.0	9.06	3.4099	3.088	-9.4	NA	±50	Average RF
1,3,5-Trimethylbenzene	10.0	9.13	3.4734	3.1716	-8.7	NA	±50	Average RF
Vinyl Chloride	10.0	9.35	0.3698	0.3457	-6.5	NA	±50	Average RF
o-Xylene	10.0	9.28	1.3093	1.2148	-7.2	NA	±50	Average RF
m,p-Xylenes	20.0	18.8	1.4114	1.3235	-6.2	NA	±50	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.26	0.8348	0.7735	-7.4	NA	±50	Average RF
Dibromofluoromethane	10.0	10.2	0.2267	0.231	1.9	NA	±50	Average RF
1,2-Dichloroethane-d4	10.0	8.84	0.2582	0.2283	-11.6	NA	±50	Average RF
Toluene-d8	10.0	9.77	0.97	0.9475	-2.3	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2002474
Project: JBLM/6304305

Analysis Run Log
Volatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**675290
Instrument ID:K-MS-13

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS13\DATA\033120\0331F003.D\	ZZZZZZZ	ZZZZZZZ	3/31/2020	08:47:00	
J:\MS13\DATA\033120\0331F004.D\	Continuing Calibration Verification	KQ2004457-04	3/31/2020	09:18:00	
J:\MS13\DATA\033120\0331F005.D\	Lab Control Sample	KQ2004457-05	3/31/2020	09:45:00	
J:\MS13\DATA\033120\0331F006.D\	Duplicate Lab Control Sample	KQ2004457-06	3/31/2020	10:11:00	
J:\MS13\DATA\033120\0331F009.D\	Method Blank	KQ2004457-07	3/31/2020	11:31:00	
J:\MS13\DATA\033120\0331F010.D\	TVR-POMONA-20200318	K2002474-001	3/31/2020	11:58:00	
J:\MS13\DATA\033120\0331F011.D\	TVR-7-20200318	K2002474-002	3/31/2020	12:25:00	
J:\MS13\DATA\033120\0331F012.D\	TVR-7-20200318 MS	KQ2004457-01	3/31/2020	12:51:00	
J:\MS13\DATA\033120\0331F013.D\	TVR-7-20200318 DMS	KQ2004457-02	3/31/2020	13:18:00	
J:\MS13\DATA\033120\0331F015.D\	TVR-3-20200318	K2002474-003	3/31/2020	14:11:00	
J:\MS13\DATA\033120\0331F016.D\	TVR-3A-20200318	K2002474-004	3/31/2020	14:37:00	
J:\MS13\DATA\033120\0331F017.D\	TVR-PAIC-20200318	K2002474-005	3/31/2020	15:04:00	
J:\MS13\DATA\033120\0331F018.D\	TVR-6-20200318	K2002474-006	3/31/2020	15:30:00	
J:\MS13\DATA\033120\0331F019.D\	TVR-MTS-4-20200318	K2002474-007	3/31/2020	15:57:00	
J:\MS13\DATA\033120\0331F020.D\	TVR-MTS-1-20200318	K2002474-008	3/31/2020	16:24:00	
J:\MS13\DATA\033120\0331F021.D\	TVR-MTS-2-20200318	K2002474-009	3/31/2020	16:50:00	
J:\MS13\DATA\033120\0331F022.D\	TVR-1-20200318	K2002474-010	3/31/2020	17:17:00	
J:\MS13\DATA\033120\0331F023.D\	TVR-2-20200318	K2002474-011	3/31/2020	17:43:00	
J:\MS13\DATA\033120\0331F024.D\	TVR-5-20200318	K2002474-012	3/31/2020	18:10:00	
J:\MS13\DATA\033120\0331F025.D\	TVR-MMP-1-20200319	K2002474-013	3/31/2020	18:36:00	
J:\MS13\DATA\033120\0331F026.D\	TVR-815-2-20200319	K2002474-014	3/31/2020	19:03:00	
J:\MS13\DATA\033120\0331F027.D\	TVR-TB-001-20200318	K2002474-015	3/31/2020	19:30:00	
J:\MS13\DATA\033120\0331F028.D\	Continuing Cal. Verification	KQ2004457-08	3/31/2020	19:56:00	

DATA VALIDATION REPORT COVER
SAMPLE DELIVERY GROUP: K2002474

PROJECT NAME: Environmental Remediation Program Services, Joint Base Lewis McChord and Yakima Training Center, Washington

SITE NAME: Tracked Vehicle Repair/Old Mobilization and Training Equipment Sites, Yakima Training Center, Washington

LABORATORY: ALS Environmental Laboratories, Inc., Kelso, Washington (ALS)

REPORT DATE: 2 April 2020

PROJECT MANAGER: Timothy McCormack, EA Engineering, Science, and Technology, Inc., PBC (email: tmccormack@eaest.com)

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REVIEWER: Sean Arnold, Project Scientist, EA Engineering, Science, and Technology, Inc., PBC (email: sarnold@eaest.com)

VALIDATION STAGE: S2AVM

REVIEW DATE: 14 April 2020

Thirteen groundwater samples as well as one field duplicate and one trip blank were collected on 18 and 19 March 2020 in support of the Environmental Remediation Program Services for Yakima Training Center in Washington. The samples were delivered to ALS for the analyses indicated in the table below. Table 1 below provides a list of the field sample identification (ID), sample ID, matrix, sample collection date, and analyses performed.

Table 1. Sample Summary Table

Field Sample ID	Lab Sample ID	Matrix	Date Collected	Analyses Performed
TVR-POMONA-20200318	K2002474-001	Groundwater	18 March 2020	VOCs
TVR-7-20200318	K2002474-002	Groundwater	18 March 2020	VOCs
TVR-3-20200318	K2002474-003	Groundwater	18 March 2020	VOCs
TVR-3A-20200318	K2002474-004	Field duplicate	18 March 2020	VOCs
TVR-PAIC-20200318	K2002474-005	Groundwater	18 March 2020	VOCs
TVR-6-20200318	K2002474-006	Groundwater	18 March 2020	VOCs
TVR-MTS-4-20200318	K2002474-007	Groundwater	18 March 2020	VOCs
TVR-MTS-1-20200318	K2002474-008	Groundwater	18 March 2020	VOCs
TVR-MTS-2-20200318	K2002474-009	Groundwater	18 March 2020	VOCs
TVR-1-20200318	K2002474-010	Groundwater	18 March 2020	VOCs
TVR-2-20200318	K2002474-011	Groundwater	18 March 2020	VOCs
TVR-5-20200318	K2002474-012	Groundwater	18 March 2020	VOCs
TVR-MMP-1-20200319	K2002474-013	Groundwater	19 March 2020	VOCs
TVR-815-2-20200319	K2002474-014	Groundwater	19 March 2020	VOCs
TVR-TB-001-20200318	K2002474-015	Trip blank	18 March 2020	VOCs

Notes:
VOCs – volatile organic compounds

1. DATA VALIDATION REPORT

The analytical data presented in Sample Delivery Group (SDG) K2002474 were reviewed with respect to quality assurance/quality control (QC) parameters specified in the 2018 *Programmatic Quality Assurance Project Plan* for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington (QAPP). In addition, the following guidance documents were used while assessing the validity of these data: U.S. Department of Defense (DoD), General Data Validation Guidelines, November 2019; DoD Quality Systems Manual, Version 5.1, January 2017; U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Superfund Organic Methods Data Review, January 2017; and the USEPA Office of Solid Waste, SW-846 Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, April 1998 and updates, as well as the referenced methodology.

Section 1 of this data validation report identifies the criteria reviewed for analyses of target analytes by the corresponding method. Section 2 provides definitions of data qualifiers that may be applied to analytical results based on the validation process. Section 3 provides an assessment of the overall data quality and a summary of final data qualification if any, and Section 4 provides the references to the guidelines and documents used in performing the data review.

The items listed below were evaluated for the Stage 2A (S2AVM) manual validation review as defined in the DoD General Data Validation Guidelines (2019), as applicable to the analytical method.

- Deliverables
- Condition of sample at laboratory receipt
- Holding times
- Method blanks
- Matrix spikes (MSs)
- Surrogates
- Laboratory control samples (LCSs)
- Field QC samples
- Overall assessment of data.

2. GLOSSARY OF DATA QUALIFIERS

The following definitions provide a brief explanation for the data qualifiers that may be used during the review process. The definitions are consistent with the DoD Data Validation Guidelines (2019).

No Qualifier	Indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was not detected and is reported as less than the limit of detection (LOD). The LOD is been adjusted for dilution or concentration of the sample.
J	The reported result is an estimated value with an unknown bias.
UJ	The analyte was not detected and is reported as less than the associated estimated numerical value.
R	The sample results are unusable to achieve project data quality objectives based on certain QC criteria outside of acceptance limits. The analyte may or may not be present in the sample.

3. DATA VALIDATION SUMMARY

Analytical results were reviewed for the criteria listed in Section 1.0. A discussion of the data is presented below.

3.1 VOLATILE ORGANIC COMPOUNDS

Project samples were prepared and analyzed for volatile organic compounds (VOCs) according to SW8260C.

3.2 DELIVERABLES

The data package for this SDG is complete.

3.3 CONDITION OF SAMPLE AT LABORATORY RECEIPT

The sample cooler(s) and the samples contained within were received at the laboratory with the proper chemical preservative at temperatures within the recommended range of $\leq$6 degrees Celsius and not frozen. No qualification of sample data is necessary on the basis of the condition upon sample receipt or chain of custody.

3.4 HOLDING TIMES

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.5 METHOD BLANKS

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (<½ limit of quantitation [LOQ]).

3.6 MATRIX SPIKES

Sample TVR-7-20200318 was selected for spiking for the matrix spike (MS) and matrix spike duplicate (MSD) samples. The percent recoveries (%Rs) and relative percent differences (RPDs) for these QC samples are within the QAPP-specified QC limits with the following exceptions.

The RPDs for the MS/MSD results of 1,2-dibromo-3-chloropropane and trichlorofluoromethane are above the QAPP-specified QC limit. The associated sample results require no additional qualification as the target analytes were not detected in the parent sample.

3.7 SURROGATES

Surrogates were added to environmental and QC samples and standards for the analysis of organic compounds as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits.

3.8 LABORATORY CONTROL SAMPLES

LCSs were prepared and analyzed as recommended by the referenced method. The %Rs for LCSs are within the QAPP-specified QC limits.

3.9 FIELD QUALITY CONTROL SAMPLES

One field duplicate was collected and identified as TVR-3A-20200318 and the associated parent sample, TVR-3-20200318. The RPDs between the parent and duplicate sample results, above the LOQ, are within the QAPP-specified QC limits.

A trip blank was included in this SDG (TVR-TB-001-20200318). The analytical results for the trip blank are within QAPP-specified QC limits (<½ LOQ). However, there are detectable results for the trip blank (acetone, 2-butanone, methylene chloride, and toluene) and the associated project sample results that are less than 5 times the trip blank results have been flagged with the UJ qualifier.

4. OVERALL ASSESSMENT OF DATA

The qualification of sample results was performed during data validation, as necessary. The data are acceptable and meet the project data quality objectives and are usable to support project decision-making. The qualifiers added during data validation are summarized in Table 2.

Table 2. Qualifier Summary Table

Field Sample ID	Lab Sample ID	Analyte	Result (µg/L)	Validation Qualifier	Reason
TVR-POMONA-20200318	K2002474-001	acetone	5.5 J	5.5 UJ	trip blank
TVR-7-20200318	K2002474-002	acetone	19 J	19 UJ	trip blank
TVR-3-20200318	K2002474-003	acetone	24	24 UJ	trip blank
TVR-3A-20200318	K2002474-004	acetone	26	26 UJ	trip blank
TVR-PAIC-20200318	K2002474-005	acetone	3.7 J	3.7 UJ	trip blank
TVR-6-20200318	K2002474-006	acetone	19 J	19 UJ	trip blank
TVR-MTS-4-20200318	K2002474-007	acetone	17 J	17 UJ	trip blank
TVR-MTS-1-20200318	K2002474-008	acetone	18 J	18 UJ	trip blank
TVR-MTS-2-20200318	K2002474-009	acetone	19 J	19 UJ	trip blank
TVR-2-20200318	K2002474-011	acetone	6.8 J	6.8 UJ	trip blank
TVR-5-20200318	K2002474-012	acetone	22	22 UJ	trip blank
TVR-MMP-1-20200319	K2002474-013	acetone	7.7 J	7.7 UJ	trip blank
TVR-815-2-20200319	K2002474-014	acetone	19 J	19 UJ	trip blank

Notes:
µg/L = microgram(s) per liter

5. REFERENCES

EA Engineering, Science, and Technology, Inc., PBC. 2018. *Programmatic Quality Assurance Project Plan for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington*.

U.S. Department of Defense (DoD). 2019. *General Data Validation Guidelines*. Environmental Data Quality Workgroup. November.

———. 2017. *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 5.1*. January.

U.S. Environmental Protection Agency. 2017. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. OLEM 9355.0-136. EPA-540-R-2017-002. January.

Joint Base Lewis-McChord

Well Purging and Sampling Record

Well ID: FTP-1 **Sample ID:** FTP-1-20200910 **Sample Date/Time:** 9/10/20 / 0800

Casing diameter/type: 4" PVC | Well Site Name: FTP | Weather: 60°, Hazy

Initial depth to water (w/o pump): 13.87' | Sampling personnel: AD + PE

Screened interval(s): 13'-18' | Sampling method: Low Flow, Conventional, PDB, Spigot Bailer

Total depth: 23.6' | Water level indicator: ¥ Solinst 101

Final depth to water (w/o pump): 16.29 | Water quality meter: ~~YSI~~ N/A

Measuring point: **North side of casing** | Pump depth: N/A | Pump type/model: Bailer

	Δ < 1° C	Δ < 10%		Δ <10%, or 3 < 0.5	Δ < 0.1 pH	Δ < 10 mV	Δ < 0.3 ft	< 1L/min	Δ < 10 NTU, or 3 < 10 NTU		
Time	**Temp (°C)**	**Conductivity (µS/cm)**	**DO (%)**	**DO (mg/L)**	**pH**	**ORP (mV)**	**Water Level (feet btoc)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Purge Volume (L)**	**Additional Comments**
9/9/20	@ 1220. Begin bailing. Intial				DTW=	~~45~~ 13.87'. Bail		dry or	to 3 well volumes		(19.05 gal)
9/9/20	@ 1249. Stop bailing. Well baled				dry. DTW=22.70						
9/10/20	@ 0745. DTW=13.94										
9/10/20	@ 0800. Collect sample										

Note:

Parameter Stabilization Limits:
(3 consecutive readings) for percent difference type parameters
Percent difference formula =
ABS [(first reading - second reading)/first reading) x 100]
Ex: Readings 12, 16, 15, 13
((12-16)/12)*100 = 33% ((16-15)/16)*100 = 6%
((15-13)/15)*100 = 13% In example, stabilization has not occurred.
Water volume per ft. 2"=.16, 4"=.64

# of Bottles / Analysis:

9 VOCs by 8260C
9 TPH-Gx
6 TPH-Dx
6 SVO

Well Monument Condition: Good condition

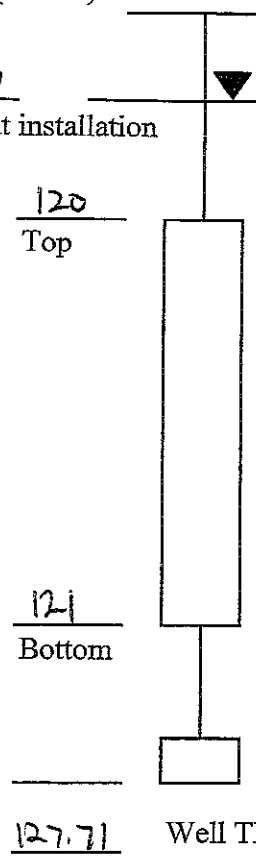
Passive Diffusion Bag Sampling Form

Well Identification: MTS-1

Depth (BTOC)

102.27 — DTW at installation

94.86 — DTW at sampling



120 — Top

121 — Bottom

Weight

127.71 — Well TD

Site Location: TVR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 3/18/20 Time: 1700

Sample Information

Sample No: TVR-MTS-1-20200909

Sample Date: 9/9/20 Time: 1420

Sampling Personnel: HD

Analyses: VOCs

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Not locked, good

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: MTS-2

Depth (BTOC)

93.72 — DTW at installation

86.67 — DTW at sampling

105 — Top

106 — Bottom

Weight

113.39 — Well TD

Site Location: TVR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 3/19/20 Time: 1708

Sample Information

Sample No: TVR-MTS-2-20200909

Sample Date: 9/9/20 Time: 1430

Sampling Personnel: HD + PE

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

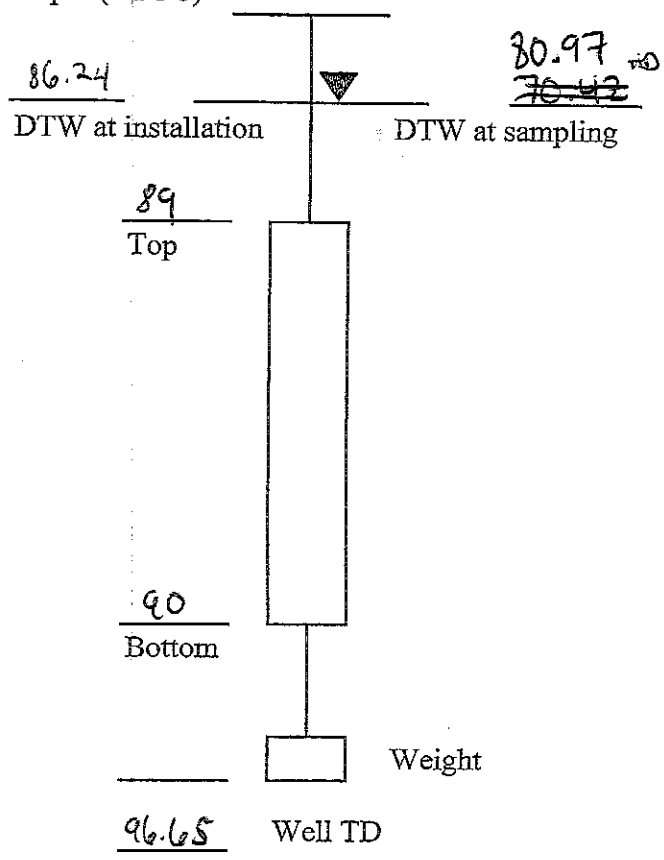
Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Not locked, good

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: MTS-4



Site Location: TVR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 3/18/20 Time: 1640

Sample Information

Sample No: TVR-MTS-4-20200909

Sample Date: 9/9/20 Time: [redacted] ND 1445

Sampling Personnel: HD+PE

Analyses: VOCs

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? flush, good condition

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

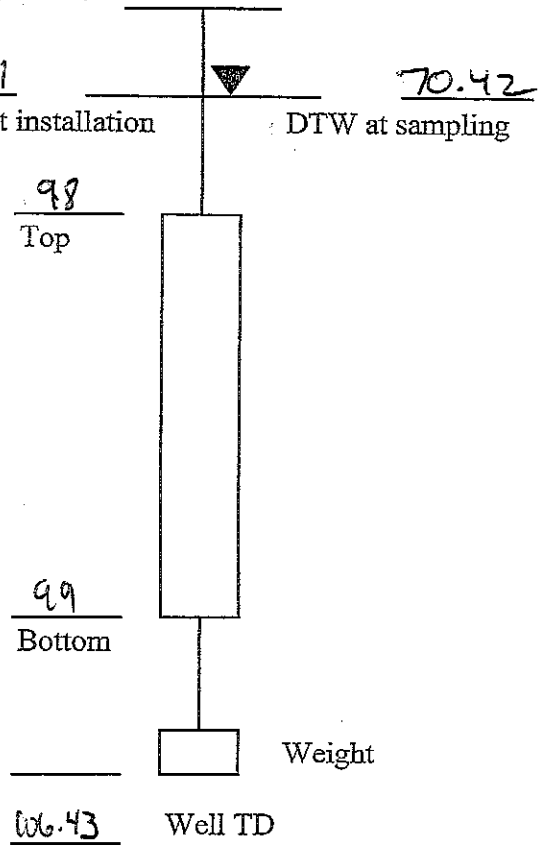
Well Casing Plug Locked and in Good Condition? ~~Not~~ locked, good condition

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-1

Depth (BTOC)



Site Location: TVR

Project Number: 6394305

Well Diameter: 4"

PDB Installation Date: 3/18/20 Time: 1720

Sample Information

Sample No: TVR-1-20200909

Sample Date: 9/9/20 Time: 1358

Sampling Personnel: MD + PE

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Y

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Not locked, good

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-3

Depth (BTOC)

66.22 DTW at installation

59.73' DTW at sampling

148 Top

2

149 Bottom

Weight

157.63 Well TD

Site Location: TVR

Project Number: 6304305

Well Diameter: 4"

PDB Installation Date: 3/18/20 Time: 1422

Sample Information

Sample No: Duplicate TVR-3A-20200909 / TVR-3-20200909

Sample Date: 9/9/20 Time: 1340 / 1345

Sampling Personnel: HD + PE

Analyses: VOCs

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y (x2)

Well Condition at Sampling

Well Monument Locked and in Good Condition? Flush, striped bolts

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Not locked, in good cond

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-6

Depth (BTOC)

65-68 — DTW at installation

59.24 — DTW at sampling

140 — Top

141 — Bottom

Weight

148.71 — Well TD

Site Location: TVR

Project Number: 60304305

Well Diameter: 2"

PDB Installation Date: 3/18/20 Time: 1448

Sample Information

Sample No: TVR-6-20200910

Sample Date: 9/10/20 Time: 1035

Sampling Personnel: HM HPE

Analyses: VOC

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? No bolts

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

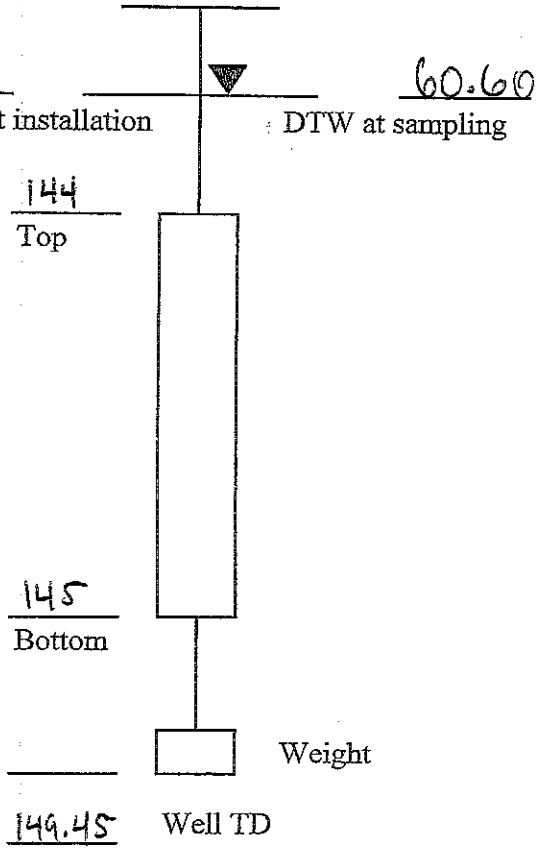
Well Casing Plug Locked and in Good Condition? Not locked good

Comments:

Passive Diffusion Bag Sampling Form

Well Identification: TVR-7

Depth (BTOC)



66.49 — DTW at installation

60.60 — DTW at sampling

144 — Top

145 — Bottom

Weight

149.45 — Well TD

Site Location: TVR

Project Number: 6304305

Well Diameter: 2"

PDB Installation Date: 3/18/20 Time: 1412

Sample Information

Sample No: TVR-7-20200909

Sample Date: 9/9/20 Time: 1353

Sampling Personnel: HD + PE

Analyses: VOCs

Biofilm Present (Y/N): N

New PDB Deployed (Y/N): Y

Well Condition at Sampling

Well Monument Locked and in Good Condition? Flush, Stripped bolts

Inside Well Head and Outside Well Casing (D = Dry, WAC = Water Above Casing, WBC=Water Below Casing) : D

Well Casing Plug Locked and in Good Condition? Not locked, Good

Comments:

9/9/20 YTC LPL/IRP

0850 Arrive on-site, H&S Meeting.
Personnel: H. Penn.s + P. Ehrman
Weather: 65°, hazy

YTC LPL

0915 Arrive at MW-4. Replace tubing
DTW = 67.38'
TD = 124.95'
0930 Begin pumping at 200 Hz
1030 HD mobs to wash rack to dispose of IDW.
1127 Stop purging - well purged dry
DTW = 122.13'
1142 Arrive at MW-5
DTW = Dry
1144 Arrive at ~~MW-8~~ HD MW-7
DTW = Dry
1147 Arrive at MW-6
DTW = 40.49'
1155 Begin purging @ 161 Hz
1200 Stop purging - well purged dry
DTW = 48.92'
1210 Mob to wash rack to dispose of IDW
1220 Arrive at FTP-1
DTW = 13.87'
TD = 23.6'

HD

YTC IRP 9/9/20

Calculate 3 well volumes
h = 9.73', r = 2"
1 well volume = 116.76" · π2"² = 1467 in³
= 6.35 gallons
3 well volumes = 19.05 gallons
1225 PE begins bailing FTP-1.
HD mobs to measure water levels
1235 FTP-13
DTW = 15.08'
1240 FTP-14
DTW = 18.68'
1245 FTP-15
DTW = 17.29'
1249 FTP-1
Stop bailing - well dry
DTW = 22.70'
1255 FTP-16
DTW = 26.46'
305 Lunch
1315 MMP-1
DTW = 50.36'
1322 TVR-5
DTW = 48.57'
1326 815-2
DTW = 49.50'

HD

1328 Dispose of tubing from MW-4 in dumpster

1333 TVR-3

DTW = 59.73'

1340 Collect sample: TVR-3-20200909

1345 Collect dup: TVR-3A-20200909

1348 TVR-7

DTW = 60.60'

1353 Collect sample: TVR-7-20200909

1355 ~~MTS-4~~ TVR-1

DTW = 70.42'

1358 ~~1355~~ Collect sample: TVR-~~MTS-1~~ HD 1-20200909

1405 Collect sample: TVR-POMONA-20200909

1410 TVR-2

DTW = 66.51'

1415 MTS-1

DTW = 94.86'

1420 Collect sample: TVR-MTS-1-20200909

1425 MTS-2

DTW = 86.67'

1430 Collect sample: TVR-MTS-2-20200909

1435 MTS-3

DTW = 26.35'

HD

1440 MTS-4

DTW = 80.97

1445 Collect sample: TVR-MTS-4-20200909

1450 Mob to vehicle wash rack to dispose of IDW

1500 Leave site. Purchase ice for coolers

Hanna Brown

Rite in the Rain

9/10/20 YTC IRP/LPL

0725 Arrive on site
personnel: H Dennis, P. Ehrman
Weather: 60°, Hazy

0735 Health & Safety meeting

0745 FTP-1
DTW = 13.94'

0800 Collect sample & MS/MSD
FTP-1-20200910
(9 x 8260., 9 x TPHGx, 6 x TPHDx, 6 SVO)

0840 Mob to get dlcon water at DPW building

0855 Arrive at MW-4. Calibrate YSI

	Initial	Final
pH_4	3.96	4.00
pH_7	6.91	7.00
pH_{10}	10.17	10.00
Cond.	1.59	1.413

~~0920~~ 0915 MW-4 DTW = 86.96'

0920 Collect sample: LPL-MW-4-20200910 (5 bottles)

0940 Collect equipment blank: LPL-EB-001-20200910

1000 MW-6
DTW = ~~40~~ 41.72

1010 Collect sample: LPL-MW-6-20200910

YTC LPL

YTC IRP 9/10/20

~~Mob~~ MD

1020 Arrive at PAIC

1025 Collect sample: TVR-PAIC-20200910

1030 Arrive at TVR-6
DTW = 59.26

1035 Collect sample: TVR-6-20200910

1045 PE to dispose of IDW and mob to ship samples.
HD to do LUC inspections.

Hannah Dennis

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October 09, 2020

Analytical Report for Service Request No: K2007905

Garrett Lee
EA Engineering, Science and Technology
2200 6th Ave, Suite 707
Seattle, WA 98121

RE: JBLM / 6304305

Dear Garrett,

Enclosed are the results of the sample(s) submitted to our laboratory September 11, 2020
For your reference, these analyses have been assigned our service request number **K2007905.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mark Harris
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Date Received:** 09/11/2020
Sample Matrix: Ground Water

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One ground water sample was received for analysis at ALS Environmental on 09/11/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

No significant anomalies were noted with this analysis.

Semivoa GC:

Method NWTPH-Dx, 09/18/2020: The control criteria for matrix spike recovery of diesel range organics for sample FTP-1-20200910 were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Approved by _____ Date 10/09/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

CHAIN OF CUSTODY

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC # | Cooler # 2 of 3

Lab Quote # | Lab Job #: K1007905

Client / Reporting Information

Company Name: EA Engineering, Science, and Technology, Inc., PBC

Address: 2200 6th Ave., Suite 707

City: Seattle | State: WA | Zip: 98121

Project Contact: Garrett Lee and per contract

Phone #: 206-452-5350

Samplers's Name/Signature: Phil Ehrman

Project Information

Project Name: JBLM

Street:

City: Joint Base Lewis McChord | State: WA

Project #: 6304305

Email: glee@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com

Purchase Order #: 17578

Analytical Information

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Lab Sample ID	Sample ID	Collection: Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
	~~FTP-1-20200910~~	~~10-Sep-2020~~		~~PE~~	~~GW~~										X	X	X	X	~~MS/MSD~~
	FTP-1-20200910	10-Sept-2020	0800	PE	GW	12	6							6		X		X	MS/MSD
																			PE

Turnaround Time (Business days): standard

Data Deliverable Information: Level IV deliverable, Equis EDD and per contract

Comments / Remarks: Samples from Site IRP / Phase 2021H / Task 2021B.
Samples for FTP-1 split between coolers

Sample Custody must be documented below each time samples change possession.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		9/10/20 1200	1	2		2
3 3	Relinquished by:	Date Time: 9/11/20 1015	Received By: ~~Received By:~~ 3	Relinquished By: 4	Date Time:	Received By: 4
5 5	Relinquished by:	Date Time:	Received By: 5	On Ice Y / N	Trip Blank Y / N	Cooler Temp. ____ °C
				Labels Match Coc? Y / N		

PM Mark

Cooler Receipt and Preservation Form

Client EA Eng Service Request K20 2107905

Received: 9/11/20 Opened: 9/11/20 By: A Unloaded: 9/11/20 By: A

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? one, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N
4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column below:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID /(NA)	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
2.4	—	IR01				3966 9815 7940	
3.8	—	"				" " 7951	
2.8	—	"				" " 7962	

6. Packing material (*Inserts*) (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
14. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Diesel and Residual Range Organics

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www.alsglobal.com

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA

Semi-Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Dx
Prep Method: EPA 3510C

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Diesel Range Organics (C12 - C25 DRO)	**30000**	**Y**	260	41	12	1	09/18/20 02:27	9/14/20	
Residual Range Organics (C25 - C36 RRO)	**2500**	**L**	510	82	20	1	09/18/20 02:27	9/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	79	50 - 150	09/18/20 02:27	
n-Triacontane	79	50 - 150	09/18/20 02:27	

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013018-04	**Basis:**	NA

Semi-Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Dx
Prep Method: EPA 3510C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Diesel Range Organics (C12 - C25 DRO)	**30 J**	250	40	11	1	09/17/20 22:43	9/14/20	
Residual Range Organics (C25 - C36 RRO)	**57 J**	500	80	19	1	09/17/20 22:43	9/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
o-Terphenyl	78	50 - 150	09/17/20 22:43	
n-Triacontane	84	50 - 150	09/17/20 22:43	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Semi-Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Dx
Extraction Method: EPA 3510C

Sample Name	Lab Code	o-Terphenyl 50-150	n-Triacontane 50-150
FTP-1-20200910	K2007905-001	79	79
Method Blank	KQ2013018-04	78	84
Lab Control Sample	KQ2013018-03	64	68
FTP-1-20200910	KQ2013018-01	73	73
FTP-1-20200910	KQ2013018-02	77	78

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	09/18/20
		Date Extracted:	09/14/20

Duplicate Matrix Spike Summary
Semi-Volatile Petroleum Products by GC/FID

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA
Analysis Method:	NWTPH-Dx		
Prep Method:	EPA 3510C		

		Matrix Spike KQ2013018-01			**Duplicate Matrix Spike** KQ2013018-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (C12 - C25 DRO)	30000 Y	26000	3200	-117 #	24100	3270	-170 #	28-176	7	30
Residual Range Organics (C25 - C36 RRO)	2500 L	3240	1600	45	3400	1630	54	45-140	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20
Sample Matrix:	Ground Water	**Date Extracted:**	09/14/20

Lab Control Sample Summary
Semi-Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Dx	**Units:**	ug/L
Prep Method:	EPA 3510C	**Basis:**	NA
		Analysis Lot:	695614

Lab Control Sample
KQ2013018-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Diesel Range Organics (C12 - C25 DRO)	2230	3200	70	46-140
Residual Range Organics (C25 - C36 RRO)	1270	1600	79	45-159

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 22:43
Sample Matrix:	Ground Water	**Date Extracted:**	09/14/20

Method Blank Summary
Semi-Volatile Petroleum Products by GC/FID

Sample Name:	Method Blank	**Instrument ID:**	K-GC-21
Lab Code:	KQ2013018-04	**File ID:**	J:\GC21\DATA\091620F\0916F206.D\
Analysis Method:	NWTPH-Dx	**Analysis Lot:**	695614
Prep Method:	EPA 3510C	**Extraction Lot:**	365494

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2013018-03	J:\GC21\DATA\091620F\0916F205.D\	09/17/20 22:20
FTP-1-20200910	K2007905-001	J:\GC21\DATA\091620F\0916F216.D\	09/18/20 02:27
FTP-1-20200910MS	KQ2013018-01	J:\GC21\DATA\091620F\0916F217.D\	09/18/20 02:50
FTP-1-20200910DMS	KQ2013018-02	J:\GC21\DATA\091620F\0916F218.D\	09/18/20 03:12

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 22:20
Sample Matrix:	Ground Water	**Date Extracted:**	09/14/20

Lab Control Sample Summary
Semi-Volatile Petroleum Products by GC/FID

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-21
Lab Code:	KQ2013018-03	**File ID:**	J:\GC21\DATA\091620F\0916F205.D\
Analysis Method:	NWTPH-Dx	**Analysis Lot:**	695614
Prep Method:	EPA 3510C	**Extraction Lot:**	365494

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ2013018-04	J:\GC21\DATA\091620F\0916F206.D\	09/17/20 22:43
FTP-1-20200910	K2007905-001	J:\GC21\DATA\091620F\0916F216.D\	09/18/20 02:27
FTP-1-20200910MS	KQ2013018-01	J:\GC21\DATA\091620F\0916F217.D\	09/18/20 02:50
FTP-1-20200910DMS	KQ2013018-02	J:\GC21\DATA\091620F\0916F218.D\	09/18/20 03:12

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 8/26/2020

Initial Calibration Summary
Semi-Volatile Petroleum Products by GC/FID

Calibration ID: KC2000445 **Signal ID:** ZB-1
Instrument ID: K-GC-21

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2000445-01	DRO SVF03-2A 200/10	J:\GC21\DATA\082620F\0826F106.D	08/26/2020 16:30
02	KC2000445-02	DRO SVF03-1L 500/25	J:\GC21\DATA\082620F\0826F107.D	08/26/2020 16:52
03	KC2000445-03	DRO SVF03-1K 2000/100	J:\GC21\DATA\082620F\0826F108.D	08/26/2020 17:15
04	KC2000445-04	DRO SVF03-1J 5000/250	J:\GC21\DATA\082620F\0826F109.D	08/26/2020 17:37
05	KC2000445-05	RRO SVF02-100K 50	J:\GC21\DATA\082620F\0826F118.D	08/26/2020 20:59
06	KC2000445-06	RRO SVF02-100J 200	J:\GC21\DATA\082620F\0826F119.D	08/26/2020 21:22
07	KC2000445-07	RRO SVF02-100I 500	J:\GC21\DATA\082620F\0826F120.D	08/26/2020 21:44
08	KC2000445-08	RRO SVF02-100H 2000	J:\GC21\DATA\082620F\0826F121.D	08/26/2020 22:06
09	KC2000445-09	RRO SVF02-100G 5000	J:\GC21\DATA\082620F\0826F122.D	08/26/2020 22:29
10	KC2000445-10	AK103 SVF03-1F 50	J:\GC21\DATA\082620F\0826F129.D	08/27/2020 01:06
11	KC2000445-11	AK103 SVF03-1E 200	J:\GC21\DATA\082620F\0826F130.D	08/27/2020 01:28
12	KC2000445-12	AK103 SVF03-1D 500	J:\GC21\DATA\082620F\0826F131.D	08/27/2020 01:51
13	KC2000445-13	AK103 SVF03-1C 2000	J:\GC21\DATA\082620F\0826F132.D	08/27/2020 02:13
14	KC2000445-14	AK103 SVF03-1B 5000	J:\GC21\DATA\082620F\0826F133.D	08/27/2020 02:35
16	KC2000445-16	DRO SVF03-2C 20/1.0	J:\GC21\DATA\082620F\0826F146.D	08/27/2020 07:26
17	KC2000445-17	DRO SVF03-2B 50/2.5	J:\GC21\DATA\082620F\0826F147.D	08/27/2020 07:49
18	KC2000445-18	DRO SVF03-1I 20K	J:\GC21\DATA\082620F\0826F153.D	08/27/2020 10:04
19	KC2000445-19	DRO SVF03-1H 50K	J:\GC21\DATA\082620F\0826F154.D	08/27/2020 10:26

Analyte

Diesel Range Organics (C12 - C25 DRO)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
16	20.000	1.421E3	17	50.000	1.415E3	01	200.000	1.358E3	02	500.000	1.337E3
03	2000.000	1.31E3	04	5000.000	1.226E3	18	20000.000	1.13E3	19	50000.000	1.172E3

Residual Range Organics (C25 - C36 RRO)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	50.000	1.064E3	06	200.000	969.6	07	500.000	922.9	08	2000.000	852.3
09	5000.000	832.3									

n-Triacontane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
16	1.000	1.374E3	17	2.500	1.46E3	01	10.000	1.415E3	02	25.000	1.471E3
03	100.000	1.383E3	04	250.000	1.34E3						

o-Terphenyl

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
16	1.000	1.806E3	17	2.500	1.878E3	01	10.000	1.746E3	02	25.000	1.789E3
03	100.000	1.665E3	04	250.000	1.609E3						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 8/26/2020

Initial Calibration Summary
Semi-Volatile Petroleum Products by GC/FID

Calibration ID: KC2000445 **Signal ID:** ZB-1
Instrument ID: K-GC-21

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Diesel Range Organics (C12 - C25 DRO)	TRG	Average RF	% RSD	8.4	≤20	1.296E3	
Residual Range Organics (C25 - C36 RRO)	TRG	Average RF	% RSD	10.1	≤20	928.1	
n-Triacontane	SURR	Average RF	% RSD	3.6	≤20	1.407E3	
o-Terphenyl	SURR	Average RF	% RSD	5.6	≤20	1.749E3	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 8/26/2020

Initial Calibration Verification Summary
Semi-Volatile Petroleum Products by GC/FID

Calibration ID: KC2000445 **Signal ID:** ZB-1
Instrument ID: K-GC-21

#	Lab Code	Sample Name	File Location	Acquisition Date
15	KC2000445-15	AK103 SVF03-1G ICV@1000	J:\GC21\DATA\082620F\0826F136.D	08/27/2020 03:42
21	KC2000445-21	DRO SVF03-2D ICV@1000	J:\GC21\DATA\082620F\0826F157.D	08/27/2020 11:34
20	KC2000445-20	RRO SVF03-02E ICV@1000	J:\GC21\DATA\082620F\0826F161.D	08/27/2020 13:04

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Diesel Range Organics (C12 - C25 DRO)	1000	985	1.296E3	1.276E3	-1.522	±15	Average RF
Residual Range Organics (C25 - C36 RRO)	1000	870	9.281E2	8.071E2	-13.040	±15	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 21:13

Continuing Calibration Verification (CCV) Summary
Semi-Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Dx	**Calibration Date:**	8/26/2020
File ID:	J:\GC21\DATA\091620F\0916F202.D\	**Calibration ID:**	KC2000445
Signal ID:	ZB-1	**Analysis Lot:**	695614
		Units:	ppm

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Diesel Range Organics (C12 - C25 DRO)	1000	1020	1.296E3	1.319E3	1.7	NA	±15	Average RF
Residual Range Organics (C25 - C36 RRO)	1000	1030	928.1187	960.307	3.5	NA	±15	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
o-Terphenyl	50.0	47.5	1.749E3	1.662E3	-5.0	NA	±15	Average RF
n-Triacontane	50.0	51.8	1.407E3	1.458E3	3.6	NA	±15	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	09/18/20 06:11

Continuing Calibration Verification (CCV) Summary
Semi-Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Dx	**Calibration Date:**	8/26/2020
File ID:	J:\GC21\DATA\091620F\0916F226.D\	**Calibration ID:**	KC2000445
Signal ID:	ZB-1	**Analysis Lot:**	695614
		Units:	ppm

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Diesel Range Organics (C12 - C25 DRO)	1000	1120	1.296E3	1.447E3	11.6	NA	±15	Average RF
Residual Range Organics (C25 - C36 RRO)	1000	1080	928.1187	997.923	7.5	NA	±15	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
o-Terphenyl	50.0	50.6	1.749E3	1.771E3	1.3	NA	±15	Average RF
n-Triacontane	50.0	54.7	1.407E3	1.539E3	9.4	NA	±15	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305

Analysis Run Log
Semi-Volatile Petroleum Products by GC/FID

Analysis Method: **Analysis Lot:**695614
Instrument ID:K-GC-21

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC21\DATA\091620F\0916F148.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	01:00:00	
J:\GC21\DATA\091620F\0916F149.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	01:22:00	
J:\GC21\DATA\091620F\0916F150.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	01:45:00	
J:\GC21\DATA\091620F\0916F158.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	04:43:00	
J:\GC21\DATA\091620F\0916F159.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	05:06:00	
J:\GC21\DATA\091620F\0916F162.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	06:13:00	
J:\GC21\DATA\091620F\0916F163.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	06:36:00	
J:\GC21\DATA\091620F\0916F164.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	06:58:00	
J:\GC21\DATA\091620F\0916F165.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	07:21:00	
J:\GC21\DATA\091620F\0916F166.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	07:43:00	
J:\GC21\DATA\091620F\0916F167.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	08:05:00	
J:\GC21\DATA\091620F\0916F169.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	08:50:00	
J:\GC21\DATA\091620F\0916F176.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	11:28:00	
J:\GC21\DATA\091620F\0916F177.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	11:51:00	
J:\GC21\DATA\091620F\0916F178.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	12:13:00	
J:\GC21\DATA\091620F\0916F202.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	21:13:00	
J:\GC21\DATA\091620F\0916F202.D\	Continuing Calibration Verification	KQ2013447-13	9/17/2020	21:13:00	
J:\GC21\DATA\091620F\0916F203.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	21:35:00	
J:\GC21\DATA\091620F\0916F203.D\	Continuing Calibration Verification	KQ2013447-13	9/17/2020	21:35:00	
J:\GC21\DATA\091620F\0916F204.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	21:58:00	
J:\GC21\DATA\091620F\0916F204.D\	Continuing Calibration Blank	KQ2013447-15	9/17/2020	21:58:00	
J:\GC21\DATA\091620F\0916F205.D\	Lab Control Sample	KQ2013018-03	9/17/2020	22:20:00	
J:\GC21\DATA\091620F\0916F206.D\	Method Blank	KQ2013018-04	9/17/2020	22:43:00	
J:\GC21\DATA\091620F\0916F207.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	23:05:00	
J:\GC21\DATA\091620F\0916F208.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	23:28:00	
J:\GC21\DATA\091620F\0916F209.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	23:50:00	
J:\GC21\DATA\091620F\0916F213.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	01:20:00	
J:\GC21\DATA\091620F\0916F214.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	01:42:00	
J:\GC21\DATA\091620F\0916F215.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	02:05:00	
J:\GC21\DATA\091620F\0916F216.D\	FTP-1-20200910	K2007905-001	9/18/2020	02:27:00	
J:\GC21\DATA\091620F\0916F217.D\	FTP-1-20200910 MS	KQ2013018-01	9/18/2020	02:50:00	
J:\GC21\DATA\091620F\0916F218.D\	FTP-1-20200910 DMS	KQ2013018-02	9/18/2020	03:12:00	
J:\GC21\DATA\091620F\0916F220.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	03:57:00	
J:\GC21\DATA\091620F\0916F221.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	04:19:00	
J:\GC21\DATA\091620F\0916F222.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	04:42:00	
J:\GC21\DATA\091620F\0916F223.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	05:04:00	
J:\GC21\DATA\091620F\0916F226.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	06:11:00	
J:\GC21\DATA\091620F\0916F226.D\	Continuing Calibration Verification	KQ2013447-14	9/18/2020	06:11:00	
J:\GC21\DATA\091620F\0916F227.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	06:34:00	
J:\GC21\DATA\091620F\0916F227.D\	Continuing Calibration Verification	KQ2013447-14	9/18/2020	06:34:00	
J:\GC21\DATA\091620F\0916F228.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	06:56:00	
J:\GC21\DATA\091620F\0916F228.D\	Continuing Calibration Blank	KQ2013447-16	9/18/2020	06:56:00	
J:\GC21\DATA\091620F\0916F229.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	07:19:00	
J:\GC21\DATA\091620F\0916F234.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	09:12:00	
J:\GC21\DATA\091620F\0916F239.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	11:04:00	
J:\GC21\DATA\091620F\0916F240.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	11:27:00	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305

Analysis Run Log
Semi-Volatile Petroleum Products by GC/FID

Analysis Method: **Analysis Lot:**695614
Instrument ID:K-GC-21

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC21\DATA\091620F\0916F241.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	11:49:00	
J:\GC21\DATA\091620F\0916F243.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	12:34:00	
J:\GC21\DATA\091620F\0916F245.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	13:19:00	
J:\GC21\DATA\091620F\0916F246.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	13:42:00	
J:\GC21\DATA\091620F\0916F247.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	14:04:00	

Prep Summary Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305
Sample Matrix: Ground Water

Semi-Volatile Petroleum Products by GC/FID

Prep Method: EPA 3510C **Extraction Lot:** 365494
Analytical Method: NWTPH-Dx **Extraction Date:** 09/14/20 09:54

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
FTP-1-20200910	K2007905-001	9/10/20	9/11/20	490.0000 mL	1 mL	
Matrix Spike	KQ2013018-01MS	9/10/20	9/11/20	500 mL	1 mL	
Duplicate Matrix Spike	KQ2013018-02DMS	9/10/20	9/11/20	490.0000 mL	1 mL	
Lab Control Sample	KQ2013018-03LCS	NA	NA	500 mL	1 mL	
Method Blank	KQ2013018-04MB	NA	NA	500 mL	1 mL	

Semi-Volatile Organic Compounds by GC/MS

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND	U	20	1.5	0.20	2	10/08/20 12:54	9/15/20	
1,2-Dichlorobenzene	ND	U	20	1.0	0.38	2	10/08/20 12:54	9/15/20	
1,3-Dichlorobenzene	ND	U	20	1.5	0.44	2	10/08/20 12:54	9/15/20	
1,4-Dichlorobenzene	ND	U	20	1.5	0.40	2	10/08/20 12:54	9/15/20	
2,4,5-Trichlorophenol	ND	U	20	1.5	0.50	2	10/08/20 12:54	9/15/20	
2,4,6-Trichlorophenol	ND	U	20	3.0	0.50	2	10/08/20 12:54	9/15/20	
2,4-Dichlorophenol	ND	U	20	1.5	0.70	2	10/08/20 12:54	9/15/20	
2,4-Dimethylphenol	ND	U	40	30	11	2	10/08/20 12:54	9/15/20	
2,4-Dinitrophenol	ND	U	100	20	2.2	2	10/08/20 12:54	9/15/20	
2,4-Dinitrotoluene	ND	U	20	1.5	0.46	2	10/08/20 12:54	9/15/20	
2,6-Dinitrotoluene	ND	U	20	1.5	0.54	2	10/08/20 12:54	9/15/20	
2-Chloronaphthalene	ND	U	20	1.0	0.42	2	10/08/20 12:54	9/15/20	
2-Chlorophenol	ND	U	20	1.5	0.52	2	10/08/20 12:54	9/15/20	
2-Methyl-4,6-dinitrophenol	ND	U	50	10	3.8	2	10/08/20 12:54	9/15/20	
2-Methylnaphthalene	**68**		20	1.5	0.60	2	10/08/20 12:54	9/15/20	
2-Methylphenol	ND	U	20	3.0	1.4	2	10/08/20 12:54	9/15/20	
2-Nitroaniline	ND	U	50	3.0	0.94	2	10/08/20 12:54	9/15/20	
2-Nitrophenol	ND	U	20	1.5	0.74	2	10/08/20 12:54	9/15/20	
3,3'-Dichlorobenzidine	ND	U	50	10	0.68	2	10/08/20 12:54	9/15/20	
3-Nitroaniline	ND	U	50	3.0	0.50	2	10/08/20 12:54	9/15/20	
4-Bromophenyl Phenyl Ether	ND	U	20	1.5	0.24	2	10/08/20 12:54	9/15/20	
4-Chloro-3-methylphenol	ND	U	20	3.0	1.1	2	10/08/20 12:54	9/15/20	
4-Chloroaniline	ND	U	20	2.0	0.94	2	10/08/20 12:54	9/15/20	
4-Chlorophenyl Phenyl Ether	ND	U	20	1.5	0.60	2	10/08/20 12:54	9/15/20	
4-Methylphenol	ND	U	20	3.0	1.5	2	10/08/20 12:54	9/15/20	
4-Nitroaniline	ND	U	50	3.0	0.84	2	10/08/20 12:54	9/15/20	
4-Nitrophenol	ND	U	50	8.0	3.4	2	10/08/20 12:54	9/15/20	
Acenaphthene	**3.1**	**J**	20	1.0	0.28	2	10/08/20 12:54	9/15/20	
Acenaphthylene	ND	U	20	1.0	0.36	2	10/08/20 12:54	9/15/20	
Aniline	ND	U	50	4.0	1.9	2	10/08/20 12:54	9/15/20	
Anthracene	ND	U	20	1.5	0.66	2	10/08/20 12:54	9/15/20	
Benz(a)anthracene	**0.52**	**J**	20	1.0	0.28	2	10/08/20 12:54	9/15/20	
Benzo(a)pyrene	ND	U	20	1.5	0.52	2	10/08/20 12:54	9/15/20	
Benzo(b)fluoranthene	ND	U	20	2.0	0.76	2	10/08/20 12:54	9/15/20	
Benzo(g,h,i)perylene	ND	U	20	1.5	0.46	2	10/08/20 12:54	9/15/20	
Benzo(k)fluoranthene	ND	U	20	1.5	0.58	2	10/08/20 12:54	9/15/20	
Benzoic Acid	**58**		50	20	5.8	2	10/08/20 12:54	9/15/20	
Benzyl Alcohol	ND	U	20	1.5	0.70	2	10/08/20 12:54	9/15/20	
Bis(2-chloroethoxy)methane	ND	U	20	1.5	0.68	2	10/08/20 12:54	9/15/20	
Bis(2-chloroethyl) Ether	ND	U	20	2.0	0.82	2	10/08/20 12:54	9/15/20	
Bis(2-ethylhexyl) Phthalate	**2.2**	**J**	20	1.5	0.54	2	10/08/20 12:54	9/15/20	
Butyl Benzyl Phthalate	ND	U	20	1.5	0.74	2	10/08/20 12:54	9/15/20	
Chrysene	ND	U	20	1.0	0.40	2	10/08/20 12:54	9/15/20	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Dibenz(a,h)anthracene	ND	U	20	1.5	1.5	2	10/08/20 12:54	9/15/20	
Dibenzofuran	**5.4**	**J**	20	1.5	0.62	2	10/08/20 12:54	9/15/20	
Diethyl Phthalate	ND	U	20	1.5	0.58	2	10/08/20 12:54	9/15/20	
Dimethyl Phthalate	ND	U	20	1.5	0.52	2	10/08/20 12:54	9/15/20	
Di-n-butyl Phthalate	ND	U	20	1.0	0.46	2	10/08/20 12:54	9/15/20	
Di-n-octyl Phthalate	ND	U	20	1.5	0.54	2	10/08/20 12:54	9/15/20	
Fluoranthene	**0.90**	**J**	20	1.0	0.34	2	10/08/20 12:54	9/15/20	
Fluorene	**9.9**	**J**	20	1.0	0.46	2	10/08/20 12:54	9/15/20	
Hexachlorobenzene	ND	U	20	1.5	0.70	2	10/08/20 12:54	9/15/20	
Hexachlorobutadiene	ND	U	20	1.5	0.42	2	10/08/20 12:54	9/15/20	
Hexachlorocyclopentadiene	ND	U	100	10	3.0	2	10/08/20 12:54	9/15/20	
Hexachloroethane	ND	U	20	3.0	0.46	2	10/08/20 12:54	9/15/20	
Indeno(1,2,3-cd)pyrene	ND	U	20	1.5	0.58	2	10/08/20 12:54	9/15/20	
Isophorone	ND	U	20	1.5	0.90	2	10/08/20 12:54	9/15/20	
Naphthalene	**36**		20	1.5	0.52	2	10/08/20 12:54	9/15/20	
Nitrobenzene	ND	U	20	2.0	0.92	2	10/08/20 12:54	9/15/20	
N-Nitrosodimethylamine	ND	U	50	20	6.0	2	10/08/20 12:54	9/15/20	
N-Nitrosodi-n-propylamine	ND	U	20	4.0	1.2	2	10/08/20 12:54	9/15/20	
N-Nitrosodiphenylamine	ND	U	20	1.0	0.48	2	10/08/20 12:54	9/15/20	
Pentachlorophenol	ND	U	50	20	7.0	2	10/08/20 12:54	9/15/20	
Phenanthrene	**10**	**J**	20	1.5	0.52	2	10/08/20 12:54	9/15/20	
Phenol	ND	U	20	1.0	0.50	2	10/08/20 12:54	9/15/20	
Pyrene	**1.2**	**J**	20	1.5	0.54	2	10/08/20 12:54	9/15/20	
2,2'-Oxybis(1-chloropropane)	ND	U	20	1.5	0.56	2	10/08/20 12:54	9/15/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	97	43 - 140	10/08/20 12:54	
2-Fluorobiphenyl	67	44 - 119	10/08/20 12:54	
2-Fluorophenol	73	19 - 119	10/08/20 12:54	
Nitrobenzene-d5	85	44 - 120	10/08/20 12:54	
Phenol-d6	87	38 - 107	10/08/20 12:54	
Terphenyl-d14	54	50 - 134	10/08/20 12:54	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013089-04	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4-Trichlorobenzene	ND U	10	0.75	0.10	1	10/08/20 11:37	9/15/20	
1,2-Dichlorobenzene	ND U	10	0.50	0.19	1	10/08/20 11:37	9/15/20	
1,3-Dichlorobenzene	ND U	10	0.75	0.22	1	10/08/20 11:37	9/15/20	
1,4-Dichlorobenzene	ND U	10	0.75	0.20	1	10/08/20 11:37	9/15/20	
2,4,5-Trichlorophenol	ND U	10	0.75	0.25	1	10/08/20 11:37	9/15/20	
2,4,6-Trichlorophenol	ND U	10	1.5	0.25	1	10/08/20 11:37	9/15/20	
2,4-Dichlorophenol	ND U	10	0.75	0.35	1	10/08/20 11:37	9/15/20	
2,4-Dimethylphenol	ND U	20	15	5.5	1	10/08/20 11:37	9/15/20	
2,4-Dinitrophenol	ND U	50	10	1.1	1	10/08/20 11:37	9/15/20	
2,4-Dinitrotoluene	ND U	10	0.75	0.23	1	10/08/20 11:37	9/15/20	
2,6-Dinitrotoluene	ND U	10	0.75	0.27	1	10/08/20 11:37	9/15/20	
2-Chloronaphthalene	ND U	10	0.50	0.21	1	10/08/20 11:37	9/15/20	
2-Chlorophenol	ND U	10	0.75	0.26	1	10/08/20 11:37	9/15/20	
2-Methyl-4,6-dinitrophenol	ND U	25	5.0	1.9	1	10/08/20 11:37	9/15/20	
2-Methylnaphthalene	ND U	10	0.75	0.30	1	10/08/20 11:37	9/15/20	
2-Methylphenol	ND U	10	1.5	0.66	1	10/08/20 11:37	9/15/20	
2-Nitroaniline	ND U	25	1.5	0.47	1	10/08/20 11:37	9/15/20	
2-Nitrophenol	ND U	10	0.75	0.37	1	10/08/20 11:37	9/15/20	
3,3'-Dichlorobenzidine	ND U	25	5.0	0.34	1	10/08/20 11:37	9/15/20	
3-Nitroaniline	ND U	25	1.5	0.25	1	10/08/20 11:37	9/15/20	
4-Bromophenyl Phenyl Ether	ND U	10	0.75	0.12	1	10/08/20 11:37	9/15/20	
4-Chloro-3-methylphenol	ND U	10	1.5	0.53	1	10/08/20 11:37	9/15/20	
4-Chloroaniline	ND U	10	1.0	0.47	1	10/08/20 11:37	9/15/20	
4-Chlorophenyl Phenyl Ether	ND U	10	0.75	0.30	1	10/08/20 11:37	9/15/20	
4-Methylphenol	ND U	10	1.5	0.74	1	10/08/20 11:37	9/15/20	
4-Nitroaniline	ND U	25	1.5	0.42	1	10/08/20 11:37	9/15/20	
4-Nitrophenol	ND U	25	4.0	1.7	1	10/08/20 11:37	9/15/20	
Acenaphthene	ND U	10	0.50	0.14	1	10/08/20 11:37	9/15/20	
Acenaphthylene	ND U	10	0.50	0.18	1	10/08/20 11:37	9/15/20	
Aniline	ND U	25	2.0	0.94	1	10/08/20 11:37	9/15/20	
Anthracene	ND U	10	0.75	0.33	1	10/08/20 11:37	9/15/20	
Benz(a)anthracene	ND U	10	0.50	0.14	1	10/08/20 11:37	9/15/20	
Benzo(a)pyrene	ND U	10	0.75	0.26	1	10/08/20 11:37	9/15/20	
Benzo(b)fluoranthene	ND U	10	1.0	0.38	1	10/08/20 11:37	9/15/20	
Benzo(g,h,i)perylene	ND U	10	0.75	0.23	1	10/08/20 11:37	9/15/20	
Benzo(k)fluoranthene	ND U	10	0.75	0.29	1	10/08/20 11:37	9/15/20	
Benzoic Acid	ND U	25	10	2.9	1	10/08/20 11:37	9/15/20	
Benzyl Alcohol	ND U	10	0.75	0.35	1	10/08/20 11:37	9/15/20	
Bis(2-chloroethoxy)methane	ND U	10	0.75	0.34	1	10/08/20 11:37	9/15/20	
Bis(2-chloroethyl) Ether	ND U	10	1.0	0.41	1	10/08/20 11:37	9/15/20	
Bis(2-ethylhexyl) Phthalate	ND U	10	0.75	0.27	1	10/08/20 11:37	9/15/20	
Butyl Benzyl Phthalate	ND U	10	0.75	0.37	1	10/08/20 11:37	9/15/20	
Chrysene	ND U	10	0.50	0.20	1	10/08/20 11:37	9/15/20	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013089-04	**Basis:**	NA

Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Dibenz(a,h)anthracene	ND U	10	0.75	0.75	1	10/08/20 11:37	9/15/20	
Dibenzofuran	ND U	10	0.75	0.31	1	10/08/20 11:37	9/15/20	
Diethyl Phthalate	ND U	10	0.75	0.29	1	10/08/20 11:37	9/15/20	
Dimethyl Phthalate	ND U	10	0.75	0.26	1	10/08/20 11:37	9/15/20	
Di-n-butyl Phthalate	ND U	10	0.50	0.23	1	10/08/20 11:37	9/15/20	
Di-n-octyl Phthalate	ND U	10	0.75	0.27	1	10/08/20 11:37	9/15/20	
Fluoranthene	ND U	10	0.50	0.17	1	10/08/20 11:37	9/15/20	
Fluorene	ND U	10	0.50	0.23	1	10/08/20 11:37	9/15/20	
Hexachlorobenzene	ND U	10	0.75	0.35	1	10/08/20 11:37	9/15/20	
Hexachlorobutadiene	ND U	10	0.75	0.21	1	10/08/20 11:37	9/15/20	
Hexachlorocyclopentadiene	ND U	50	5.0	1.5	1	10/08/20 11:37	9/15/20	
Hexachloroethane	ND U	10	1.5	0.23	1	10/08/20 11:37	9/15/20	
Indeno(1,2,3-cd)pyrene	ND U	10	0.75	0.29	1	10/08/20 11:37	9/15/20	
Isophorone	ND U	10	0.75	0.45	1	10/08/20 11:37	9/15/20	
Naphthalene	ND U	10	0.75	0.26	1	10/08/20 11:37	9/15/20	
Nitrobenzene	ND U	10	1.0	0.46	1	10/08/20 11:37	9/15/20	
N-Nitrosodimethylamine	ND U	25	10	3.0	1	10/08/20 11:37	9/15/20	
N-Nitrosodi-n-propylamine	ND U	10	2.0	0.59	1	10/08/20 11:37	9/15/20	
N-Nitrosodiphenylamine	ND U	10	0.50	0.24	1	10/08/20 11:37	9/15/20	
Pentachlorophenol	ND U	25	10	3.5	1	10/08/20 11:37	9/15/20	
Phenanthrene	ND U	10	0.75	0.26	1	10/08/20 11:37	9/15/20	
Phenol	ND U	10	0.50	0.25	1	10/08/20 11:37	9/15/20	
Pyrene	ND U	10	0.75	0.27	1	10/08/20 11:37	9/15/20	
2,2'-Oxybis(1-chloropropane)	ND U	10	0.75	0.28	1	10/08/20 11:37	9/15/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	66	43 - 140	10/08/20 11:37	
2-Fluorobiphenyl	70	44 - 119	10/08/20 11:37	
2-Fluorophenol	67	19 - 119	10/08/20 11:37	
Nitrobenzene-d5	73	44 - 120	10/08/20 11:37	
Phenol-d6	74	38 - 107	10/08/20 11:37	
Terphenyl-d14	93	50 - 134	10/08/20 11:37	

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

		2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol
Sample Name	**Lab Code**	**43-140**	**44-119**	**19-119**
FTP-1-20200910	K2007905-001	97	67	73
Method Blank	KQ2013089-04	66	70	67
Lab Control Sample	KQ2013089-03	77	73	69
FTP-1-20200910	KQ2013089-01	75	60	67
FTP-1-20200910	KQ2013089-02	81	74	71

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

		Nitrobenzene-d5	Phenol-d6	Terphenyl-d14
Sample Name	**Lab Code**	**44-120**	**38-107**	**50-134**
FTP-1-20200910	K2007905-001	85	87	54
Method Blank	KQ2013089-04	73	74	93
Lab Control Sample	KQ2013089-03	74	79	87
FTP-1-20200910	KQ2013089-01	71	80	56
FTP-1-20200910	KQ2013089-02	78	87	83

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305 **Date Analyzed:**10/08/20 11:09

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS28\DATA\100820\1008F003.D\ **Lab Code:**KQ2015048-05
Instrument ID: K-MS-28 **Analysis Lot:**698479
Analysis Method: 8270D **Signal ID:**1

		1,4-Dichlorobenzene-d4		Acenaphthene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	50,474	3.17	105,978	5.73	224,233	9.48
	Upper Limit ==>	100,948	3.34	211,956	5.90	448,466	9.65
	Lower Limit ==>	25,237	3.00	52,989	5.56	112,117	9.31
Associated Analyses							
Continuing Calibration Verification	KQ2015048-05	45431	3.18	91756	5.75	139511	9.51
Method Blank	KQ2013089-04	50689	3.18	110013	5.75	154241	9.50
Lab Control Sample	KQ2013089-03	55803	3.18	118389	5.75	175742	9.50
FTP-1-20200910MS	KQ2013089-01	57067	3.18	125415	5.75	176814	9.50
FTP-1-20200910DMS	KQ2013089-02	62614	3.18	141364	5.75	202987	9.51
FTP-1-20200910	K2007905-001	70064	3.18	159312	5.75	232436	9.50

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305 **Date Analyzed:**10/08/20 11:09

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS28\DATA\100820\1008F003.D\ **Lab Code:**KQ2015048-05
Instrument ID: K-MS-28 **Analysis Lot:**698479
Analysis Method: 8270D **Signal ID:**1

		Naphthalene-d8		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	218,301	4.20	239,660	11.48	212,771	7.05
	Upper Limit ==>	436,602	4.37	479,320	11.65	425,542	7.22
	Lower Limit ==>	109,151	4.03	119,830	11.31	106,386	6.88
Associated Analyses							
Continuing Calibration Verification	KQ2015048-05	186705	4.21	145839	11.53	163778	7.07
Method Blank	KQ2013089-04	214433	4.21	156552	11.52	201767	7.07
Lab Control Sample	KQ2013089-03	235639	4.21	169109	11.52	209362	7.07
FTP-1-20200910MS	KQ2013089-01	245329	4.21	182970	11.53	227501	7.07
FTP-1-20200910DMS	KQ2013089-02	278469	4.21	199116	11.53	257973	7.07
FTP-1-20200910	K2007905-001	301470	4.21	222511	11.53	290935	7.07

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305 **Date Analyzed:**10/08/20 14:30

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS28\DATA\100820\1008F014.D\ **Lab Code:**KQ2015048-03
Instrument ID: K-MS-28 **Analysis Lot:**698479
Analysis Method: 8270D **Signal ID:**1

		1,4-Dichlorobenzene-d4		Acenaphthene-d10		Chrysene-d12	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	50,474	3.17	105,978	5.73	224,233	9.48
	Upper Limit ==>	100,948	3.34	211,956	5.90	448,466	9.65
	Lower Limit ==>	25,237	3.00	52,989	5.56	112,117	9.31
Associated Analyses							
Continuing Cal. Verification	KQ2015048-03	55071	3.18	123494	5.75	190609	9.51

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305 **Date Analyzed:**10/08/20 14:30

Internal Standard Area and RT SUMMARY
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS28\DATA\100820\1008F014.D\ **Lab Code:**KQ2015048-03
Instrument ID: K-MS-28 **Analysis Lot:**698479
Analysis Method: 8270D **Signal ID:**1

		Naphthalene-d8		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	218,301	4.20	239,660	11.48	212,771	7.05
	Upper Limit ==>	436,602	4.37	479,320	11.65	425,542	7.22
	Lower Limit ==>	109,151	4.03	119,830	11.31	106,386	6.88
Associated Analyses							
Continuing Cal. Verification	KQ2015048-03	239051	4.21	201267	11.53	221821	7.07

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	10/8/20
		Date Extracted:	09/15/20

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3520C		

		Matrix Spike KQ2013089-01			**Duplicate Matrix Spike** KQ2013089-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,4-Trichlorobenzene	ND U	64.7	100	65	73.0	100	73	29-116	12	20
1,2-Dichlorobenzene	ND U	67.2	100	67	70.7	100	71	32-111	5	20
1,3-Dichlorobenzene	ND U	65.2	100	65	69.1	100	69	28-110	6	20
1,4-Dichlorobenzene	ND U	65.0	100	65	69.1	100	69	29-112	6	20
2,4,5-Trichlorophenol	ND U	74.0	100	74	77.5	100	78	53-123	5	20
2,4,6-Trichlorophenol	ND U	73.6	100	74	76.6	100	77	50-125	4	20
2,4-Dichlorophenol	ND U	76.4	100	76	82.1	100	82	47-121	7	20
2,4-Dimethylphenol	ND U	79.8	100	80	79.5	100	80	31-124	<1	20
2,4-Dinitrophenol	ND U	90.0 J	100	90	95.4 J	100	95	23-143	6	20
2,4-Dinitrotoluene	ND U	72.7	100	73	75.0	100	75	57-128	3	20
2,6-Dinitrotoluene	ND U	71.6	100	72	75.4	100	75	57-124	5	20
2-Chloronaphthalene	ND U	72.5	100	73	84.8	100	85	40-116	16	20
2-Chlorophenol	ND U	70.4	100	70	75.4	100	75	38-117	7	20
2-Methyl-4,6-dinitrophenol	ND U	77.0	100	77	80.0	100	80	44-137	4	20
2-Methylnaphthalene	68	134	100	66	108	100	40	40-121	22*	20
2-Methylphenol	ND U	74.5	100	74	80.7	100	81	30-117	8	20
2-Nitroaniline	ND U	71.1	100	71	75.6	100	76	55-127	6	20
2-Nitrophenol	ND U	76.9	100	77	78.3	100	78	47-123	2	20
3,3'-Dichlorobenzidine	ND U	ND U	100	0 *	ND U	100	0 *	27-129	NC	20
3-Nitroaniline	ND U	52.9	100	53	55.2	100	55	41-128	4	20
4-Bromophenyl Phenyl Ether	ND U	54.2	100	54 *	74.1	100	74	55-124	31*	20
4-Chloro-3-methylphenol	ND U	79.9	100	80	83.9	100	84	52-119	5	20
4-Chloroaniline	ND U	40.9	100	41	39.0	100	39	33-117	5	20
4-Chlorophenyl Phenyl Ether	ND U	54.3	100	54	72.1	100	72	53-121	28*	20
4-Methylphenol	ND U	77.6	100	78	83.2	100	83	25-120	7	20
4-Nitroaniline	ND U	49.5 J	100	50	52.3	100	52	48-133	5	20
4-Nitrophenol	ND U	66.6	100	67	15.1 J	100	15 *	52-132	126*	20
Acenaphthene	3.1 J	60.8	100	58	72.7	100	70	47-122	18	20
Acenaphthylene	ND U	62.4	100	62	71.3	100	71	41-130	13	20
Aniline	ND U	28.8 J	100	29	26.3 J	100	26	22-125	9	20
Anthracene	ND U	53.1	100	53 *	70.5	100	71	57-123	28*	20
Benz(a)anthracene	0.52 J	51.5	100	51 *	74.6	100	74	58-125	37*	20
Benzo(a)pyrene	ND U	43.9	100	44 *	67.4	100	67	54-128	42*	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	10/8/20
		Date Extracted:	09/15/20

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3520C		

		Matrix Spike KQ2013089-01			Duplicate Matrix Spike KQ2013089-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Benzo(b)fluoranthene	ND U	48.2	100	48 *	75.7	100	76	53-131	44*	20
Benzo(g,h,i)perylene	ND U	49.9	100	50	73.1	100	73	50-134	38*	20
Benzo(k)fluoranthene	ND U	48.7	100	49 *	73.8	100	74	57-129	41*	20
Benzoic Acid	58	152	100	94	122	100	64	28-128	22*	20
Benzyl Alcohol	ND U	76.7	100	77	81.8	100	82	31-112	6	20
Bis(2-chloroethoxy)methane	ND U	74.7	100	75	79.3	100	79	48-120	6	20
Bis(2-chloroethyl) Ether	ND U	68.6	100	69	76.8	100	77	43-118	11	20
Bis(2-ethylhexyl) Phthalate	2.2 J	68.7	100	66	98.0	100	96	55-135	35*	20
Butyl Benzyl Phthalate	ND U	65.4	100	65	91.7	100	92	53-134	33*	20
Chrysene	ND U	52.7	100	53 *	76.8	100	77	59-123	37*	20
Dibenz(a,h)anthracene	ND U	49.0	100	49 *	71.2	100	71	51-134	37*	20
Dibenzofuran	5.4 J	64.2	100	59	77.0	100	72	53-118	18	20
Diethyl Phthalate	ND U	70.5	100	70	75.7	100	76	56-125	7	20
Dimethyl Phthalate	ND U	71.0	100	71	75.1	100	75	45-127	6	20
Di-n-butyl Phthalate	ND U	59.5	100	59	83.0	100	83	59-127	33*	20
Di-n-octyl Phthalate	ND U	65.5	100	66	95.5	100	96	51-140	37*	20
Fluoranthene	0.90 J	51.4	100	51 *	72.7	100	72	57-128	34*	20
Fluorene	9.9 J	68.2	100	58	79.6	100	70	52-124	15	20
Hexachlorobenzene	ND U	49.0	100	49 *	69.1	100	69	53-125	34*	20
Hexachlorobutadiene	ND U	50.5	100	51	69.5	100	69	22-124	32*	20
Hexachlorocyclopentadiene	ND U	25.1 J	100	25	29.5 J	100	29	10-45	16	20
Hexachloroethane	ND U	97.0	100	97	101	100	101	21-115	4	20
Indeno(1,2,3-cd)pyrene	ND U	46.8	100	47 *	68.7	100	69	52-134	38*	20
Isophorone	ND U	74.9	100	75	77.4	100	77	42-124	3	20
Naphthalene	36	102	100	66	98.7	100	62	40-121	3	20
Nitrobenzene	ND U	74.8	100	75	79.2	100	79	45-121	6	20
N-Nitrosodimethylamine	ND U	60.3	100	60	59.4	100	59	43-116	2	20
N-Nitrosodi-n-propylamine	ND U	71.0	100	71	75.4	100	75	49-119	6	20
N-Nitrosodiphenylamine	ND U	62.8	100	63	67.1	100	67	51-123	7	20
Pentachlorophenol	ND U	93.0	100	93	98.3	100	98	35-138	5	20
Phenanthrene	10 J	65.2	100	55 *	76.8	100	66	59-120	16	20
Phenol	ND U	73.0	100	73	78.4	100	78	54-105	7	20
Pyrene	1.2 J	63.9	100	63	86.9	100	86	57-126	30*	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	10/8/20
		Date Extracted:	09/15/20

Duplicate Matrix Spike Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007905-001	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3520C		

		Matrix Spike KQ2013089-01			**Duplicate Matrix Spike** KQ2013089-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,2'-Oxybis(1-chloropropane)	ND U	70.8	100	71	76.4	100	76	37-130	8	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20
Sample Matrix:	Ground Water	**Date Extracted:**	09/15/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	698479

Lab Control Sample
KQ2013089-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
1,2,4-Trichlorobenzene	69.5	100	70	29-116
1,2-Dichlorobenzene	66.5	100	66	32-111
1,3-Dichlorobenzene	65.5	100	66	28-110
1,4-Dichlorobenzene	66.4	100	66	29-112
2,2'-Oxybis(1-chloropropane)	66.2	100	66	37-130
2,4,5-Trichlorophenol	74.6	100	75	53-123
2,4,6-Trichlorophenol	73.0	100	73	50-125
2,4-Dichlorophenol	74.8	100	75	47-121
2,4-Dimethylphenol	46.4	100	46	31-124
2,4-Dinitrophenol	73.4	100	73	23-143
2,4-Dinitrotoluene	72.7	100	73	57-128
2,6-Dinitrotoluene	71.6	100	72	57-124
2-Chloronaphthalene	78.2	100	78	40-116
2-Chlorophenol	70.8	100	71	38-117
2-Methyl-4,6-dinitrophenol	70.7	100	71	44-137
2-Methylnaphthalene	72.7	100	73	40-121
2-Methylphenol	69.8	100	70	30-117
2-Nitroaniline	71.1	100	71	55-127
2-Nitrophenol	76.1	100	76	47-123
3,3'-Dichlorobenzidine	58.5	100	58	27-129
3-Nitroaniline	75.3	100	75	41-128
4-Bromophenyl Phenyl Ether	76.0	100	76	55-124
4-Chloro-3-methylphenol	79.3	100	79	52-119
4-Chloroaniline	77.8	100	78	33-117
4-Chlorophenyl Phenyl Ether	73.2	100	73	53-121
4-Methylphenol	72.1	100	72	25-120
4-Nitroaniline	71.4	100	71	48-133
4-Nitrophenol	68.3	100	68	52-132
Acenaphthene	69.4	100	69	47-122
Acenaphthylene	71.3	100	71	41-130
Aniline	67.5	100	67	22-125
Anthracene	75.6	100	76	57-123
Benz(a)anthracene	80.5	100	81	58-125
Benzo(a)pyrene	76.5	100	77	54-128
Benzo(b)fluoranthene	82.3	100	82	53-131
Benzo(g,h,i)perylene	73.9	100	74	50-134
Benzo(k)fluoranthene	83.8	100	84	57-129
Benzoic Acid	74.4	100	74	28-128
Benzyl Alcohol	75.6	100	76	31-112
Bis(2-chloroethoxy)methane	73.7	100	74	48-120
Bis(2-chloroethyl) Ether	65.8	100	66	43-118

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20
Sample Matrix:	Ground Water	**Date Extracted:**	09/15/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	698479

Lab Control Sample
KQ2013089-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	93.6	100	94	55-135
Butyl Benzyl Phthalate	87.4	100	87	53-134
Chrysene	81.1	100	81	59-123
Dibenz(a,h)anthracene	73.6	100	74	51-134
Dibenzofuran	70.3	100	70	53-118
Diethyl Phthalate	73.4	100	73	56-125
Dimethyl Phthalate	73.5	100	73	45-127
Di-n-butyl Phthalate	83.3	100	83	59-127
Di-n-octyl Phthalate	88.9	100	89	51-140
Fluoranthene	74.7	100	75	57-128
Fluorene	72.5	100	73	52-124
Hexachlorobenzene	73.7	100	74	53-125
Hexachlorobutadiene	64.6	100	65	22-124
Hexachlorocyclopentadiene	30.0 J	100	30	10-45
Hexachloroethane	67.0	100	67	21-115
Indeno(1,2,3-cd)pyrene	71.7	100	72	52-134
Isophorone	72.0	100	72	42-124
Naphthalene	68.8	100	69	40-121
Nitrobenzene	72.9	100	73	45-121
N-Nitrosodimethylamine	58.4	100	58	43-116
N-Nitrosodi-n-propylamine	67.1	100	67	49-119
N-Nitrosodiphenylamine	68.7	100	69	51-123
Pentachlorophenol	71.4	100	71	35-138
Phenanthrene	74.8	100	75	59-120
Phenol	71.5	100	71	54-105
Pyrene	83.6	100	84	57-126

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20 11:37
Sample Matrix:	Ground Water	**Date Extracted:**	09/15/20

Method Blank Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-28
Lab Code:	KQ2013089-04	**File ID:**	J:\MS28\DATA\100820\1008F004.D\
Analysis Method:	8270D	**Analysis Lot:**	698479
Prep Method:	EPA 3520C	**Extraction Lot:**	365559

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2013089-03	J:\MS28\DATA\100820\1008F005.D\	10/08/20 11:56
FTP-1-20200910MS	KQ2013089-01	J:\MS28\DATA\100820\1008F006.D\	10/08/20 12:15
FTP-1-20200910DMS	KQ2013089-02	J:\MS28\DATA\100820\1008F007.D\	10/08/20 12:35
FTP-1-20200910	K2007905-001	J:\MS28\DATA\100820\1008F008.D\	10/08/20 12:54

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20 11:56
Sample Matrix:	Ground Water	**Date Extracted:**	09/15/20

Lab Control Sample Summary
Semivolatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-28
Lab Code:	KQ2013089-03	**File ID:**	J:\MS28\DATA\100820\1008F005.D\
Analysis Method:	8270D	**Analysis Lot:**	698479
Prep Method:	EPA 3520C	**Extraction Lot:**	365559

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ2013089-04	J:\MS28\DATA\100820\1008F004.D\	10/08/20 11:37
FTP-1-20200910MS	KQ2013089-01	J:\MS28\DATA\100820\1008F006.D\	10/08/20 12:15
FTP-1-20200910DMS	KQ2013089-02	J:\MS28\DATA\100820\1008F007.D\	10/08/20 12:35
FTP-1-20200910	K2007905-001	J:\MS28\DATA\100820\1008F008.D\	10/08/20 12:54

ALS Group USA, Corp.
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QC/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305 **Date Analyzed:**10/08/20 10:25

Tune Summary
Semivolatile Organic Compounds by GC/MS

File ID: J:\MS28\DATA\100820\1008F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-28 **Analysis Lot:** 698479

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	60	36.44	26794	Pass
68	69	0	2	0.00	0	Pass
70	69	0	2	0.39	124	Pass
127	198	40	60	57.94	42600	Pass
197	198	0	1	0.00	0	Pass
198	198	100	100	100.00	73520	Pass
199	198	5	9	7.23	5314	Pass
275	198	10	30	23.51	17288	Pass
365	198	1.0	100	2.64	1942	Pass
441	443	0.01	100	89.26	10924	Pass
442	198	40	100	81.43	59864	Pass
443	442	17	23	20.44	12239	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ2015048-05	J:\MS28\DATA\100820\1008F003.D\	10/08/20 11:09	
Method Blank	KQ2013089-04	J:\MS28\DATA\100820\1008F004.D\	10/08/20 11:37	
Lab Control Sample	KQ2013089-03	J:\MS28\DATA\100820\1008F005.D\	10/08/20 11:56	
FTP-1-20200910	KQ2013089-01	J:\MS28\DATA\100820\1008F006.D\	10/08/20 12:15	
FTP-1-20200910	KQ2013089-02	J:\MS28\DATA\100820\1008F007.D\	10/08/20 12:35	
FTP-1-20200910	K2007905-001	J:\MS28\DATA\100820\1008F008.D\	10/08/20 12:54	
Continuing Cal. Verification	KQ2015048-03	J:\MS28\DATA\100820\1008F014.D\	10/08/20 14:30	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2000532-01	8270 ONLY ICAL @ 1PPM | SVM64-58B	J:\MS28\DATA\100520\1005F005.D	10/05/2020 15:58
02	KC2000532-02	8270 ONLY ICAL @ 5PPM | SVM64-58C	J:\MS28\DATA\100520\1005F006.D	10/05/2020 16:17
03	KC2000532-03	8270 ONLY ICAL @ 10PPM | SVM64-58D	J:\MS28\DATA\100520\1005F007.D	10/05/2020 16:36
04	KC2000532-04	8270 ONLY ICAL @ 20PPM | SVM64-58E	J:\MS28\DATA\100520\1005F008.D	10/05/2020 16:56
05	KC2000532-05	8270 ONLY ICAL @ 50PPM | SVM64-58F	J:\MS28\DATA\100520\1005F009.D	10/05/2020 17:15
06	KC2000532-06	8270 ONLY ICAL @ 80PPM | SVM64-58G	J:\MS28\DATA\100520\1005F010.D	10/05/2020 17:34
07	KC2000532-07	8270 ONLY ICAL @ 100PPM | SVM64-58H	J:\MS28\DATA\100520\1005F011.D	10/05/2020 17:54
08	KC2000532-08	8270 ONLY ICAL @ 120PPM | SVM64-58I	J:\MS28\DATA\100520\1005F012.D	10/05/2020 18:13
09	KC2000532-09	8270 ONLY ICAL @ 160PPM | SVM64-58J	J:\MS28\DATA\100520\1005F013.D	10/05/2020 18:33
10	KC2000532-10	8270 ONLY ICAL @ 200PPM | SVM64-58K	J:\MS28\DATA\100520\1005F014.D	10/05/2020 18:52

Analyte

1,2,4-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.2877	02	5.000	0.2732	03	10.000	0.2874	04	20.000	0.2821
05	50.000	0.2619	06	80.000	0.2623	07	100.000	0.2668	08	120.000	0.2714
09	160.000	0.2571	10	200.000	0.2568						

1,2-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.535	02	5.000	1.482	03	10.000	1.51	04	20.000	1.468
05	50.000	1.371	06	80.000	1.385	07	100.000	1.374	08	120.000	1.416
09	160.000	1.363	10	200.000	1.323						

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.553	02	5.000	1.498	03	10.000	1.519	04	20.000	1.504
05	50.000	1.396	06	80.000	1.407	07	100.000	1.402	08	120.000	1.432
09	160.000	1.39	10	200.000	1.377						

1,4-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.71	02	5.000	1.582	03	10.000	1.589	04	20.000	1.586
05	50.000	1.476	06	80.000	1.476	07	100.000	1.47	08	120.000	1.512
09	160.000	1.448	10	200.000	1.427						

2,2'-Oxybis(1-chloropropane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.43	02	5.000	1.363	03	10.000	1.368	04	20.000	1.313
05	50.000	1.194	06	80.000	1.206	07	100.000	1.212	08	120.000	1.238
09	160.000	1.188	10	200.000	1.193						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte

2,4,5-Trichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.3655	03	10.000	0.3975	04	20.000	0.4246	05	50.000	0.4175
06	80.000	0.4271	07	100.000	0.4327	08	120.000	0.4416	09	160.000	0.4327
10	200.000	0.4276									

2,4,6-Tribromophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.000		02	0.000		03	10.000	0.09262	04	20.000	0.1051
05	50.000	0.1057	06	80.000	0.115	07	100.000	0.1204	08	120.000	0.1288
09	160.000	0.1317	10	200.000	0.1412						

2,4,6-Trichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.3279	03	10.000	0.3489	04	20.000	0.3837	05	50.000	0.3724
06	80.000	0.3835	07	100.000	0.3949	08	120.000	0.4102	09	160.000	0.4047
10	200.000	0.4102									

2,4-Dichlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2323	03	10.000	0.2624	04	20.000	0.266	05	50.000	0.2595
06	80.000	0.2686	07	100.000	0.273	08	120.000	0.2803	09	160.000	0.2685
10	200.000	0.2657									

2,4-Dimethylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.2481	02	5.000	0.2734	03	10.000	0.289	04	20.000	0.3095
05	50.000	0.2893	06	80.000	0.2965	07	100.000	0.2945	08	120.000	0.3042
09	160.000	0.2885	10	200.000	0.2851						

2,4-Dinitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.02681	04	20.000	0.06326	05	50.000	0.1234	06	80.000	0.1635
07	100.000	0.1767	08	120.000	0.2017	09	160.000	0.2206	10	200.000	0.2412

2,4-Dinitrotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2541	03	10.000	0.3279	04	20.000	0.399	05	50.000	0.4322
06	80.000	0.4504	07	100.000	0.4395	08	120.000	0.4669	09	160.000	0.4496
10	200.000	0.4494									

2,6-Dinitrotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2106	03	10.000	0.2499	04	20.000	0.2986	05	50.000	0.3097
06	80.000	0.3284	07	100.000	0.3312	08	120.000	0.3456	09	160.000	0.3457
10	200.000	0.3551									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte

2-Chloronaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.5012	02	5.000	0.5171	03	10.000	0.5333	04	20.000	0.539
05	50.000	0.5007	06	80.000	0.5007	07	100.000	0.4981	08	120.000	0.509
09	160.000	0.4928	10	200.000	0.4833						

2-Chlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.32	02	5.000	1.429	03	10.000	1.475	04	20.000	1.535
05	50.000	1.44	06	80.000	1.5	07	100.000	1.484	08	120.000	1.551
09	160.000	1.501	10	200.000	1.491						

2-Fluorobiphenyl

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.507	02	5.000	1.389	03	10.000	1.436	04	20.000	1.452
05	50.000	1.321	06	80.000	1.311	07	100.000	1.299	08	120.000	1.311
09	160.000	1.246	10	200.000	1.197						

2-Fluorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9951	02	5.000	1.132	03	10.000	1.242	04	20.000	1.315
05	50.000	1.265	06	80.000	1.292	07	100.000	1.285	08	120.000	1.354
09	160.000	1.317	10	200.000	1.313						

2-Methyl-4,6-dinitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.106	04	20.000	0.1713	05	50.000	0.2243	06	80.000	0.2594
07	100.000	0.2624	08	120.000	0.2866	09	160.000	0.298	10	200.000	0.3061

2-Methylnaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6095	02	5.000	0.5933	03	10.000	0.6041	04	20.000	0.607
05	50.000	0.5691	06	80.000	0.571	07	100.000	0.5672	08	120.000	0.5757
09	160.000	0.5378	10	200.000	0.5263						

2-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.036	02	5.000	1.167	03	10.000	1.272	04	20.000	1.316
05	50.000	1.247	06	80.000	1.289	07	100.000	1.269	08	120.000	1.296
09	160.000	1.274	10	200.000	1.273						

2-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2799	03	10.000	0.3351	04	20.000	0.3884	05	50.000	0.404
06	80.000	0.4276	07	100.000	0.4277	08	120.000	0.4506	09	160.000	0.4417
10	200.000	0.4487									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte

2-Nitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.1282	03	10.000	0.1512	04	20.000	0.1619	05	50.000	0.1703
06	80.000	0.1785	07	100.000	0.1831	08	120.000	0.1893	09	160.000	0.1852
10	200.000	0.1889									

3,3'-Dichlorobenzidine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.3816	03	10.000	0.424	04	20.000	0.4713	05	50.000	0.4865
06	80.000	0.5174	07	100.000	0.5156	08	120.000	0.541	09	160.000	0.5166
10	200.000	0.5013									

3-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2598	03	10.000	0.3351	04	20.000	0.3711	05	50.000	0.3941
06	80.000	0.4224	07	100.000	0.4171	08	120.000	0.439	09	160.000	0.436
10	200.000	0.4361									

4-Bromophenyl Phenyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.159	02	5.000	0.1828	03	10.000	0.1858	04	20.000	0.1917
05	50.000	0.1827	06	80.000	0.1921	07	100.000	0.1983	08	120.000	0.2016
09	160.000	0.2015	10	200.000	0.2079						

4-Chloro-3-methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.2248	02	5.000	0.2802	03	10.000	0.2991	04	20.000	0.3184
05	50.000	0.3132	06	80.000	0.3237	07	100.000	0.3223	08	120.000	0.3374
09	160.000	0.3233	10	200.000	0.3217						

4-Chloroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.3213	02	5.000	0.4051	03	10.000	0.4465	04	20.000	0.439
05	50.000	0.4172	06	80.000	0.4131	07	100.000	0.3949	08	120.000	0.403
09	160.000	0.3661	10	200.000	0.345						

4-Chlorophenyl Phenyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6156	02	5.000	0.6164	03	10.000	0.6407	04	20.000	0.6563
05	50.000	0.612	06	80.000	0.6219	07	100.000	0.6067	08	120.000	0.6134
09	160.000	0.5806	10	200.000	0.5408						

4-Methylphenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.302	02	5.000	1.601	03	10.000	1.747	04	20.000	1.823
05	50.000	1.792	06	80.000	1.887	07	100.000	1.858	08	120.000	1.931
09	160.000	1.871	10	200.000	1.842						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte

4-Nitroaniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.2696	03	10.000	0.3445	04	20.000	0.4293	05	50.000	0.431
06	80.000	0.4528	07	100.000	0.4347	08	120.000	0.4719	09	160.000	0.4541
10	200.000	0.4579									

4-Nitrophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.08548	04	20.000	0.1645	05	50.000	0.2051	06	80.000	0.2284
07	100.000	0.2276	08	120.000	0.2509	09	160.000	0.2525	10	200.000	0.2633

Acenaphthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.333	02	5.000	1.245	03	10.000	1.258	04	20.000	1.271
05	50.000	1.171	06	80.000	1.162	07	100.000	1.148	08	120.000	1.179
09	160.000	1.114	10	200.000	1.076						

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.81	02	5.000	1.928	03	10.000	2.008	04	20.000	2.113
05	50.000	1.969	06	80.000	1.979	07	100.000	1.952	08	120.000	2.007
09	160.000	1.908	10	200.000	1.862						

Aniline

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.477	02	5.000	1.76	03	10.000	1.943	04	20.000	2.092
05	50.000	1.921	06	80.000	1.831	07	100.000	1.742	08	120.000	1.747
09	160.000	1.59	10	200.000	1.411						

Anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.093	02	5.000	1.112	03	10.000	1.166	04	20.000	1.173
05	50.000	1.107	06	80.000	1.125	07	100.000	1.106	08	120.000	1.125
09	160.000	1.056	10	200.000	1.006						

Benz(a)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.254	02	5.000	1.157	03	10.000	1.201	04	20.000	1.227
05	50.000	1.151	06	80.000	1.177	07	100.000	1.168	08	120.000	1.215
09	160.000	1.136	10	200.000	1.121						

Benzo(a)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.8784	03	10.000	0.9238	04	20.000	0.9856	05	50.000	0.9621
06	80.000	1.011	07	100.000	1.028	08	120.000	1.073	09	160.000	1.062
10	200.000	1.086									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
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Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
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Analyte

Benzo(b)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9582	02	5.000	0.9985	03	10.000	1.059	04	20.000	1.131
05	50.000	1.111	06	80.000	1.198	07	100.000	1.214	08	120.000	1.263
09	160.000	1.281	10	200.000	1.377						

Benzo(g,h,i)perylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9329	02	5.000	1.066	03	10.000	1.048	04	20.000	1.054
05	50.000	0.9805	06	80.000	1.017	07	100.000	1.02	08	120.000	1.072
09	160.000	1.042	10	200.000	1.088						

Benzo(k)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.076	02	5.000	1.104	03	10.000	1.133	04	20.000	1.202
05	50.000	1.18	06	80.000	1.219	07	100.000	1.239	08	120.000	1.311
09	160.000	1.238	10	200.000	1.204						

Benzoic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.1199	04	20.000	0.1652	05	50.000	0.2178	06	80.000	0.2426
07	100.000	0.2497	08	120.000	0.2681	09	160.000	0.2713	10	200.000	0.2745

Benzyl Alcohol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.8031	03	10.000	0.8868	04	20.000	0.9472	05	50.000	0.9537
06	80.000	1.009	07	100.000	1.007	08	120.000	1.05	09	160.000	1.026
10	200.000	1.009									

Bis(2-chloroethoxy)methane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.4343	02	5.000	0.4132	03	10.000	0.4284	04	20.000	0.4427
05	50.000	0.414	06	80.000	0.4149	07	100.000	0.4202	08	120.000	0.4266
09	160.000	0.4034	10	200.000	0.3955						

Bis(2-chloroethyl) Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	2.117	02	5.000	1.868	03	10.000	1.806	04	20.000	1.634
05	50.000	1.491	06	80.000	1.508	07	100.000	1.482	08	120.000	1.537
09	160.000	1.495	10	200.000	1.501						

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.7733	03	10.000	0.8544	04	20.000	0.9595	05	50.000	0.9746
06	80.000	0.9908	07	100.000	1.006	08	120.000	0.9926	09	160.000	0.9302
10	200.000	0.9232									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
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Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
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Analyte

Butyl Benzyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.4754	02	5.000	0.5345	03	10.000	0.5711	04	20.000	0.6361
05	50.000	0.6479	06	80.000	0.6689	07	100.000	0.6816	08	120.000	0.6837
09	160.000	0.658	10	200.000	0.6649						

Chrysene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.32	02	5.000	1.282	03	10.000	1.31	04	20.000	1.33
05	50.000	1.237	06	80.000	1.24	07	100.000	1.205	08	120.000	1.251
09	160.000	1.166	10	200.000	1.14						

Di-n-butyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9634	02	5.000	1.126	03	10.000	1.216	04	20.000	1.344
05	50.000	1.313	06	80.000	1.353	07	100.000	1.34	08	120.000	1.348
09	160.000	1.276	10	200.000	1.232						

Di-n-octyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	1.091	04	20.000	1.335	05	50.000	1.514	06	80.000	1.637
07	100.000	1.684	08	120.000	1.714	09	160.000	1.701	10	200.000	1.728

Dibenz(a,h)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.8701	02	5.000	0.9874	03	10.000	1.033	04	20.000	1.085
05	50.000	1.048	06	80.000	1.096	07	100.000	1.141	08	120.000	1.211
09	160.000	1.191	10	200.000	1.249						

Dibenzofuran

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.995	02	5.000	1.853	03	10.000	1.895	04	20.000	1.899
05	50.000	1.757	06	80.000	1.747	07	100.000	1.72	08	120.000	1.745
09	160.000	1.656	10	200.000	1.616						

Diethyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.349	02	5.000	1.482	03	10.000	1.504	04	20.000	1.575
05	50.000	1.498	06	80.000	1.525	07	100.000	1.503	08	120.000	1.547
09	160.000	1.498	10	200.000	1.469						

Dimethyl Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.393	02	5.000	1.438	03	10.000	1.45	04	20.000	1.495
05	50.000	1.415	06	80.000	1.434	07	100.000	1.417	08	120.000	1.463
09	160.000	1.433	10	200.000	1.453						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
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Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
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Analyte

Fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.11	02	5.000	1.156	03	10.000	1.206	04	20.000	1.248
05	50.000	1.184	06	80.000	1.251	07	100.000	1.209	08	120.000	1.262
09	160.000	1.185	10	200.000	1.118						

Fluorene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.433	02	5.000	1.421	03	10.000	1.456	04	20.000	1.49
05	50.000	1.396	06	80.000	1.393	07	100.000	1.325	08	120.000	1.339
09	160.000	1.25	10	200.000	1.156						

Hexachlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.1975	02	5.000	0.2151	03	10.000	0.2218	04	20.000	0.2226
05	50.000	0.2085	06	80.000	0.2233	07	100.000	0.2323	08	120.000	0.2387
09	160.000	0.2351	10	200.000	0.2412						

Hexachlorobutadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.1339	02	5.000	0.1332	03	10.000	0.1355	04	20.000	0.1383
05	50.000	0.1262	06	80.000	0.1272	07	100.000	0.1311	08	120.000	0.1327
09	160.000	0.1278	10	200.000	0.1327						

Hexachlorocyclopentadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.1256	04	20.000	0.1812	05	50.000	0.2222	06	80.000	0.2473
07	100.000	0.2734	08	120.000	0.2822	09	160.000	0.2864	10	200.000	0.3015

Hexachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.5322	02	5.000	0.5581	03	10.000	0.6119	04	20.000	0.5973
05	50.000	0.565	06	80.000	0.5697	07	100.000	0.5734	08	120.000	0.5924
09	160.000	0.5681	10	200.000	0.5597						

Indeno(1,2,3-cd)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	5.000	0.9518	03	10.000	0.9866	04	20.000	1.02	05	50.000	0.9849
06	80.000	1.047	07	100.000	1.054	08	120.000	1.123	09	160.000	1.115
10	200.000	1.217									

Isophorone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.6511	02	5.000	0.6262	03	10.000	0.6525	04	20.000	0.6598
05	50.000	0.6266	06	80.000	0.6373	07	100.000	0.6353	08	120.000	0.6482
09	160.000	0.6156	10	200.000	0.6083						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
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Analyte

N-Nitrosodi-n-propylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9025	02	5.000	0.9525	03	10.000	0.975	04	20.000	0.9833
05	50.000	0.957	06	80.000	0.9906	07	100.000	1	08	120.000	1.033
09	160.000	1.011	10	200.000	1.01						

N-Nitrosodimethylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.4157	04	20.000	0.4059	05	50.000	0.4013	06	80.000	0.4293
07	100.000	0.4232	08	120.000	0.4561	09	160.000	0.4453	10	200.000	0.454

N-Nitrosodiphenylamine

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.9104	02	5.000	1.06	03	10.000	1.101	04	20.000	1.121
05	50.000	1.075	06	80.000	1.082	07	100.000	1.068	08	120.000	1.109
09	160.000	1.063	10	200.000	1.057						

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.108	02	5.000	1.04	03	10.000	1.04	04	20.000	1.033
05	50.000	0.9498	06	80.000	0.9421	07	100.000	0.926	08	120.000	0.9417
09	160.000	0.8727	10	200.000	0.8504						

Nitrobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.088	02	5.000	1.422	03	10.000	1.458	04	20.000	1.547
05	50.000	1.489	06	80.000	1.549	07	100.000	1.552	08	120.000	1.611
09	160.000	1.561	10	200.000	1.568						

Nitrobenzene-d5

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.093	02	5.000	1.258	03	10.000	1.444	04	20.000	1.498
05	50.000	1.465	06	80.000	1.537	07	100.000	1.551	08	120.000	1.607
09	160.000	1.585	10	200.000	1.6						

Pentachlorophenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	10.000	0.08109	04	20.000	0.1072	05	50.000	0.1259	06	80.000	0.1479
07	100.000	0.1569	08	120.000	0.1678	09	160.000	0.1751	10	200.000	0.1868

Phenanthrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.283	02	5.000	1.171	03	10.000	1.191	04	20.000	1.182
05	50.000	1.071	06	80.000	1.09	07	100.000	1.075	08	120.000	1.097
09	160.000	1.022	10	200.000	0.9874						

Phenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.735	02	5.000	1.955	03	10.000	2.084	04	20.000	2.121

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
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Analyte

Phenol

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	50.000	1.999	06	80.000	2.027	07	100.000	1.957	08	120.000	2.014
09	160.000	1.873	10	200.000	1.814						

Phenol-d6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.138	02	5.000	1.356	03	10.000	1.579	04	20.000	1.636
05	50.000	1.571	06	80.000	1.606	07	100.000	1.573	08	120.000	1.647
09	160.000	1.549	10	200.000	1.511						

Pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	1.343	02	5.000	1.295	03	10.000	1.33	04	20.000	1.352
05	50.000	1.208	06	80.000	1.209	07	100.000	1.213	08	120.000	1.222
09	160.000	1.161	10	200.000	1.162						

Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.8856	02	5.000	0.8811	03	10.000	0.9143	04	20.000	0.9212
05	50.000	0.8788	06	80.000	0.8927	07	100.000	0.9174	08	120.000	0.9189
09	160.000	0.8882	10	200.000	0.896						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	4.3	≤15	0.2707	0.010
1,2-Dichlorobenzene	TRG	Average RF	% RSD	5.0	≤15	1.423	0.010
1,3-Dichlorobenzene	TRG	Average RF	% RSD	4.4	≤15	1.448	0.010
1,4-Dichlorobenzene	TRG	Average RF	% RSD	5.7	≤15	1.528	0.010
2,2'-Oxybis(1-chloropropane)	TRG	Average RF	% RSD	7.1	≤15	1.27	0.010
2,4,5-Trichlorophenol	TRG	Average RF	% RSD	5.6	≤15	0.4185	0.200
2,4,6-Tribromophenol	SURR	Average RF	% RSD	13.7	≤15	0.1176	0.010
2,4,6-Trichlorophenol	TRG	Average RF	% RSD	7.4	≤15	0.3818	0.200
2,4-Dichlorophenol	TRG	Average RF	% RSD	5.1	≤15	0.264	0.200
2,4-Dimethylphenol	TRG	Average RF	% RSD	6.0	≤15	0.2878	0.200
2,4-Dinitrophenol	TRG	Quadratic	COD	0.9989	≥0.990	0.1521	0.010
2,4-Dinitrotoluene	TRG	Quadratic	COD	0.9993	≥0.990	0.4077	0.200
2,6-Dinitrotoluene	TRG	Linear	R2	0.9990	≥0.990	0.3083	0.200
2-Chloronaphthalene	TRG	Average RF	% RSD	3.5	≤15	0.5075	0.800
2-Chlorophenol	TRG	Average RF	% RSD	4.4	≤15	1.472	0.800
2-Fluorobiphenyl	SURR	Average RF	% RSD	7.2	≤15	1.347	0.010
2-Fluorophenol	SURR	Average RF	% RSD	8.7	≤15	1.251	0.010
2-Methyl-4,6-dinitrophenol	TRG	Quadratic	COD	0.9991	≥0.990	0.2393	0.010
2-Methylnaphthalene	TRG	Average RF	% RSD	4.9	≤15	0.5761	0.400
2-Methylphenol	TRG	Average RF	% RSD	6.7	≤15	1.244	0.700
2-Nitroaniline	TRG	Quadratic	COD	0.9995	≥0.990	0.4004	0.010
2-Nitrophenol	TRG	Average RF	% RSD	12.0	≤15	0.1707	0.100
3,3'-Dichlorobenzidine	TRG	Average RF	% RSD	10.6	≤15	0.4839	0.010
3-Nitroaniline	TRG	Quadratic	COD	0.9995	≥0.990	0.3901	0.010
4-Bromophenyl Phenyl Ether	TRG	Average RF	% RSD	7.3	≤15	0.1903	0.100
4-Chloro-3-methylphenol	TRG	Average RF	% RSD	10.7	≤15	0.3064	0.010
4-Chloroaniline	TRG	Average RF	% RSD	10.1	≤15	0.3951	0.010
4-Chlorophenyl Phenyl Ether	TRG	Average RF	% RSD	5.2	≤15	0.6104	0.400
4-Methylphenol	TRG	Average RF	% RSD	10.6	≤15	1.765	0.600
4-Nitroaniline	TRG	Quadratic	COD	0.9988	≥0.990	0.4162	0.010
4-Nitrophenol	TRG	Quadratic	COD	0.9991	≥0.990	0.2097	0.010
Acenaphthene	TRG	Average RF	% RSD	6.6	≤15	1.196	0.900
Acenaphthylene	TRG	Average RF	% RSD	4.3	≤15	1.954	0.900
Aniline	TRG	Average RF	% RSD	12.1	≤15	1.752	0.010

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Anthracene	TRG	Average RF	% RSD	4.4	≤15	1.107	0.700
Benz(a)anthracene	TRG	Average RF	% RSD	3.6	≤15	1.181	0.800
Benzo(a)pyrene	TRG	Average RF	% RSD	7.0	≤15	1.001	0.700
Benzo(b)fluoranthene	TRG	Average RF	% RSD	11.4	≤15	1.159	0.700
Benzo(g,h,i)perylene	TRG	Average RF	% RSD	4.5	≤15	1.032	0.500
Benzo(k)fluoranthene	TRG	Average RF	% RSD	5.9	≤15	1.191	0.700
Benzoic Acid	TRG	Quadratic	COD	0.9990	≥0.990	0.2261	0.010
Benzyl Alcohol	TRG	Average RF	% RSD	8.1	≤15	0.9658	0.010
Bis(2-chloroethoxy)methane	TRG	Average RF	% RSD	3.4	≤15	0.4193	0.300
Bis(2-chloroethyl) Ether	TRG	Average RF	% RSD	13.2	≤15	1.644	0.700
Bis(2-ethylhexyl) Phthalate	TRG	Average RF	% RSD	8.2	≤15	0.9338	0.010
Butyl Benzyl Phthalate	TRG	Linear	R2	0.9995	≥0.990	0.6222	0.010
Chrysene	TRG	Average RF	% RSD	5.2	≤15	1.248	0.700
Di-n-butyl Phthalate	TRG	Average RF	% RSD	10.0	≤15	1.251	0.010
Di-n-octyl Phthalate	TRG	Linear	R2	0.9997	≥0.990	1.551	0.010
Dibenz(a,h)anthracene	TRG	Quadratic	COD	0.9992	≥0.990	1.091	0.400
Dibenzofuran	TRG	Average RF	% RSD	6.6	≤15	1.788	0.800
Diethyl Phthalate	TRG	Average RF	% RSD	4.0	≤15	1.495	0.010
Dimethyl Phthalate	TRG	Average RF	% RSD	2.0	≤15	1.439	0.010
Fluoranthene	TRG	Average RF	% RSD	4.5	≤15	1.193	0.600
Fluorene	TRG	Average RF	% RSD	7.4	≤15	1.366	0.900
Hexachlorobenzene	TRG	Average RF	% RSD	6.2	≤15	0.2236	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	2.9	≤15	0.1319	0.010
Hexachlorocyclopentadiene	TRG	Quadratic	COD	0.9990	≥0.990	0.24	0.050
Hexachloroethane	TRG	Average RF	% RSD	4.0	≤15	0.5728	0.300
Indeno(1,2,3-cd)pyrene	TRG	Average RF	% RSD	7.9	≤15	1.055	0.500
Isophorone	TRG	Average RF	% RSD	2.7	≤15	0.6361	0.400
N-Nitrosodi-n-propylamine	TRG	Average RF	% RSD	3.8	≤15	0.9814	0.500
N-Nitrosodimethylamine	TRG	Average RF	% RSD	4.9	≤15	0.4289	0.010
N-Nitrosodiphenylamine	TRG	Average RF	% RSD	5.5	≤15	1.065	0.010
Naphthalene	TRG	Average RF	% RSD	8.5	≤15	0.9705	0.700
Nitrobenzene	TRG	Average RF	% RSD	10.1	≤15	1.484	0.200
Nitrobenzene-d5	SURR	Average RF	% RSD	11.3	≤15	1.464	0.010
Pentachlorophenol	TRG	Quadratic	COD	0.9994	≥0.990	0.1436	0.050
Phenanthrene	TRG	Average RF	% RSD	8.0	≤15	1.117	0.700

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Phenol	TRG	Average RF	% RSD	6.1	≤15	1.958	0.800
Phenol-d6	SURR	Average RF	% RSD	10.3	≤15	1.517	0.010
Pyrene	TRG	Average RF	% RSD	5.9	≤15	1.249	0.600
Terphenyl-d14	SURR	Average RF	% RSD	1.9	≤15	0.8994	0.010

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC2000532-11	8270 ONLY ICV @ 80PPM | SVM64 -71B	J:\MS28\DATA\100520\1005F015.D	10/05/2020 19:11

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	78.0	2.707E-1	2.639E-1	-2.489	±20	Average RF
1,2-Dichlorobenzene	80.0	82.8	1.423E0	1.472E0	3.48	±20	Average RF
1,3-Dichlorobenzene	80.0	82.9	1.448E0	1.501E0	3.68	±20	Average RF
1,4-Dichlorobenzene	80.0	80.4	1.528E0	1.536E0	0.534	±20	Average RF
2,4,5-Trichlorophenol	80.0	75.7	4.185E-1	3.958E-1	-5.436	±20	Average RF
2,4,6-Trichlorophenol	80.0	76.4	3.818E-1	3.644E-1	-4.558	±20	Average RF
2,4-Dichlorophenol	80.0	79.6	2.64E-1	2.626E-1	-0.551	±20	Average RF
2,4-Dimethylphenol	80.0	85.6	2.878E-1	3.08E-1	7.02	±20	Average RF
2,4-Dinitrophenol	80.0	81.2	1.521E-1	1.69E-1	1.47	±20	Quadratic
2,4-Dinitrotoluene	80.0	83.7	4.077E-1	4.711E-1	4.65	±20	Quadratic
2,6-Dinitrotoluene	80.0	80.4	3.083E-1	3.398E-1	0.534	±20	Linear
2-Chloronaphthalene	80.0	73.8	5.075E-1	4.679E-1	-7.803	±20	Average RF
2-Chlorophenol	80.0	80.9	1.472E0	1.489E0	1.09	±20	Average RF
2-Methyl-4,6-dinitrophenol	80.0	80.7	2.393E-1	2.625E-1	0.855	±20	Quadratic
2-Methylnaphthalene	80.0	81.8	5.761E-1	5.89E-1	2.25	±20	Average RF
2-Methylphenol	80.0	79.4	1.244E0	1.234E0	-0.800	±20	Average RF
2-Nitroaniline	80.0	79.9	4.004E-1	4.288E-1	-0.140	±20	Quadratic
2-Nitrophenol	80.0	83.8	1.707E-1	1.788E-1	4.73	±20	Average RF
3,3'-Dichlorobenzidine	80.0	82.1	4.839E-1	4.966E-1	2.61	±20	Average RF
3-Nitroaniline	80.0	79.2	3.901E-1	4.171E-1	-0.983	±20	Quadratic
4-Bromophenyl Phenyl Ether	80.0	81.4	1.903E-1	1.936E-1	1.74	±20	Average RF
4-Chloro-3-methylphenol	80.0	85.5	3.064E-1	3.275E-1	6.87	±20	Average RF
4-Chloroaniline	80.0	88.6	3.951E-1	4.376E-1	10.76	±20	Average RF
4-Chlorophenyl Phenyl Ether	80.0	77.8	6.104E-1	5.938E-1	-2.726	±20	Average RF
4-Methylphenol	160	146	1.765E0	1.611E0	-8.741	±20	Average RF
4-Nitroaniline	80.0	78.4	4.162E-1	4.404E-1	-1.974	±20	Quadratic
4-Nitrophenol	80.0	72.4	2.097E-1	2.03E-1	-9.445	±20	Quadratic
Acenaphthene	80.0	75.2	1.196E0	1.124E0	-6.000	±20	Average RF
Acenaphthylene	80.0	81.6	1.954E0	1.992E0	1.99	±20	Average RF
Aniline	80.0	95.0	1.752E0	2.08E0	18.74	±20	Average RF
Anthracene	80.0	83.1	1.107E0	1.15E0	3.90	±20	Average RF
Benz(a)anthracene	80.0	82.0	1.181E0	1.211E0	2.54	±20	Average RF
Benzo(a)pyrene	80.0	90.9	1.001E0	1.137E0	13.60	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Benzo(b)fluoranthene	80.0	82.1	1.159E0	1.189E0	2.62	±20	Average RF
Benzo(g,h,i)perylene	80.0	76.2	1.032E0	9.83E-1	-4.747	±20	Average RF
Benzo(k)fluoranthene	80.0	82.2	1.191E0	1.223E0	2.72	±20	Average RF
Benzoic Acid	80.0	88.9	2.261E-1	2.787E-1	11.18	±20	Quadratic
Benzyl Alcohol	80.0	87.0	9.658E-1	1.05E0	8.77	±20	Average RF
Bis(2-chloroethoxy)methane	80.0	82.9	4.193E-1	4.346E-1	3.64	±20	Average RF
Bis(2-chloroethyl) Ether	80.0	76.3	1.644E0	1.568E0	-4.636	±20	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	81.1	9.338E-1	9.466E-1	1.37	±20	Average RF
Butyl Benzyl Phthalate	80.0	77.6	6.222E-1	6.448E-1	-3.042	±20	Linear
Chrysene	80.0	74.3	1.248E0	1.159E0	-7.176	±20	Average RF
Dibenz(a,h)anthracene	80.0	77.6	1.091E0	1.086E0	-3.045	±20	Quadratic
Dibenzofuran	80.0	72.9	1.788E0	1.631E0	-8.813	±20	Average RF
Diethyl Phthalate	80.0	82.9	1.495E0	1.549E0	3.65	±20	Average RF
Dimethyl Phthalate	80.0	78.5	1.439E0	1.412E0	-1.909	±20	Average RF
Di-n-butyl Phthalate	80.0	90.2	1.251E0	1.411E0	12.81	±20	Average RF
Di-n-octyl Phthalate	80.0	81.3	1.551E0	1.684E0	1.66	±20	Linear
Fluoranthene	80.0	84.2	1.193E0	1.256E0	5.28	±20	Average RF
Fluorene	80.0	82.1	1.366E0	1.402E0	2.64	±20	Average RF
Hexachlorobenzene	80.0	82.2	2.236E-1	2.298E-1	2.78	±20	Average RF
Hexachlorobutadiene	80.0	81.9	1.319E-1	1.351E-1	2.43	±20	Average RF
Hexachlorocyclopentadiene	80.0	81.3	2.4E-1	2.622E-1	1.61	±20	Quadratic
Hexachloroethane	80.0	81.2	5.728E-1	5.816E-1	1.54	±20	Average RF
Indeno(1,2,3-cd)pyrene	80.0	77.8	1.055E0	1.027E0	-2.727	±20	Average RF
Isophorone	80.0	87.2	6.361E-1	6.936E-1	9.04	±20	Average RF
Naphthalene	80.0	81.9	9.705E-1	9.94E-1	2.42	±20	Average RF
Nitrobenzene	80.0	88.2	1.484E0	1.637E0	10.28	±20	Average RF
N-Nitrosodimethylamine	80.0	95.7	4.289E-1	5.128E-1	19.57	±20	Average RF
N-Nitrosodi-n-propylamine	80.0	92.6	9.814E-1	1.136E0	15.72	±20	Average RF
N-Nitrosodiphenylamine	80.0	93.4	1.065E0	1.243E0	16.77	±20	Average RF
Pentachlorophenol	80.0	73.7	1.436E-1	1.355E-1	-7.937	±20	Quadratic
Phenanthrene	80.0	79.4	1.117E0	1.109E0	-0.726	±20	Average RF
Phenol	80.0	82.1	1.958E0	2.01E0	2.67	±20	Average RF
Pyrene	80.0	76.1	1.249E0	1.188E0	-4.890	±20	Average RF
2,2'-Oxybis(1-chloropropane)	80.0	95.1	1.27E0	1.51E0	18.84	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM **Calibration Date:** 10/5/2020

Initial Calibration Verification Summary
Semivolatile Organic Compounds by GC/MS

Calibration ID: KC2000532 **Signal ID:** 1
Instrument ID: K-MS-28

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4,6-Tribromophenol	80.0	83.9	1.176E-1	1.233E-1	4.91	±20	Average RF
2-Fluorobiphenyl	80.0	75.0	1.347E0	1.263E0	-6.257	±20	Average RF
2-Fluorophenol	80.0	87.7	1.251E0	1.371E0	9.56	±20	Average RF
Nitrobenzene-d5	80.0	92.2	1.464E0	1.688E0	15.30	±20	Average RF
Phenol-d6	80.0	91.0	1.517E0	1.724E0	13.70	±20	Average RF
Terphenyl-d14	80.0	78.6	8.994E-1	8.835E-1	-1.771	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM/6304305 **Date Analyzed:** 10/08/20 14:30

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 10/5/2020
File ID: J:\MS28\DATA\100820\1008F014.D\ **Calibration ID:** KC2000532
Signal ID: 1 **Analysis Lot:** 698479
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	79.7	0.2707	0.2696	-0.4	NA	±50	Average RF
1,2-Dichlorobenzene	80.0	80.2	1.4226	1.4259	0.2	NA	±50	Average RF
1,3-Dichlorobenzene	80.0	80.6	1.4478	1.458	0.7	NA	±50	Average RF
1,4-Dichlorobenzene	80.0	80.5	1.5276	1.538	0.7	NA	±50	Average RF
2,4,5-Trichlorophenol	80.0	77.7	0.4185	0.4064	-2.9	NA	±50	Average RF
2,4,6-Trichlorophenol	80.0	76.2	0.3818	0.3637	-4.8	NA	±50	Average RF
2,4-Dichlorophenol	80.0	83.4	0.264	0.2754	4.3	NA	±50	Average RF
2,4-Dimethylphenol	80.0	86.8	0.2878	0.3123	8.5	NA	±50	Average RF
2,4-Dinitrophenol	80.0	77.4	0.1521	0.1581	NA	-3.3	±50	Quadratic
2,4-Dinitrotoluene	80.0	73.7	0.4077	0.4136	NA	-7.8	±50	Quadratic
2,6-Dinitrotoluene	80.0	72.3	0.3083	0.3035	NA	-9.6	±50	Linear
2-Chloronaphthalene	80.0	73.8	0.5075	0.4679	-7.8	NA	±50	Average RF
2-Chlorophenol	80.0	83.2	1.4725	1.5317	4.0	NA	±50	Average RF
2-Methyl-4,6-dinitrophenol	80.0	71.9	0.2393	0.2289	NA	-10.2	±50	Quadratic
2-Methylnaphthalene	80.0	79.1	0.5761	0.5698	-1.1	NA	±50	Average RF
2-Methylphenol	80.0	85.9	1.2439	1.3359	7.4	NA	±50	Average RF
2-Nitroaniline	80.0	72.1	0.4004	0.3852	NA	-9.8	±50	Quadratic
2-Nitrophenol	80.0	87.9	0.1707	0.1877	9.9	NA	±50	Average RF
3,3'-Dichlorobenzidine	80.0	85.0	0.4839	0.5139	6.2	NA	±50	Average RF
3-Nitroaniline	80.0	75.0	0.3901	0.394	NA	-6.2	±50	Quadratic
4-Bromophenyl Phenyl Ether	80.0	76.1	0.1903	0.181	-4.9	NA	±50	Average RF
4-Chloro-3-methylphenol	80.0	83.1	0.3064	0.3184	3.9	NA	±50	Average RF
4-Chloroaniline	80.0	86.5	0.3951	0.4273	8.2	NA	±50	Average RF
4-Chlorophenyl Phenyl Ether	80.0	74.4	0.6104	0.5673	-7.1	NA	±50	Average RF
4-Methylphenol	80.0	85.7	1.7654	1.8918	7.2	NA	±50	Average RF
4-Nitroaniline	80.0	71.5	0.4162	0.4002	NA	-10.7	±50	Quadratic
4-Nitrophenol	80.0	69.0	0.2097	0.1918	NA	-13.8	±50	Quadratic
Acenaphthene	80.0	71.7	1.1957	1.0719	-10.4	NA	±50	Average RF
Acenaphthylene	80.0	74.8	1.9535	1.8269	-6.5	NA	±50	Average RF
Aniline	80.0	96.5	1.7516	2.1137	20.7	NA	±50	Average RF
Anthracene	80.0	78.7	1.1068	1.0893	-1.6	NA	±50	Average RF
Benz(a)anthracene	80.0	81.8	1.1806	1.2074	2.3	NA	±50	Average RF
Benzo(a)pyrene	80.0	78.3	1.0011	0.9801	-2.1	NA	±50	Average RF
Benzo(b)fluoranthene	80.0	79.2	1.1591	1.1481	-0.9	NA	±50	Average RF
Benzo(g,h,i)perylene	80.0	72.3	1.032	0.9331	-9.6	NA	±50	Average RF
Benzo(k)fluoranthene	80.0	80.4	1.1905	1.1969	0.5	NA	±50	Average RF
Benzoic Acid	80.0	81.9	0.2261	0.2537	NA	2.3	±50	Quadratic
Benzyl Alcohol	80.0	84.8	0.9658	1.0242	6.0	NA	±50	Average RF
Bis(2-chloroethoxy)methane	80.0	81.6	0.4193	0.4278	2.0	NA	±50	Average RF

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20 14:30

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Calibration Date:**	10/5/2020
File ID:	J:\MS28\DATA\100820\1008F014.D\	**Calibration ID:**	KC2000532
Signal ID:	1	**Analysis Lot:**	698479
		Units:	ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	80.0	74.1	1.6437	1.5214	-7.4	NA	±50	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	94.4	0.9338	1.102	18.0	NA	±50	Average RF
Butyl Benzyl Phthalate	80.0	88.6	0.6222	0.7371	NA	10.7	±50	Linear
Chrysene	80.0	80.3	1.2481	1.2533	0.4	NA	±50	Average RF
Dibenz(a,h)anthracene	80.0	74.2	1.0911	1.0357	NA	-7.3	±50	Quadratic
Dibenzofuran	80.0	71.9	1.7883	1.6079	-10.1	NA	±50	Average RF
Diethyl Phthalate	80.0	74.1	1.4949	1.3847	-7.4	NA	±50	Average RF
Dimethyl Phthalate	80.0	73.4	1.4391	1.3198	-8.3	NA	±50	Average RF
Di-n-butyl Phthalate	80.0	83.8	1.2512	1.3104	4.7	NA	±50	Average RF
Di-n-octyl Phthalate	80.0	82.7	1.5505	1.7143	NA	3.4	±50	Linear
Fluoranthene	80.0	75.5	1.193	1.126	-5.6	NA	±50	Average RF
Fluorene	80.0	74.5	1.3658	1.2716	-6.9	NA	±50	Average RF
Hexachlorobenzene	80.0	73.8	0.2236	0.2062	-7.8	NA	±50	Average RF
Hexachlorobutadiene	80.0	78.2	0.1319	0.1289	-2.3	NA	±50	Average RF
Hexachlorocyclopentadiene	80.0	71.3	0.24	0.225	NA	-10.9	±50	Quadratic
Hexachloroethane	80.0	84.1	0.5728	0.602	5.1	NA	±50	Average RF
Indeno(1,2,3-cd)pyrene	80.0	74.9	1.0553	0.9879	-6.4	NA	±50	Average RF
Isophorone	80.0	79.0	0.6361	0.628	-1.3	NA	±50	Average RF
Naphthalene	80.0	77.8	0.9705	0.9438	-2.7	NA	±50	Average RF
Nitrobenzene	80.0	83.6	1.4845	1.5518	4.5	NA	±50	Average RF
N-Nitrosodimethylamine	80.0	66.0	0.4289	0.3538	-17.5	NA	±50	Average RF
N-Nitrosodi-n-propylamine	80.0	80.2	0.9814	0.9844	0.3	NA	±50	Average RF
N-Nitrosodiphenylamine	80.0	73.3	1.0646	0.9751	-8.4	NA	±50	Average RF
Pentachlorophenol	80.0	74.4	0.1436	0.137	NA	-7.1	±50	Quadratic
Phenanthrene	80.0	75.3	1.1169	1.0511	-5.9	NA	±50	Average RF
Phenol	80.0	84.1	1.9577	2.0583	5.1	NA	±50	Average RF
Pyrene	80.0	84.1	1.2494	1.3134	5.1	NA	±50	Average RF
2,2'-Oxybis(1-chloropropane)	80.0	78.7	1.2704	1.2495	-1.6	NA	±50	Average RF
2,4,6-Tribromophenol	80.0	70.3	0.1176	0.1033	-12.1	NA	±50	Average RF
2-Fluorobiphenyl	80.0	74.0	1.347	1.246	-7.5	NA	±50	Average RF
2-Fluorophenol	80.0	86.0	1.2511	1.3456	7.6	NA	±50	Average RF
Nitrobenzene-d5	80.0	83.7	1.4637	1.531	4.6	NA	±50	Average RF
Phenol-d6	80.0	86.0	1.5166	1.6295	7.4	NA	±50	Average RF
Terphenyl-d14	80.0	84.1	0.8994	0.9458	5.2	NA	±50	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007905
Project: JBLM/6304305 **Date Analyzed:** 10/08/20 11:09

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D **Calibration Date:** 10/5/2020
File ID: J:\MS28\DATA\100820\1008F003.D\ **Calibration ID:** KC2000532
Signal ID: 1 **Analysis Lot:** 698479
Units: ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,2,4-Trichlorobenzene	80.0	80.8	0.2707	0.2734	1.0	NA	±20	Average RF
1,2-Dichlorobenzene	80.0	78.3	1.4226	1.3924	-2.1	NA	±20	Average RF
1,3-Dichlorobenzene	80.0	80.4	1.4478	1.4547	0.5	NA	±20	Average RF
1,4-Dichlorobenzene	80.0	79.7	1.5276	1.5209	-0.4	NA	±20	Average RF
2,4,5-Trichlorophenol	80.0	78.8	0.4185	0.4124	-1.5	NA	±20	Average RF
2,4,6-Trichlorophenol	80.0	78.1	0.3818	0.3727	-2.4	NA	±20	Average RF
2,4-Dichlorophenol	80.0	82.1	0.264	0.2708	2.6	NA	±20	Average RF
2,4-Dimethylphenol	80.0	87.2	0.2878	0.3139	9.1	NA	±20	Average RF
2,4-Dinitrophenol	80.0	74.2	0.1521	0.1493	NA	-7.2	±20	Quadratic
2,4-Dinitrotoluene	80.0	72.6	0.4077	0.4068	NA	-9.3	±20	Quadratic
2,6-Dinitrotoluene	80.0	70.5	0.3083	0.2956	NA	-11.9	±20	Linear
2-Chloronaphthalene	80.0	72.8	0.5075	0.4616	-9.1	NA	±20	Average RF
2-Chlorophenol	80.0	81.8	1.4725	1.5056	2.3	NA	±20	Average RF
2-Methyl-4,6-dinitrophenol	80.0	70.9	0.2393	0.2252	NA	-11.4	±20	Quadratic
2-Methylnaphthalene	80.0	79.7	0.5761	0.5737	-0.4	NA	±20	Average RF
2-Methylphenol	80.0	82.8	1.2439	1.2867	3.4	NA	±20	Average RF
2-Nitroaniline	80.0	72.8	0.4004	0.3889	NA	-9.0	±20	Quadratic
2-Nitrophenol	80.0	86.4	0.1707	0.1844	8.0	NA	±20	Average RF
3,3'-Dichlorobenzidine	80.0	85.6	0.4839	0.518	7.0	NA	±20	Average RF
3-Nitroaniline	80.0	74.4	0.3901	0.3904	NA	-7.1	±20	Quadratic
4-Bromophenyl Phenyl Ether	80.0	74.6	0.1903	0.1774	-6.8	NA	±20	Average RF
4-Chloro-3-methylphenol	80.0	80.5	0.3064	0.3085	0.7	NA	±20	Average RF
4-Chloroaniline	80.0	88.5	0.3951	0.4369	10.6	NA	±20	Average RF
4-Chlorophenyl Phenyl Ether	80.0	74.3	0.6104	0.5673	-7.1	NA	±20	Average RF
4-Methylphenol	80.0	80.2	1.7654	1.7701	0.3	NA	±20	Average RF
4-Nitroaniline	80.0	71.6	0.4162	0.4012	NA	-10.5	±20	Quadratic
4-Nitrophenol	80.0	67.7	0.2097	0.1876	NA	-15.4	±20	Quadratic
Acenaphthene	80.0	72.7	1.1957	1.0868	-9.1	NA	±20	Average RF
Acenaphthylene	80.0	77.2	1.9535	1.8854	-3.5	NA	±20	Average RF
Aniline	80.0	93.3	1.7516	2.0421	16.6	NA	±20	Average RF
Anthracene	80.0	78.6	1.1068	1.0873	-1.8	NA	±20	Average RF
Benz(a)anthracene	80.0	81.5	1.1806	1.2031	1.9	NA	±20	Average RF
Benzo(a)pyrene	80.0	80.6	1.0011	1.009	0.8	NA	±20	Average RF
Benzo(b)fluoranthene	80.0	80.8	1.1591	1.1705	1.0	NA	±20	Average RF
Benzo(g,h,i)perylene	80.0	84.0	1.032	1.0833	5.0	NA	±20	Average RF
Benzo(k)fluoranthene	80.0	80.8	1.1905	1.2019	1.0	NA	±20	Average RF
Benzoic Acid	80.0	78.1	0.2261	0.2406	NA	-2.3	±20	Quadratic
Benzyl Alcohol	80.0	78.7	0.9658	0.9503	-1.6	NA	±20	Average RF
Bis(2-chloroethoxy)methane	80.0	81.1	0.4193	0.4251	1.4	NA	±20	Average RF

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007905
Project:	JBLM/6304305	**Date Analyzed:**	10/08/20 11:09

Continuing Calibration Verification (CCV) Summary
Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Calibration Date:**	10/5/2020
File ID:	J:\MS28\DATA\100820\1008F003.D\	**Calibration ID:**	KC2000532
Signal ID:	1	**Analysis Lot:**	698479
		Units:	ug/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	80.0	72.2	1.6437	1.4837	-9.7	NA	±20	Average RF
Bis(2-ethylhexyl) Phthalate	80.0	80.9	0.9338	0.9442	1.1	NA	±20	Average RF
Butyl Benzyl Phthalate	80.0	79.2	0.6222	0.6585	NA	-1.0	±20	Linear
Chrysene	80.0	81.3	1.2481	1.2683	1.6	NA	±20	Average RF
Dibenz(a,h)anthracene	80.0	81.1	1.0911	1.1397	NA	1.4	±20	Quadratic
Dibenzofuran	80.0	73.4	1.7883	1.6415	-8.2	NA	±20	Average RF
Diethyl Phthalate	80.0	70.8	1.4949	1.3235	-11.5	NA	±20	Average RF
Dimethyl Phthalate	80.0	71.2	1.4391	1.2814	-11.0	NA	±20	Average RF
Di-n-butyl Phthalate	80.0	77.2	1.2512	1.2075	-3.5	NA	±20	Average RF
Di-n-octyl Phthalate	80.0	72.6	1.5505	1.4908	NA	-9.3	±20	Linear
Fluoranthene	80.0	74.9	1.193	1.1164	-6.4	NA	±20	Average RF
Fluorene	80.0	75.3	1.3658	1.2858	-5.9	NA	±20	Average RF
Hexachlorobenzene	80.0	74.0	0.2236	0.2067	-7.5	NA	±20	Average RF
Hexachlorobutadiene	80.0	78.6	0.1319	0.1296	-1.7	NA	±20	Average RF
Hexachlorocyclopentadiene	80.0	75.9	0.24	0.242	NA	-5.2	±20	Quadratic
Hexachloroethane	80.0	80.5	0.5728	0.5766	0.7	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	80.0	83.4	1.0553	1.1003	4.3	NA	±20	Average RF
Isophorone	80.0	75.3	0.6361	0.599	-5.8	NA	±20	Average RF
Naphthalene	80.0	78.0	0.9705	0.9466	-2.5	NA	±20	Average RF
Nitrobenzene	80.0	79.6	1.4845	1.4769	-0.5	NA	±20	Average RF
N-Nitrosodimethylamine	80.0	74.6	0.4289	0.3997	-6.8	NA	±20	Average RF
N-Nitrosodi-n-propylamine	80.0	73.6	0.9814	0.9034	-7.9	NA	±20	Average RF
N-Nitrosodiphenylamine	80.0	71.2	1.0646	0.9474	-11.0	NA	±20	Average RF
Pentachlorophenol	80.0	72.4	0.1436	0.1328	NA	-9.5	±20	Quadratic
Phenanthrene	80.0	75.3	1.1169	1.0518	-5.8	NA	±20	Average RF
Phenol	80.0	81.0	1.9577	1.9817	1.2	NA	±20	Average RF
Pyrene	80.0	84.7	1.2494	1.3228	5.9	NA	±20	Average RF
2,2'-Oxybis(1-chloropropane)	80.0	77.0	1.2704	1.222	-3.8	NA	±20	Average RF
2,4,6-Tribromophenol	80.0	71.5	0.1176	0.1051	-10.6	NA	±20	Average RF
2-Fluorobiphenyl	80.0	76.4	1.347	1.2857	-4.6	NA	±20	Average RF
2-Fluorophenol	80.0	87.0	1.2511	1.3609	8.8	NA	±20	Average RF
Nitrobenzene-d5	80.0	78.8	1.4637	1.4417	-1.5	NA	±20	Average RF
Phenol-d6	80.0	83.7	1.5166	1.5871	4.6	NA	±20	Average RF
Terphenyl-d14	80.0	81.1	0.8994	0.9121	1.4	NA	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305

Analysis Run Log
Semivolatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**698479
Instrument ID:K-MS-28

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS28\DATA\100820\1008F001.D\	ZZZZZZZ	ZZZZZZZ	10/8/2020	10:25:00	
J:\MS28\DATA\100820\1008F003.D\	Continuing Calibration Verification	KQ2015048-05	10/8/2020	11:09:00	
J:\MS28\DATA\100820\1008F004.D\	Method Blank	KQ2013089-04	10/8/2020	11:37:00	
J:\MS28\DATA\100820\1008F005.D\	Lab Control Sample	KQ2013089-03	10/8/2020	11:56:00	
J:\MS28\DATA\100820\1008F006.D\	FTP-1-20200910 MS	KQ2013089-01	10/8/2020	12:15:00	
J:\MS28\DATA\100820\1008F007.D\	FTP-1-20200910 DMS	KQ2013089-02	10/8/2020	12:35:00	
J:\MS28\DATA\100820\1008F008.D\	FTP-1-20200910	K2007905-001	10/8/2020	12:54:00	
J:\MS28\DATA\100820\1008F014.D\	Continuing Cal. Verification	KQ2015048-03	10/8/2020	14:30:00	

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Prep Summary Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007905
Project: JBLM/6304305
Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Prep Method: EPA 3520C **Extraction Lot:** 365559
Analytical Method: 8270D **Extraction Date:** 09/15/20 12:42

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
FTP-1-20200910	K2007905-001	9/10/20	9/11/20	1000 mL	1 mL	
Matrix Spike	KQ2013089-01MS	9/10/20	9/11/20	1000 mL	1 mL	
Duplicate Matrix Spike	KQ2013089-02DMS	9/10/20	9/11/20	1000 mL	1 mL	
Lab Control Sample	KQ2013089-03LCS	NA	NA	1000 mL	1 mL	
Method Blank	KQ2013089-04MB	NA	NA	1000.0000	1 mL	

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DATA VALIDATION REPORT COVER
SAMPLE DELIVERY GROUP: K2007905

PROJECT NAME: Environmental Remediation Program Services, Joint Base Lewis McChord and Yakima Training Center, Washington

SITE NAME: Former Fire Training Pit and Tracked Vehicle Repair/Old Mobilization and Training Equipment Sites, Yakima Training Center, Washington

LABORATORY: ALS Environmental Laboratories, Inc., Kelso, Washington (ALS)

REPORT DATE: 09 October 2020

PROJECT MANAGER: Timothy McCormack, EA Engineering, Science, and Technology, Inc., PBC (email: tmccormack@eaest.com)

CONTRACTOR OFFICE: EA Engineering, Science, and Technology, Inc., PBC
2200 6th Avenue, Suite 707, Seattle, Washington, 98121

REVIEWER: Sean Arnold, Project Scientist, EA Engineering, Science, and Technology, Inc., PBC (email: sarnold@eaest.com)

VALIDATION STAGE: S2AVM

REVIEW DATE: 16 November 2020

One groundwater sample was collected on 10 September 2020 in support of the Environmental Remediation Program Services for Yakima Training Center in Washington. The samples were delivered to ALS for the analyses indicated in the table below. Table 1 below provides a list of the field sample identification (ID), sample ID, sample collection date, and analyses performed.

Table 1. Sample Summary Table

Field Sample ID	Lab Sample ID	Matrix	Date Collected	Analyses Performed
FTP-1-20200910	K2007905-001	Groundwater	10 September 2020	DRO, RRO, SVOCs

Notes:
DRO – diesel range organics
RRO – residual range organics
SVOCs – semivolatile organic compounds

1. DATA VALIDATION REPORT

The analytical data presented in Sample Delivery Group (SDG) K2007905 were reviewed with respect to quality assurance/quality control (QC) parameters specified in the 2018 *Programmatic Quality Assurance Project Plan* for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington (QAPP). In addition, the following guidance documents were used while assessing the validity of these data: U.S. Department of Defense (DoD), General Data Validation Guidelines, November 2019; DoD Quality Systems Manual, Version 5.3, May 2019; U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Superfund Organic Methods Data Review, January 2017; and the USEPA Office of Solid Waste, SW-846 Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, April 1998 and updates, as well as the referenced methodology.

Section 1 of this data validation report identifies the criteria reviewed for analyses of target analytes by the corresponding method. Section 2 provides definitions of data qualifiers that may be applied to analytical results based on the validation process. Section 3 provides an assessment of the overall data quality and a summary of final data qualification if any, and Section 4 provides the references to the guidelines and documents used in performing the data review.

The items listed below were evaluated for the Stage 2A (S2AVM) manual validation review as defined in the DoD General Data Validation Guidelines (2019), as applicable to the analytical method.

- Deliverables
- Condition of sample at laboratory receipt
- Holding times
- Method blanks
- Matrix spikes (MSs) and laboratory replicates
- Surrogates
- Laboratory control samples (LCS)
- Field QC samples
- Overall assessment of data.

2. GLOSSARY OF DATA QUALIFIERS

The following definitions provide a brief explanation for the data qualifiers that may be used during the review process. The definitions are consistent with the DoD Data Validation Guidelines (2019).

No Qualifier	Indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was not detected and is reported as less than the limit of detection (LOD). The LOD has been adjusted for dilution or concentration of the sample.
J	The reported result is an estimated value.
UJ	The analyte was not detected and is reported as less than the associated estimated numerical value.
R	The sample results are unusable to achieve project data quality objectives based on certain QC criteria outside of acceptance limits. The analyte may or may not be present in the sample.

3. DATA VALIDATION SUMMARY

Analytical results were reviewed for the criteria listed in Section 1.0. A discussion of the data is presented below.

3.1 DELIVERABLES

The data package for this SDG is complete.

3.2 CONDITION OF SAMPLE AT LABORATORY RECEIPT

The sample cooler(s) and the samples contained within were received at the laboratory with the proper chemical preservative at temperatures within the recommended range of $\leq$6 degrees Celsius and not frozen. No qualification of sample data is necessary on the basis of the condition upon sample receipt or chain of custody.

3.3 DIESEL RANGE ORGANICS AND RESIDUAL RANGE ORGANICS

Project samples were prepared and analyzed for diesel range organics (DRO) and residual range organics (RRO) according to NWTPH-Dx.

3.3.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.3.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (< ½ limit of quantitation [LOQ]).

3.3.3 Matrix Spikes

Project sample FTP-1-20200910 was used to prepare matrix spike and matrix spike duplicate samples for DRO and RRO. The percent recoveries (%Rs) and relative percent differences (RPDs) are within the QAPP-specified QC limits or the parent sample result is greater than four times the spike amount and no qualification is required.

3.3.4 Surrogates

Surrogates were added to environmental and QC samples and standards for the analysis of organic compounds as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits.

3.3.5 Laboratory Control Samples

A LCS (one per preparation batch) was prepared and analyzed as recommended by the referenced method. The %Rs for the LCS are within the QAPP-specified QC limits.

3.4 SEMIVOLATILE ORGANIC COMPOUNDS

The project sample (was prepared and analyzed for semivolatile organic compounds according to SW8270D.

3.4.1 Holding Times

The sample was prepared and analyzed within the holding time specified in the referenced method of analysis.

3.4.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (<½ LOQ).

3.4.3 Matrix Spikes

Project sample FTP-1-20180912 was selected for spiking for the MS and matrix spike duplicate (MSD) samples. The %Rs and RPDs are within the QAPP-specified QC limits, with the following exceptions.

- The MS or MSD %Rs for 4-bromophenyl phenyl ether, anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, hexachlorobenzene, indeno(1,2,3-cd)pyrene, and 4-nitrophenol by SW8270D are below QC limits. The associated sample results for these analytes are non-detectable and have been flagged as estimated with the UJ qualifier because of evidence of low bias.
- The MS %Rs for benzo(a)anthracene, fluoranthene, and phenanthrene by SW8270D are below QC limits. The associated project sample results for these target analytes are already flagged with the J qualifier; therefore, no further qualification is necessary.
- The MS/MSD %Rs for 3,3'-dichlorobenzidine are below QC limits at 0 percent. The associated sample result for 3,3'-dichlorobenzidine is non-detectable and has been flagged as unusable with the R qualifier.
- The MS/MSD RPDs for 2-methylnapthalene, 4-bromophenyl phenyl ether, 4-chlorophenyl phenyl ether, 4-nitrophenol, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, chrysene, dibenz(a,h)anthracene, di-n-butyl phthalate, di-n-octyl phthalate, fluoranthene, hexachlorobenzene, hexachlorobutadiene, indeno(1,2,3-cd)pyrene, and pyrene are outside QC limits. The associated sample results that are detectable and above the LOQ have been flagged as estimated with the J qualifier with potential high bias; nondetectable results have not been qualified.

3.4.4 Surrogates

Surrogates were added to environmental and QC samples and standards for the analysis of organic compounds as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits.

3.4.5 Laboratory Control Samples

LCSs (one per preparation batch) were prepared and analyzed as recommended by the referenced method. The %Rs for LCSs are within the QAPP-specified QC limits.

4. OVERALL ASSESSMENT OF DATA

The qualification of sample results was performed during data validation, as necessary. The data are acceptable and meet the project data quality objectives and are usable to support project decision-making, with the except of a result that is flagged with the R qualifier as unusable. Note that one sample result for 3,3'-dichlorobenzidine was flagged with R qualifier. 3,3'-dichlorobenzidine has been identified as a poor performer.

The qualifiers added during data validation are summarized in Table 2.

Table 2. Qualifier Summary Table

Field Sample ID	Lab Sample ID	Analyte	Result (µg/L)	Validation Qualifier	Reason
FTP-1-20200910	K2007905-001	3,3'-dichlorobenzidine	ND	R	MS/MSD %R (0%)
FTP-1-20200910	K2007905-001	4-bromophenyl phenyl ether	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	anthracene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	benzo(a)pyrene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	benzo(b)fluoranthene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	benzo(k)fluoranthene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	chrysene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	dibenz(a,h)anthracene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	hexachlorobenzene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	indeno(1,2,3-cd)pyrene	ND	UJ	MS/MSD %R
FTP-1-20200910	K2007905-001	2-methylnaphthalene	68	J	MS/MSD RPD
FTP-1-20200910	K2007905-001	benzoic acid	58	J	MS/MSD RPD

5. REFERENCES

EA Engineering, Science, and Technology, Inc., PBC. 2018. *Programmatic Quality Assurance Project Plan for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington*.

U.S. Department of Defense (DoD). 2019. *General Data Validation Guidelines*. Environmental Data Quality Workgroup. November.

———. 2019. *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 5.3.* May.

U.S. Environmental Protection Agency. 2017. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. OLEM 9355.0-136. EPA-540-R-2017-002. January.

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September 25, 2020 **Analytical Report for Service Request No:** K2007912

Garrett Lee
EA Engineering, Science and Technology
2200 6th Ave, Suite 707
Seattle, WA 98121

RE: JBLM / 6304305

Dear Garrett,

Enclosed are the results of the sample(s) submitted to our laboratory September 11, 2020
For your reference, these analyses have been assigned our service request number **K2007912.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Mark Harris
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: EA Engineering, Science, and Technology (EAEST)
Project: JBLM
Sample Matrix: Ground Water, Water

Service Request: K2007912
Date Received: 09/11/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Twelve ground water, water samples were received for analysis at ALS Environmental on 09/11/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Volatiles by GC/MS:

Method 8260C Volatile Organic Compounds: The DOD QSM 5.0 lower control criterion was exceeded by 1-3% for the surrogate 4-Bromofluorobenzene in some samples. The error associated with reduced recoveries equates to a potential slight bias. The recoveries of the surrogate in question were within ALS control Charted limits. The results were flagged to indicate the issue. No further corrective action was taken.

Method 8260C Volatile Organic Compounds: The DOD QSM 5.0 lower control criterion was exceeded by 1-3% for the surrogate 4-Bromofluorobenzene in some samples. The error associated with reduced recoveries equates to a potential slight bias. The recoveries of the surrogate in question were within ALS control Charted limits. The results were flagged to indicate the issue. No further corrective action was taken.

Approved by Noe D. Oaxaca Date 09/25/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

CHAIN OF CUSTODY

K2007912

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC # | Cooler # 3 of 3

Lab Quote # | Lab Job #:

Client / Reporting Information

Company Name: EA Engineering, Science, and Technology, Inc., PBC

Address: 2200 6th Ave., Suite 707

City: Seattle State: WA Zip: 98121

Project Contact: Garrett Lee and per contract

Phone #: 206-452-5350

Samplers's Name/Signature: Phil Ehrman

Project Information

Project Name: JBLM

Street:

City: Joint Base Lewis McChord State: WA

Project #: 6304305

Email: glee@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com

Purchase Order #: 17578

Analytical Information

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Lab Sample ID	Sample ID	Collection Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
	TVR-3-20200909	9-Sep-2020	13:40	PE	GW	3	3								X				
	TVR-3A-20200909	9-Sep-2020	13:45	PE	GW	3	3								X				
	TVR-7-20200909	9-Sep-2020	13:53	PE	GW	3	3								X				
	TVR-1-20200909	9-Sep-2020	13:58	PE	GW	3	3								X				
	TVR-POMONA-20200909	9-Sep-2020	14:05	PE	GW	3	3								X				
	TVR-MTS-1-20200909	9-Sep-2020	14:20	PE	GW	3	3								X				
	TVR-MTS-2-20200909	9-Sep-2020	14:30	PE	GW	3	3								X				
	TVR-MTS-4-20200909	9-Sep-2020	14:45	PE	GW	3	3								X				
	TVR-PAIC-20200910	10-Sep-2020	10:25	PE	GW	3	3								X				
	TVR-6-20200910	10-Sep-2020	10:35	PE	GW	3	3								X				
	TVR-TB-001-20200909	9-Sep-2020	13:30	PE	W	2	2								X				TRIP BLANK

Turnaround Time (Business days): standard

Data Deliverable Information: Level IV deliverable, Equis EDD and per contract

Comments / Remarks: Samples from Site IRP / Phase 2021H / Task 2021B.

Sample Custody must be documented below each time samples change possession.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Phil Ehrman	9/10/20 1200	1	2		2
3 3	Relinquished by:	Date Time: 9/11/20 1015	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 5	Relinquished by:	Date Time:	Received By: 5			

On Ice Y / N Trip Blank Y / N Cooler Temp. ____ °C

Labels Match Coc? Y / N

CHAIN OF CUSTODY

Laboratory Information

Address: 1317 South 13th Ave., Kelso, WA 98626

Phone #: 360-577-7222 POC: Mark Harris

COC # | Cooler # 2 of 2

Lab Quote # | Lab Job #:

Client / Reporting Information

Company Name: EA Engineering, Science, and Technology, Inc., PBC

Address: 2200 6th Ave., Suite 707

City: Seattle State: WA Zip: 98121

Project Contact: Garrett Lee and per contract

Phone #: 206-452-5350

Samplers's Name/Signature: Phil Ehrman

Project Information

Project Name: JBLM

Street:

City: Joint Base Lewis McChord State: WA

Project #: 6304305

Email: glee@eaest.com, bnuding@eaest.com, and pacificchem@eaest.com

Purchase Order #: 17578

Analytical Information

Lab Sample ID	Sample ID	Collection: Date	Time	Sampled by	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	8260C / VOC FP	8270D / SVOC	NWTPH-GX / TPH-GX	NWTPH-DX / TPH-DX	Notes
	~~FTP-1-20200910~~	~~10-Sep-2020~~		~~PE~~	~~GW~~										X	X	X	X	~~MS/MSD~~
	FTP-1-20200910	10-Sep-2020	0900	PE	GW	18	18								X		X		MS/MSD
																			PE

Matrix Codes

W - Water
GW - Ground Water
SW - Surface Water
SO - Soil
OI - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Turnaround Time (Business days): standard

Data Deliverable Information: Level IV deliverable, Equis EDD and per contract

Comments / Remarks: Samples from Site IRP / Phase 2021H / Task 2021B. Sample for FTP-1- split between coolers

Sample Custody must be documented below each time samples change possession.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Phil Ehrman	9/10/20 1200	1	2		2
3	Relinquished by:	Date Time: 9/11/20 1015	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	On Ice Y / N Trip Blank Y / N Labels Match Coc? Y / N		Cooler Temp. ____ °C

PM MH

Cooler Receipt and Preservation Form

Client EA Eng Service Request K20 07912

Received: 9/11/20 Opened: 9/11/20 By: [illegible] Unloaded: 9/11/20 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? one, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N
4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column below:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / (NA)	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
2.4	—	IR01				3966 9815 7940	
3.8	—	"				" " 7951	
2.8	—	"				" " 7962	

6. Packing material: (*Inserts*) (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) (*Dry Ice*) *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
14. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA

Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics (Toluene-Naphthalene GRO)	**1510**	250	25.0	12.0	1	09/17/20 13:00	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	113	50 - 150	09/17/20 13:00	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013465-09	**Basis:**	NA

Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Gx
Prep Method: None

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Gasoline Range Organics (Toluene-Naphthalene GRO)	**14.0 J**	250	25.0	12.0	1	09/17/20 11:48	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Difluorobenzene	114	50 - 150	09/17/20 11:48	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912

Project: JBLM/6304305

Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Gx

Extraction Method: None

Sample Name	Lab Code	1,4-Difluorobenzene 50-150
FTP-1-20200910	K2007912-012	113
FTP-1-20200910	KQ2013465-12	115
Method Blank	KQ2013465-09	114
Lab Control Sample	KQ2013465-10	116
Duplicate Lab Control Sample	KQ2013465-11	118

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	09/17/20

Replicate Sample Summary

Volatile Petroleum Products by GC/FID

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample KQ2013465-12 Result	Average	RPD	RPD Limit
Gasoline Range Organics (Toluene-Naphthalene GRO)	NWTPH-Gx	250	25.0	12.0	1510	1420	1470	6	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Gx	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	695663

	Lab Control Sample KQ2013465-10			Duplicate Lab Control Sample KQ2013465-11					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Gasoline Range Organics (Toluene-Naphthalene GRO)	496	500	99	464	500	93	80-119	7	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 11:48
Sample Matrix:	Ground Water	**Date Extracted:**	

Method Blank Summary
Volatile Petroleum Products by GC/FID

Sample Name:	Method Blank	**Instrument ID:**	K-GC-39
Lab Code:	KQ2013465-09	**File ID:**	J:\GC39\DATA\091720\0917F011.D\
Analysis Method:	NWTPH-Gx	**Analysis Lot:**	695663
Prep Method:	None		

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2013465-10	J:\GC39\DATA\091720\0917F012.D\	09/17/20 12:12
Duplicate Lab Control Sample	KQ2013465-11	J:\GC39\DATA\091720\0917F013.D\	09/17/20 12:36
FTP-1-20200910	K2007912-012	J:\GC39\DATA\091720\0917F014.D\	09/17/20 13:00
FTP-1-20200910DUP	KQ2013465-12	J:\GC39\DATA\091720\0917F015.D\	09/17/20 13:23

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 12:12
Sample Matrix:	Ground Water	**Date Extracted:**	

Lab Control Sample Summary
Volatile Petroleum Products by GC/FID

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-39
Lab Code:	KQ2013465-10	**File ID:**	J:\GC39\DATA\091720\0917F012.D\
Analysis Method:	NWTPH-Gx	**Analysis Lot:**	695663
Prep Method:	None		

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ2013465-09	J:\GC39\DATA\091720\0917F011.D\	09/17/20 11:48
Duplicate Lab Control Sample	KQ2013465-11	J:\GC39\DATA\091720\0917F013.D\	09/17/20 12:36
FTP-1-20200910	K2007912-012	J:\GC39\DATA\091720\0917F014.D\	09/17/20 13:00
FTP-1-20200910DUP	KQ2013465-12	J:\GC39\DATA\091720\0917F015.D\	09/17/20 13:23

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/7/2020

Initial Calibration Summary
Volatile Petroleum Products by GC/FID

Calibration ID: KC2000336 **Signal ID:** DB-624
Instrument ID: K-GC-39

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2000336-01	ICAL 50/20	J:\GC39\DATA\070720\0707F006.D	07/07/2020 09:15
02	KC2000336-02	ICAL 100/25	J:\GC39\DATA\070720\0707F007.D	07/07/2020 09:39
03	KC2000336-03	ICAL 200/50	J:\GC39\DATA\070720\0707F008.D	07/07/2020 10:02
04	KC2000336-04	ICAL 500/100	J:\GC39\DATA\070720\0707F009.D	07/07/2020 10:26
05	KC2000336-05	ICAL 1000/150	J:\GC39\DATA\070720\0707F010.D	07/07/2020 10:50
06	KC2000336-06	ICAL 5000	J:\GC39\DATA\070720\0707F011.D	07/07/2020 11:14
07	KC2000336-07	ICAL 10000	J:\GC39\DATA\070720\0707F012.D	07/07/2020 11:37

Analyte

1,4-Difluorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20.000	1.567E5	02	25.000	1.606E5	03	50.000	1.446E5	04	100.000	1.441E5
05	150.000	1.515E5									

Gasoline Range Organics (Toluene-Naphthalene GRO)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	5.979E4	02	100.000	5.324E4	03	200.000	5.272E4	04	500.000	5.111E4
05	1000.000	5.396E4	06	5000.000	5.397E4	07	10000.000	5.898E4			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/7/2020

Initial Calibration Summary
Volatile Petroleum Products by GC/FID

Calibration ID: KC2000336 **Signal ID:** DB-624
Instrument ID: K-GC-39

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,4-Difluorobenzene	SURR	Average RF	% RSD	4.8	≤20	1.515E5	
Gasoline Range Organics (Toluene-Naphthalene GRO)	TRG	Average RF	% RSD	6.0	≤20	5.482E4	

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/7/2020

Initial Calibration Verification Summary
Volatile Petroleum Products by GC/FID

Calibration ID: KC2000336 **Signal ID:** DB-624
Instrument ID: K-GC-39

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC2000336-08	ICV	J:\GC39\DATA\070720\0707F015.D	07/07/2020 12:48

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Gasoline Range Organics (Toluene-Naphthalene GRO)	500	422	5.482E4	4.632E4	-15.512	±20	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,4-Difluorobenzene	100	95.8	1.515E5	1.451E5	-4.232	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 11:00

Continuing Calibration Verification (CCV) Summary
Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Gx	**Calibration Date:**	7/7/2020
File ID:	J:\GC39\DATA\091720\0917F009.D\	**Calibration ID:**	KC2000336
Signal ID:	DB-624	**Analysis Lot:**	695663
		Units:	ug/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Gasoline Range Organics (Toluene-Naphthalene GRO)	500	477	5.482E4	5.23E4	-4.6	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,4-Difluorobenzene	100	113	1.515E5	1.714E5	13.1	NA	±20	Average RF

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/17/20 19:22

Continuing Calibration Verification (CCV) Summary
Volatile Petroleum Products by GC/FID

Analysis Method:	NWTPH-Gx	**Calibration Date:**	7/7/2020
File ID:	J:\GC39\DATA\091720\0917F030.D\	**Calibration ID:**	KC2000336
Signal ID:	DB-624	**Analysis Lot:**	695663
		Units:	ug/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Gasoline Range Organics (Toluene-Naphthalene GRO)	500	491	5.482E4	5.388E4	-1.7	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
1,4-Difluorobenzene	100	120	1.515E5	1.813E5	19.7	NA	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007912
Project: JBLM/6304305

Analysis Run Log
Volatile Petroleum Products by GC/FID

Analysis Method: NWTPH-Gx **Analysis Lot:**695663
Instrument ID:K-GC-39

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC39\DATA\091720\0917F009.D\	Continuing Calibration Verification	KQ2013465-01	9/17/2020	11:00:00	
J:\GC39\DATA\091720\0917F010.D\	Continuing Calibration Blank	KQ2013465-05	9/17/2020	11:24:00	
J:\GC39\DATA\091720\0917F011.D\	Method Blank	KQ2013465-09	9/17/2020	11:48:00	
J:\GC39\DATA\091720\0917F012.D\	Lab Control Sample	KQ2013465-10	9/17/2020	12:12:00	
J:\GC39\DATA\091720\0917F013.D\	Duplicate Lab Control Sample	KQ2013465-11	9/17/2020	12:36:00	
J:\GC39\DATA\091720\0917F014.D\	FTP-1-20200910	K2007912-012	9/17/2020	13:00:00	
J:\GC39\DATA\091720\0917F015.D\	FTP-1-20200910 DUP	KQ2013465-12	9/17/2020	13:23:00	
J:\GC39\DATA\091720\0917F030.D\	Continuing Calibration Verification	KQ2013465-02	9/17/2020	19:22:00	
J:\GC39\DATA\091720\0917F031.D\	Continuing Calibration Blank	KQ2013465-06	9/17/2020	19:46:00	
J:\GC39\DATA\091720\0917F040.D\	ZZZZZZZ	ZZZZZZZ	9/17/2020	23:22:00	
J:\GC39\DATA\091720\0917F043.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	00:34:00	
J:\GC39\DATA\091720\0917F044.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	00:58:00	
J:\GC39\DATA\091720\0917F046.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	01:46:00	
J:\GC39\DATA\091720\0917F049.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	02:58:00	
J:\GC39\DATA\091720\0917F050.D\	Continuing Calibration Blank	KQ2013465-07	9/18/2020	03:22:00	
J:\GC39\DATA\091720\0917F051.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	03:46:00	
J:\GC39\DATA\091720\0917F052.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	04:10:00	
J:\GC39\DATA\091720\0917F064.D\	ZZZZZZZ	ZZZZZZZ	9/18/2020	09:08:00	
J:\GC39\DATA\091720\0917F065.D\	Continuing Calibration Blank	KQ2013465-08	9/18/2020	09:32:00	

Volatile Organic Compounds

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:40
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-3-20200909	**Units:**	ug/L
Lab Code:	K2007912-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**11**	**J**	20	10	3.3	1	09/19/20 12:10	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 12:10	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 12:10	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:10	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 12:10	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 12:10	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 12:10	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 12:10	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 12:10	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 12:10	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 12:10	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	09/19/20 12:10	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 12:10	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 12:10	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:10	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 12:10	
Chloromethane	**0.070**	**J**	0.50	0.20	0.068	1	09/19/20 12:10	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 12:10	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 12:10	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 12:10	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 12:10	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 12:10	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 12:10	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 12:10	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 12:10	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 12:10	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 12:10	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 12:10	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 12:10	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 12:10	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 12:10	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 12:10	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 12:10	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 12:10	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 12:10	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 12:10	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 12:10	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 12:10	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 12:10	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 12:10	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 12:10	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 12:10	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 12:10	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:40
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-3-20200909	**Units:**	ug/L
Lab Code:	K2007912-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 12:10	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 12:10	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 12:10	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 12:10	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 12:10	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 12:10	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 12:10	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:10	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 12:10	
Toluene	**0.13**	**J**	0.50	0.10	0.054	1	09/19/20 12:10	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 12:10	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 12:10	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 12:10	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 12:10	
Trichloroethene (TCE)	**2.1**		0.50	0.10	0.10	1	09/19/20 12:10	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 12:10	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 12:10	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 12:10	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 12:10	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 12:10	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 12:10	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 12:10	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	09/19/20 12:10	
Dibromofluoromethane	94	80 - 119	09/19/20 12:10	
1,2-Dichloroethane-d4	95	81 - 118	09/19/20 12:10	
Toluene-d8	99	89 - 112	09/19/20 12:10	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:45
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-3A-20200909	**Units:**	ug/L
Lab Code:	K2007912-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**8.9**	**J**	20	10	3.3	1	09/19/20 12:36	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 12:36	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 12:36	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:36	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 12:36	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 12:36	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 12:36	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 12:36	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 12:36	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 12:36	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 12:36	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	09/19/20 12:36	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 12:36	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 12:36	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:36	
Chloroform	**0.080**	**J**	0.50	0.20	0.072	1	09/19/20 12:36	
Chloromethane	**0.090**	**J**	0.50	0.20	0.068	1	09/19/20 12:36	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 12:36	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 12:36	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 12:36	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 12:36	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 12:36	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 12:36	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 12:36	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 12:36	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 12:36	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 12:36	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 12:36	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 12:36	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 12:36	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 12:36	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 12:36	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 12:36	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 12:36	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 12:36	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 12:36	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 12:36	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 12:36	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 12:36	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 12:36	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 12:36	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 12:36	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 12:36	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:45
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-3A-20200909	**Units:**	ug/L
Lab Code:	K2007912-002	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 12:36	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 12:36	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 12:36	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 12:36	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 12:36	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 12:36	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 12:36	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 12:36	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 12:36	
Toluene	**0.15**	**J**	0.50	0.10	0.054	1	09/19/20 12:36	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 12:36	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 12:36	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 12:36	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 12:36	
Trichloroethene (TCE)	**2.0**		0.50	0.10	0.10	1	09/19/20 12:36	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 12:36	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 12:36	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 12:36	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 12:36	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 12:36	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 12:36	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 12:36	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	84	85 - 114	09/19/20 12:36	*
Dibromofluoromethane	100	80 - 119	09/19/20 12:36	
1,2-Dichloroethane-d4	102	81 - 118	09/19/20 12:36	
Toluene-d8	101	89 - 112	09/19/20 12:36	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:53
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-7-20200909	**Units:**	ug/L
Lab Code:	K2007912-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**18**	**J**	20	10	3.3	1	09/19/20 13:03	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 13:03	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 13:03	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:03	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 13:03	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 13:03	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 13:03	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 13:03	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 13:03	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 13:03	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 13:03	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	09/19/20 13:03	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 13:03	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 13:03	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:03	
Chloroform	**0.15**	**J**	0.50	0.20	0.072	1	09/19/20 13:03	
Chloromethane	**0.070**	**J**	0.50	0.20	0.068	1	09/19/20 13:03	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 13:03	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 13:03	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 13:03	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 13:03	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 13:03	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 13:03	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:03	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 13:03	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:03	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 13:03	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 13:03	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 13:03	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 13:03	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 13:03	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 13:03	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 13:03	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 13:03	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 13:03	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 13:03	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 13:03	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 13:03	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 13:03	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 13:03	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 13:03	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 13:03	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 13:03	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:53
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-7-20200909	**Units:**	ug/L
Lab Code:	K2007912-003	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 13:03	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 13:03	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 13:03	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 13:03	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 13:03	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 13:03	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 13:03	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:03	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 13:03	
Toluene	**0.17**	**J**	0.50	0.10	0.054	1	09/19/20 13:03	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 13:03	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 13:03	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 13:03	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 13:03	
Trichloroethene (TCE)	**3.7**		0.50	0.10	0.10	1	09/19/20 13:03	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 13:03	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 13:03	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 13:03	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 13:03	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 13:03	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 13:03	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 13:03	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	84	85 - 114	09/19/20 13:03	*
Dibromofluoromethane	96	80 - 119	09/19/20 13:03	
1,2-Dichloroethane-d4	100	81 - 118	09/19/20 13:03	
Toluene-d8	98	89 - 112	09/19/20 13:03	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:58
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-1-20200909	**Units:**	ug/L
Lab Code:	K2007912-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**13**	**J**	20	10	3.3	1	09/19/20 13:29	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 13:29	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 13:29	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:29	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 13:29	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 13:29	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 13:29	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 13:29	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 13:29	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 13:29	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 13:29	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	09/19/20 13:29	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 13:29	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 13:29	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:29	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 13:29	
Chloromethane	**0.080**	**J**	0.50	0.20	0.068	1	09/19/20 13:29	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 13:29	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 13:29	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 13:29	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 13:29	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 13:29	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 13:29	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:29	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 13:29	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:29	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 13:29	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 13:29	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 13:29	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 13:29	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 13:29	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 13:29	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 13:29	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 13:29	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 13:29	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 13:29	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 13:29	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 13:29	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 13:29	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 13:29	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 13:29	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 13:29	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 13:29	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:58
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-1-20200909	**Units:**	ug/L
Lab Code:	K2007912-004	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 13:29	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 13:29	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 13:29	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 13:29	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 13:29	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 13:29	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 13:29	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:29	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 13:29	
Toluene	**0.12**	**J**	0.50	0.10	0.054	1	09/19/20 13:29	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 13:29	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 13:29	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 13:29	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 13:29	
Trichloroethene (TCE)	**7.4**		0.50	0.10	0.10	1	09/19/20 13:29	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 13:29	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 13:29	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 13:29	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 13:29	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 13:29	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 13:29	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 13:29	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	83	85 - 114	09/19/20 13:29	*
Dibromofluoromethane	96	80 - 119	09/19/20 13:29	
1,2-Dichloroethane-d4	97	81 - 118	09/19/20 13:29	
Toluene-d8	97	89 - 112	09/19/20 13:29	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:05
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-POMONA-20200909	**Units:**	ug/L
Lab Code:	K2007912-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**12**	**J**	20	10	3.3	1	09/19/20 13:56	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 13:56	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 13:56	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:56	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 13:56	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 13:56	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 13:56	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 13:56	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 13:56	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 13:56	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 13:56	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	09/19/20 13:56	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 13:56	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 13:56	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:56	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 13:56	
Chloromethane	**0.21**	**J**	0.50	0.20	0.068	1	09/19/20 13:56	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 13:56	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 13:56	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 13:56	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 13:56	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 13:56	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 13:56	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:56	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 13:56	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 13:56	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 13:56	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 13:56	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 13:56	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 13:56	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 13:56	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 13:56	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 13:56	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 13:56	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 13:56	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 13:56	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 13:56	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 13:56	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 13:56	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 13:56	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 13:56	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 13:56	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 13:56	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:05
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-POMONA-20200909	**Units:**	ug/L
Lab Code:	K2007912-005	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 13:56	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 13:56	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 13:56	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 13:56	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 13:56	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 13:56	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 13:56	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 13:56	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 13:56	
Toluene	**0.080**	**J**	0.50	0.10	0.054	1	09/19/20 13:56	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 13:56	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 13:56	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 13:56	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 13:56	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	09/19/20 13:56	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 13:56	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 13:56	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 13:56	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 13:56	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 13:56	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 13:56	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 13:56	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	82	85 - 114	09/19/20 13:56	*
Dibromofluoromethane	97	80 - 119	09/19/20 13:56	
1,2-Dichloroethane-d4	103	81 - 118	09/19/20 13:56	
Toluene-d8	99	89 - 112	09/19/20 13:56	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-1-20200909	**Units:**	ug/L
Lab Code:	K2007912-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**11**	**J**	20	10	3.3	1	09/19/20 14:22	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 14:22	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 14:22	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:22	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 14:22	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 14:22	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 14:22	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 14:22	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 14:22	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 14:22	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 14:22	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	09/19/20 14:22	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 14:22	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 14:22	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:22	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 14:22	
Chloromethane	**0.15**	**J**	0.50	0.20	0.068	1	09/19/20 14:22	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 14:22	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 14:22	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 14:22	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 14:22	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 14:22	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 14:22	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 14:22	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 14:22	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 14:22	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 14:22	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 14:22	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 14:22	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 14:22	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 14:22	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 14:22	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 14:22	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 14:22	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 14:22	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 14:22	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 14:22	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 14:22	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 14:22	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 14:22	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 14:22	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 14:22	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 14:22	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-1-20200909	**Units:**	ug/L
Lab Code:	K2007912-006	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 14:22	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 14:22	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 14:22	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 14:22	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 14:22	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 14:22	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 14:22	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:22	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 14:22	
Toluene	**0.10**	**J**	0.50	0.10	0.054	1	09/19/20 14:22	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 14:22	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 14:22	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 14:22	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 14:22	
Trichloroethene (TCE)	**2.9**		0.50	0.10	0.10	1	09/19/20 14:22	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 14:22	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 14:22	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 14:22	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 14:22	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 14:22	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 14:22	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 14:22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	09/19/20 14:22	
Dibromofluoromethane	96	80 - 119	09/19/20 14:22	
1,2-Dichloroethane-d4	96	81 - 118	09/19/20 14:22	
Toluene-d8	99	89 - 112	09/19/20 14:22	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:30
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-2-20200909	**Units:**	ug/L
Lab Code:	K2007912-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**10**	**J**	20	10	3.3	1	09/19/20 14:49	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 14:49	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 14:49	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:49	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 14:49	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 14:49	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 14:49	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 14:49	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 14:49	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 14:49	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 14:49	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	09/19/20 14:49	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 14:49	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 14:49	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:49	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 14:49	
Chloromethane	**0.14**	**J**	0.50	0.20	0.068	1	09/19/20 14:49	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 14:49	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 14:49	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 14:49	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 14:49	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 14:49	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 14:49	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 14:49	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 14:49	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 14:49	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 14:49	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 14:49	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 14:49	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 14:49	
cis-1,2-Dichloroethene	**0.59**		0.50	0.20	0.067	1	09/19/20 14:49	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 14:49	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 14:49	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 14:49	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 14:49	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 14:49	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 14:49	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 14:49	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 14:49	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 14:49	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 14:49	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 14:49	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 14:49	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:30
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-2-20200909	**Units:**	ug/L
Lab Code:	K2007912-007	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 14:49	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 14:49	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 14:49	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 14:49	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 14:49	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 14:49	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 14:49	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 14:49	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 14:49	
Toluene	**0.14**	**J**	0.50	0.10	0.054	1	09/19/20 14:49	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 14:49	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 14:49	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 14:49	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 14:49	
Trichloroethene (TCE)	**13**		0.50	0.10	0.10	1	09/19/20 14:49	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 14:49	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 14:49	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 14:49	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 14:49	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 14:49	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 14:49	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 14:49	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	85	85 - 114	09/19/20 14:49	
Dibromofluoromethane	96	80 - 119	09/19/20 14:49	
1,2-Dichloroethane-d4	97	81 - 118	09/19/20 14:49	
Toluene-d8	96	89 - 112	09/19/20 14:49	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:45
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-4-20200909	**Units:**	ug/L
Lab Code:	K2007912-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**8.5**	**J**	20	10	3.3	1	09/19/20 15:16	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 15:16	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 15:16	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:16	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 15:16	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 15:16	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 15:16	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 15:16	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 15:16	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 15:16	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 15:16	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	09/19/20 15:16	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 15:16	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 15:16	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:16	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 15:16	
Chloromethane	**0.090**	**J**	0.50	0.20	0.068	1	09/19/20 15:16	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 15:16	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 15:16	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 15:16	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 15:16	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 15:16	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 15:16	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 15:16	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 15:16	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 15:16	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 15:16	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 15:16	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 15:16	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 15:16	
cis-1,2-Dichloroethene	**0.19**	**J**	0.50	0.20	0.067	1	09/19/20 15:16	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 15:16	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 15:16	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 15:16	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 15:16	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 15:16	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 15:16	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 15:16	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 15:16	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 15:16	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 15:16	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 15:16	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 15:16	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 14:45
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-MTS-4-20200909	**Units:**	ug/L
Lab Code:	K2007912-008	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 15:16	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 15:16	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 15:16	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 15:16	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 15:16	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 15:16	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 15:16	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:16	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 15:16	
Toluene	**0.070**	**J**	0.50	0.10	0.054	1	09/19/20 15:16	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 15:16	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 15:16	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 15:16	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 15:16	
Trichloroethene (TCE)	**4.1**		0.50	0.10	0.10	1	09/19/20 15:16	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 15:16	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 15:16	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 15:16	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 15:16	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 15:16	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 15:16	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 15:16	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	09/19/20 15:16	
Dibromofluoromethane	96	80 - 119	09/19/20 15:16	
1,2-Dichloroethane-d4	96	81 - 118	09/19/20 15:16	
Toluene-d8	97	89 - 112	09/19/20 15:16	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 10:25
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-PAIC-20200910	**Units:**	ug/L
Lab Code:	K2007912-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**12**	**J**	20	10	3.3	1	09/19/20 15:42	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 15:42	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 15:42	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:42	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 15:42	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 15:42	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 15:42	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 15:42	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 15:42	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 15:42	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 15:42	
Carbon Disulfide	**0.070**	**J**	0.50	0.20	0.069	1	09/19/20 15:42	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 15:42	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 15:42	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:42	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 15:42	
Chloromethane	**0.090**	**J**	0.50	0.20	0.068	1	09/19/20 15:42	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 15:42	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 15:42	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 15:42	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 15:42	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 15:42	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 15:42	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 15:42	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 15:42	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 15:42	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 15:42	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 15:42	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 15:42	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 15:42	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 15:42	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 15:42	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 15:42	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 15:42	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 15:42	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 15:42	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 15:42	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 15:42	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 15:42	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 15:42	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 15:42	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 15:42	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 15:42	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 10:25
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-PAIC-20200910	**Units:**	ug/L
Lab Code:	K2007912-009	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 15:42	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 15:42	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 15:42	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 15:42	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 15:42	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 15:42	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 15:42	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 15:42	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 15:42	
Toluene	**0.20**	**J**	0.50	0.10	0.054	1	09/19/20 15:42	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 15:42	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 15:42	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 15:42	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 15:42	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	09/19/20 15:42	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 15:42	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 15:42	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 15:42	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 15:42	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 15:42	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 15:42	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 15:42	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	83	85 - 114	09/19/20 15:42	*
Dibromofluoromethane	96	80 - 119	09/19/20 15:42	
1,2-Dichloroethane-d4	98	81 - 118	09/19/20 15:42	
Toluene-d8	99	89 - 112	09/19/20 15:42	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 10:35
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-6-20200910	**Units:**	ug/L
Lab Code:	K2007912-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**18**	**J**	20	10	3.3	1	09/19/20 16:09	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 16:09	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 16:09	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:09	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 16:09	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 16:09	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 16:09	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 16:09	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 16:09	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 16:09	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 16:09	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	09/19/20 16:09	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 16:09	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 16:09	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:09	
Chloroform	**0.080**	**J**	0.50	0.20	0.072	1	09/19/20 16:09	
Chloromethane	**0.070**	**J**	0.50	0.20	0.068	1	09/19/20 16:09	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 16:09	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 16:09	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 16:09	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 16:09	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 16:09	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 16:09	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 16:09	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 16:09	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 16:09	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 16:09	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 16:09	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 16:09	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 16:09	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 16:09	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 16:09	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 16:09	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 16:09	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 16:09	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 16:09	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 16:09	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 16:09	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 16:09	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 16:09	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 16:09	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 16:09	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 16:09	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 10:35
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-6-20200910	**Units:**	ug/L
Lab Code:	K2007912-010	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 16:09	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 16:09	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 16:09	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 16:09	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 16:09	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 16:09	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 16:09	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:09	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 16:09	
Toluene	**0.18**	**J**	0.50	0.10	0.054	1	09/19/20 16:09	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 16:09	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 16:09	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 16:09	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 16:09	
Trichloroethene (TCE)	**0.13**	**J**	0.50	0.10	0.10	1	09/19/20 16:09	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 16:09	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 16:09	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 16:09	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 16:09	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 16:09	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 16:09	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 16:09	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	09/19/20 16:09	
Dibromofluoromethane	97	80 - 119	09/19/20 16:09	
1,2-Dichloroethane-d4	98	81 - 118	09/19/20 16:09	
Toluene-d8	98	89 - 112	09/19/20 16:09	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:30
Sample Matrix:	Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-TB-001-20200909	**Units:**	ug/L
Lab Code:	K2007912-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**11**	**J**	20	10	3.3	1	09/19/20 16:36	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 16:36	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 16:36	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:36	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 16:36	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 16:36	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 16:36	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 16:36	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 16:36	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 16:36	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 16:36	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	09/19/20 16:36	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 16:36	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 16:36	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:36	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 16:36	
Chloromethane	ND	U	0.50	0.20	0.068	1	09/19/20 16:36	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 16:36	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 16:36	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 16:36	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 16:36	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 16:36	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 16:36	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 16:36	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 16:36	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 16:36	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 16:36	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 16:36	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 16:36	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 16:36	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 16:36	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 16:36	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 16:36	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 16:36	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 16:36	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 16:36	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 16:36	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 16:36	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 16:36	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 16:36	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 16:36	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 16:36	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 16:36	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/09/20 13:30
Sample Matrix:	Water	**Date Received:**	09/11/20 10:15
Sample Name:	TVR-TB-001-20200909	**Units:**	ug/L
Lab Code:	K2007912-011	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 16:36	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 16:36	
Methylene Chloride	**0.18**	**J**	2.0	0.20	0.10	1	09/19/20 16:36	
Naphthalene	ND	U	2.0	0.30	0.088	1	09/19/20 16:36	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 16:36	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 16:36	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 16:36	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 16:36	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 16:36	
Toluene	**0.20**	**J**	0.50	0.10	0.054	1	09/19/20 16:36	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 16:36	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 16:36	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 16:36	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 16:36	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	09/19/20 16:36	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 16:36	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 16:36	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 16:36	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 16:36	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 16:36	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 16:36	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 16:36	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	87	85 - 114	09/19/20 16:36	
Dibromofluoromethane	97	80 - 119	09/19/20 16:36	
1,2-Dichloroethane-d4	102	81 - 118	09/19/20 16:36	
Toluene-d8	99	89 - 112	09/19/20 16:36	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	**17**	**J**	20	10	3.3	1	09/19/20 17:02	
Benzene	**3.5**		0.50	0.10	0.062	1	09/19/20 17:02	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 17:02	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 17:02	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 17:02	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 17:02	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 17:02	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 17:02	
n-Butylbenzene	**1.3**	**J**	4.0	4.0	0.054	1	09/19/20 17:02	
sec-Butylbenzene	**1.4**	**J**	2.0	0.10	0.062	1	09/19/20 17:02	
tert-Butylbenzene	**0.19**	**J**	2.0	0.20	0.059	1	09/19/20 17:02	
Carbon Disulfide	**0.080**	**J**	0.50	0.20	0.069	1	09/19/20 17:02	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 17:02	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 17:02	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 17:02	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 17:02	
Chloromethane	**0.080**	**J**	0.50	0.20	0.068	1	09/19/20 17:02	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 17:02	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 17:02	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 17:02	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 17:02	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 17:02	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 17:02	
1,2-Dichlorobenzene	**0.73**		0.50	0.20	0.12	1	09/19/20 17:02	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 17:02	
1,4-Dichlorobenzene	**0.15**	**J**	0.50	0.20	0.12	1	09/19/20 17:02	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 17:02	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 17:02	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 17:02	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 17:02	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 17:02	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 17:02	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 17:02	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 17:02	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 17:02	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 17:02	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 17:02	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 17:02	
Ethylbenzene	**3.5**		0.50	0.10	0.050	1	09/19/20 17:02	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 17:02	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 17:02	
Isopropylbenzene	**3.1**		2.0	0.20	0.051	1	09/19/20 17:02	
4-Isopropyltoluene	**2.2**		2.0	0.20	0.060	1	09/19/20 17:02	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20 08:00
Sample Matrix:	Ground Water	**Date Received:**	09/11/20 10:15
Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 17:02	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 17:02	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	09/19/20 17:02	
Naphthalene	**47**		2.0	0.30	0.088	1	09/19/20 17:02	
n-Propylbenzene	**3.8**		2.0	0.20	0.054	1	09/19/20 17:02	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 17:02	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 17:02	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 17:02	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 17:02	
Toluene	**0.29**	**J**	0.50	0.10	0.054	1	09/19/20 17:02	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	09/19/20 17:02	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	09/19/20 17:02	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 17:02	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 17:02	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	09/19/20 17:02	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 17:02	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 17:02	
1,2,4-Trimethylbenzene	**39**		2.0	0.20	0.069	1	09/19/20 17:02	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 17:02	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 17:02	
o-Xylene	**0.65**		0.50	0.20	0.074	1	09/19/20 17:02	
m,p-Xylenes	**0.15**	**J**	0.50	0.20	0.11	1	09/19/20 17:02	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	86	85 - 114	09/19/20 17:02	
Dibromofluoromethane	96	80 - 119	09/19/20 17:02	
1,2-Dichloroethane-d4	102	81 - 118	09/19/20 17:02	
Toluene-d8	99	89 - 112	09/19/20 17:02	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013490-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Acetone	ND	U	20	10	3.3	1	09/19/20 11:43	
Benzene	ND	U	0.50	0.10	0.062	1	09/19/20 11:43	
Bromobenzene	ND	U	2.0	0.20	0.12	1	09/19/20 11:43	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	09/19/20 11:43	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	09/19/20 11:43	
Bromoform	ND	U	0.50	0.30	0.16	1	09/19/20 11:43	
Bromomethane	ND	U	0.50	0.30	0.16	1	09/19/20 11:43	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	09/19/20 11:43	
n-Butylbenzene	ND	U	4.0	4.0	0.054	1	09/19/20 11:43	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	09/19/20 11:43	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	09/19/20 11:43	
Carbon Disulfide	**0.11**	**J**	0.50	0.20	0.069	1	09/19/20 11:43	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	09/19/20 11:43	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	09/19/20 11:43	
Chloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 11:43	
Chloroform	ND	U	0.50	0.20	0.072	1	09/19/20 11:43	
Chloromethane	ND	U	0.50	0.20	0.068	1	09/19/20 11:43	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	09/19/20 11:43	
4-Chlorotoluene	ND	U	2.0	0.30	0.13	1	09/19/20 11:43	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.22	0.22	1	09/19/20 11:43	
Dibromochloromethane	ND	U	0.50	0.30	0.14	1	09/19/20 11:43	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	09/19/20 11:43	
Dibromomethane	ND	U	0.50	0.30	0.15	1	09/19/20 11:43	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 11:43	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	09/19/20 11:43	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	09/19/20 11:43	
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	09/19/20 11:43	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	09/19/20 11:43	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	09/19/20 11:43	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	09/19/20 11:43	
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	09/19/20 11:43	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	09/19/20 11:43	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	09/19/20 11:43	
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	09/19/20 11:43	
2,2-Dichloropropane	ND	U	0.50	0.50	0.065	1	09/19/20 11:43	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	09/19/20 11:43	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	09/19/20 11:43	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	09/19/20 11:43	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	09/19/20 11:43	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	09/19/20 11:43	
2-Hexanone	ND	U	20	10	2.7	1	09/19/20 11:43	
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	09/19/20 11:43	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	09/19/20 11:43	

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Analytical Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ2013490-07	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: None

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	09/19/20 11:43	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	09/19/20 11:43	
Methylene Chloride	**0.23**	**J**	2.0	0.20	0.10	1	09/19/20 11:43	
Naphthalene	**0.22**	**J**	2.0	0.30	0.088	1	09/19/20 11:43	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	09/19/20 11:43	
Styrene	ND	U	0.50	0.20	0.089	1	09/19/20 11:43	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	09/19/20 11:43	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	09/19/20 11:43	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	09/19/20 11:43	
Toluene	ND	U	0.50	0.10	0.054	1	09/19/20 11:43	
1,2,3-Trichlorobenzene	**0.16**	**J**	2.0	0.40	0.11	1	09/19/20 11:43	
1,2,4-Trichlorobenzene	**0.17**	**J**	2.0	0.30	0.096	1	09/19/20 11:43	
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	09/19/20 11:43	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	09/19/20 11:43	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	09/19/20 11:43	
Trichlorofluoromethane (CFC 11)	ND	U	0.50	0.20	0.12	1	09/19/20 11:43	
1,2,3-Trichloropropane	ND	U	0.50	0.30	0.20	1	09/19/20 11:43	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	09/19/20 11:43	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	09/19/20 11:43	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	09/19/20 11:43	
o-Xylene	ND	U	0.50	0.20	0.074	1	09/19/20 11:43	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	09/19/20 11:43	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	82	85 - 114	09/19/20 11:43	*
Dibromofluoromethane	98	80 - 119	09/19/20 11:43	
1,2-Dichloroethane-d4	96	81 - 118	09/19/20 11:43	
Toluene-d8	96	89 - 112	09/19/20 11:43	

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene 85-114	Dibromofluoromethane 80-119	1,2-Dichloroethane-d4 81-118
TVR-3-20200909	K2007912-001	86	94	95
TVR-3A-20200909	K2007912-002	84*	100	102
TVR-7-20200909	K2007912-003	84*	96	100
TVR-1-20200909	K2007912-004	83*	96	97
TVR-POMONA-20200909	K2007912-005	82*	97	103
TVR-MTS-1-20200909	K2007912-006	86	96	96
TVR-MTS-2-20200909	K2007912-007	85	96	97
TVR-MTS-4-20200909	K2007912-008	86	96	96
TVR-PAIC-20200910	K2007912-009	83*	96	98
TVR-6-20200910	K2007912-010	86	97	98
FTP-1-20200910	K2007912-012	86	96	102
Method Blank	KQ2013490-07	82*	98	96
Lab Control Sample	KQ2013490-05	87	97	93
Duplicate Lab Control Sample	KQ2013490-06	92	103	96
FTP-1-20200910	KQ2013490-01	88	98	98
FTP-1-20200910	KQ2013490-02	87	101	97

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305
Sample Matrix: Ground Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	Toluene-d8 89-112
TVR-3-20200909	K2007912-001	99
TVR-3A-20200909	K2007912-002	101
TVR-7-20200909	K2007912-003	98
TVR-1-20200909	K2007912-004	97
TVR-POMONA-20200909	K2007912-005	99
TVR-MTS-1-20200909	K2007912-006	99
TVR-MTS-2-20200909	K2007912-007	96
TVR-MTS-4-20200909	K2007912-008	97
TVR-PAIC-20200910	K2007912-009	99
TVR-6-20200910	K2007912-010	98
FTP-1-20200910	K2007912-012	99
Method Blank	KQ2013490-07	96
Lab Control Sample	KQ2013490-05	102
Duplicate Lab Control Sample	KQ2013490-06	99
FTP-1-20200910	KQ2013490-01	100
FTP-1-20200910	KQ2013490-02	104

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	4-Bromofluorobenzene 85-114	Dibromofluoromethane 80-119	1,2-Dichloroethane-d4 81-118
TVR-TB-001-20200909	K2007912-011	87	97	102

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Extraction Method: None

Sample Name	Lab Code	Toluene-d8 89-112
TVR-TB-001-20200909	K2007912-011	99

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007912
Project: JBLM/6304305 **Date Analyzed:**09/19/20 09:30

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: I:\MS13\DATA\091920\0919F004.D\ **Lab Code:**KQ2013490-04
Instrument ID: K-MS-13 **Analysis Lot:**695743
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Calibration Verification	KQ2013490-04	117312	9.36	84718	11.96	292306	5.32
Lab Control Sample	KQ2013490-05	115707	9.36	87669	11.96	296438	5.32
Duplicate Lab Control Sample	KQ2013490-06	114026	9.36	87903	11.95	305445	5.32
Method Blank	KQ2013490-07	115806	9.36	77827	11.96	297845	5.32
TVR-3-20200909	K2007912-001	110775	9.36	81256	11.96	287634	5.32
TVR-3A-20200909	K2007912-002	109021	9.36	77471	11.95	270362	5.32
TVR-7-20200909	K2007912-003	104373	9.36	75651	11.95	271480	5.32
TVR-1-20200909	K2007912-004	106369	9.36	74859	11.96	279472	5.32
TVR-POMONA-20200909	K2007912-005	105725	9.36	77487	11.96	267863	5.32
TVR-MTS-1-20200909	K2007912-006	100205	9.36	78985	11.96	251186	5.32
TVR-MTS-2-20200909	K2007912-007	105022	9.36	77504	11.96	279877	5.32
TVR-MTS-4-20200909	K2007912-008	102733	9.36	77985	11.96	278809	5.32
TVR-PAIC-20200910	K2007912-009	104758	9.36	77794	11.96	270942	5.32
TVR-6-20200910	K2007912-010	104157	9.36	77043	11.96	274284	5.32
TVR-TB-001-20200909	K2007912-011	107206	9.36	74312	11.95	276529	5.32
FTP-1-20200910	K2007912-012	107348	9.36	84450	11.95	261336	5.32
FTP-1-20200910MS	KQ2013490-01	112001	9.36	82095	11.96	278712	5.32
FTP-1-20200910DMS	KQ2013490-02	116548	9.36	82774	11.96	281438	5.32

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007912
Project: JBLM/6304305 **Date Analyzed:**09/19/20 20:35

Internal Standard Area and RT SUMMARY
Volatile Organic Compounds by GC/MS

File ID: I:\MS13\DATA\091920\0919F029.D\ **Lab Code:**KQ2013490-08
Instrument ID: K-MS-13 **Analysis Lot:**695743
Analysis Method: 8260C **Signal ID:**1

		Chlorobenzene-d5		1,4-Dichlorobenzene-d4		Fluorobenzene	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	109,383	9.37	82,314	11.97	296,176	5.33
	Upper Limit ==>	218,766	9.87	164,628	12.47	592,352	5.83
	Lower Limit ==>	54,692	8.87	41,157	11.47	148,088	4.83
Associated Analyses							
Continuing Cal. Verification	KQ2013490-08	121364	9.36	93186	11.96	315201	5.32

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	09/19/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike KQ2013490-01			**Duplicate Matrix Spike** KQ2013490-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Acetone	17 J	69.6	50.0	106	83.4	50.0	133	39-160	18	20
Benzene	3.5	14.7	10.0	112	15.1	10.0	116	79-120	3	20
Bromobenzene	ND U	10.9	10.0	109	11.3	10.0	113	80-120	4	20
Bromochloromethane	ND U	11.6	10.0	116	11.2	10.0	112	78-123	4	20
Bromodichloromethane	ND U	11.5	10.0	115	11.7	10.0	117	79-127	2	20
Bromoform	ND U	10.6	10.0	106	10.9	10.0	109	66-130	2	20
Bromomethane	ND U	7.56	10.0	76	8.51	10.0	85	53-141	12	20
2-Butanone (MEK)	ND U	55.5	50.0	111	60.6	50.0	121	56-143	9	20
n-Butylbenzene	1.3 J	13.8	10.0	125	13.6	10.0	123	75-128	2	20
sec-Butylbenzene	1.4 J	12.9	10.0	115	12.7	10.0	114	77-126	1	20
tert-Butylbenzene	0.19 J	11.5	10.0	113	12.0	10.0	118	78-124	4	20
Carbon Disulfide	0.080 J	21.5	20.0	107	22.7	20.0	113	64-133	5	20
Carbon Tetrachloride	ND U	12.6	10.0	126	12.6	10.0	126	72-136	<1	20
Chlorobenzene	ND U	10.2	10.0	102	10.2	10.0	102	82-118	<1	20
Chloroethane	ND U	11.7	10.0	117	11.9	10.0	119	60-138	2	20
Chloroform	ND U	11.1	10.0	111	11.4	10.0	114	79-124	3	20
Chloromethane	0.080 J	11.1	10.0	110	11.6	10.0	115	50-139	5	20
2-Chlorotoluene	ND U	10.9	10.0	109	11.5	10.0	115	79-122	5	20
4-Chlorotoluene	ND U	11.3	10.0	113	11.9	10.0	119	78-122	5	20
1,2-Dibromo-3-chloropropane	ND U	11.8	10.0	118	15.1	10.0	151 *	62-128	25*	20
Dibromochloromethane	ND U	11.3	10.0	113	11.6	10.0	116	74-126	3	20
1,2-Dibromoethane (EDB)	ND U	9.67	10.0	97	9.46	10.0	95	77-121	2	20
Dibromomethane	ND U	11.0	10.0	110	10.8	10.0	108	79-123	2	20
1,2-Dichlorobenzene	0.73	11.9	10.0	112	12.1	10.0	114	80-119	2	20
1,3-Dichlorobenzene	ND U	10.8	10.0	108	10.6	10.0	106	80-119	2	20
1,4-Dichlorobenzene	0.15 J	11.0	10.0	109	10.6	10.0	104	79-118	4	20
Dichlorodifluoromethane	ND U	12.3	10.0	123	12.1	10.0	121	32-152	2	20
1,1-Dichloroethane	ND U	11.6	10.0	116	11.8	10.0	118	77-125	2	20
1,2-Dichloroethane (EDC)	ND U	11.2	10.0	112	11.5	10.0	115	73-128	2	20
1,1-Dichloroethene	ND U	9.77	10.0	98	9.91	10.0	99	71-131	1	20
cis-1,2-Dichloroethene	ND U	11.0	10.0	110	11.2	10.0	112	78-123	2	20
trans-1,2-Dichloroethene	ND U	11.4	10.0	114	12.0	10.0	120	75-124	5	20
1,2-Dichloropropane	ND U	10.6	10.0	106	11.1	10.0	111	78-122	5	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Collected:**	09/10/20
Sample Matrix:	Ground Water	**Date Received:**	09/11/20
		Date Analyzed:	09/19/20
		Date Extracted:	NA

Duplicate Matrix Spike Summary
Volatile Organic Compounds by GC/MS

Sample Name:	FTP-1-20200910	**Units:**	ug/L
Lab Code:	K2007912-012	**Basis:**	NA
Analysis Method:	8260C		
Prep Method:	None		

		Matrix Spike KQ2013490-01			**Duplicate Matrix Spike** KQ2013490-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,3-Dichloropropane	ND U	9.96	10.0	100	10.1	10.0	101	80-119	1	20
2,2-Dichloropropane	ND U	8.68	10.0	87	9.11	10.0	91	60-139	5	20
1,1-Dichloropropene	ND U	11.4	10.0	114	12.2	10.0	122	79-125	6	20
cis-1,3-Dichloropropene	ND U	10.1	10.0	101	10.5	10.0	105	75-124	4	20
trans-1,3-Dichloropropene	ND U	8.99	10.0	90	9.20	10.0	92	73-127	2	20
Ethylbenzene	3.5	14.1	10.0	106	13.9	10.0	104	79-121	1	20
Hexachlorobutadiene	ND U	9.80	10.0	98	11.1	10.0	111	66-134	12	20
2-Hexanone	ND U	58.0	50.0	116	60.4	50.0	121	57-139	4	20
Isopropylbenzene	3.1	14.2	10.0	111	14.2	10.0	112	72-131	<1	20
4-Isopropyltoluene	2.2	14.3	10.0	120	13.6	10.0	113	77-127	5	20
Methyl tert-Butyl Ether	ND U	10.2	10.0	102	10.3	10.0	103	71-124	1	20
4-Methyl-2-pentanone (MIBK)	ND U	58.5	50.0	117	60.7	50.0	121	67-130	4	20
Methylene Chloride	ND U	10.9	10.0	109	11.3	10.0	113	74-124	3	20
Naphthalene	47	69.4	10.0	221 #	70.3	10.0	230 #	61-128	1	20
n-Propylbenzene	3.8	16.2	10.0	124	16.7	10.0	129 *	76-126	3	20
Styrene	ND U	10.6	10.0	106	10.5	10.0	105	78-123	<1	20
1,1,1,2-Tetrachloroethane	ND U	10.2	10.0	102	10.3	10.0	103	78-124	1	20
1,1,2,2-Tetrachloroethane	ND U	11.1	10.0	111	12.1	10.0	121	71-121	8	20
Tetrachloroethene (PCE)	ND U	10.4	10.0	104	11.0	10.0	110	74-129	5	20
Toluene	0.29 J	11.7	10.0	114	12.0	10.0	117	80-121	2	20
1,2,3-Trichlorobenzene	ND U	10.6	10.0	106	11.8	10.0	118	69-129	10	20
1,2,4-Trichlorobenzene	ND U	10.6	10.0	106	11.6	10.0	116	69-130	9	20
1,1,2-Trichloroethane	ND U	10.4	10.0	104	10.2	10.0	102	80-119	3	20
1,1,1-Trichloroethane (TCA)	ND U	11.9	10.0	119	12.2	10.0	122	74-131	2	20
Trichloroethene (TCE)	ND U	11.3	10.0	113	11.5	10.0	115	79-123	2	20
Trichlorofluoromethane (CFC 11)	ND U	10.0	10.0	100	10.1	10.0	101	65-141	1	20
1,2,3-Trichloropropane	ND U	11.9	10.0	119	12.8	10.0	128 *	73-122	8	20
1,2,4-Trimethylbenzene	39	54.8	10.0	155 *	54.2	10.0	149 *	76-124	1	20
1,3,5-Trimethylbenzene	ND U	11.2	10.0	112	11.6	10.0	116	75-124	4	20
Vinyl Chloride	ND U	12.2	10.0	122	11.9	10.0	119	58-137	3	20
o-Xylene	0.65	10.8	10.0	102	11.1	10.0	105	78-122	3	20
m,p-Xylenes	0.15 J	20.4	20.0	101	20.2	20.0	100	80-121	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/19/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	695743

	Lab Control Sample KQ2013490-05			Duplicate Lab Control Sample KQ2013490-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,1,1,2-Tetrachloroethane	9.46	10.0	95	10.4	10.0	104	78-124	9	20
1,1,1-Trichloroethane (TCA)	9.86	10.0	99	10.6	10.0	106	74-131	7	20
1,1,2,2-Tetrachloroethane	10.2	10.0	102	10.4	10.0	104	71-121	2	20
1,1,2-Trichloroethane	9.77	10.0	98	10.4	10.0	104	80-119	6	20
1,1-Dichloroethane	9.27	10.0	93	10.5	10.0	105	77-125	12	20
1,1-Dichloroethene	8.07	10.0	81	8.57	10.0	86	71-131	6	20
1,1-Dichloropropene	9.34	10.0	93	10.3	10.0	103	79-125	10	20
1,2,3-Trichlorobenzene	9.89	10.0	99	10.1	10.0	101	69-129	2	20
1,2,3-Trichloropropane	11.1	10.0	111	11.1	10.0	111	73-122	<1	20
1,2,4-Trichlorobenzene	9.77	10.0	98	9.86	10.0	99	69-130	<1	20
1,2,4-Trimethylbenzene	10.1	10.0	101	10.4	10.0	104	76-124	3	20
1,2-Dibromo-3-chloropropane	10.1	10.0	101	8.69	10.0	87	62-128	15	20
1,2-Dibromoethane (EDB)	8.77	10.0	88	9.67	10.0	97	77-121	10	20
1,2-Dichlorobenzene	10.0	10.0	100	10.3	10.0	103	80-119	2	20
1,2-Dichloroethane (EDC)	10.3	10.0	103	10.7	10.0	107	73-128	4	20
1,2-Dichloropropane	10.0	10.0	100	10.1	10.0	101	78-122	<1	20
1,3,5-Trimethylbenzene	9.88	10.0	99	10.2	10.0	102	75-124	4	20
1,3-Dichlorobenzene	9.86	10.0	99	10.0	10.0	100	80-119	1	20
1,3-Dichloropropane	9.70	10.0	97	10.1	10.0	101	80-119	4	20
1,4-Dichlorobenzene	9.76	10.0	98	9.93	10.0	99	79-118	2	20
2,2-Dichloropropane	7.90	10.0	79	8.62	10.0	86	60-139	9	20
2-Butanone (MEK)	45.9	50.0	92	52.1	50.0	104	56-143	13	20
2-Chlorotoluene	10.1	10.0	101	10.1	10.0	101	79-122	<1	20
2-Hexanone	53.4	50.0	107	52.1	50.0	104	57-139	2	20
4-Chlorotoluene	10.0	10.0	100	10.3	10.0	103	78-122	3	20
4-Isopropyltoluene	10.1	10.0	101	10.6	10.0	106	77-127	5	20
4-Methyl-2-pentanone (MIBK)	55.9	50.0	112	54.2	50.0	108	67-130	3	20
Acetone	51.8	50.0	104	55.2	50.0	110	39-160	6	20
Benzene	9.71	10.0	97	10.1	10.0	101	79-120	4	20
Bromobenzene	9.86	10.0	99	10.2	10.0	102	80-120	3	20
Bromochloromethane	9.78	10.0	98	10.1	10.0	101	78-123	3	20
Bromodichloromethane	11.1	10.0	111	11.1	10.0	111	79-127	<1	20
Bromoform	10.2	10.0	102	11.0	10.0	110	66-130	8	20
Bromomethane	8.36	10.0	84	8.65	10.0	87	53-141	3	20
Carbon Disulfide	16.8	20.0	84	18.5	20.0	93	64-133	10	20
Carbon Tetrachloride	10.6	10.0	106	11.6	10.0	116	72-136	10	20
Chlorobenzene	9.54	10.0	95	9.70	10.0	97	82-118	2	20
Chloroethane	9.77	10.0	98	10.2	10.0	102	60-138	4	20
Chloroform	9.76	10.0	98	10.6	10.0	106	79-124	8	20
Chloromethane	9.25	10.0	93	9.11	10.0	91	50-139	2	20
cis-1,2-Dichloroethene	9.09	10.0	91	10.3	10.0	103	78-123	12	20

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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/19/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Duplicate Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	**Units:**	ug/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	695743

	Lab Control Sample KQ2013490-05			Duplicate Lab Control Sample KQ2013490-06					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
cis-1,3-Dichloropropene	10.1	10.0	101	10.1	10.0	101	75-124	<1	20
Dibromochloromethane	11.3	10.0	113	11.9	10.0	119	74-126	5	20
Dibromomethane	9.73	10.0	97	9.93	10.0	99	79-123	2	20
Dichlorodifluoromethane	9.75	10.0	98	9.90	10.0	99	32-152	2	20
Ethylbenzene	9.22	10.0	92	9.56	10.0	96	79-121	4	20
Hexachlorobutadiene	10.5	10.0	105	10.7	10.0	107	66-134	1	20
Isopropylbenzene	9.51	10.0	95	10.1	10.0	101	72-131	6	20
m,p-Xylenes	18.1	20.0	90	19.0	20.0	95	80-121	5	20
Methyl tert-Butyl Ether	8.81	10.0	88	9.54	10.0	95	71-124	8	20
Methylene Chloride	9.29	10.0	93	10.4	10.0	104	74-124	12	20
Naphthalene	9.92	10.0	99	9.81	10.0	98	61-128	1	20
n-Butylbenzene	10.1	10.0	101	10.2	10.0	102	75-128	1	20
n-Propylbenzene	10.1	10.0	101	10.4	10.0	104	76-126	3	20
o-Xylene	9.33	10.0	93	9.60	10.0	96	78-122	3	20
sec-Butylbenzene	9.88	10.0	99	10.2	10.0	102	77-126	3	20
Styrene	9.91	10.0	99	10.2	10.0	102	78-123	2	20
tert-Butylbenzene	9.80	10.0	98	9.97	10.0	100	78-124	2	20
Tetrachloroethene (PCE)	9.65	10.0	97	10.1	10.0	101	74-129	4	20
Toluene	10.0	10.0	100	10.2	10.0	102	80-121	1	20
trans-1,2-Dichloroethene	9.10	10.0	91	10.3	10.0	103	75-124	12	20
trans-1,3-Dichloropropene	9.14	10.0	91	9.73	10.0	97	73-127	6	20
Trichloroethene (TCE)	9.92	10.0	99	9.97	10.0	100	79-123	<1	20
Trichlorofluoromethane (CFC 11)	8.69	10.0	87	9.14	10.0	91	65-141	5	20
Vinyl Chloride	9.49	10.0	95	9.84	10.0	98	58-137	4	20

ALS Group USA, Corp.
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QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/19/20 11:43
Sample Matrix:	Ground Water	**Date Extracted:**	

Method Blank Summary
Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KQ2013490-07
Instrument ID: K-MS-13
File ID: I:\MS13\DATA\091920\0919F009.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 695743

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ2013490-05	I:\MS13\DATA\091920\0919F005.D\	09/19/20 09:57
Duplicate Lab Control Sample	KQ2013490-06	I:\MS13\DATA\091920\0919F006.D\	09/19/20 10:23
TVR-3-20200909	K2007912-001	I:\MS13\DATA\091920\0919F010.D\	09/19/20 12:10
TVR-3A-20200909	K2007912-002	I:\MS13\DATA\091920\0919F011.D\	09/19/20 12:36
TVR-7-20200909	K2007912-003	I:\MS13\DATA\091920\0919F012.D\	09/19/20 13:03
TVR-1-20200909	K2007912-004	I:\MS13\DATA\091920\0919F013.D\	09/19/20 13:29
TVR-POMONA-20200909	K2007912-005	I:\MS13\DATA\091920\0919F014.D\	09/19/20 13:56
TVR-MTS-1-20200909	K2007912-006	I:\MS13\DATA\091920\0919F015.D\	09/19/20 14:22
TVR-MTS-2-20200909	K2007912-007	I:\MS13\DATA\091920\0919F016.D\	09/19/20 14:49
TVR-MTS-4-20200909	K2007912-008	I:\MS13\DATA\091920\0919F017.D\	09/19/20 15:16
TVR-PAIC-20200910	K2007912-009	I:\MS13\DATA\091920\0919F018.D\	09/19/20 15:42
TVR-6-20200910	K2007912-010	I:\MS13\DATA\091920\0919F019.D\	09/19/20 16:09
TVR-TB-001-20200909	K2007912-011	I:\MS13\DATA\091920\0919F020.D\	09/19/20 16:36
FTP-1-20200910	K2007912-012	I:\MS13\DATA\091920\0919F021.D\	09/19/20 17:02
FTP-1-20200910MS	KQ2013490-01	I:\MS13\DATA\091920\0919F022.D\	09/19/20 17:29
FTP-1-20200910DMS	KQ2013490-02	I:\MS13\DATA\091920\0919F023.D\	09/19/20 17:55

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	EA Engineering, Science, and Technology (EAEST)	**Service Request:**	K2007912
Project:	JBLM/6304305	**Date Analyzed:**	09/19/20 09:57
Sample Matrix:	Ground Water	**Date Extracted:**	

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Sample Name: Lab Control Sample
Lab Code: KQ2013490-05
Instrument ID: K-MS-13
File ID: I:\MS13\DATA\091920\0919F005.D\

Analysis Method: 8260C
Prep Method: None
Analysis Lot: 695743

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Duplicate Lab Control Sample	KQ2013490-06	I:\MS13\DATA\091920\0919F006.D\	09/19/20 10:23
Method Blank	KQ2013490-07	I:\MS13\DATA\091920\0919F009.D\	09/19/20 11:43
TVR-3-20200909	K2007912-001	I:\MS13\DATA\091920\0919F010.D\	09/19/20 12:10
TVR-3A-20200909	K2007912-002	I:\MS13\DATA\091920\0919F011.D\	09/19/20 12:36
TVR-7-20200909	K2007912-003	I:\MS13\DATA\091920\0919F012.D\	09/19/20 13:03
TVR-1-20200909	K2007912-004	I:\MS13\DATA\091920\0919F013.D\	09/19/20 13:29
TVR-POMONA-20200909	K2007912-005	I:\MS13\DATA\091920\0919F014.D\	09/19/20 13:56
TVR-MTS-1-20200909	K2007912-006	I:\MS13\DATA\091920\0919F015.D\	09/19/20 14:22
TVR-MTS-2-20200909	K2007912-007	I:\MS13\DATA\091920\0919F016.D\	09/19/20 14:49
TVR-MTS-4-20200909	K2007912-008	I:\MS13\DATA\091920\0919F017.D\	09/19/20 15:16
TVR-PAIC-20200910	K2007912-009	I:\MS13\DATA\091920\0919F018.D\	09/19/20 15:42
TVR-6-20200910	K2007912-010	I:\MS13\DATA\091920\0919F019.D\	09/19/20 16:09
TVR-TB-001-20200909	K2007912-011	I:\MS13\DATA\091920\0919F020.D\	09/19/20 16:36
FTP-1-20200910	K2007912-012	I:\MS13\DATA\091920\0919F021.D\	09/19/20 17:02
FTP-1-20200910MS	KQ2013490-01	I:\MS13\DATA\091920\0919F022.D\	09/19/20 17:29
FTP-1-20200910DMS	KQ2013490-02	I:\MS13\DATA\091920\0919F023.D\	09/19/20 17:55

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900305-01	CAL 0.1 PPB	I:\MS13\DATA\072519\0725F006.D	07/25/2019 09:26
02	KC1900305-02	CAL 0.2 PPB	I:\MS13\DATA\072519\0725F007.D	07/25/2019 09:52
03	KC1900305-03	CAL 0.5 PPB	I:\MS13\DATA\072519\0725F008.D	07/25/2019 10:19
04	KC1900305-04	CAL 1.0 PPB	I:\MS13\DATA\072519\0725F009.D	07/25/2019 10:45
05	KC1900305-05	CAL 2.0 PPB	I:\MS13\DATA\072519\0725F010.D	07/25/2019 11:12
06	KC1900305-06	CAL 5.0 PPB	I:\MS13\DATA\072519\0725F011.D	07/25/2019 11:38
07	KC1900305-07	CAL 10 PPB	I:\MS13\DATA\072519\0725F012.D	07/25/2019 12:04
08	KC1900305-08	CAL 40 PPB	I:\MS13\DATA\072519\0725F014.D	07/25/2019 12:57
09	KC1900305-09	CAL 60 PPB	I:\MS13\DATA\072519\0725F015.D	07/25/2019 13:24
10	KC1900305-10	CAL 80 PPB	I:\MS13\DATA\072519\0725F016.D	07/25/2019 13:50
11	KC1900305-11	CAL 20 PPB	I:\MS13\DATA\072519\0725F020.D	07/25/2019 15:37

Analyte

1,1,1,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5788	02	0.200	0.6941	03	0.500	0.5621	04	1.000	0.5542
05	2.000	0.5394	06	5.000	0.5919	07	10.000	0.6521	11	20.000	0.644
08	40.000	0.7323	09	60.000	0.7387	10	80.000	0.739			

1,1,1-Trichloroethane (TCA)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3816	02	0.200	0.4249	03	0.500	0.4148	04	1.000	0.3927
05	2.000	0.4022	06	5.000	0.4448	07	10.000	0.4676	11	20.000	0.4636
08	40.000	0.514	09	60.000	0.4972	10	80.000	0.4986			

1,1,2,2-Tetrachloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.7116	03	0.500	0.5801	04	1.000	0.5425	05	2.000	0.5169
06	5.000	0.6034	07	10.000	0.6106	11	20.000	0.5497	08	40.000	0.5855
09	60.000	0.5597	10	80.000	0.5462						

1,1,2-Trichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4182	03	0.500	0.4633	04	1.000	0.3869	05	2.000	0.3943
06	5.000	0.4317	07	10.000	0.4491	11	20.000	0.4233	08	40.000	0.4606
09	60.000	0.4547	10	80.000	0.436						

1,1-Dichloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5704	02	0.200	0.4919	03	0.500	0.5431	04	1.000	0.5019
05	2.000	0.4932	06	5.000	0.5297	07	10.000	0.5519	11	20.000	0.5356
08	40.000	0.57	09	60.000	0.5556	10	80.000	0.5521			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

1,1-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1884	02	0.200	0.2911	03	0.500	0.298	04	1.000	0.2666
05	2.000	0.2712	06	5.000	0.2865	07	10.000	0.2847	11	20.000	0.2813
08	40.000	0.2955	09	60.000	0.2903	10	80.000	0.2995			

1,1-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3922	02	0.200	0.4166	03	0.500	0.4119	04	1.000	0.3781
05	2.000	0.3928	06	5.000	0.4271	07	10.000	0.4369	11	20.000	0.4254
08	40.000	0.464	09	60.000	0.4473	10	80.000	0.4437			

1,2,3-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9456	02	0.200	0.7174	03	0.500	0.7812	04	1.000	0.6885
05	2.000	0.6823	06	5.000	0.7742	07	10.000	0.8059	11	20.000	0.7555
08	40.000	0.7992	09	60.000	0.8036	10	80.000	0.7986			

1,2,3-Trichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.1308	04	1.000	0.1763	05	2.000	0.1661	06	5.000	0.1891
07	10.000	0.1916	11	20.000	0.1698	08	40.000	0.1829	09	60.000	0.1732
10	80.000	0.1665									

1,2,4-Trichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.13	03	0.500	0.946	04	1.000	0.8997	05	2.000	0.833
06	5.000	0.941	07	10.000	0.9441	11	20.000	0.9395	08	40.000	1.003
09	60.000	0.9896	10	80.000	0.9825						

1,2,4-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.374	02	0.200	2.971	03	0.500	3.258	04	1.000	3.369
05	2.000	3.255	06	5.000	3.559	07	10.000	3.669	11	20.000	3.433
08	40.000	3.672	09	60.000	3.537	10	80.000	3.412			

1,2-Dibromo-3-chloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.05852	06	5.000	0.06588	07	10.000	0.06852	11	20.000	0.06746
08	40.000	0.07371	09	60.000	0.07331	10	80.000	0.07663			

1,2-Dibromoethane (EDB)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5317	03	0.500	0.4149	04	1.000	0.4279	05	2.000	0.3968
06	5.000	0.4527	07	10.000	0.4626	11	20.000	0.469	08	40.000	0.5152
09	60.000	0.5012	10	80.000	0.4826						

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

1,2-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.573	02	0.200	1.518	03	0.500	1.566	04	1.000	1.551
05	2.000	1.441	06	5.000	1.653	07	10.000	1.661	11	20.000	1.568
08	40.000	1.686	09	60.000	1.651	10	80.000	1.596			

1,2-Dichloroethane (EDC)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4218	02	0.200	0.3337	03	0.500	0.369	04	1.000	0.3553
05	2.000	0.3236	06	5.000	0.3645	07	10.000	0.3599	11	20.000	0.3456
08	40.000	0.3694	09	60.000	0.3602	10	80.000	0.348			

1,2-Dichloroethane-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.2393	05	6.000	0.2404	06	8.000	0.2589	07	10.000	0.2635
11	12.000	0.2569	08	14.000	0.2776	09	16.000	0.2681	10	20.000	0.261

1,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.289	03	0.500	0.3274	04	1.000	0.2719	05	2.000	0.2777
06	5.000	0.3098	07	10.000	0.3084	11	20.000	0.2942	08	40.000	0.3207
09	60.000	0.3073	10	80.000	0.3029						

1,3,5-Trimethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.261	02	0.200	3.37	03	0.500	3.442	04	1.000	3.347
05	2.000	3.322	06	5.000	3.612	07	10.000	3.661	11	20.000	3.48
08	40.000	3.703	09	60.000	3.557	10	80.000	3.452			

1,3-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.244	02	0.200	1.825	03	0.500	1.868	04	1.000	1.745
05	2.000	1.678	06	5.000	1.868	07	10.000	1.87	11	20.000	1.779
08	40.000	1.913	09	60.000	1.874	10	80.000	1.825			

1,3-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.008	02	0.200	0.8052	03	0.500	0.9487	04	1.000	0.9357
05	2.000	0.8449	06	5.000	0.9331	07	10.000	0.9418	11	20.000	0.8938
08	40.000	0.9731	09	60.000	0.9543	10	80.000	0.9213			

1,4-Dichlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.094	02	0.200	2.02	03	0.500	1.832	04	1.000	1.803
05	2.000	1.668	06	5.000	1.855	07	10.000	1.856	11	20.000	1.757
08	40.000	1.936	09	60.000	1.882	10	80.000	1.827			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

2,2-Dichloropropane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4907	02	0.200	0.3959	03	0.500	0.4592	04	1.000	0.4278
05	2.000	0.4189	06	5.000	0.4494	07	10.000	0.4548	11	20.000	0.4901
08	40.000	0.4988	09	60.000	0.4853	10	80.000	0.4775			

2-Butanone (MEK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	5.000	0.01305	04	10.000	0.01435	05	20.000	0.01168	06	50.000	0.01303
07	100.000	0.01298	11	200.000	0.01257	08	400.000	0.0134	09	600.000	0.01373
10	800.000	0.0133									

2-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.259	02	0.200	3.113	03	0.500	3.022	04	1.000	2.988
05	2.000	2.897	06	5.000	3.109	07	10.000	3.017	11	20.000	2.848
08	40.000	3.009	09	60.000	2.88	10	80.000	2.791			

2-Hexanone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.000	0.05024	03	5.000	0.05074	04	10.000	0.04076	05	20.000	0.03945
06	50.000	0.04269	07	100.000	0.04572	11	200.000	0.04227	08	400.000	0.04553
09	600.000	0.04454	10	800.000	0.04264						

4-Bromofluorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.7102	05	6.000	0.7459	06	8.000	0.8099	07	10.000	0.884
11	12.000	0.8483	08	14.000	0.9184	09	16.000	0.9014	10	20.000	0.8605

4-Chlorotoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.372	02	0.200	3.434	03	0.500	3.391	04	1.000	3.466
05	2.000	3.321	06	5.000	3.586	07	10.000	3.609	11	20.000	3.314
08	40.000	3.513	09	60.000	3.39	10	80.000	3.268			

4-Isopropyltoluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.211	02	0.200	3.075	03	0.500	3.431	04	1.000	3.314
05	2.000	3.306	06	5.000	3.699	07	10.000	3.784	11	20.000	3.601
08	40.000	3.869	09	60.000	3.712	10	80.000	3.606			

4-Methyl-2-pentanone (MIBK)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	0.05302	02	2.000	0.05357	03	5.000	0.04948	04	10.000	0.05126
05	20.000	0.04625	06	50.000	0.05152	07	100.000	0.05107	11	200.000	0.04847
08	400.000	0.05155	09	600.000	0.04994	10	800.000	0.04838			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

Acetone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	10.000	0.0404	05	20.000	0.03496	06	50.000	0.03664	07	100.000	0.03708
11	200.000	0.03555	08	400.000	0.03723	09	600.000	0.03767	10	800.000	0.03669

Benzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.319	02	0.200	1.194	03	0.500	1.255	04	1.000	1.159
05	2.000	1.15	06	5.000	1.243	07	10.000	1.258	11	20.000	1.196
08	40.000	1.281	09	60.000	1.245	10	80.000	1.231			

Bromobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.8195	02	0.200	1.106	03	0.500	1.002	04	1.000	0.9333
05	2.000	0.9117	06	5.000	1.024	07	10.000	1.022	11	20.000	0.9583
08	40.000	0.9984	09	60.000	0.9922	10	80.000	0.9874			

Bromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1106	03	0.500	0.1246	04	1.000	0.124	05	2.000	0.1123
06	5.000	0.1301	07	10.000	0.1299	11	20.000	0.1286	08	40.000	0.1391
09	60.000	0.1387	10	80.000	0.1356						

Bromodichloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3065	02	0.200	0.2624	03	0.500	0.3047	04	1.000	0.2996
05	2.000	0.291	06	5.000	0.3235	07	10.000	0.3242	11	20.000	0.3283
08	40.000	0.3639	09	60.000	0.3616	10	80.000	0.3528			

Bromoform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1963	03	0.500	0.15	04	1.000	0.1875	05	2.000	0.1847
06	5.000	0.2236	07	10.000	0.2444	11	20.000	0.2524	08	40.000	0.3063
09	60.000	0.324	10	80.000	0.326						

Bromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.237	04	1.000	0.2285	05	2.000	0.2252	06	5.000	0.2248
07	10.000	0.222	11	20.000	0.2132	08	40.000	0.2204	09	60.000	0.2165
10	80.000	0.2154									

Carbon Disulfide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.8432	04	1.000	0.7338	05	2.000	0.7209	06	5.000	0.7501
07	10.000	0.7744	11	20.000	0.7339	08	40.000	0.7895	09	60.000	0.7685
10	80.000	0.7747									

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

Carbon Tetrachloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.324	02	0.200	0.3124	03	0.500	0.3236	04	1.000	0.334
05	2.000	0.3241	06	5.000	0.3497	07	10.000	0.3693	11	20.000	0.3879
08	40.000	0.4306	09	60.000	0.4261	10	80.000	0.4285			

Chlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.246	02	0.200	1.866	03	0.500	2.061	04	1.000	1.925
05	2.000	1.868	06	5.000	2.044	07	10.000	2.074	11	20.000	2.046
08	40.000	2.229	09	60.000	2.164	10	80.000	2.139			

Chloroethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.1997	02	0.200	0.1939	03	0.500	0.219	04	1.000	0.2321
05	2.000	0.2275	06	5.000	0.2215	07	10.000	0.223	11	20.000	0.2149
08	40.000	0.2204	09	60.000	0.2084	10	80.000	0.2087			

Chloroform

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5621	02	0.200	0.5065	03	0.500	0.459	04	1.000	0.4473
05	2.000	0.4629	06	5.000	0.4965	07	10.000	0.5054	11	20.000	0.4953
08	40.000	0.5347	09	60.000	0.5265	10	80.000	0.5203			

Chloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.4571	02	0.200	0.4193	03	0.500	0.4088	04	1.000	0.3958
05	2.000	0.4047	06	5.000	0.393	07	10.000	0.3868	11	20.000	0.3604
08	40.000	0.3743	09	60.000	0.3616	10	80.000	0.3672			

Dibromochloromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.4931	03	0.500	0.417	04	1.000	0.3988	05	2.000	0.4255
06	5.000	0.493	07	10.000	0.5249	11	20.000	0.55			

Dibromofluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.1918	05	6.000	0.1983	06	8.000	0.2236	07	10.000	0.2269
11	12.000	0.2303	08	14.000	0.2471	09	16.000	0.2509	10	20.000	0.2449

Dibromomethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.1515	03	0.500	0.1362	04	1.000	0.1293	05	2.000	0.1255
06	5.000	0.1294	07	10.000	0.1369	11	20.000	0.1291	08	40.000	0.1378
09	60.000	0.1366	10	80.000	0.1334						

Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3439	02	0.200	0.318	03	0.500	0.3588	04	1.000	0.3068

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

Dichlorodifluoromethane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	2.000	0.3243	06	5.000	0.3463	07	10.000	0.3272	11	20.000	0.3321
08	40.000	0.3243	09	60.000	0.315	10	80.000	0.3261			

Ethylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.174	02	0.200	1.134	03	0.500	1.184	04	1.000	1.083
05	2.000	1.11	06	5.000	1.179	07	10.000	1.209	11	20.000	1.173
08	40.000	1.313	09	60.000	1.263	10	80.000	1.25			

Hexachlorobutadiene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	0.5056	03	0.500	0.4798	04	1.000	0.3654	05	2.000	0.4209
06	5.000	0.474	07	10.000	0.4814	11	20.000	0.46	08	40.000	0.5076
09	60.000	0.4942	10	80.000	0.5077						

Isopropylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.279	02	0.200	2.921	03	0.500	3.333	04	1.000	3.122
05	2.000	3.133	06	5.000	3.447	07	10.000	3.56	11	20.000	3.475
08	40.000	3.866	09	60.000	3.773	10	80.000	3.642			

Methyl tert-Butyl Ether

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	0.5752	02	0.400	0.5363	03	1.000	0.5458	04	2.000	0.4945
05	4.000	0.4725	06	10.000	0.5419	07	20.000	0.5317	11	40.000	0.5263
08	80.000	0.563	09	120.000	0.571	10	160.000	0.5641			

Methylene Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	0.500	0.3351	04	1.000	0.3152	05	2.000	0.2873	06	5.000	0.2921
07	10.000	0.2797	11	20.000	0.2674	08	40.000	0.2736	09	60.000	0.2724
10	80.000	0.2689									

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.200	1.868	03	0.500	1.578	04	1.000	1.552	05	2.000	1.433
06	5.000	1.683	07	10.000	1.695	11	20.000	1.65	08	40.000	1.742
09	60.000	1.695	10	80.000	1.678						

Styrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.157	02	0.200	0.9802	03	0.500	0.9574	04	1.000	0.8673
05	2.000	0.9171	06	5.000	1.007	07	10.000	1.06	11	20.000	1.008
08	40.000	1.126	09	60.000	1.152	10	80.000	1.074			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
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Analyte

Tetrachloroethene (PCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6296	02	0.200	0.601	03	0.500	0.6478	04	1.000	0.5824
05	2.000	0.6031	06	5.000	0.6351	07	10.000	0.6643	11	20.000	0.6581
08	40.000	0.7325	09	60.000	0.7023	10	80.000	0.7056			

Toluene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.6486	02	0.200	0.6778	03	0.500	0.7077	04	1.000	0.7018
05	2.000	0.7108	06	5.000	0.7494	07	10.000	0.7641	11	20.000	0.7271
08	40.000	0.7865	09	60.000	0.7678	10	80.000	0.7562			

Toluene-d8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	4.000	0.871	05	6.000	0.8991	06	8.000	0.9763	07	10.000	1.003
11	12.000	0.9751	08	14.000	1.012	09	16.000	1.016	10	20.000	1.007

Trichloroethene (TCE)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3058	02	0.200	0.2936	03	0.500	0.3093	04	1.000	0.2745
05	2.000	0.2848	06	5.000	0.296	07	10.000	0.3042	11	20.000	0.2976
08	40.000	0.3205	09	60.000	0.3134	10	80.000	0.3095			

Trichlorofluoromethane (CFC 11)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.5357	02	0.200	0.5284	03	0.500	0.5256	04	1.000	0.5098
05	2.000	0.5165	06	5.000	0.5601	07	10.000	0.5632	11	20.000	0.5532
08	40.000	0.5738	09	60.000	0.5427	10	80.000	0.5567			

Vinyl Chloride

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3391	02	0.200	0.3474	03	0.500	0.3835	04	1.000	0.3532
05	2.000	0.3737	06	5.000	0.3938	07	10.000	0.3856	11	20.000	0.3722
08	40.000	0.3827	09	60.000	0.3661	10	80.000	0.3706			

cis-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2567	02	0.200	0.3138	03	0.500	0.3259	04	1.000	0.2778
05	2.000	0.2594	06	5.000	0.3063	07	10.000	0.3064	11	20.000	0.307
08	40.000	0.3268	09	60.000	0.3251	10	80.000	0.3207			

cis-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.3909	02	0.200	0.3733	03	0.500	0.338	04	1.000	0.3478
05	2.000	0.3496	06	5.000	0.3878	07	10.000	0.4196	11	20.000	0.4105
08	40.000	0.4434	09	60.000	0.442	10	80.000	0.4322			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte

m,p-Xylenes

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.200	1.346	02	0.400	1.392	03	1.000	1.338	04	2.000	1.331
05	4.000	1.275	06	10.000	1.409	07	20.000	1.443	11	40.000	1.413
08	80.000	1.555	09	120.000	1.532	10	160.000	1.492			

n-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.611	02	0.200	3.307	03	0.500	3.136	04	1.000	2.956
05	2.000	2.932	06	5.000	3.253	07	10.000	3.349	11	20.000	3.235
08	40.000	3.429	09	60.000	3.262	10	80.000	3.163			

n-Propylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	4.634	02	0.200	4.743	03	0.500	4.943	04	1.000	5.111
05	2.000	4.845	06	5.000	5.377	07	10.000	5.359	11	20.000	5.029
08	40.000	5.318	09	60.000	5.042	10	80.000	4.93			

o-Xylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	1.315	02	0.200	1.113	03	0.500	1.251	04	1.000	1.24
05	2.000	1.219	06	5.000	1.34	07	10.000	1.334	11	20.000	1.332
08	40.000	1.461	09	60.000	1.421	10	80.000	1.379			

sec-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	3.987	02	0.200	4.202	03	0.500	4.184	04	1.000	4.109
05	2.000	4.14	06	5.000	4.495	07	10.000	4.525	11	20.000	4.321
08	40.000	4.578	09	60.000	4.374	10	80.000	4.224			

tert-Butylbenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	2.662	02	0.200	2.782	03	0.500	3.097	04	1.000	3.013
05	2.000	2.951	06	5.000	3.187	07	10.000	3.201	11	20.000	2.993
08	40.000	3.192	09	60.000	3.055	10	80.000	2.974			

trans-1,2-Dichloroethene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.2876	02	0.200	0.2125	03	0.500	0.2664	04	1.000	0.2467
05	2.000	0.2484	06	5.000	0.2684	07	10.000	0.2749	11	20.000	0.2733
08	40.000	0.2998	09	60.000	0.2949	10	80.000	0.3004			

trans-1,3-Dichloropropene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	0.9585	02	0.200	0.8987	03	0.500	0.8123	04	1.000	0.7296
05	2.000	0.7481	06	5.000	0.8529	07	10.000	0.9029	11	20.000	0.9004
08	40.000	0.99	09	60.000	0.9984	10	80.000	0.9652			

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
1,1,1,2-Tetrachloroethane	TRG	Average RF	% RSD	12.2	≤15	0.6388	0.01
1,1,1-Trichloroethane (TCA)	TRG	Average RF	% RSD	10.3	≤15	0.4456	.100
1,1,2,2-Tetrachloroethane	TRG	Average RF	% RSD	9.4	≤15	0.5806	.300
1,1,2-Trichloroethane	TRG	Average RF	% RSD	6.1	≤15	0.4318	.100
1,1-Dichloroethane	TRG	Average RF	% RSD	5.4	≤15	0.5359	.200
1,1-Dichloroethene	TRG	Average RF	% RSD	11.3	≤15	0.2775	.100
1,1-Dichloropropene	TRG	Average RF	% RSD	6.2	≤15	0.4215	0.01
1,2,3-Trichlorobenzene	TRG	Average RF	% RSD	9.3	≤15	0.7774	0.01
1,2,3-Trichloropropane	TRG	Average RF	% RSD	10.5	≤15	0.1718	0.01
1,2,4-Trichlorobenzene	TRG	Average RF	% RSD	8.0	≤15	0.9609	0.200
1,2,4-Trimethylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.41	0.01
1,2-Dibromo-3-chloropropane	TRG	Average RF	% RSD	8.8	≤15	0.06915	0.025
1,2-Dibromoethane (EDB)	TRG	Average RF	% RSD	9.4	≤15	0.4655	0.100
1,2-Dichlorobenzene	TRG	Average RF	% RSD	4.5	≤15	1.588	0.400
1,2-Dichloroethane (EDC)	TRG	Average RF	% RSD	7.0	≤15	0.3592	0.100
1,2-Dichloroethane-d4	SURR	Average RF	% RSD	5.0	≤15	0.2582	0.01
1,2-Dichloropropane	TRG	Average RF	% RSD	5.9	≤15	0.3009	0.100
1,3,5-Trimethylbenzene	TRG	Average RF	% RSD	4.2	≤15	3.473	0.01
1,3-Dichlorobenzene	TRG	Average RF	% RSD	7.7	≤15	1.862	0.600
1,3-Dichloropropane	TRG	Average RF	% RSD	6.2	≤15	0.9237	0.01
1,4-Dichlorobenzene	TRG	Average RF	% RSD	6.3	≤15	1.866	0.500
2,2-Dichloropropane	TRG	Average RF	% RSD	7.3	≤15	0.459	0.01
2-Butanone (MEK)	TRG	Average RF	% RSD	5.7	≤15	0.01312	0.01
2-Chlorotoluene	TRG	Average RF	% RSD	4.5	≤15	2.994	0.01
2-Hexanone	TRG	Average RF	% RSD	8.4	≤15	0.04446	0.015
4-Bromofluorobenzene	SURR	Average RF	% RSD	8.9	≤15	0.8348	0.01
4-Chlorotoluene	TRG	Average RF	% RSD	3.2	≤15	3.424	0.01
4-Isopropyltoluene	TRG	Average RF	% RSD	7.3	≤15	3.51	0.01
4-Methyl-2-pentanone (MIBK)	TRG	Average RF	% RSD	4.3	≤15	0.05041	0.01
Acetone	TRG	Average RF	% RSD	4.4	≤15	0.03703	0.01
Benzene	TRG	Average RF	% RSD	4.2	≤15	1.23	0.500
Bromobenzene	TRG	Average RF	% RSD	7.5	≤15	0.9778	0.01
Bromochloromethane	TRG	Average RF	% RSD	7.7	≤15	0.1274	0.01
Bromodichloromethane	TRG	Average RF	% RSD	9.8	≤15	0.3198	0.200

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Bromoform	TRG	Quadratic (0,0)	COD	0.9977	≥.990	0.2395	0.100
Bromomethane	TRG	Average RF	% RSD	3.3	≤15	0.2225	0.100
Carbon Disulfide	TRG	Average RF	% RSD	4.8	≤15	0.7654	0.100
Carbon Tetrachloride	TRG	Average RF	% RSD	12.8	≤15	0.3646	0.100
Chlorobenzene	TRG	Average RF	% RSD	6.4	≤15	2.06	0.500
Chloroethane	TRG	Average RF	% RSD	5.4	≤15	0.2154	0.100
Chloroform	TRG	Average RF	% RSD	6.9	≤15	0.5015	0.200
Chloromethane	TRG	Average RF	% RSD	7.3	≤15	0.3935	0.100
Dibromochloromethane	TRG	Average RF	% RSD	12.3	≤15	0.4717	0.100
Dibromofluoromethane	SURR	Average RF	% RSD	9.7	≤15	0.2267	0.01
Dibromomethane	TRG	Average RF	% RSD	5.4	≤15	0.1346	0.01
Dichlorodifluoromethane	TRG	Average RF	% RSD	4.6	≤15	0.3293	0.100
Ethylbenzene	TRG	Average RF	% RSD	5.7	≤15	1.188	0.100
Hexachlorobutadiene	TRG	Average RF	% RSD	9.6	≤15	0.4696	0.01
Isopropylbenzene	TRG	Average RF	% RSD	8.5	≤	3.414	
Methyl tert-Butyl Ether	TRG	Average RF	% RSD	5.9	≤15	0.5384	0.100
Methylene Chloride	TRG	Average RF	% RSD	8.0	≤15	0.288	0.100
Naphthalene	TRG	Average RF	% RSD	7.1	≤15	1.657	0.01
Styrene	TRG	Average RF	% RSD	9.3	≤15	1.028	0.300
Tetrachloroethene (PCE)	TRG	Average RF	% RSD	7.3	≤15	0.6511	0.200
Toluene	TRG	Average RF	% RSD	5.8	≤15	0.7271	0.400
Toluene-d8	SURR	Average RF	% RSD	5.7	≤15	0.97	0.01
Trichloroethene (TCE)	TRG	Average RF	% RSD	4.4	≤15	0.3008	0.200
Trichlorofluoromethane (CFC 11)	TRG	Average RF	% RSD	3.8	≤15	0.5423	0.100
Vinyl Chloride	TRG	Average RF	% RSD	4.6	≤15	0.3698	0.100
cis-1,2-Dichloroethene	TRG	Average RF	% RSD	8.6	≤15	0.3024	0.100
cis-1,3-Dichloropropene	TRG	Average RF	% RSD	9.8	≤15	0.3941	0.200
m,p-Xylenes	TRG	Average RF	% RSD	6.3	≤15	1.411	0.100
n-Butylbenzene	TRG	Average RF	% RSD	6.0	≤15	3.239	0.01
n-Propylbenzene	TRG	Average RF	% RSD	4.9	≤15	5.03	0.01
o-Xylene	TRG	Average RF	% RSD	7.5	≤15	1.309	0.300
sec-Butylbenzene	TRG	Average RF	% RSD	4.4	≤15	4.285	0.01
tert-Butylbenzene	TRG	Average RF	% RSD	5.6	≤15	3.01	0.01
trans-1,2-Dichloroethene	TRG	Average RF	% RSD	9.9	≤15	0.2703	0.100
trans-1,3-Dichloropropene	TRG	Average RF	% RSD	10.4	≤15	0.887	0.100

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

#	Lab Code	Sample Name	File Location	Acquisition Date
12	KC1900305-12	ICV	I:\MS13\DATA\072519\0725F023.D	07/25/2019 16:56

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Acetone	50.0	54.7	3.703E-2	4.053E-2	9.46	±20	Average RF
Benzene	10.0	9.15	1.23E0	1.126E0	-8.489	±20	Average RF
Bromobenzene	10.0	9.34	9.778E-1	9.131E-1	-6.608	±20	Average RF
Bromochloromethane	10.0	9.16	1.274E-1	1.166E-1	-8.447	±20	Average RF
Bromodichloromethane	10.0	8.87	3.198E-1	2.837E-1	-11.312	±20	Average RF
Bromoform	10.0	8.71	2.395E-1	2.177E-1	-12.879	±20	Quadratic (0,0)
Bromomethane	10.0	9.36	2.225E-1	2.083E-1	-6.387	±20	Average RF
2-Butanone (MEK)	50.0	53.3	1.312E-2	1.399E-2	6.62	±20	Average RF
n-Butylbenzene	10.0	9.42	3.239E0	3.052E0	-5.772	±20	Average RF
sec-Butylbenzene	10.0	9.49	4.285E0	4.068E0	-5.070	±20	Average RF
tert-Butylbenzene	10.0	9.50	3.01E0	2.86E0	-4.982	±20	Average RF
Carbon Disulfide	20.0	18.9	7.654E-1	7.219E-1	-5.694	±20	Average RF
Carbon Tetrachloride	10.0	9.46	3.646E-1	3.45E-1	-5.353	±20	Average RF
Chlorobenzene	10.0	9.42	2.06E0	1.94E0	-5.824	±20	Average RF
Chloroethane	10.0	10.1	2.154E-1	2.177E-1	1.09	±20	Average RF
Chloroform	10.0	9.17	5.015E-1	4.596E-1	-8.349	±20	Average RF
Chloromethane	10.0	8.82	3.935E-1	3.471E-1	-11.802	±20	Average RF
2-Chlorotoluene	10.0	9.30	2.994E0	2.783E0	-7.032	±20	Average RF
4-Chlorotoluene	10.0	9.27	3.424E0	3.175E0	-7.283	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.26	6.915E-2	5.712E-2	-17.393	±20	Average RF
Dibromochloromethane	10.0	10.0	4.717E-1	4.722E-1	0.104	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	8.79	4.655E-1	4.089E-1	-12.149	±20	Average RF
Dibromomethane	10.0	8.80	1.346E-1	1.184E-1	-12.048	±20	Average RF
1,2-Dichlorobenzene	10.0	9.24	1.588E0	1.467E0	-7.594	±20	Average RF
1,3-Dichlorobenzene	10.0	9.13	1.862E0	1.7E0	-8.730	±20	Average RF
1,4-Dichlorobenzene	10.0	8.87	1.866E0	1.655E0	-11.312	±20	Average RF
Dichlorodifluoromethane	10.0	8.81	3.293E-1	2.903E-1	-11.852	±20	Average RF
1,1-Dichloroethane	10.0	9.43	5.359E-1	5.055E-1	-5.670	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	9.03	3.592E-1	3.244E-1	-9.672	±20	Average RF
1,1-Dichloroethene	10.0	9.09	2.775E-1	2.523E-1	-9.099	±20	Average RF
cis-1,2-Dichloroethene	10.0	9.28	3.024E-1	2.806E-1	-7.202	±20	Average RF
trans-1,2-Dichloroethene	10.0	9.13	2.703E-1	2.469E-1	-8.659	±20	Average RF
1,2-Dichloropropane	10.0	8.88	3.009E-1	2.673E-1	-11.166	±20	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
1,3-Dichloropropane	10.0	9.24	9.237E-1	8.536E-1	-7.589	±20	Average RF
2,2-Dichloropropane	10.0	9.33	4.59E-1	4.281E-1	-6.715	±20	Average RF
1,1-Dichloropropene	10.0	9.37	4.215E-1	3.948E-1	-6.328	±20	Average RF
cis-1,3-Dichloropropene	10.0	9.20	3.941E-1	3.627E-1	-7.963	±20	Average RF
trans-1,3-Dichloropropene	10.0	9.30	8.87E-1	8.249E-1	-6.999	±20	Average RF
Ethylbenzene	10.0	9.51	1.188E0	1.13E0	-4.917	±20	Average RF
Hexachlorobutadiene	10.0	9.08	4.696E-1	4.266E-1	-9.176	±20	Average RF
2-Hexanone	50.0	51.5	4.446E-2	4.577E-2	2.96	±20	Average RF
Isopropylbenzene	10.0	9.61	3.414E0	3.28E0	-3.91828772050652363851		Average RF
4-Isopropyltoluene	10.0	9.91	3.51E0	3.477E0	-0.944	±20	Average RF
Methyl tert-Butyl Ether	10.0	9.05	5.384E-1	4.875E-1	-9.452	±20	Average RF
4-Methyl-2-pentanone (MIBK)	50.0	50.9	5.041E-2	5.129E-2	1.74	±20	Average RF
Methylene Chloride	10.0	8.84	2.88E-1	2.544E-1	-11.648	±20	Average RF
Naphthalene			1.657E0			±20	Average RF
n-Propylbenzene	10.0	9.44	5.03E0	4.751E0	-5.551	±20	Average RF
Styrene	10.0	9.53	1.028E0	9.797E-1	-4.672	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.20	6.388E-1	5.878E-1	-7.980	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	8.93	5.806E-1	5.186E-1	-10.676	±20	Average RF
Tetrachloroethene (PCE)	10.0	9.59	6.511E-1	6.243E-1	-4.109	±20	Average RF
Toluene	10.0	9.37	7.271E-1	6.815E-1	-6.263	±20	Average RF
1,2,3-Trichlorobenzene	10.0	8.79	7.774E-1	6.83E-1	-12.141	±20	Average RF
1,2,4-Trichlorobenzene			9.609E-1			±20	Average RF
1,1,2-Trichloroethane	10.0	9.31	4.318E-1	4.022E-1	-6.868	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	9.20	4.456E-1	4.1E-1	-7.996	±20	Average RF
Trichloroethene (TCE)	10.0	8.95	3.008E-1	2.692E-1	-10.524	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	8.35	5.423E-1	4.528E-1	-16.509	±20	Average RF
1,2,3-Trichloropropane	10.0	9.37	1.718E-1	1.609E-1	-6.337	±20	Average RF
1,2,4-Trimethylbenzene	10.0	9.41	3.41E0	3.21E0	-5.865	±20	Average RF
1,3,5-Trimethylbenzene	10.0	9.35	3.473E0	3.247E0	-6.521	±20	Average RF
Vinyl Chloride	10.0	9.52	3.698E-1	3.519E-1	-4.849	±20	Average RF
o-Xylene	10.0	9.46	1.309E0	1.238E0	-5.412	±20	Average RF
m,p-Xylenes	20.0	18.8	1.411E0	1.33E0	-5.759	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM **Calibration Date:** 7/25/2019

Initial Calibration Verification Summary
Volatile Organic Compounds by GC/MS

Calibration ID: KC1900305 **Signal ID:** 1
Instrument ID: K-MS-13

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.42	8.348E-1	7.864E-1	-5.803	±20	Average RF
Dibromofluoromethane	10.0	9.59	2.267E-1	2.175E-1	-4.065	±20	Average RF
1,2-Dichloroethane-d4	10.0	8.64	2.582E-1	2.231E-1	-13.588	±20	Average RF
Toluene-d8	10.0	10.0	9.7E-1	9.723E-1	0.230	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST)
Project: JBLM/6304305

Service Request: K2007912
Date Analyzed: 09/19/20 09:30

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
File ID: I:\MS13\DATA\091920\0919F004.D\
Signal ID: 1

Calibration Date: 7/25/2019
Calibration ID: KC1900305
Analysis Lot: 695743
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	109	0.037	0.0403	8.8	NA	±20	Average RF
Benzene	10.0	10.4	1.23	1.2746	3.6	NA	±20	Average RF
Bromobenzene	10.0	10.5	0.9778	1.0245	4.8	NA	±20	Average RF
Bromochloromethane	10.0	10.7	0.1274	0.1356	6.5	NA	±20	Average RF
Bromodichloromethane	10.0	11.6	0.3198	0.3699	15.7	NA	±20	Average RF
Bromoform	10.0	10.2	0.2395	0.2555	NA	1.5	±20	Quadratic (0,0)
Bromomethane	10.0	9.84	0.2225	0.2189	-1.6	NA	±20	Average RF
2-Butanone (MEK)	100	104	0.0131	0.0137	4.1	NA	±20	Average RF
n-Butylbenzene	10.0	10.5	3.2393	3.3875	4.6	NA	±20	Average RF
sec-Butylbenzene	10.0	10.6	4.2852	4.5204	5.5	NA	±20	Average RF
tert-Butylbenzene	10.0	10.3	3.0096	3.085	2.5	NA	±20	Average RF
Carbon Disulfide	10.0	9.98	0.7654	0.7642	-0.2	NA	±20	Average RF
Carbon Tetrachloride	10.0	11.6	0.3646	0.4242	16.4	NA	±20	Average RF
Chlorobenzene	10.0	9.57	2.06	1.9706	-4.3	NA	±20	Average RF
Chloroethane	10.0	10.5	0.2154	0.2258	4.9	NA	±20	Average RF
Chloroform	10.0	10.9	0.5015	0.5453	8.7	NA	±20	Average RF
Chloromethane	10.0	10.2	0.3935	0.3995	1.5	NA	±20	Average RF
2-Chlorotoluene	10.0	10.5	2.9938	3.1497	5.2	NA	±20	Average RF
4-Chlorotoluene	10.0	10.7	3.4241	3.6749	7.3	NA	±20	Average RF
1,2-Dibromo-3-chloropropane	10.0	9.57	0.0691	0.0662	-4.3	NA	±20	Average RF
Dibromochloromethane	10.0	11.5	0.4717	0.5423	15.0	NA	±20	Average RF
1,2-Dibromoethane (EDB)	10.0	9.37	0.4655	0.436	-6.3	NA	±20	Average RF
Dibromomethane	10.0	10.4	0.1346	0.1404	4.4	NA	±20	Average RF
1,2-Dichlorobenzene	10.0	10.4	1.5875	1.6473	3.8	NA	±20	Average RF
1,3-Dichlorobenzene	10.0	10.4	1.8624	1.9424	4.3	NA	±20	Average RF
1,4-Dichlorobenzene	10.0	10.3	1.8664	1.9123	2.5	NA	±20	Average RF
Dichlorodifluoromethane	10.0	11.1	0.3293	0.3655	11.0	NA	±20	Average RF
1,1-Dichloroethane	10.0	10.5	0.5359	0.5624	4.9	NA	±20	Average RF
1,2-Dichloroethane (EDC)	10.0	11.3	0.3592	0.4044	12.6	NA	±20	Average RF
1,1-Dichloroethene	10.0	9.13	0.2775	0.2534	-8.7	NA	±20	Average RF
cis-1,2-Dichloroethene	10.0	10.3	0.3024	0.3121	3.2	NA	±20	Average RF
trans-1,2-Dichloroethene	10.0	10.5	0.2703	0.284	5.1	NA	±20	Average RF
1,2-Dichloropropane	10.0	10.5	0.3009	0.3147	4.6	NA	±20	Average RF
1,3-Dichloropropane	10.0	9.56	0.9237	0.8827	-4.4	NA	±20	Average RF
2,2-Dichloropropane	10.0	9.07	0.459	0.4162	-9.3	NA	±20	Average RF
1,1-Dichloropropene	10.0	10.7	0.4215	0.4524	7.3	NA	±20	Average RF
cis-1,3-Dichloropropene	10.0	10.6	0.3941	0.4157	5.5	NA	±20	Average RF
trans-1,3-Dichloropropene	10.0	9.20	0.887	0.816	-8.0	NA	±20	Average RF
Ethylbenzene	10.0	9.49	1.1883	1.1271	-5.1	NA	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305 **Date Analyzed:** 09/19/20 09:30

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: I:\MS13\DATA\091920\0919F004.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 695743
Units: ppb

Hexachlorobutadiene	10.0	11.1	0.4696	0.522	11.1	NA	±20	Average RF
2-Hexanone	100	87.5	0.0445	0.0389	-12.5	NA	±20	Average RF
Isopropylbenzene	10.0	9.88	3.4138	3.3721	-1.2	NA	±20	Average RF
4-Isopropyltoluene	10.0	10.5	3.5098	3.6984	5.4	NA	±20	Average RF
Methyl tert-Butyl Ether	20.0	20.5	0.5384	0.5505	2.2	NA	±20	Average RF
4-Methyl-2-pentanone (MIBK)	100	98.7	0.0504	0.0498	-1.3	NA	±20	Average RF
Methylene Chloride	10.0	10.3	0.288	0.2957	2.7	NA	±20	Average RF
Naphthalene	10.0	8.90	1.6574	1.4756	-11.0	NA	±20	Average RF
n-Propylbenzene	10.0	11.0	5.0302	5.5518	10.4	NA	±20	Average RF
Styrene	10.0	9.79	1.0277	1.0062	-2.1	NA	±20	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.94	0.6388	0.6351	-0.6	NA	±20	Average RF
1,1,2,2-Tetrachloroethane	10.0	10.4	0.5806	0.6015	3.6	NA	±20	Average RF
Tetrachloroethene (PCE)	10.0	9.82	0.6511	0.6393	-1.8	NA	±20	Average RF
Toluene	10.0	11.2	0.7271	0.8132	11.8	NA	±20	Average RF
1,2,3-Trichlorobenzene	10.0	9.18	0.7774	0.7134	-8.2	NA	±20	Average RF
1,2,4-Trichlorobenzene	10.0	9.31	0.9609	0.8947	-6.9	NA	±20	Average RF
1,1,2-Trichloroethane	10.0	9.09	0.4318	0.3926	-9.1	NA	±20	Average RF
1,1,1-Trichloroethane (TCA)	10.0	11.4	0.4456	0.5057	13.5	NA	±20	Average RF
Trichloroethene (TCE)	10.0	10.8	0.3008	0.3242	7.8	NA	±20	Average RF
Trichlorofluoromethane (CFC 11)	10.0	10.6	0.5423	0.5749	6.0	NA	±20	Average RF
1,2,3-Trichloropropane	10.0	11.8	0.1718	0.2029	18.1	NA	±20	Average RF
1,2,4-Trimethylbenzene	10.0	10.7	3.4099	3.6571	7.2	NA	±20	Average RF
1,3,5-Trimethylbenzene	10.0	10.6	3.4734	3.6761	5.8	NA	±20	Average RF
Vinyl Chloride	10.0	10.8	0.3698	0.3986	7.8	NA	±20	Average RF
o-Xylene	10.0	9.47	1.3093	1.24	-5.3	NA	±20	Average RF
m,p-Xylenes	20.0	19.0	1.4114	1.3407	-5.0	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	8.99	0.8348	0.7501	-10.1	NA	±20	Average RF
Dibromofluoromethane	10.0	10.0	0.2267	0.2269	0.1	NA	±20	Average RF
1,2-Dichloroethane-d4	10.0	9.74	0.2582	0.2515	-2.6	NA	±20	Average RF
Toluene-d8	10.0	10.2	0.97	0.9892	2.0	NA	±20	Average RF

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QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST)
Project: JBLM/6304305

Service Request: K2007912
Date Analyzed: 09/19/20 20:35

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
File ID: I:\MS13\DATA\091920\0919F029.D\
Signal ID: 1

Calibration Date: 7/25/2019
Calibration ID: KC1900305
Analysis Lot: 695743
Units: ppb

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Acetone	100	103	0.037	0.038	2.5	NA	±50	Average RF
Benzene	10.0	9.85	1.23	1.2121	-1.5	NA	±50	Average RF
Bromobenzene	10.0	9.91	0.9778	0.9691	-0.9	NA	±50	Average RF
Bromochloromethane	10.0	10.1	0.1274	0.1287	1.1	NA	±50	Average RF
Bromodichloromethane	10.0	11.0	0.3198	0.3525	10.2	NA	±50	Average RF
Bromoform	10.0	10.3	0.2395	0.2599	NA	3.2	±50	Quadratic (0,0)
Bromomethane	10.0	9.68	0.2225	0.2155	-3.2	NA	±50	Average RF
2-Butanone (MEK)	100	88.5	0.0131	0.0116	-11.5	NA	±50	Average RF
n-Butylbenzene	10.0	9.59	3.2393	3.1077	-4.1	NA	±50	Average RF
sec-Butylbenzene	10.0	9.80	4.2852	4.2007	-2.0	NA	±50	Average RF
tert-Butylbenzene	10.0	9.48	3.0096	2.8525	-5.2	NA	±50	Average RF
Carbon Disulfide	10.0	9.90	0.7654	0.7582	-1.0	NA	±50	Average RF
Carbon Tetrachloride	10.0	10.8	0.3646	0.3943	8.1	NA	±50	Average RF
Chlorobenzene	10.0	9.39	2.06	1.9342	-6.1	NA	±50	Average RF
Chloroethane	10.0	9.44	0.2154	0.2034	-5.6	NA	±50	Average RF
Chloroform	10.0	10.2	0.5015	0.5096	1.6	NA	±50	Average RF
Chloromethane	10.0	9.44	0.3935	0.3713	-5.6	NA	±50	Average RF
2-Chlorotoluene	10.0	9.77	2.9938	2.9262	-2.3	NA	±50	Average RF
4-Chlorotoluene	10.0	9.95	3.4241	3.4069	-0.5	NA	±50	Average RF
1,2-Dibromo-3-chloropropane	10.0	8.72	0.0691	0.0603	-12.8	NA	±50	Average RF
Dibromochloromethane	10.0	11.4	0.4717	0.5356	13.5	NA	±50	Average RF
1,2-Dibromoethane (EDB)	10.0	9.01	0.4655	0.4193	-9.9	NA	±50	Average RF
Dibromomethane	10.0	10.0	0.1346	0.135	0.3	NA	±50	Average RF
1,2-Dichlorobenzene	10.0	9.69	1.5875	1.538	-3.1	NA	±50	Average RF
1,3-Dichlorobenzene	10.0	9.50	1.8624	1.7684	-5.0	NA	±50	Average RF
1,4-Dichlorobenzene	10.0	9.27	1.8664	1.7299	-7.3	NA	±50	Average RF
Dichlorodifluoromethane	10.0	10.3	0.3293	0.3396	3.1	NA	±50	Average RF
1,1-Dichloroethane	10.0	10.2	0.5359	0.5442	1.5	NA	±50	Average RF
1,2-Dichloroethane (EDC)	10.0	10.5	0.3592	0.377	5.0	NA	±50	Average RF
1,1-Dichloroethene	10.0	8.61	0.2775	0.2388	-13.9	NA	±50	Average RF
cis-1,2-Dichloroethene	10.0	9.64	0.3024	0.2916	-3.6	NA	±50	Average RF
trans-1,2-Dichloroethene	10.0	10.1	0.2703	0.2737	1.3	NA	±50	Average RF
1,2-Dichloropropane	10.0	9.59	0.3009	0.2886	-4.1	NA	±50	Average RF
1,3-Dichloropropane	10.0	9.64	0.9237	0.89	-3.6	NA	±50	Average RF
2,2-Dichloropropane	10.0	7.60	0.459	0.3487	-24.0	NA	±50	Average RF
1,1-Dichloropropene	10.0	10.2	0.4215	0.4299	2.0	NA	±50	Average RF
cis-1,3-Dichloropropene	10.0	9.99	0.3941	0.3937	-0.1	NA	±50	Average RF
trans-1,3-Dichloropropene	10.0	9.00	0.887	0.7985	-10.0	NA	±50	Average RF
Ethylbenzene	10.0	9.37	1.1883	1.1134	-6.3	NA	±50	Average RF

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:** K2007912
Project: JBLM/6304305 **Date Analyzed:** 09/19/20 20:35

Continuing Calibration Verification (CCV) Summary
Volatile Organic Compounds by GC/MS

Analysis Method: 8260C **Calibration Date:** 7/25/2019
File ID: I:\MS13\DATA\091920\0919F029.D\ **Calibration ID:** KC1900305
Signal ID: 1 **Analysis Lot:** 695743
Units: ppb

Hexachlorobutadiene	10.0	8.60	0.4696	0.4039	-14.0	NA	±50	Average RF
2-Hexanone	100	79.5	0.0445	0.0354	-20.5	NA	±50	Average RF
Isopropylbenzene	10.0	9.74	3.4138	3.3254	-2.6	NA	±50	Average RF
4-Isopropyltoluene	10.0	9.51	3.5098	3.3371	-4.9	NA	±50	Average RF
Methyl tert-Butyl Ether	20.0	19.8	0.5384	0.5339	-0.8	NA	±50	Average RF
4-Methyl-2-pentanone (MIBK)	100	88.7	0.0504	0.0447	-11.3	NA	±50	Average RF
Methylene Chloride	10.0	10.3	0.288	0.2969	3.1	NA	±50	Average RF
Naphthalene	10.0	7.54	1.6574	1.2496	-24.6	NA	±50	Average RF
n-Propylbenzene	10.0	10.2	5.0302	5.1414	2.2	NA	±50	Average RF
Styrene	10.0	9.64	1.0277	0.9906	-3.6	NA	±50	Average RF
1,1,1,2-Tetrachloroethane	10.0	9.87	0.6388	0.6303	-1.3	NA	±50	Average RF
1,1,2,2-Tetrachloroethane	10.0	9.10	0.5806	0.5285	-9.0	NA	±50	Average RF
Tetrachloroethene (PCE)	10.0	9.54	0.6511	0.621	-4.6	NA	±50	Average RF
Toluene	10.0	10.6	0.7271	0.7735	6.4	NA	±50	Average RF
1,2,3-Trichlorobenzene	10.0	7.80	0.7774	0.6066	-22.0	NA	±50	Average RF
1,2,4-Trichlorobenzene	10.0	7.95	0.9609	0.7638	-20.5	NA	±50	Average RF
1,1,2-Trichloroethane	10.0	9.71	0.4318	0.4191	-2.9	NA	±50	Average RF
1,1,1-Trichloroethane (TCA)	10.0	10.5	0.4456	0.4685	5.1	NA	±50	Average RF
Trichloroethene (TCE)	10.0	10.5	0.3008	0.3155	4.9	NA	±50	Average RF
Trichlorofluoromethane (CFC 11)	10.0	9.84	0.5423	0.5334	-1.6	NA	±50	Average RF
1,2,3-Trichloropropane	10.0	10.5	0.1718	0.1797	4.6	NA	±50	Average RF
1,2,4-Trimethylbenzene	10.0	9.85	3.4099	3.3588	-1.5	NA	±50	Average RF
1,3,5-Trimethylbenzene	10.0	9.88	3.4734	3.4314	-1.2	NA	±50	Average RF
Vinyl Chloride	10.0	9.80	0.3698	0.3625	-2.0	NA	±50	Average RF
o-Xylene	10.0	9.35	1.3093	1.224	-6.5	NA	±50	Average RF
m,p-Xylenes	20.0	18.5	1.4114	1.3048	-7.6	NA	±50	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
4-Bromofluorobenzene	10.0	9.03	0.8348	0.7539	-9.7	NA	±50	Average RF
Dibromofluoromethane	10.0	9.58	0.2267	0.2173	-4.2	NA	±50	Average RF
1,2-Dichloroethane-d4	10.0	9.63	0.2582	0.2486	-3.7	NA	±50	Average RF
Toluene-d8	10.0	10.1	0.97	0.9778	0.8	NA	±50	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: EA Engineering, Science, and Technology (EAEST) **Service Request:**K2007912
Project: JBLM/6304305

Analysis Run Log
Volatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**695743
Instrument ID:K-MS-13

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\MS13\DATA\091920\0919F003.D\	ZZZZZZZ	ZZZZZZZ	9/19/2020	08:57:00	
I:\MS13\DATA\091920\0919F004.D\	Continuing Calibration Verification	KQ2013490-04	9/19/2020	09:30:00	
I:\MS13\DATA\091920\0919F005.D\	Lab Control Sample	KQ2013490-05	9/19/2020	09:57:00	
I:\MS13\DATA\091920\0919F006.D\	Duplicate Lab Control Sample	KQ2013490-06	9/19/2020	10:23:00	
I:\MS13\DATA\091920\0919F009.D\	Method Blank	KQ2013490-07	9/19/2020	11:43:00	
I:\MS13\DATA\091920\0919F010.D\	TVR-3-20200909	K2007912-001	9/19/2020	12:10:00	
I:\MS13\DATA\091920\0919F011.D\	TVR-3A-20200909	K2007912-002	9/19/2020	12:36:00	
I:\MS13\DATA\091920\0919F012.D\	TVR-7-20200909	K2007912-003	9/19/2020	13:03:00	
I:\MS13\DATA\091920\0919F013.D\	TVR-1-20200909	K2007912-004	9/19/2020	13:29:00	
I:\MS13\DATA\091920\0919F014.D\	TVR-POMONA-20200909	K2007912-005	9/19/2020	13:56:00	
I:\MS13\DATA\091920\0919F015.D\	TVR-MTS-1-20200909	K2007912-006	9/19/2020	14:22:00	
I:\MS13\DATA\091920\0919F016.D\	TVR-MTS-2-20200909	K2007912-007	9/19/2020	14:49:00	
I:\MS13\DATA\091920\0919F017.D\	TVR-MTS-4-20200909	K2007912-008	9/19/2020	15:16:00	
I:\MS13\DATA\091920\0919F018.D\	TVR-PAIC-20200910	K2007912-009	9/19/2020	15:42:00	
I:\MS13\DATA\091920\0919F019.D\	TVR-6-20200910	K2007912-010	9/19/2020	16:09:00	
I:\MS13\DATA\091920\0919F020.D\	TVR-TB-001-20200909	K2007912-011	9/19/2020	16:36:00	
I:\MS13\DATA\091920\0919F021.D\	FTP-1-20200910	K2007912-012	9/19/2020	17:02:00	
I:\MS13\DATA\091920\0919F022.D\	FTP-1-20200910 MS	KQ2013490-01	9/19/2020	17:29:00	
I:\MS13\DATA\091920\0919F023.D\	FTP-1-20200910 DMS	KQ2013490-02	9/19/2020	17:55:00	
I:\MS13\DATA\091920\0919F029.D\	Continuing Cal. Verification	KQ2013490-08	9/19/2020	20:35:00	

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DATA VALIDATION REPORT COVER
SAMPLE DELIVERY GROUP: K2007912

PROJECT NAME: Environmental Remediation Program Services, Joint Base Lewis McChord and Yakima Training Center, Washington

SITE NAME: Former Fire Training Pit and Tracked Vehicle Repair/Old Mobilization and Training Equipment Sites, Yakima Training Center, Washington

LABORATORY: ALS Environmental Laboratories, Inc., Kelso, Washington (ALS)

REPORT DATE: 23 November 2020

PROJECT MANAGER: Timothy McCormack, EA Engineering, Science, and Technology, Inc., PBC (email: tmccormack@eaest.com)

CONTRACTOR OFFICE: EA Engineering, Science, and Technology, Inc., PBC
2200 6th Avenue, Suite 707, Seattle, Washington, 98121

REVIEWER: Sean Arnold, Project Scientist, EA Engineering, Science, and Technology, Inc., PBC (email: bnuding@eaest.com)

VALIDATION STAGE: S2AVM

REVIEW DATE: 23 November 2020

Ten groundwater samples as well as one field duplicate and one trip blank were collected on 9 and 10 September 2020 in support of the Environmental Remediation Program Services for Yakima Training Center in Washington. The samples were delivered to ALS for the analyses indicated in the table below. Table 1 below provides a list of the field sample identification (ID), sample ID, sample collection date, and analyses performed.

Table 1. Sample Summary Table

Field Sample ID	Lab Sample ID	Matrix	Date Collected	Analyses Performed
TVR-3-20200909	K2007912-001	Groundwater	9 September 2020	VOCs
TVR-3A-20200909	K2007912-002	Field duplicate	9 September 2020	VOCs
TVR-7-20200909	K2007912-003	Groundwater	9 September 2020	VOCs
TVR-1-20200909	K2007912-004	Groundwater	9 September 2020	VOCs
TVR-POMONA-20200909	K2007912-005	Groundwater	9 September 2020	VOCs
TVR-MTS-1-20200909	K2007912-006	Groundwater	9 September 2020	VOCs
TVR-MTS-2-20200909	K2007912-007	Groundwater	9 September 2020	VOCs
TVR-MTS-4-20200909	K2007912-008	Groundwater	9 September 2020	VOCs
TVR-PAIC-20200910	K2007912-009	Groundwater	10 September 2020	VOCs
TVR-6-20200910	K2007912-010	Groundwater	10 September 2020	VOCs
TVR-TB-001-20200909	K2007912-011	Trip blank	9 September 2020	VOCs
FTP-1-20200910	K2007912-012	Groundwater	10 September 2020	GRO and VOCs

Notes:
GRO – gasoline range organics
VOCs – volatile organic compounds

1. DATA VALIDATION REPORT

The analytical data presented in Sample Delivery Group (SDG) K2007912 were reviewed with respect to quality assurance/quality control (QC) parameters specified in the 2018 *Programmatic Quality Assurance Project Plan* for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington (QAPP). In addition, the following guidance documents were used while assessing the validity of these data: U.S. Department of Defense (DoD), General Data Validation Guidelines, November 2019; DoD Quality Systems Manual, Version 5.3, May 2019; U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Superfund Organic Methods Data Review, January 2017; and the USEPA Office of Solid Waste, SW-846 Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, April 1998 and updates, as well as the referenced methodology.

Section 1 of this data validation report identifies the criteria reviewed for analyses of target analytes by the corresponding method. Section 2 provides definitions of data qualifiers that may be applied to analytical results based on the validation process. Section 3 provides an assessment of the overall data quality and a summary of final data qualification if any, and Section 4 provides the references to the guidelines and documents used in performing the data review.

The items listed below were evaluated for the Stage 2A (S2AVM) manual validation review as defined in the DoD General Data Validation Guidelines (2019), as applicable to the analytical method.

- Deliverables
- Condition of sample at laboratory receipt
- Holding times
- Method blanks
- Matrix spikes (MSs) and laboratory replicates
- Surrogates
- Laboratory control samples (LCS)
- Field QC samples
- Overall assessment of data.

2. GLOSSARY OF DATA QUALIFIERS

The following definitions provide a brief explanation for the data qualifiers that may be used during the review process. The definitions are consistent with the DoD Data Validation Guidelines (2019).

No Qualifier	Indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was not detected and is reported as less than the limit of detection (LOD). The LOD has been adjusted for dilution or concentration of the sample.
J	The reported result is an estimated value.
UJ	The analyte was not detected and is reported as less than the associated estimated numerical value.
R	The sample result is unusable to achieve the project data quality objectives based on certain QC criteria outside of acceptance limits. The analyte may or may not be present in the sample.

3. DATA VALIDATION SUMMARY

Analytical results were reviewed for the criteria listed in Section 1.0. A discussion of the data is presented below.

3.1 DELIVERABLES

The data package for this SDG is complete.

3.2 CONDITION OF SAMPLE AT LABORATORY RECEIPT

The sample cooler(s) and the samples contained within were received at the laboratory with the proper chemical preservative at temperatures within the recommended range of $\leq$6 degrees Celsius and not frozen. No qualification of sample data is necessary on the basis of the condition upon sample receipt or chain of custody.

3.3 GASOLINE RANGE ORGANICS

Project samples were prepared and analyzed for gasoline range organics (GRO) according to NWTPH-Gx.

3.3.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.3.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank result is within the QAPP-specified QC limit (< ½ limit of quantitation [LOQ]).

3.3.3 Matrix Spikes and Laboratory Duplicates

No matrix spike (MS) was prepared using project samples for GRO analysis. A laboratory duplicate sample was prepared using project sample FTP-1-20200910. The relative percent difference (RPD) for the original and duplicate sample results is within the QAPP-specified QC limit.

3.3.4 Surrogates

A surrogate was added to environmental and QC samples and standards for GRO analysis as required by the referenced methodology. Surrogate percent recoveries (%Rs) are within the QAPP-specified QC limits.

3.3.5 Laboratory Control Samples

An LCS and LCS duplicate set (one per preparation batch) was prepared and analyzed as recommended by the referenced method. The %Rs and RPDs f are within the QAPP-specified QC limits.

3.4 VOLATILE ORGANIC COMPOUNDS

Project samples were prepared and analyzed for volatile organic compounds (VOCs) according to SW8260C.

3.4.1 Holding Times

Samples were prepared and analyzed within the holding time specified in the referenced method of analysis.

3.4.2 Method Blanks

A method blank was prepared and analyzed as specified by the referenced method. The method blank results are within the QAPP-specified QC limit (<½LOQ). There are also detectable results for the method blank (carbon disulfide, methylene chloride, naphthalene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene) and the associated project sample results that are less than 5 times these method blank results have been flagged with the UJ qualifier.

3.4.3 Matrix Spikes

Sample FTP-1-20200910 was selected for spiking for the MS and matrix spike duplicate (MSD) samples. The %Rs and RPDs are within the QAPP-specified QC limits or the %R and/or RPD are elevated above QC limits, and no detectable results were reported for the associated samples.

3.4.4 Surrogates

Surrogates were added to environmental and QC samples and standards for the analysis of organic compounds as required by the referenced methodology. Surrogate %Rs are within the QAPP-specified QC limits, with the following exception.

The %Rs for the surrogate 4-bromofluorobenzene are below QC limits for project samples TVR-3A-20200909, TVR-7-20200909, TVR-1-20200909, TVR-POMONA-20200909, and TVR-PAIC-20200910 as well as the associated method blank. The results for the three other surrogates are within QC limits; therefore, no qualification has been performed on the basis of this single outlier.

3.4.5 Laboratory Control Samples

LCSs (one set per preparation batch) were prepared and analyzed as recommended by the referenced method. The %Rs and RPDs for LCS results are within the QAPP-specified QC limits.

3.4.6 Field Quality Control Samples

A field duplicate sample was collected. Field duplicate (TVR-3A-20200909) is associated with parent sample (TVR-3-20200909). The RPDs between the parent and duplicate sample results that are greater than the LOQ are within the QAPP-specified QC limit (RPD<30 percent).

A trip blank was included in this SDG (TVR-TB-001-20200909). The analytical results for the trip blank are within QAPP-specified QC limits (<½ LOQ), with the exception of acetone. There

are also detectable results for the trip blank (methylene chloride and toluene) and the associated project sample results that are less than 5 times the trip blank results have been flagged with the UJ qualifier.

4. OVERALL ASSESSMENT OF DATA

The qualification of sample results was performed during data validation, as necessary. The data are acceptable and meet the project data quality objectives and are usable to support project decision-making. The qualifiers added during data validation are summarized in Table 2.

Table 2. Qualifier Summary Table

Field Sample ID	Lab Sample ID	Analyte	Result (µg/L)	Validation Qualifier	Reason
TVR-3-20200909	K2007912-001	acetone	11 J	11 UJ	trip blank
TVR-3-20200909	K2007912-001	toluene	0.13 J	0.13 UJ	trip blank
TVR-3-20200909	K2007912-001	carbon disulfide	0.070 J	0.070 UJ	method blank
TVR-3A-20200909	K2007912-002	acetone	8.9 J	8.9 UJ	trip blank
TVR-3A-20200909	K2007912-002	toluene	0.15 J	0.15 UJ	trip blank
TVR-3A-20200909	K2007912-002	carbon disulfide	0.080 J	0.080 UJ	method blank
TVR-7-20200909	K2007912-003	acetone	18 J	18 UJ	trip blank
TVR-7-20200909	K2007912-003	toluene	0.17 J	0.17 UJ	trip blank
TVR-7-20200909	K2007912-003	carbon disulfide	0.080 J	0.080 UJ	method blank
TVR-1-20200909	K2007912-004	acetone	13 J	13 UJ	trip blank
TVR-1-20200909	K2007912-004	toluene	0.12 J	0.12 UJ	trip blank
TVR-1-20200909	K2007912-004	carbon disulfide	0.070 J	0.070 UJ	method blank
TVR-POMONA-20200909	K2007912-005	acetone	12 J	12 UJ	trip blank
TVR-POMONA-20200909	K2007912-005	toluene	0.080 J	0.080 UJ	trip blank
TVR-MTS-1-20200909	K2007912-006	acetone	11 J	11 UJ	trip blank
TVR-MTS-1-20200909	K2007912-006	toluene	0.010 J	0.010 UJ	trip blank
TVR-MTS-1-20200909	K2007912-006	carbon disulfide	0.070 J	0.070 UJ	method blank
TVR-MTS-2-20200909	K2007912-007	acetone	10 J	10 UJ	trip blank
TVR-MTS-2-20200909	K2007912-007	toluene	0.14 J	0.14 UJ	trip blank
TVR-MTS-2-20200909	K2007912-007	carbon disulfide	0.070 J	0.070 UJ	method blank
TVR-MTS-4-20200909	K2007912-008	acetone	8.5 J	8.5 UJ	trip blank
TVR-MTS-4-20200909	K2007912-008	toluene	0.070 J	0.070 UJ	trip blank
TVR-PAIC-20200910	K2007912-009	acetone	12 J	12 UJ	trip blank
TVR-PAIC-20200910	K2007912-009	toluene	0.20 J	0.20 UJ	trip blank
TVR-PAIC-20200910	K2007912-009	carbon disulfide	0.070 J	0.070 UJ	method blank
TVR-6-20200910	K2007912-010	acetone	18 J	18 UJ	trip blank
TVR-6-20200910	K2007912-010	toluene	0.18 J	0.18 UJ	trip blank
FTP-1-20200910	K2007912-012	acetone	17 J	17 UJ	trip blank
FTP-1-20200910	K2007912-012	toluene	0.29 J	0.29 UJ	trip blank
FTP-1-20200910	K2007912-012	carbon disulfide	0.080 J	0.080 UJ	method blank

Notes:
µg/L = microgram(s) per liter

5. REFERENCES

EA Engineering, Science, and Technology, Inc., PBC. 2018. *Programmatic Quality Assurance Project Plan for Environmental Remediation Program Services, Joint Base Lewis-McChord and Yakima Training Center, Washington*.

U.S. Department of Defense (DoD). 2019. *General Data Validation Guidelines*. Environmental Data Quality Workgroup. November.

———. 2019. *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 5.3.* May.

U.S. Environmental Protection Agency. 2017. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. OLEM 9355.0-136. EPA-540-R-2017-002. January.

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APPENDIX B

HISTORICAL CONCENTRATION GRAPHS AND STATISTICS

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ANALYSIS OF DATA

Statistical analysis on data from the Fire Training Pit (FTP) and Tracked Vehicle Repair (TVR)/ Old Mobilization and Training Equipment Site (Old MATES) sites followed guidelines presented in the U.S. Environmental Protection Agency's (EPA's) Methods for Evaluating the Attainment of Cleanup Standards, Volume 2: Ground Water (EPA 1992). Statistical analysis was performed only on data from monitoring wells which consisted of less than half non-detects. This included total petroleum hydrocarbons – gasoline range, total petroleum hydrocarbons – diesel range, and total petroleum hydrocarbons – heavy oil range data for monitoring well FTP-1, as well as trichloroethylene data for the following monitoring wells: 815-2, MTS-1, MTS-2, MTS-4, TVR-1, TVR-2, TVR-3, TVR-5, TVR-6, and TVR-7.

Summary statistics (e.g. mean and standard deviation) were calculated using the Microsoft Excel® Descriptive Statistics tool. The Shapiro-Wilk test for normality, linear regression analysis, and Mann-Kendall test for trend were performed using Analyse-it for Microsoft Excel version 5.01. The Mann-Kendall test was performed only on non-parametric data.

All concentration measurements not known to be in error were considered valid. Suspect "outliers" were not removed from the data set and were included in the graphs. Non-detect data, which represent concentration measurements below the analytical reporting limits, were evaluated at the reporting limit value.

A. SUMMARY STATISTICS

Summary statistics were calculated using Microsoft Excel®'s Descriptive Statistics tool and are shown in Table 6.

B. SHAPIRO-WILK TEST FOR NORMALITY

Prior to analyzing data for trends, the data were tested for normal distribution. A significance level, or alpha level, of 0.05 was used when determining whether current data from monitoring wells was normally distributed. P values, generated using the Shapiro-Wilk test for normality, were then compared to the alpha level. The alpha level is the "cutoff" point for the test statistic in making a decision whether the data was normally distributed or not. P values show the strength of the test in determining whether the data was normally distributed or not. P values range from 0 to 1; the closer a P value is to 1, the closer the dataset is to a normally distribution. P values equal to or below 0.05 (alpha level) were not considered normally distributed.

Datasets that were not considered normally distributed were then transformed by taking the natural logarithm of the original values. The Shapiro-Wilk test for normality was run on the transformed data with the same criteria as the datasets above. Histograms are presented following this discussion.

C. LINEAR REGRESSION AND MANN-KENDALL TREND ANALYSES

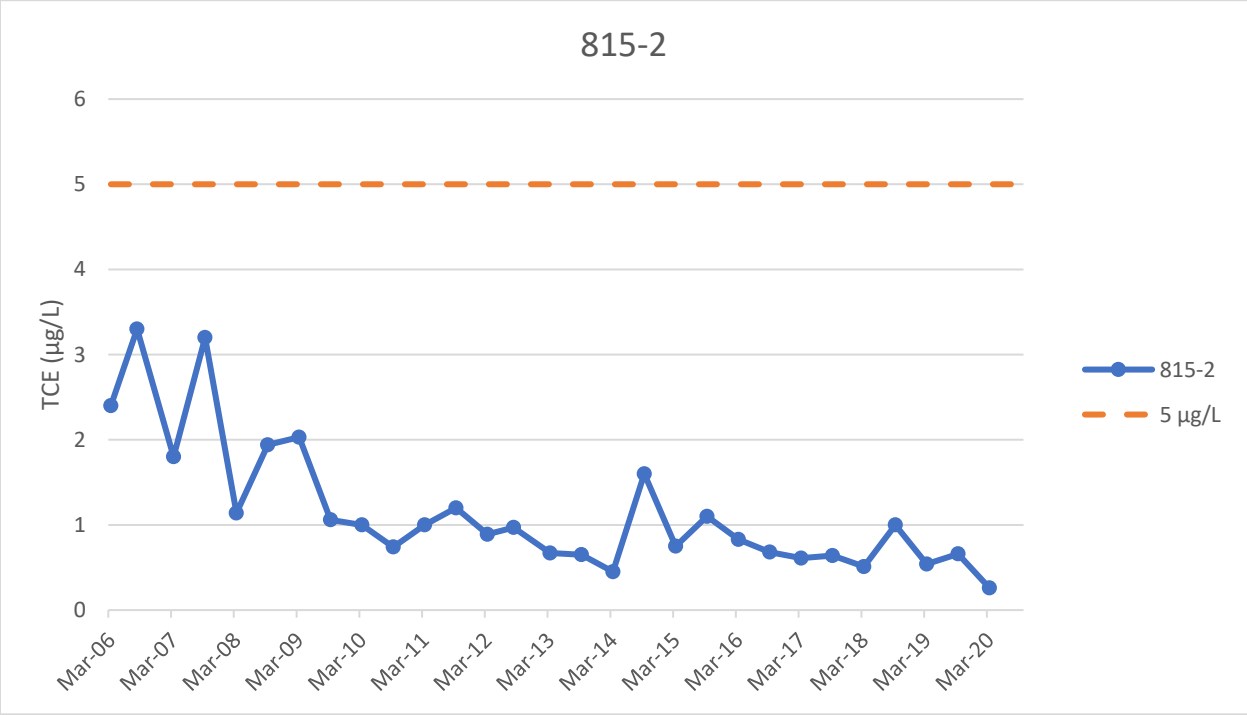
Linear regression trend analyses were conducted on all concentration data that was found to be normally or log-normally distributed. The alpha level for the linear regression analysis was 0.05. P values generated by the analysis were then compared to the alpha level. P values less than the alpha value suggested a trend in the data. Linear regression graphs are presented following this discussion.

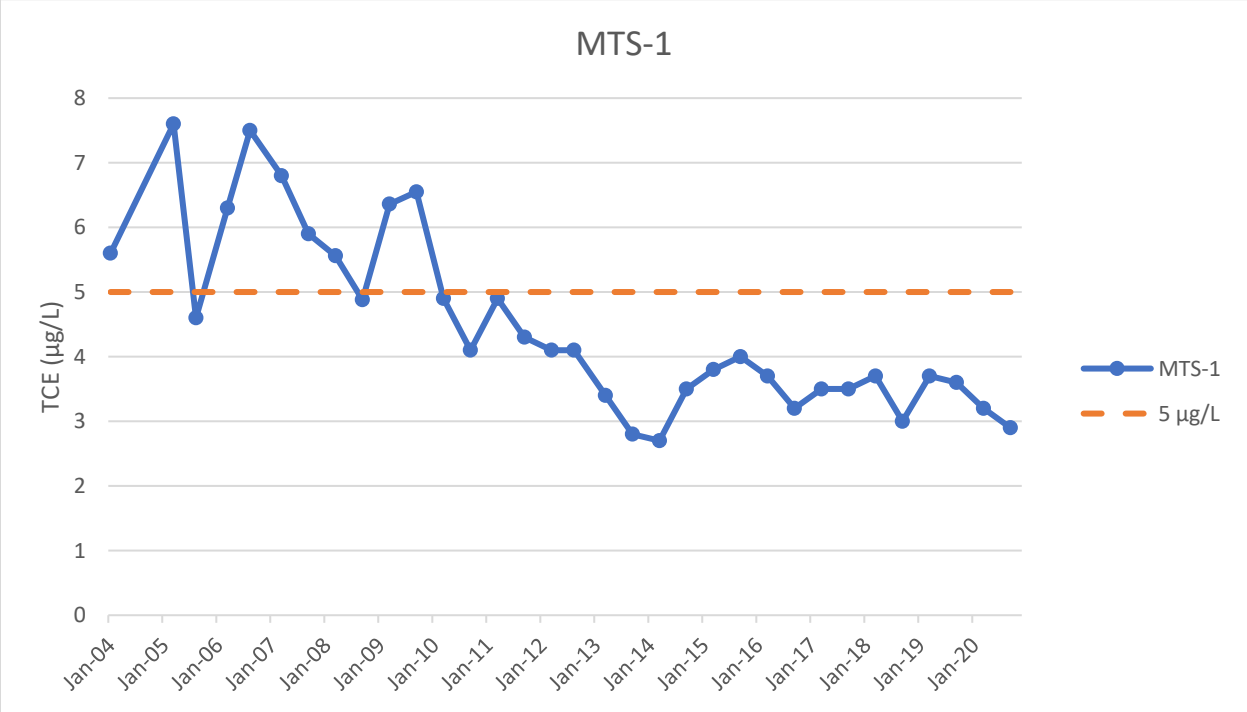
The Mann-Kendall test for trend was performed on data that was not normally or log-normally distributed (non-parametric data). No assumptions need to be made about the distribution of the data in order to perform the Mann-Kendall test (Helsel and Hirsch 2002). The alpha level was kept at 0.05, although the Mann-Kendall test computes a P value for a two-tailed prediction interval, and as such the null hypothesis was rejected for P values smaller than 0.025 or larger than 0.975. Mann-Kendall scatter plots are presented following this discussion.

D. TOTAL TOXIC EQUIVALENT CONCENTRATIONS OF CPAHS

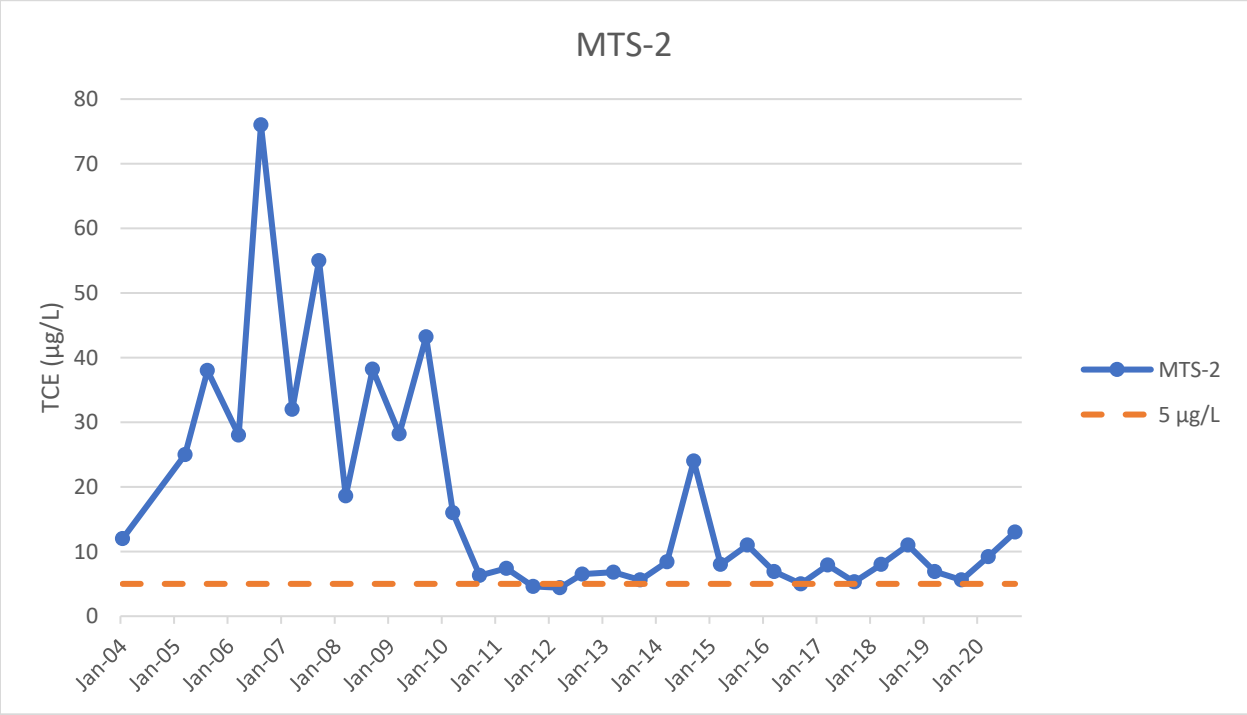
During YTC's 5-year review conducted by the U.S. Army Corps of Engineers in 2011, it was noted that the updated 2007 groundwater monitoring plan stated that total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) for the FTP site would be evaluated using the total toxic equivalent concentration (TEC) of the benz(a)pyrene method outlined in Washington Administrative Code (WAC) 173-340-708(8)(e) (U.S. Army Corps of Engineers 2012). The cPAHs required for this analyses include benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluroanthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The concentration of each of these cPAHs is multiplied by its corresponding toxicity equivalency factor (TEF) listed in Table 708-2 (WAC 173-340-900) to obtain the TEF for that cPAH. The TEFs from each cPAH are then added together to obtain the total TEF for that sample. If the total TEC is equal to or greater than 0.1, then the cPAHs are above the MTCA Method A cleanup level of 0.1 µg/L for cPAHs. During both the spring and fall 2019 sampling events, none of the specified cPAHs were detected in the sample from well FTP-1 and a TEF was not calculated (Table 4).

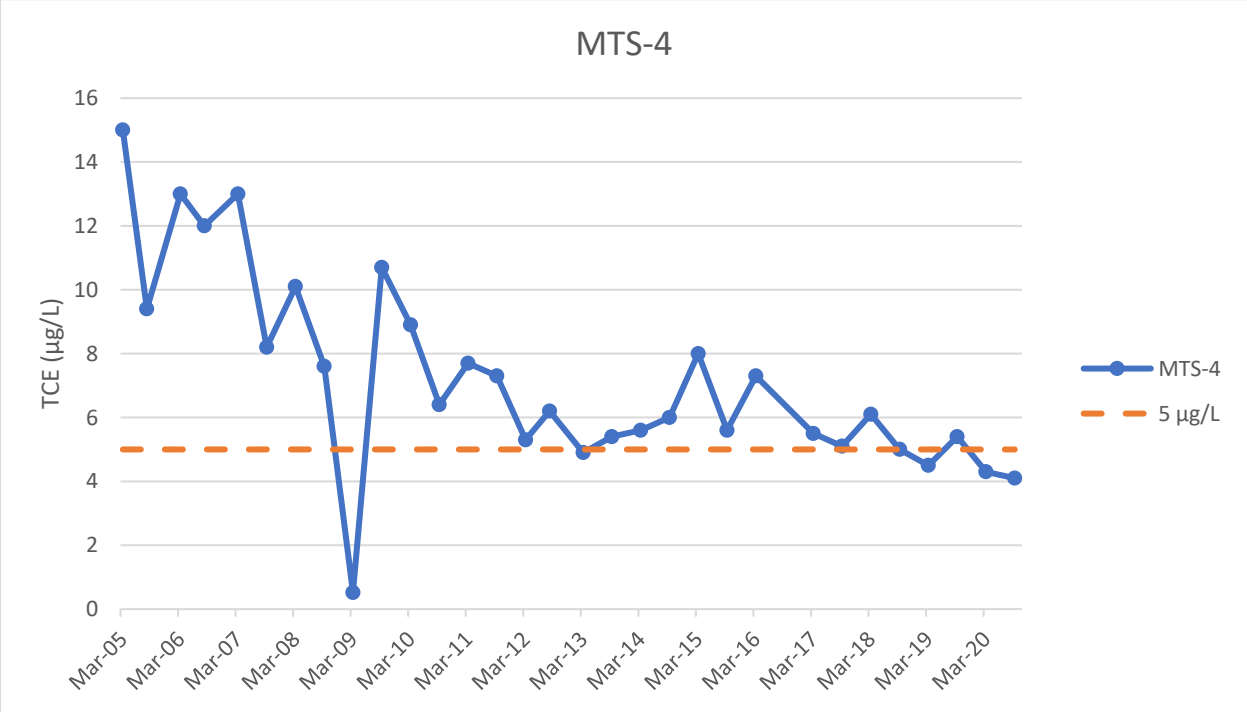
TVR/Old MATES - TCE Concentration Graphs



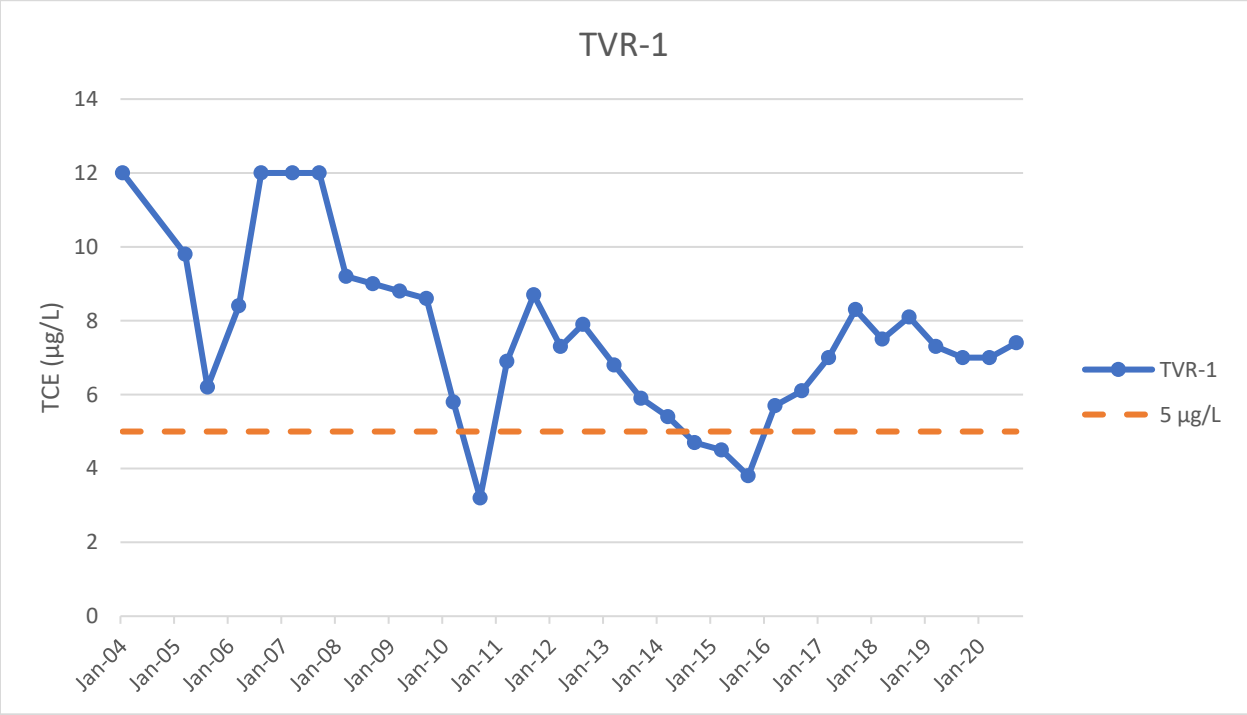


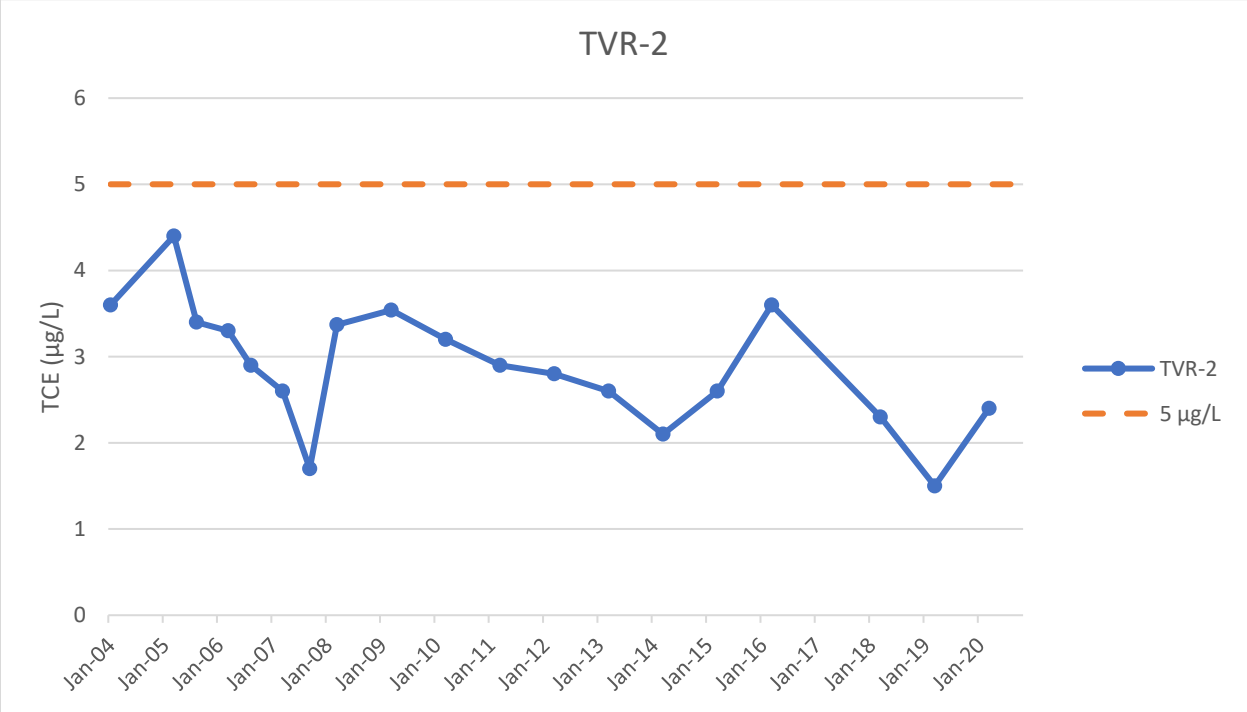
TVR/Old MATES - TCE Concentration Graphs



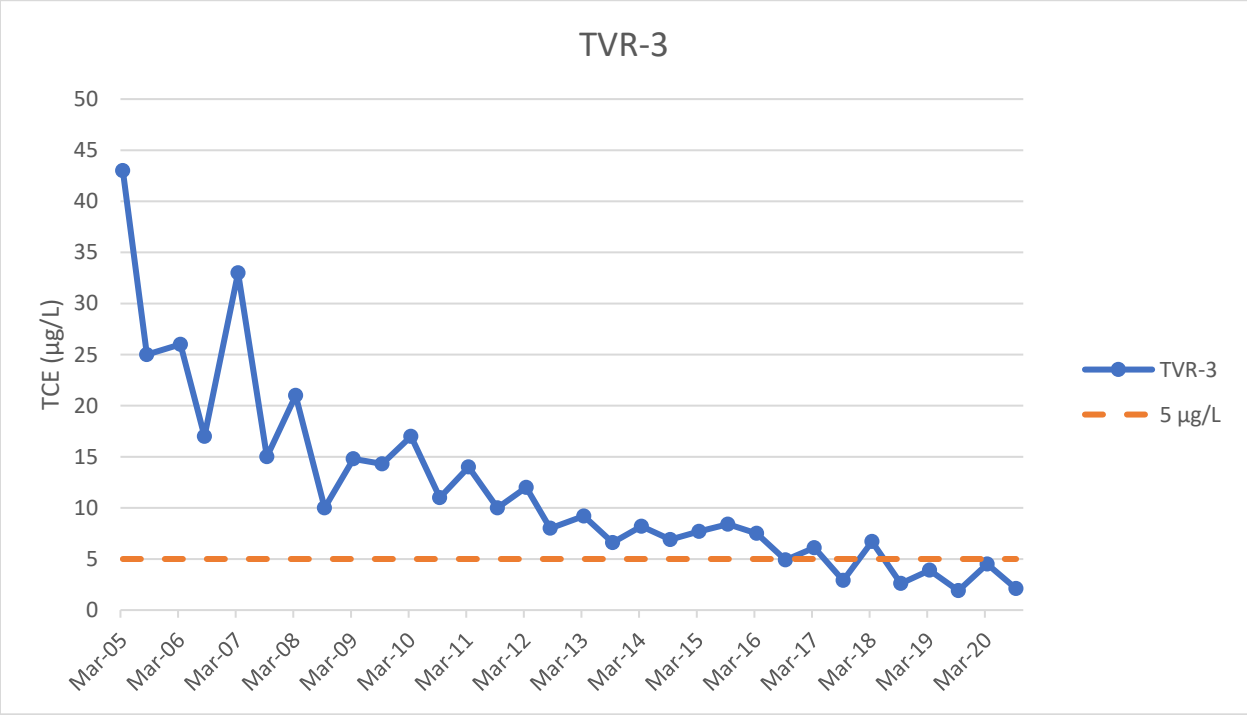


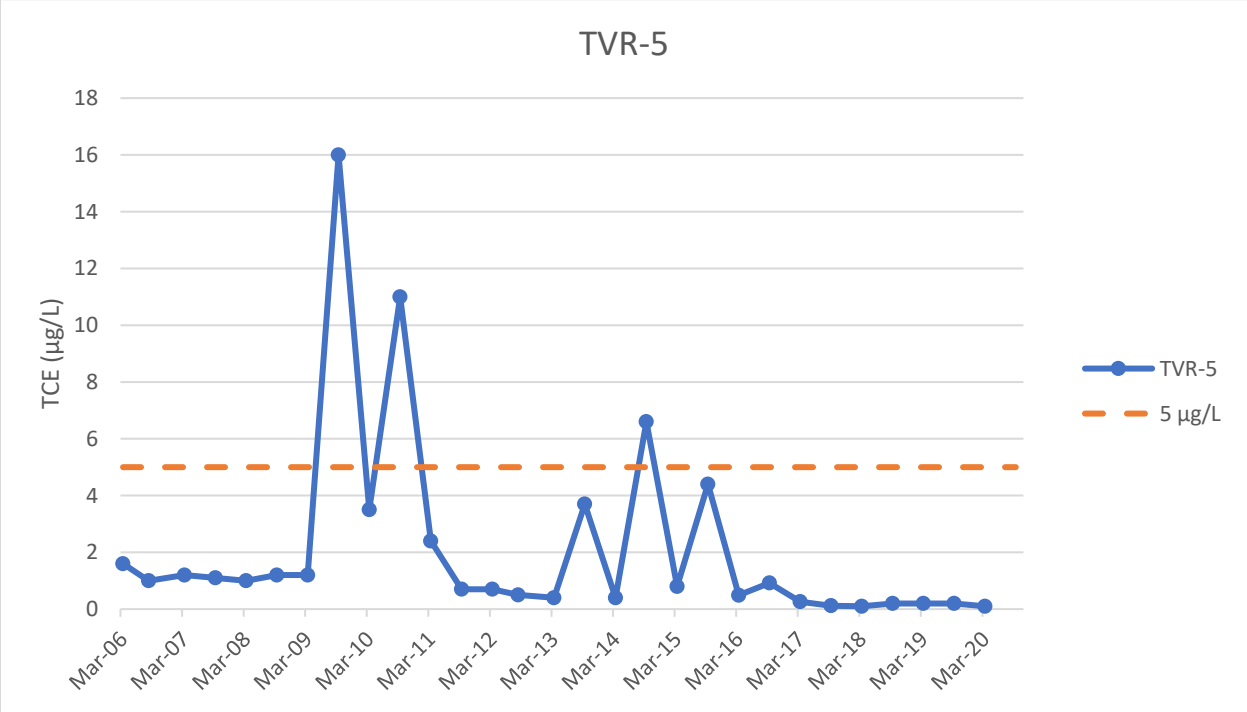
TVR/Old MATES - TCE Concentration Graphs



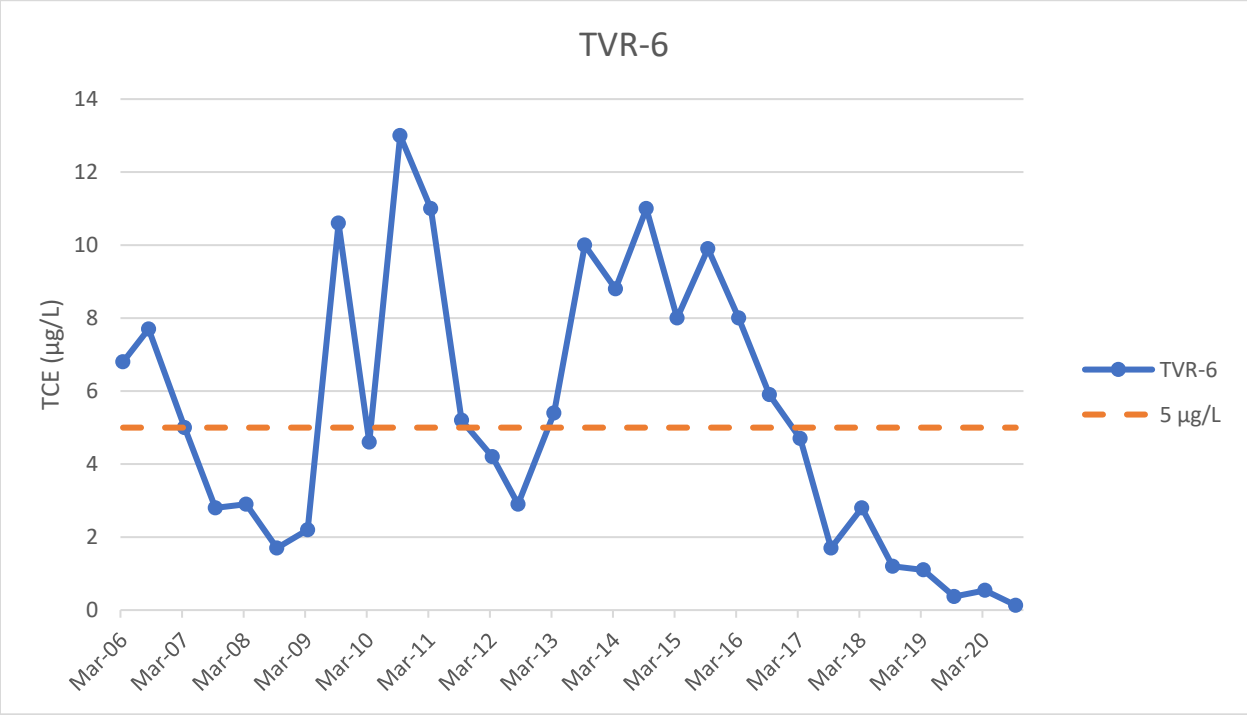


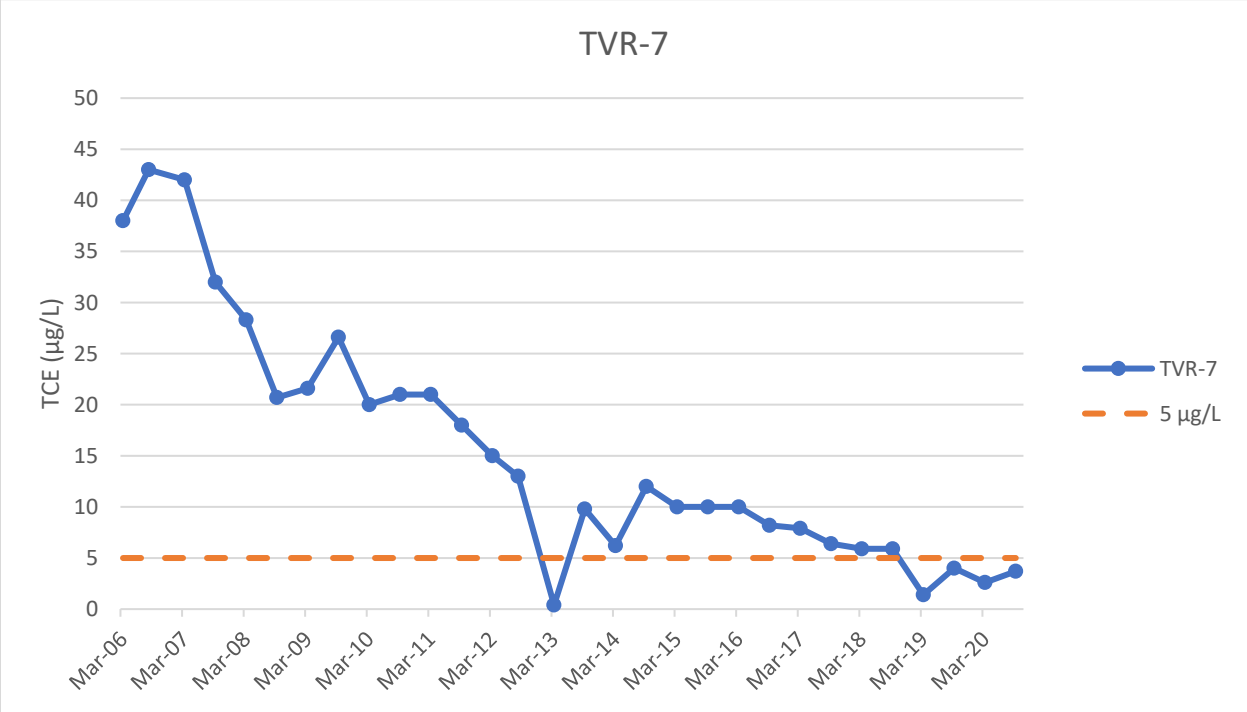
TVR/Old MATES - TCE Concentration Graphs



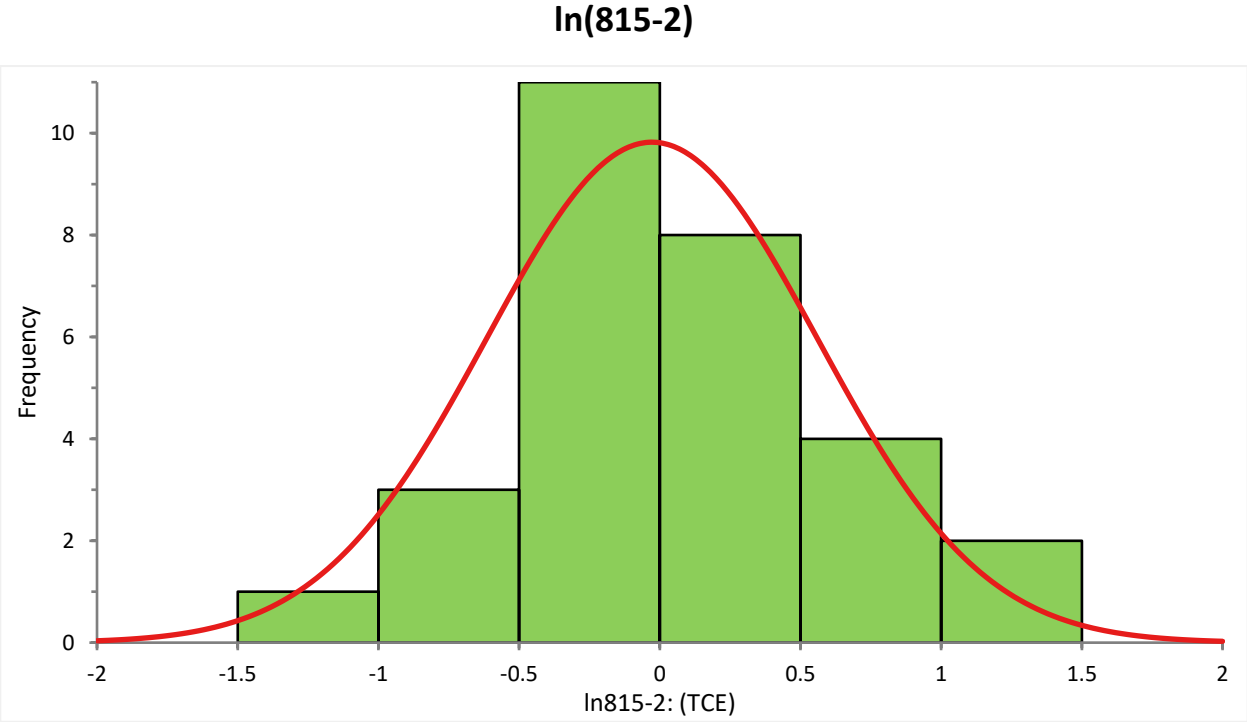


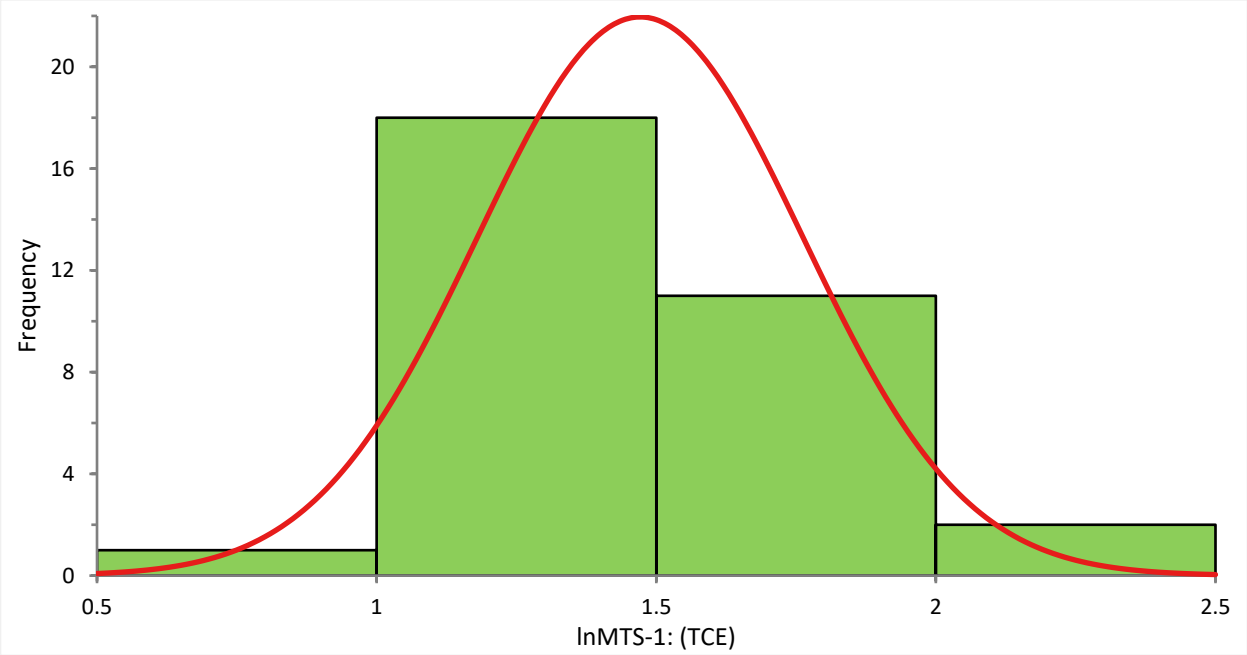
TVR/Old MATES - TCE Concentration Graphs





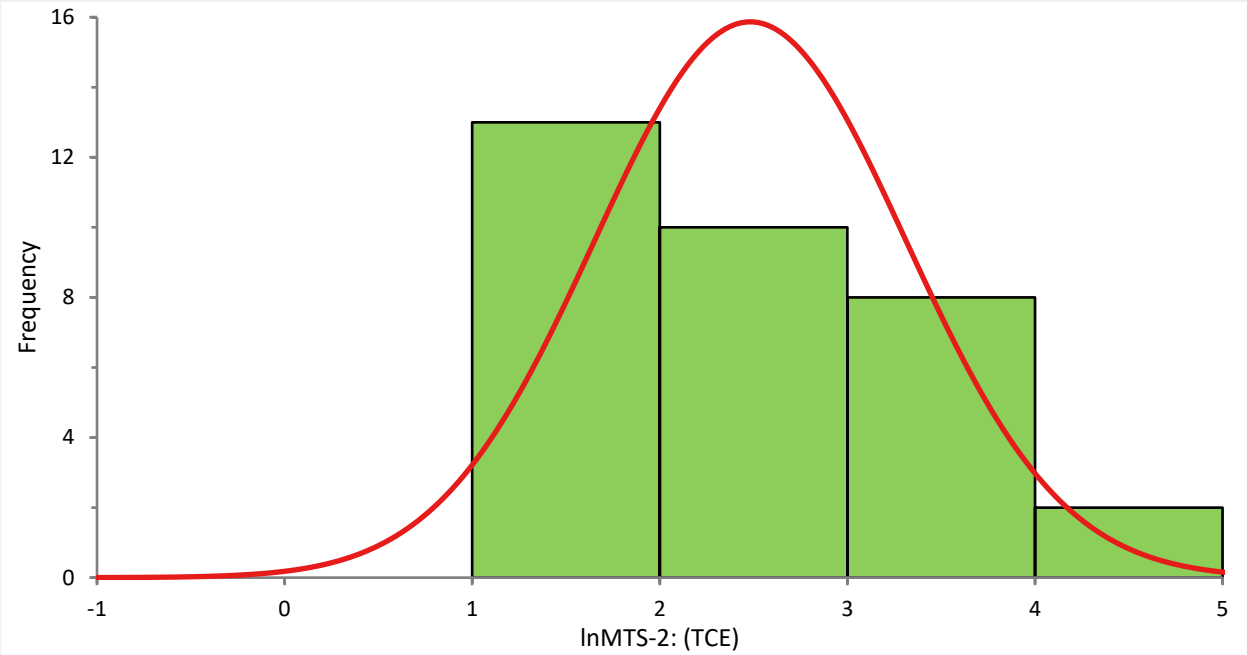
TVR/Old MATES – TCE Histograms



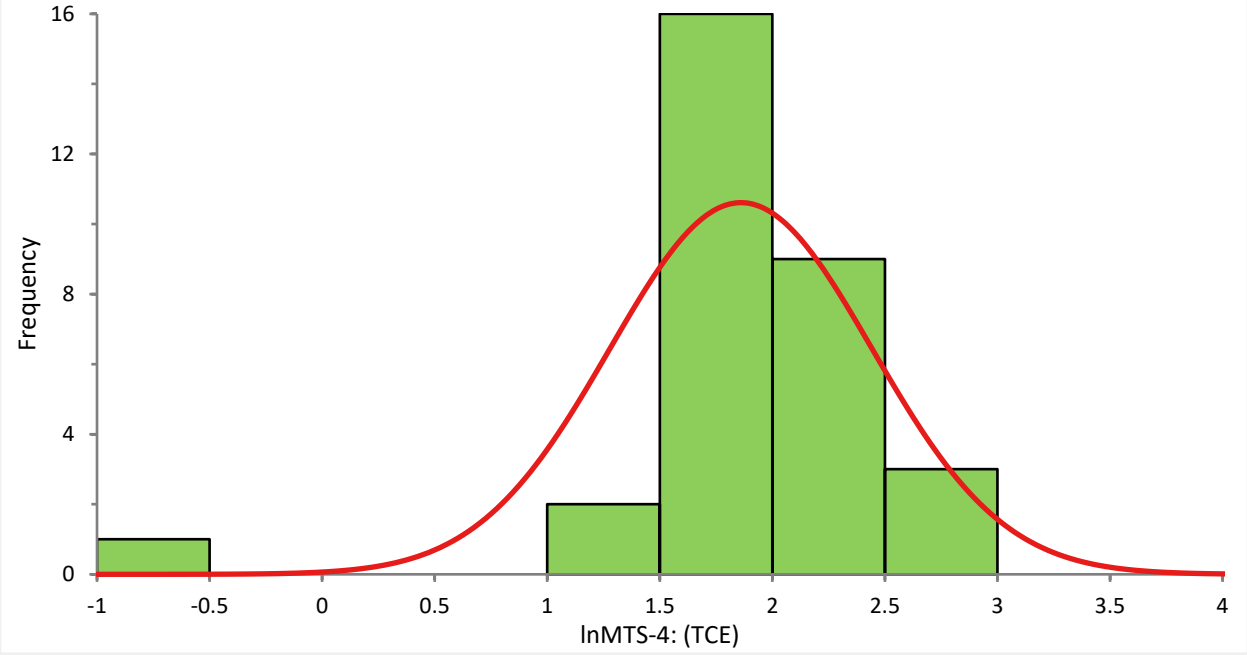


TVR/Old MATES – TCE Histograms

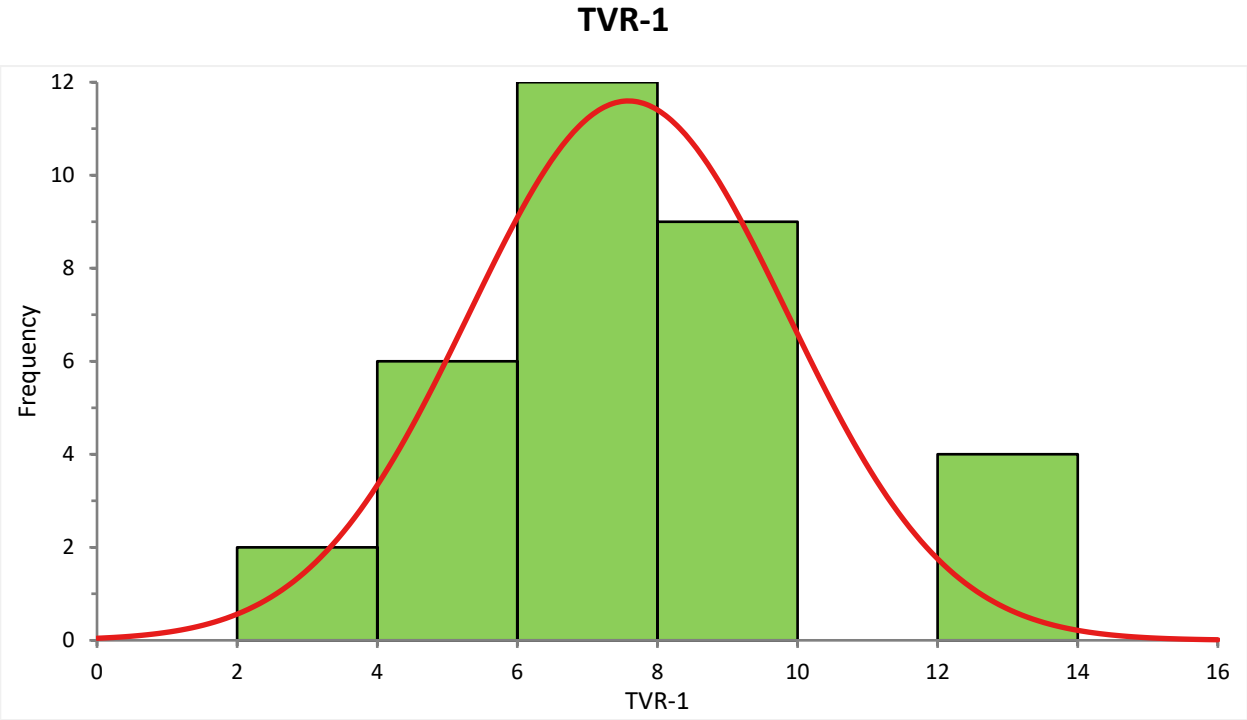
ln(MTS-2)

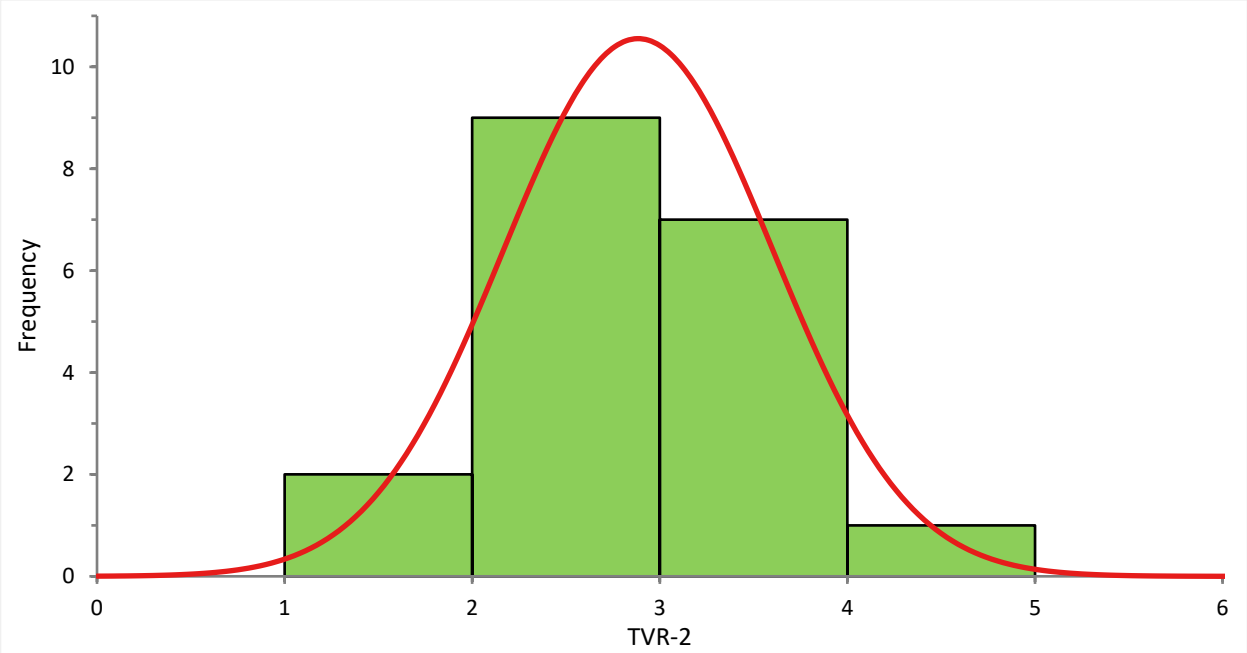


ln(MTS-4)



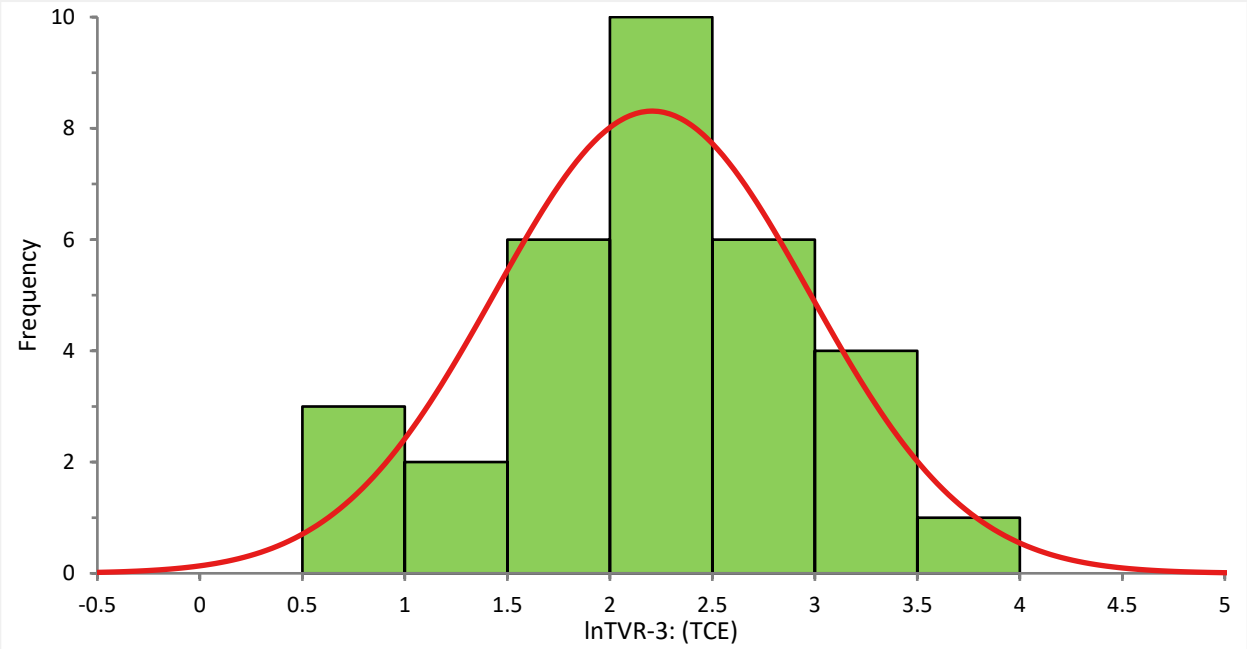
TVR/Old MATES – TCE Histograms



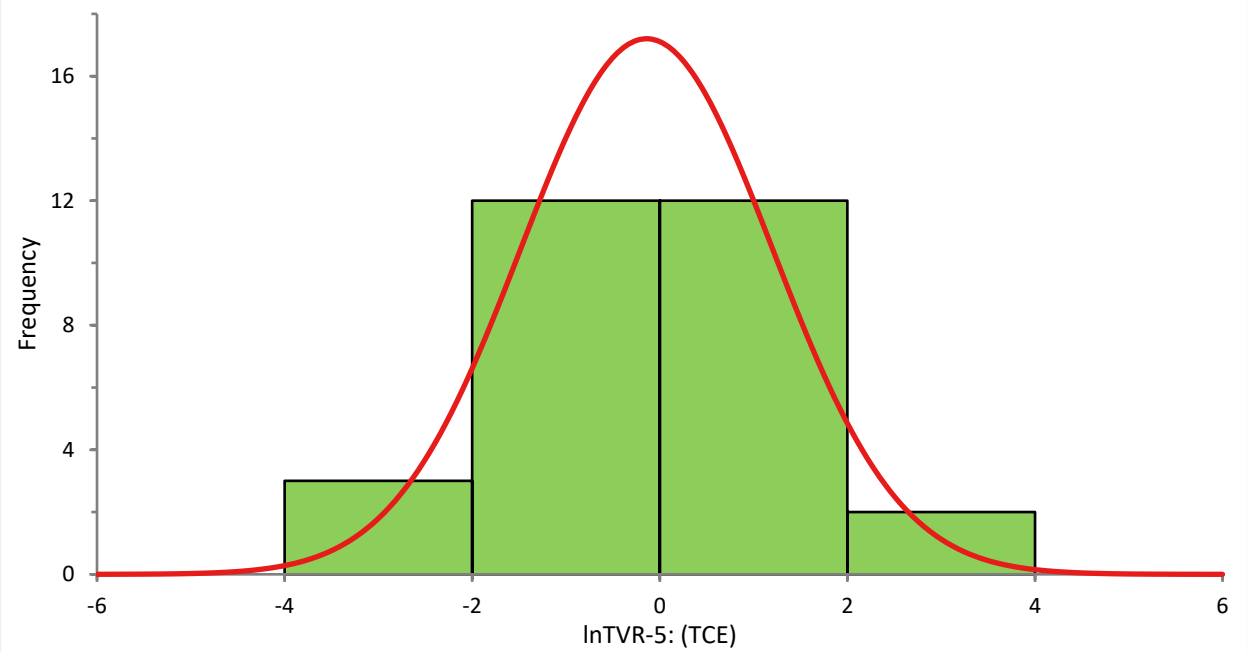


TVR/Old MATES – TCE Histograms

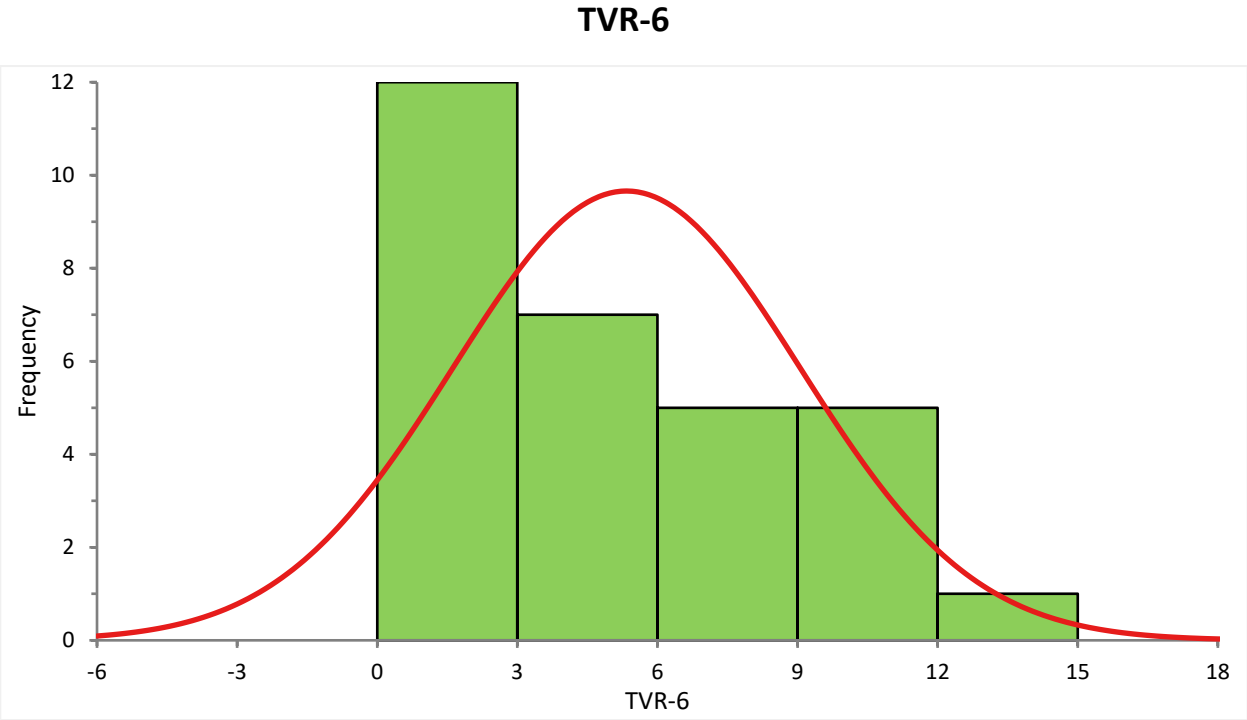
ln(TVR-3)

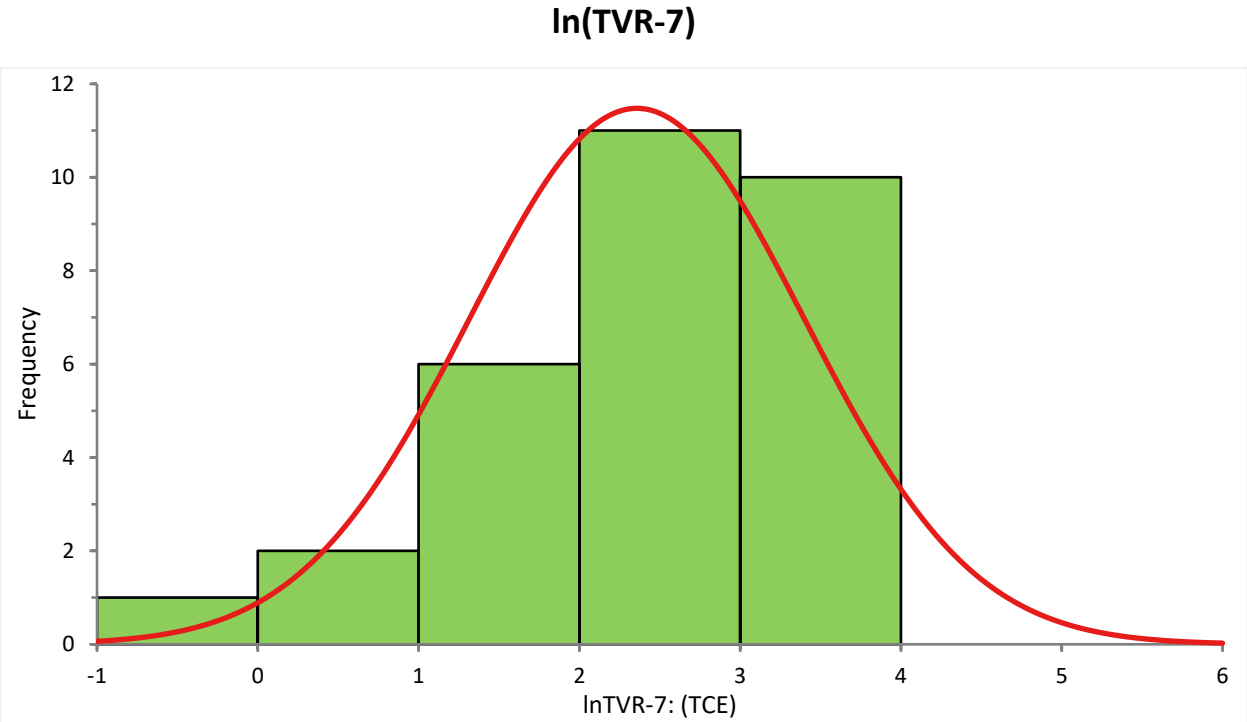


ln(TVR-5)



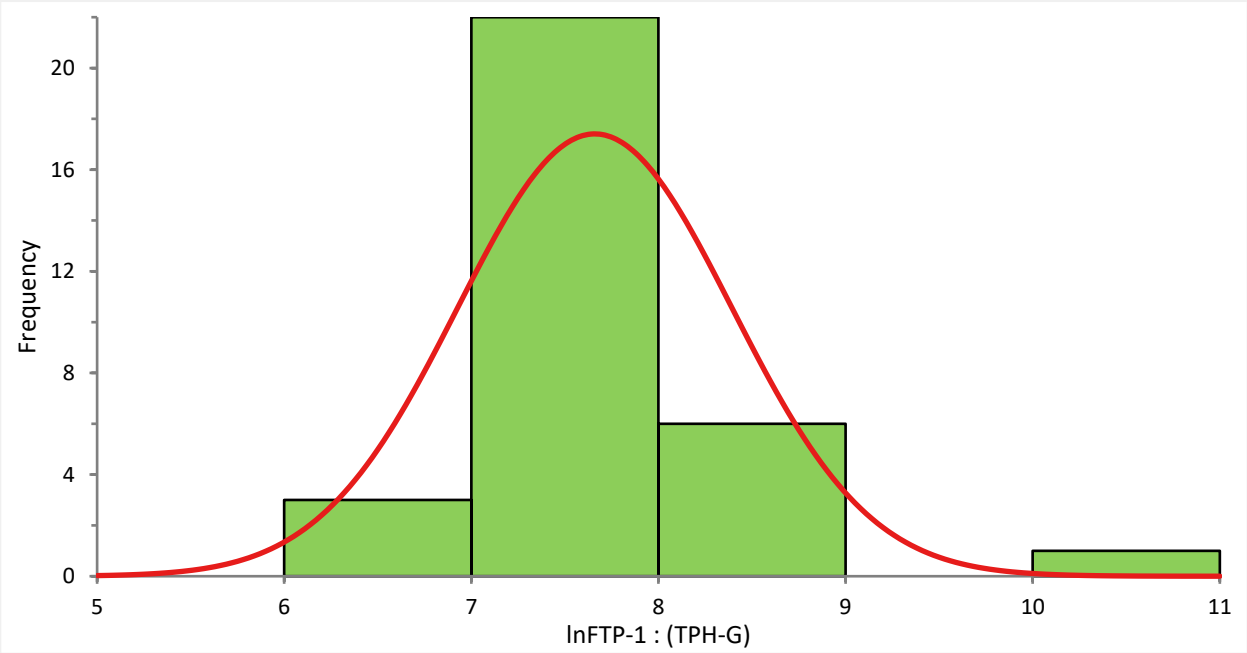
TVR/Old MATES – TCE Histograms



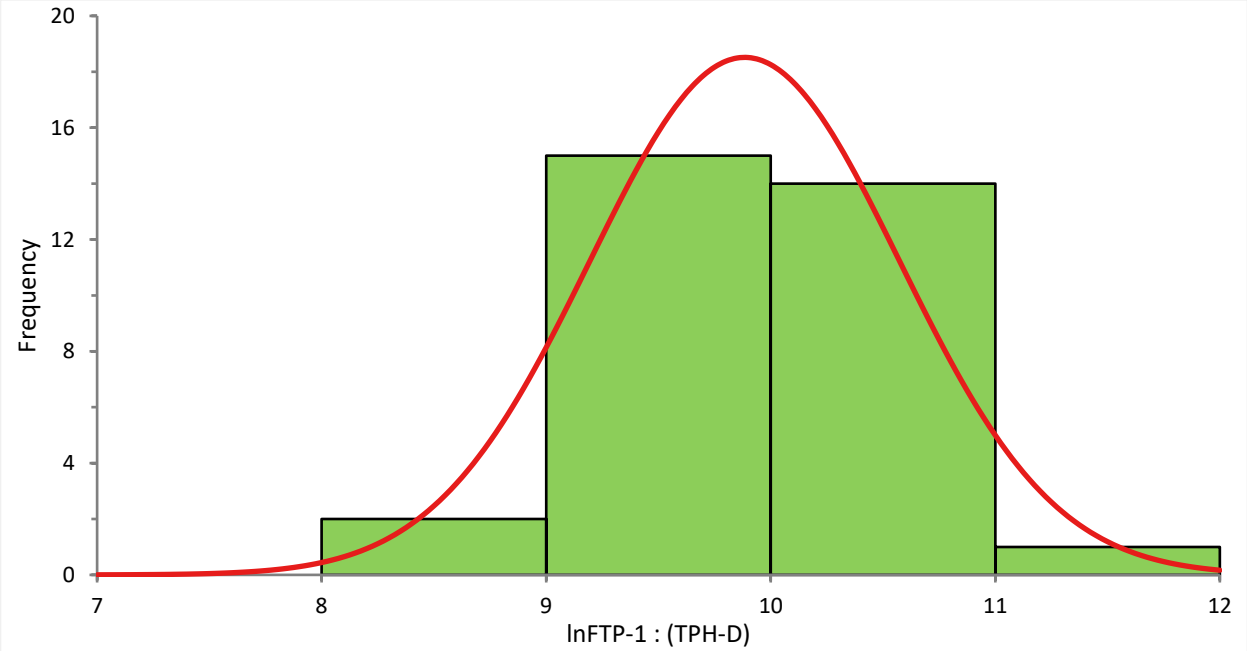


Fire Training Pit – TPH Histograms

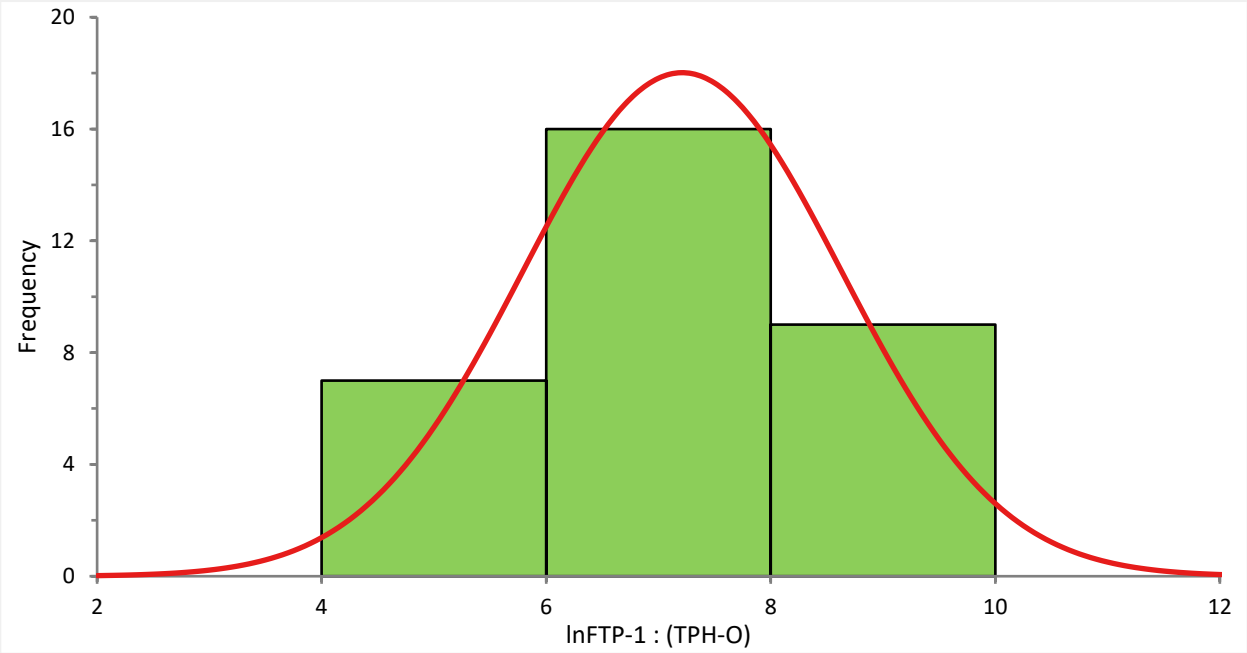
ln(FTP-1) – TPH-G



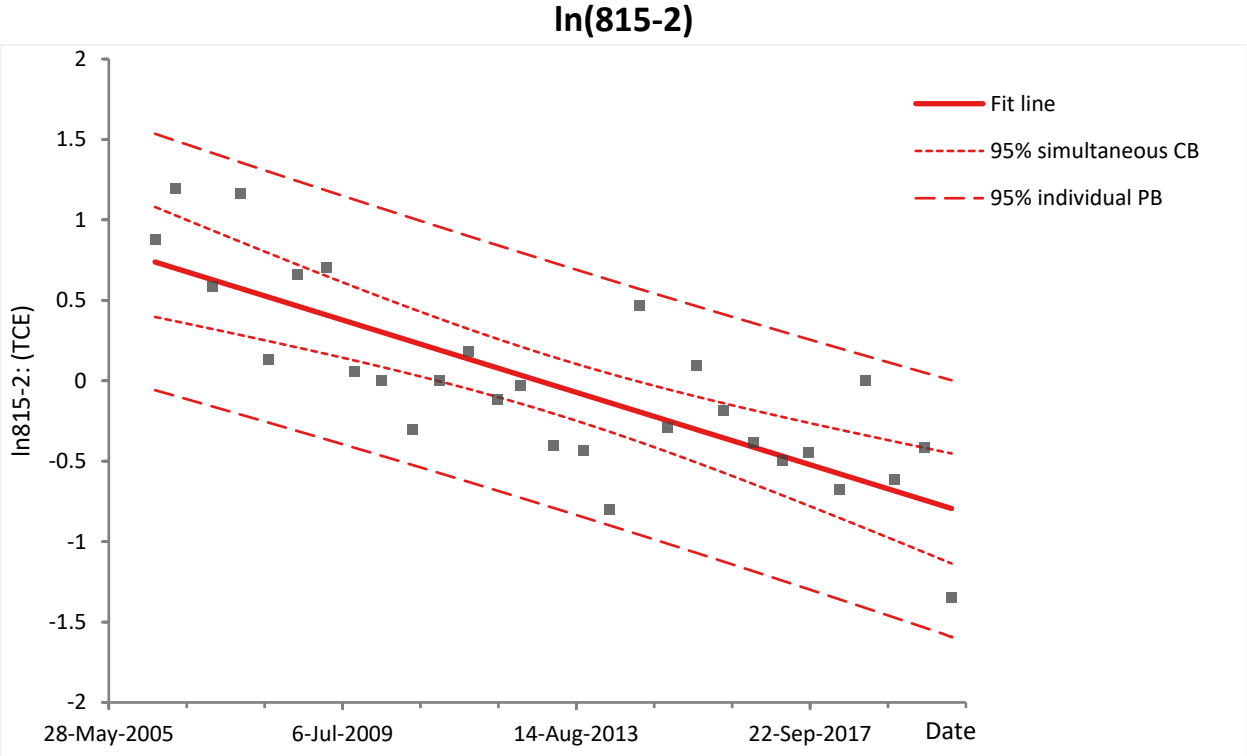
ln(FTP-1) – TPH-D

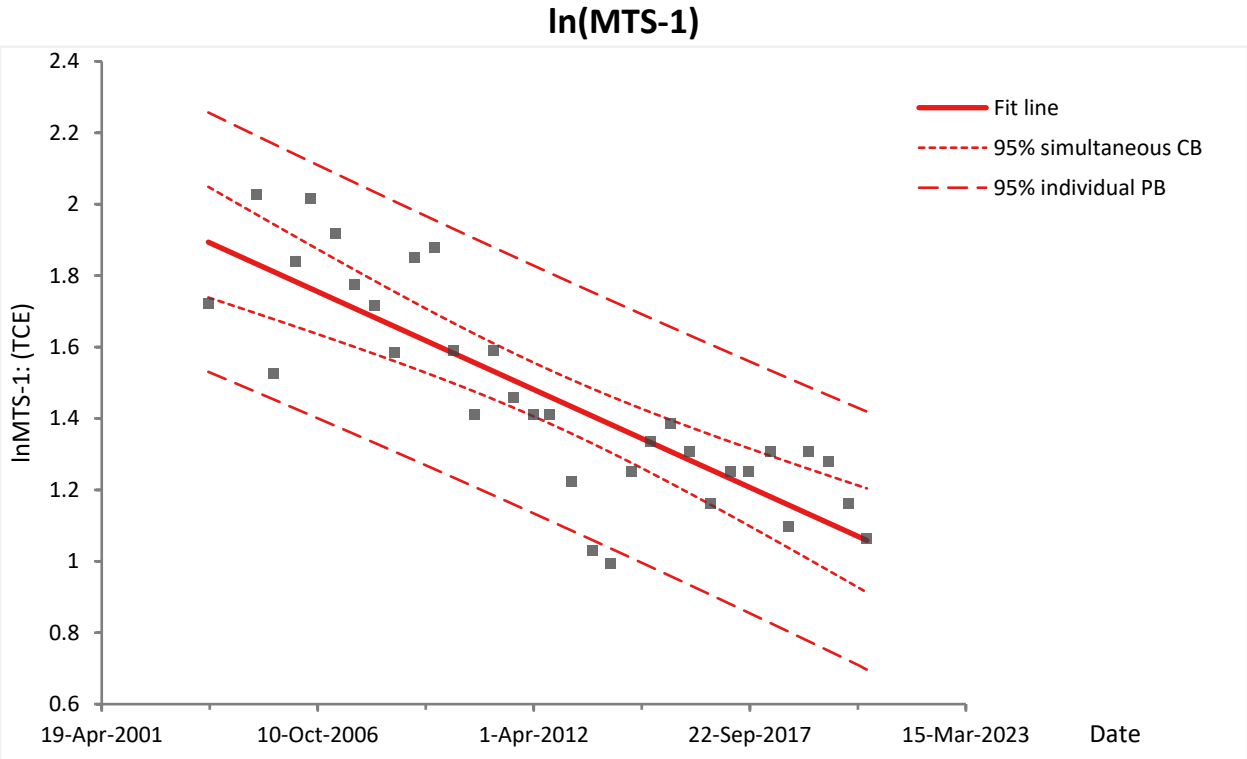


Fire Training Pit – TPH Histograms



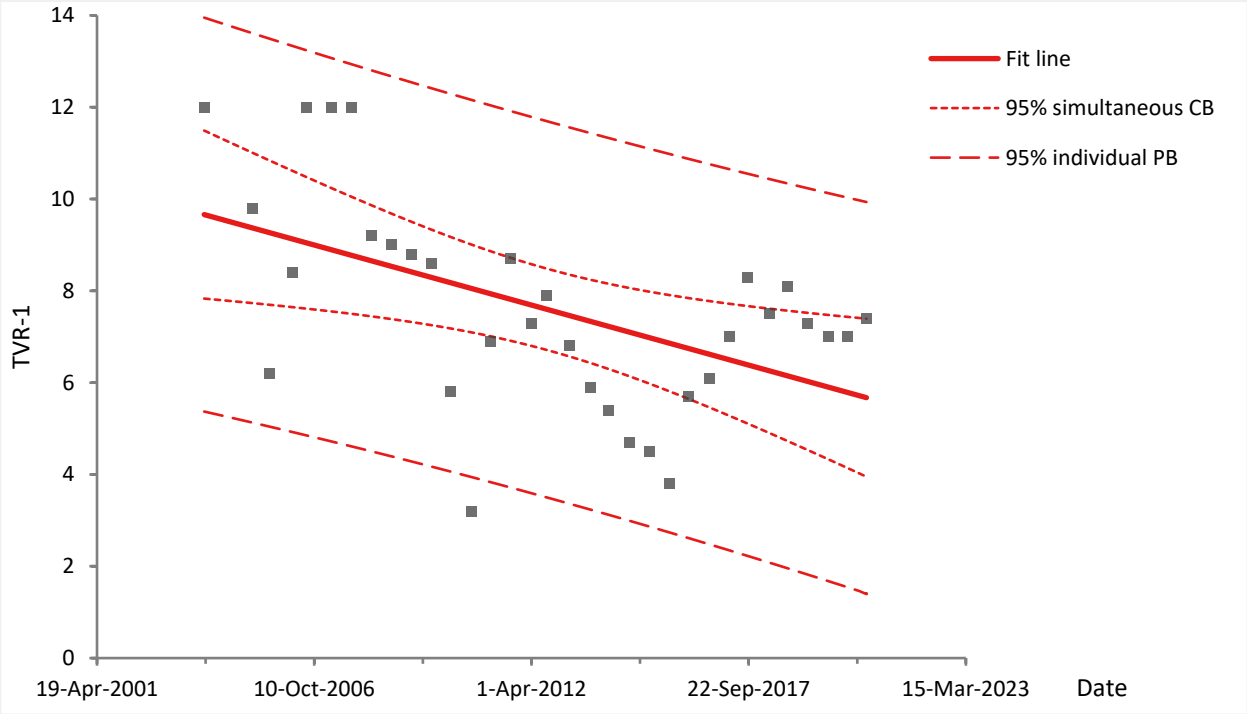
TVR/Old MATES – TCE Linear Regressions



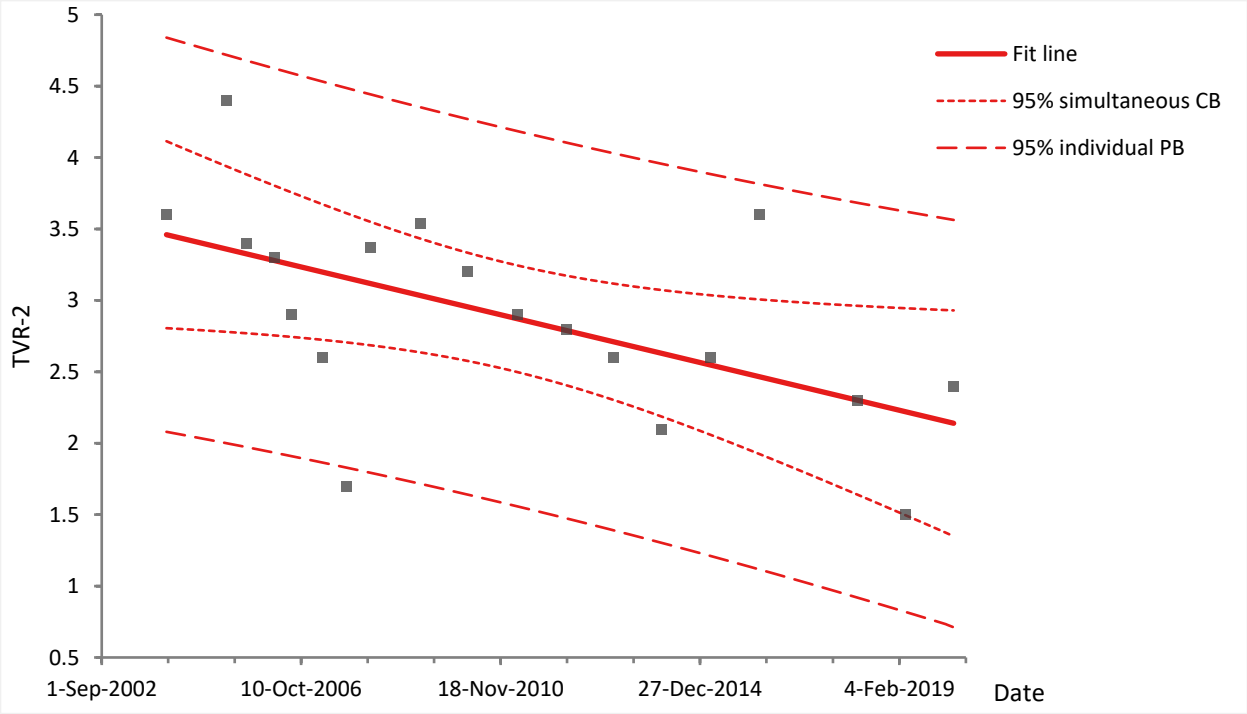


TVR/Old MATES – TCE Linear Regressions

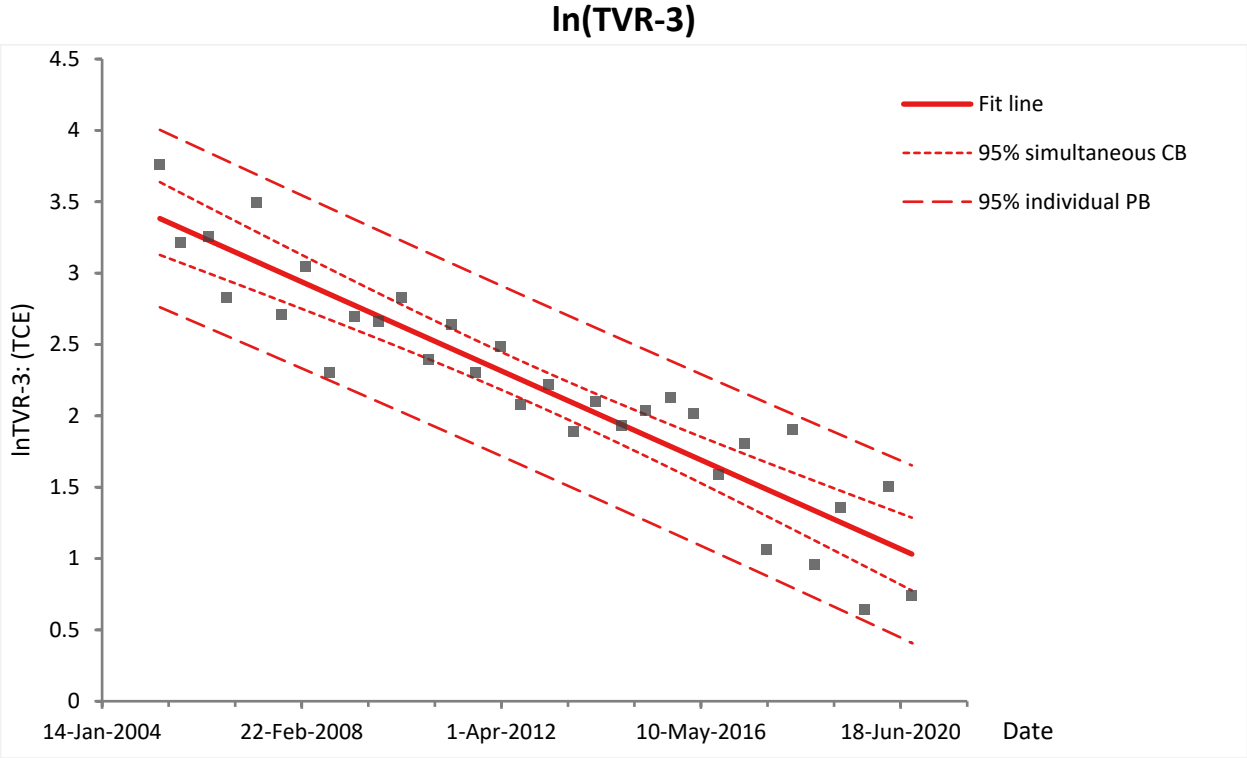
TVR-1

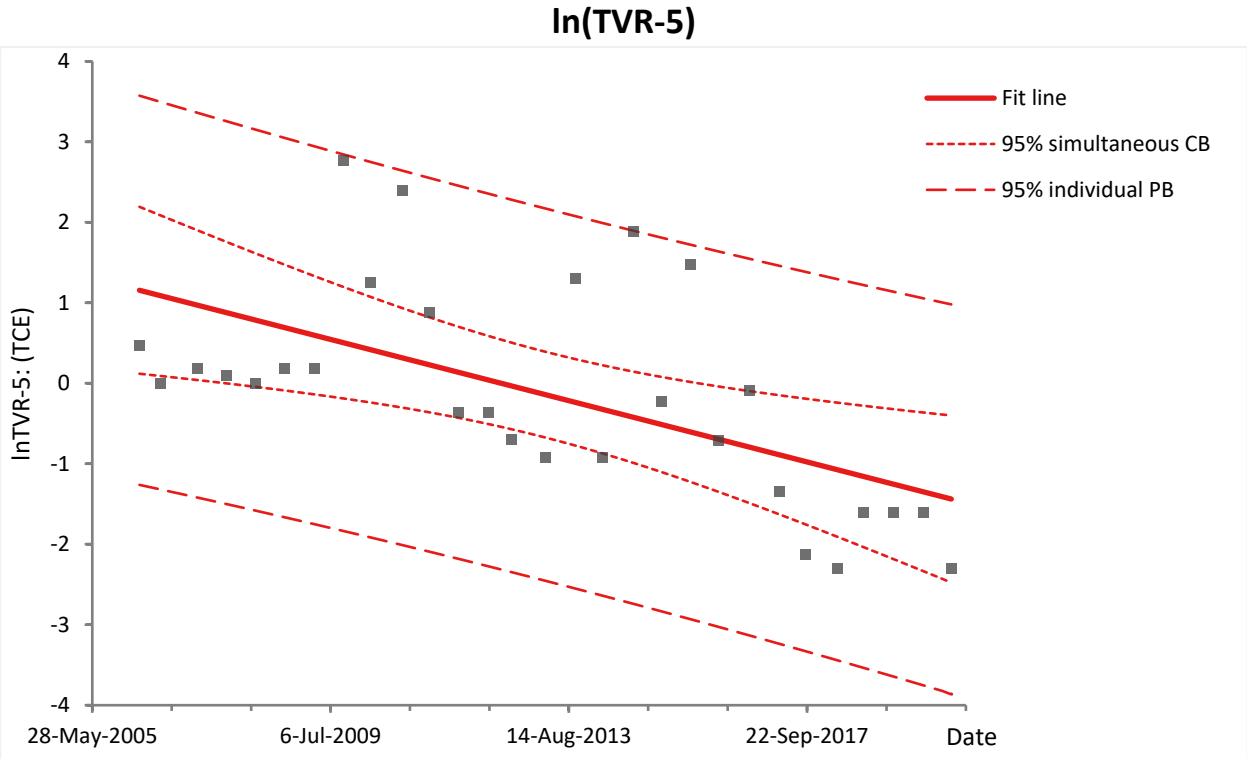


TVR-2

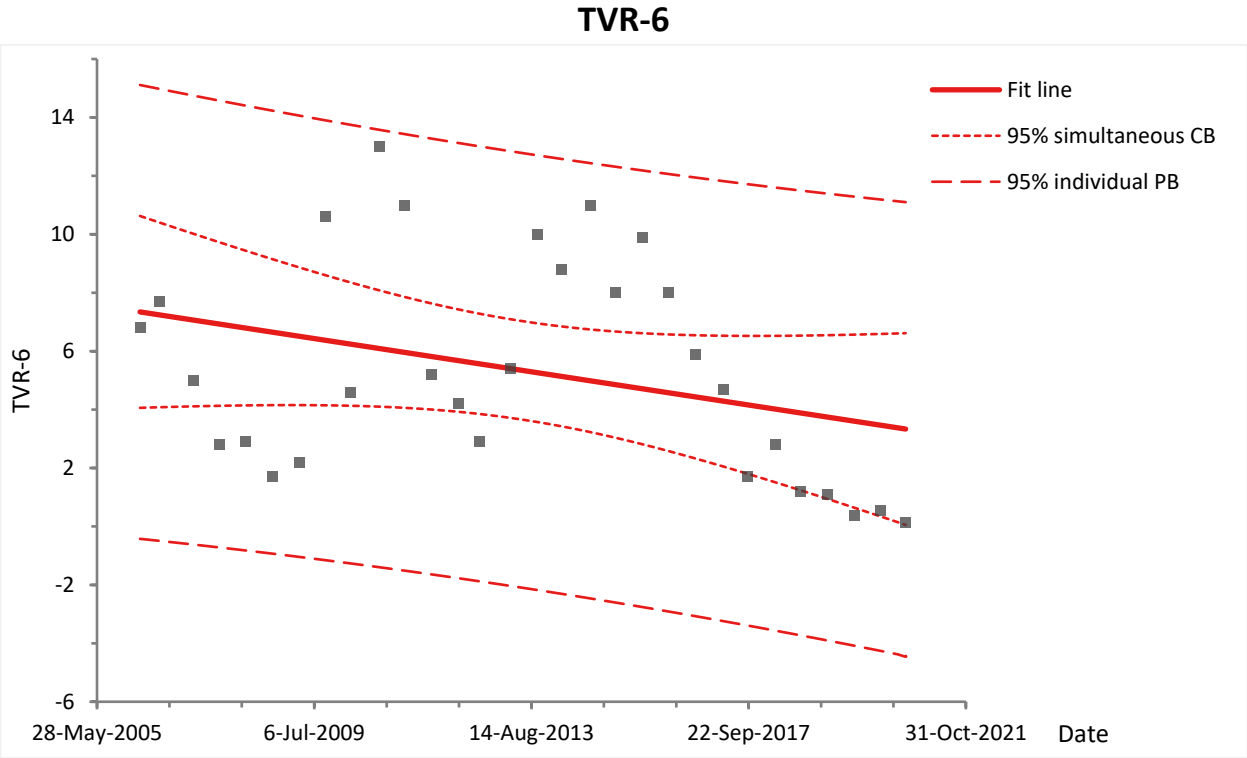


TVR/Old MATES – TCE Linear Regressions

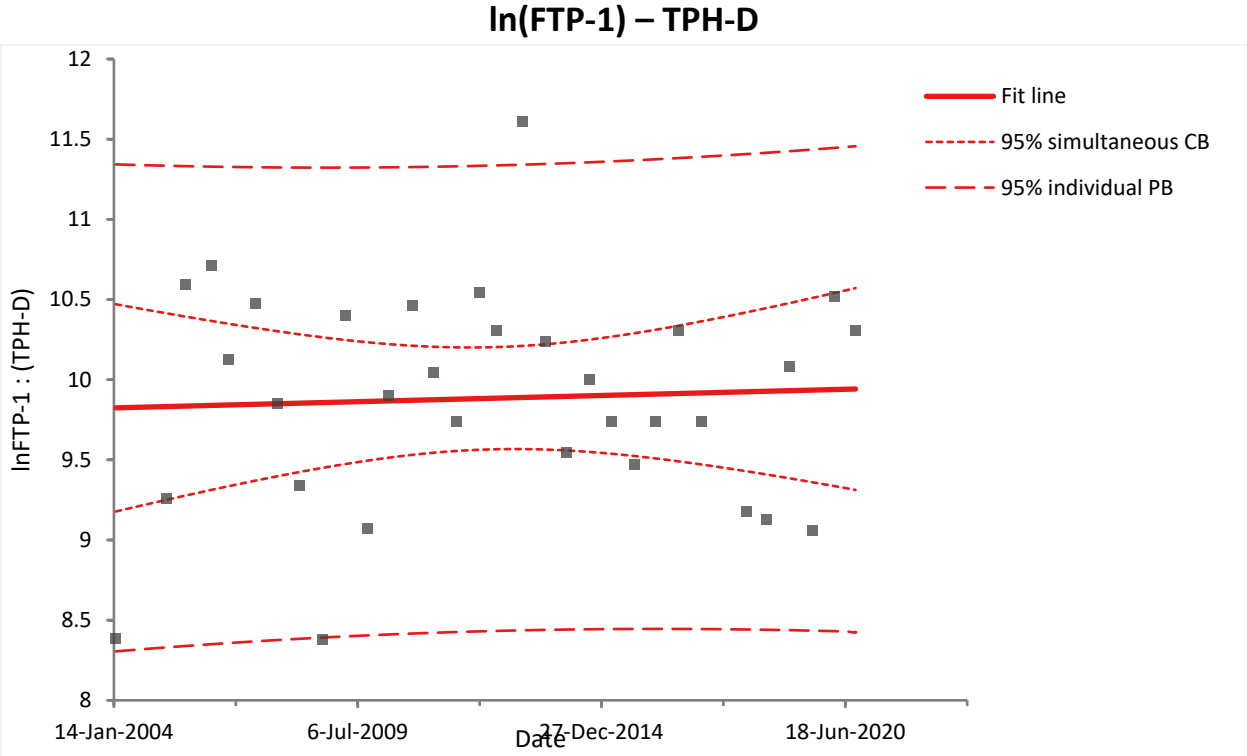


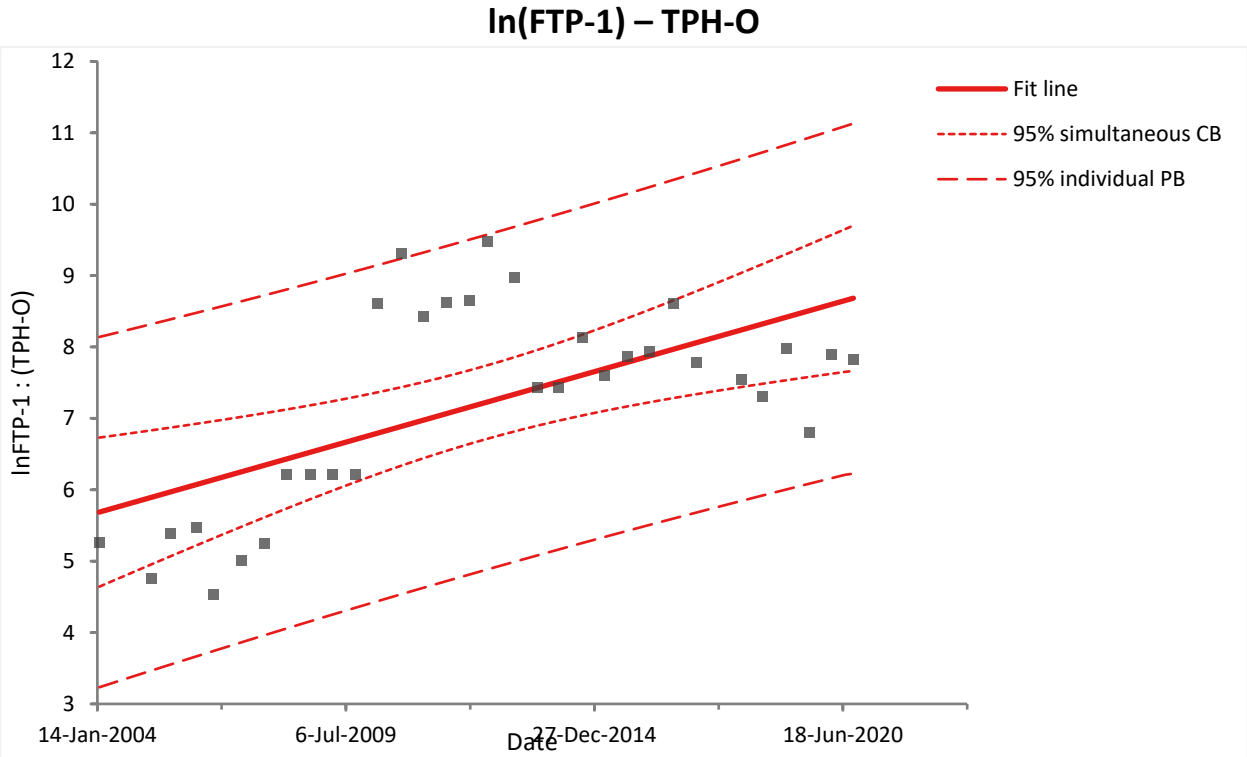


TVR/Old MATES – TCE Linear Regressions

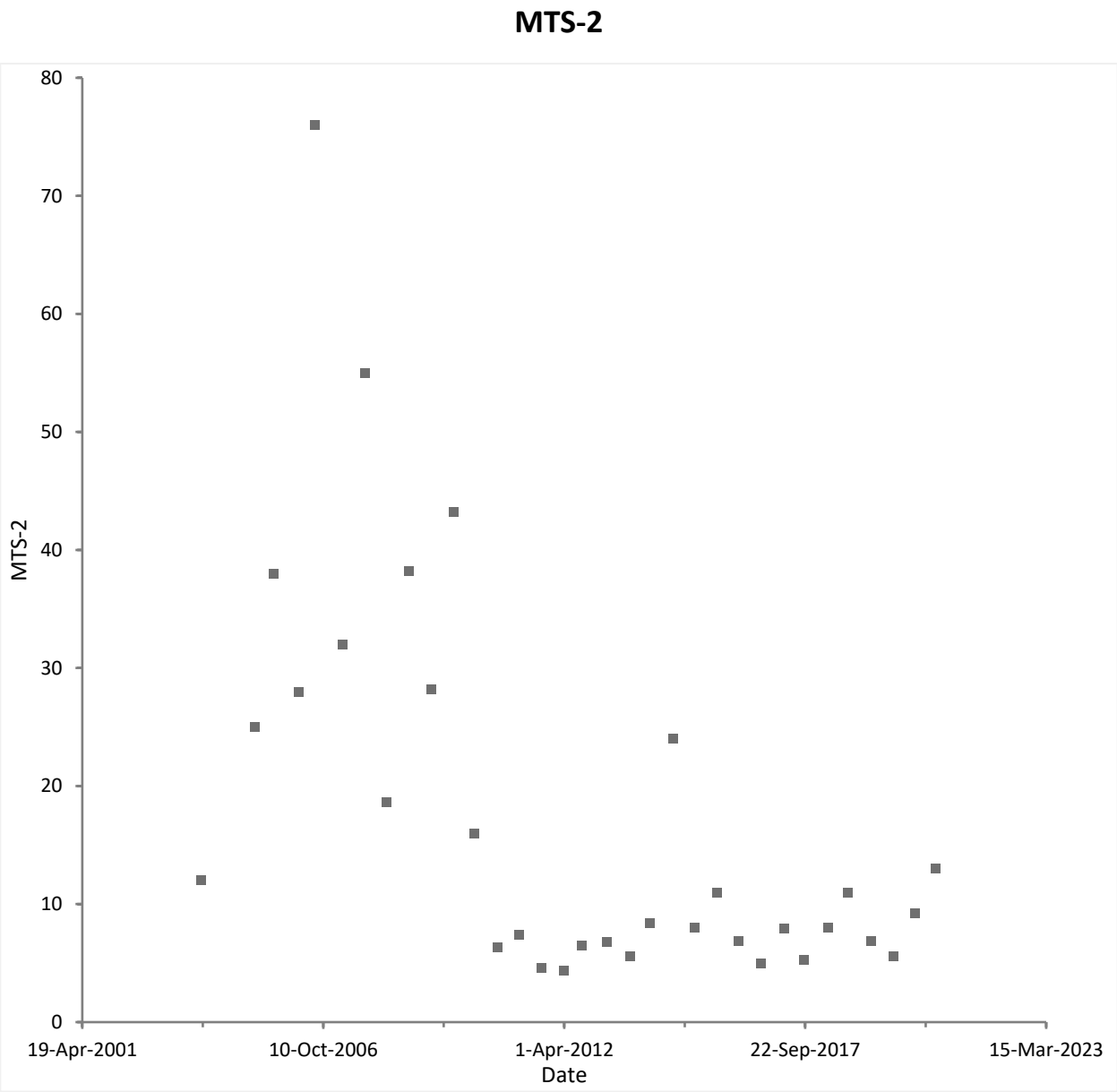


Fire Training Pit – TPH Linear Regressions

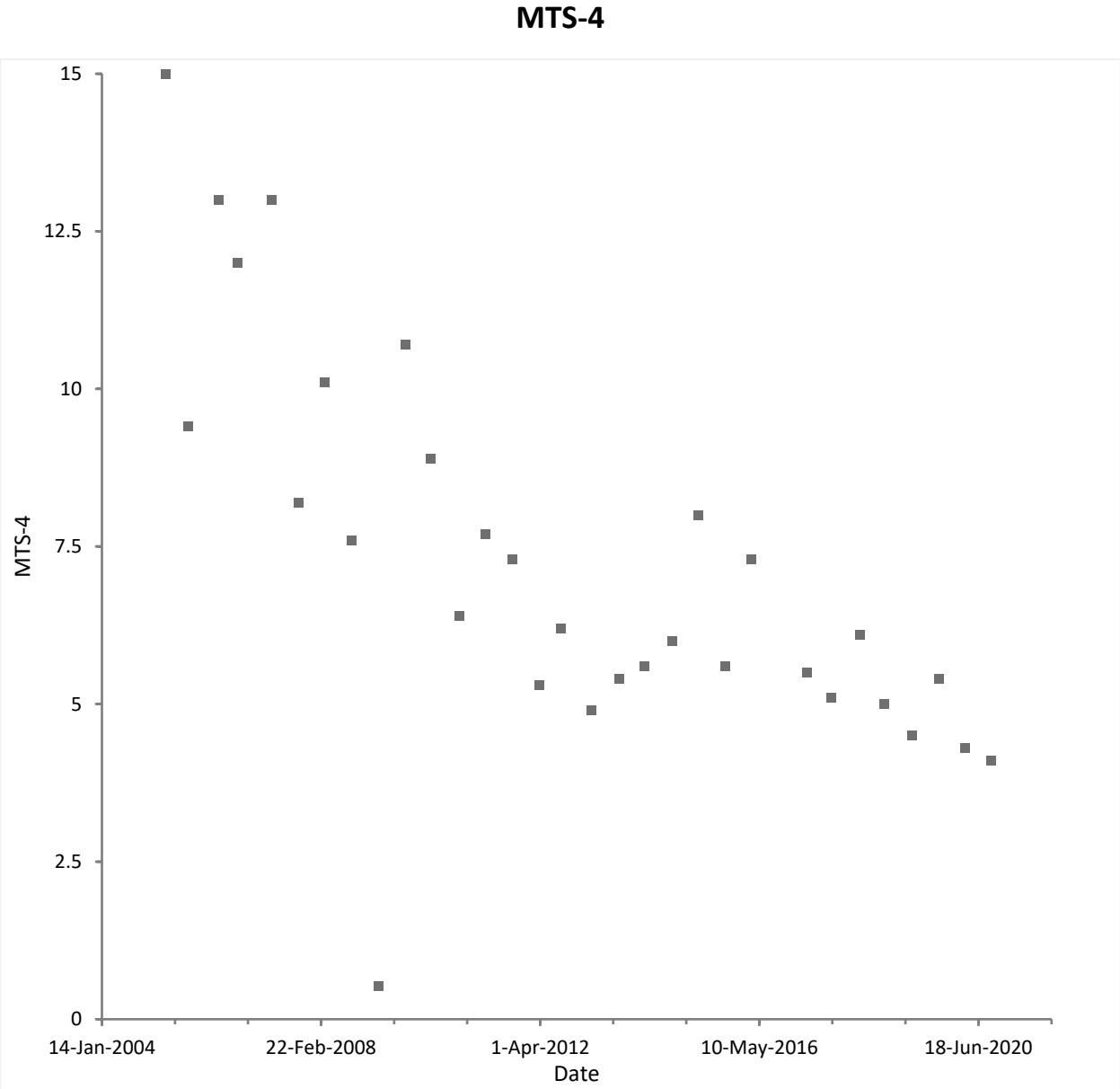




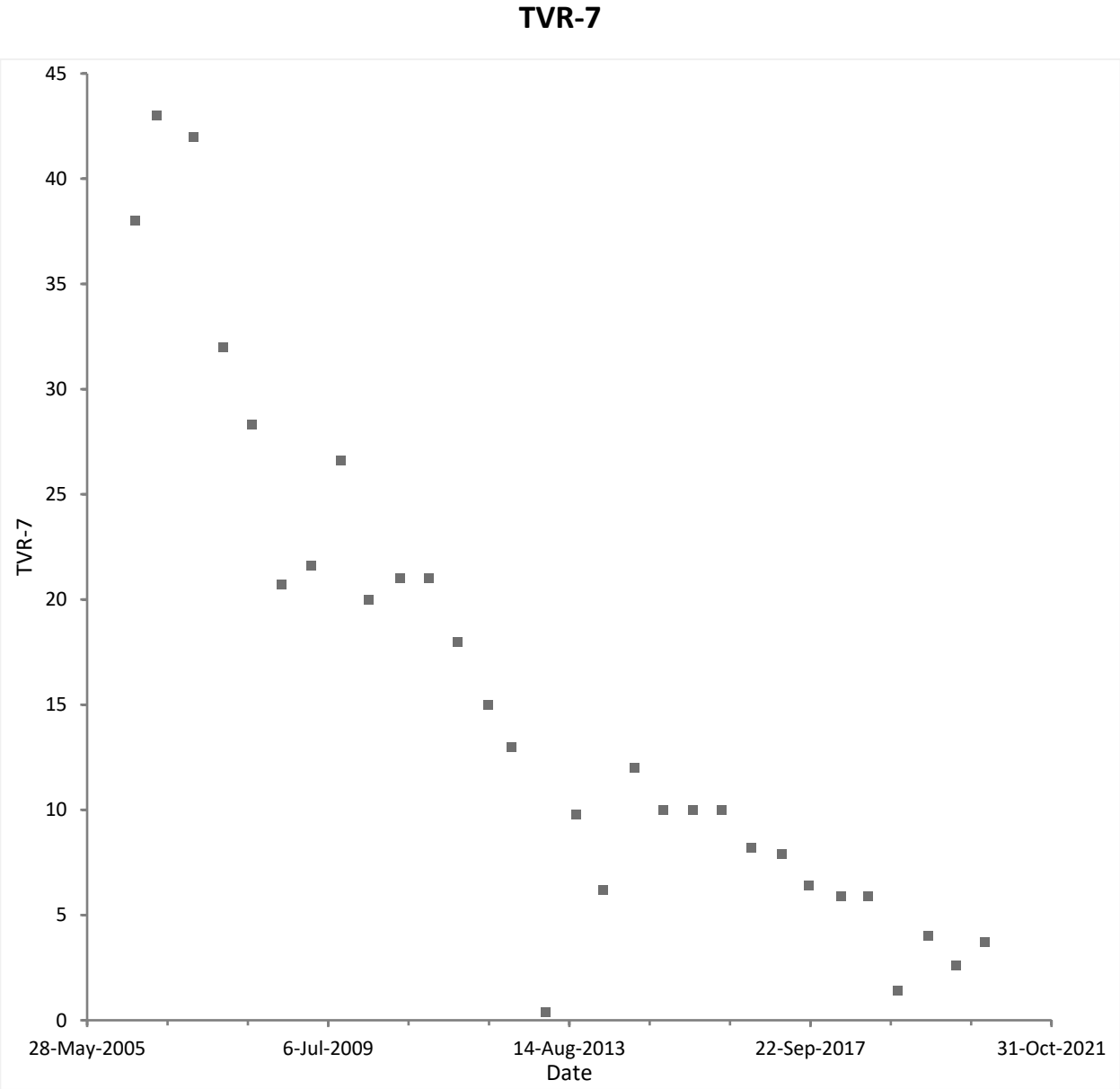
TVR/Old MATES – TCE Mann-Kendall Scatterplots



TVR/Old MATES – TCE Mann-Kendall Scatterplots



TVR/Old MATES – TCE Mann-Kendall Scatterplots



Fire Training Pit – TPH Mann-Kendall Scatterplots