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December 12, 2022

Washington Department of Ecology
Northwest Regional Office
Attn: Ms. Sonia Fernandez
15700 Dayton Avenue North
Shoreline, WA 98133

Dear Ms. Fernandez:

Please find the enclosed Sucsurface Investigation Report, that documents the results at ARCO Facility No. 980 located at 10822 Roosevelt Way NE, Seattle, Washington.

Sincerely yours,

Wade Melton
Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

cc: File, Antea Group

Subsurface Investigation Report

ARCO Facility No. 980
10822 Roosevelt Way NE, Seattle, Washington

Antea®Group

Understanding today.
Improving tomorrow.

PREPARED FOR
Remediation Management Services Company
An affiliate of Atlantic Richfield Company
4 Centerpointe Drive, Suite 200
Room LPR-4-222
La Palma, CA 90623

PREPARED BY
Antea Group - Portland, OR
December 12, 2022
Project # WA - 00980 Seattle
FSID # 68996432

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE OF WORK

On behalf of Remediation Management Services Company (RMSC, a BP affiliated company), Antea®Group (Antea Group) conducted a subsurface investigation at Atlantic Richfield Company (ARCO) Facility No. 980, located at 10822 Roosevelt Way NE, Seattle, King County, Washington (hereinafter referred to as the "Site"). The subsurface investigation (SSI), which consisted of the installation of two monitoring wells, three soil vapor wells, and three soil borings was conducted in November 2022. The objective of this subsurface investigation is to delineate the extent of the Washington State Department of Ecology's (Ecology) Model Toxics Control Act (MTCA) Site boundary, and to assess the soil vapor intrusion pathway both onsite and offsite at the adjoining property to the east.

The investigation scope of work included the following:

- Update the Health and Safety Plan (HASP) for the Site;
- Request a public locate via the One-Call Notification Center;
- Conduct a meeting with subcontractors to develop a Level 2 Task Risk Assessment (TRA);
- Contract Applied Professional Services (APS) of North Bend, WA to identify all private utilities at the Site;
- Conduct utility pre-clearance at each boring location to a minimum of 6.5 feet below ground surface (bgs) using a vacuum truck and air-knife;
- Advance two soil borings and subsequently completed them as 2-inch diameter groundwater monitoring wells to approximate depths of 22 and 24 feet bgs using a hollow stem auger rig;
- Install three soil gas wells to approximate depths of 4, 5, and 7 feet bgs.
- Advance three soil borings to approximate depths of 6, 8, and 15 feet bgs using vacuum truck, air knife, hand auger, and hollow stem auger equipment.
- Collect soil samples and submit select samples for quantitative chemical analyses;
- Interpret the data obtained; and
- Prepare this report.

1.2 SITE DESCRIPTION

The Site is an active ARCO branded retail gasoline station with a convenience store located on the southeast corner of the intersection of Roosevelt Way NE and NE Northgate Way in Seattle, Washington. A Site Location Map and Site Aerial Map are presented as Figures 1 and 2, respectively. The Site extends south to the Caribbean House Apartments and east to the Ismahan Family Child Care. The parking lot of the apartment building is approximately 5 feet lower in elevation than the station's grade and the childcare facility is approximately 2 feet lower. The three properties are separated by cinder block retaining walls and fencing. The Site vicinity is a mix of commercial and residential land uses. The closest surface water body is Thornton Creek located approximately 250 feet south of the Site. According to Google Earth, the Site is approximately 260 feet above mean sea level.

Site features include the station building with a canopy extending north from the building over two pump islands and a separate canopy west of the building over a third pump island. The underground storage tank (UST) complex containing four double-walled tanks is located to the northeast of the station building. The Site surface consists of

asphalt pavement and concrete except in three designated planter areas. A Site Map detailing the structures is presented on Figure 3.

1.3 PREVIOUS INVESTIGATIONS

A summary of previous assessments is described below:

1.3.1 DECEMBER 1989 – PRELIMINARY SOIL ASSESSMENT

On September 12, 1989, ARCO contracted Geraghty & Miller (G&M) to install four soil borings (B1 – B4) in the vicinity of the UST complex at the Site. The soil borings were installed as part of a preliminary soil assessment prior to UST removal activities. Hydrocarbon concentrations were detected above MTCA Method A cleanup levels at three of the four borings. Additional information pertaining to this investigation was reported in G&M's *Preliminary Subsurface Assessment Report* dated October 25, 1989.

1.3.2 OCTOBER 1990 – STATION UPGRADES

In October 1990, ARCO contracted Joe Hall Construction Company to remove four gasoline USTs, and the associated product distribution piping from the Site. The USTs consisted of one 10,000-gallon steel UST, and three 6,000-gallon steel USTs. Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the UST cavity and from below the product lines. During excavation activities, an abandoned septic tank was discovered. Light non-aqueous phase liquid (LNAPL) was measured in the abandoned septic tank and the contents were removed; however, the septic tank was left in place due to the proximity to structures on the ARCO property. In addition to the gasoline USTs, a waste oil UST was also reportedly removed. Additional information pertaining to this investigation was reported in G&M's *Site Assessment During Underground Storage Tank Removal Report* dated August 7, 1991.

1.3.3 MARCH 1992 – SOIL GAS SURVEY

On March 30 and 31, 1992, G&M subcontracted Tracer Research Corporation (Tracer) to conduct a soil-gas survey at the Site to determine the approximate distribution of hydrocarbons and potential locations for bioventing and monitoring wells. Fifteen soil-gas samples were collected and analyzed onsite by Tracer for total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Soil-gas as TVH was detected in 10 of the soil-gas samples. The highest concentrations of TVH were detected in samples collected along the east side of the Site from sampling locations SG-1 at 11 feet bgs and SG-2 at 8 feet bgs. Additional information pertaining to this investigation was reported in Tracer's *Shallow Soil Gas Investigation* dated April 13, 1992.

1.3.4 AUGUST AND SEPTEMBER 1992 – MONITORING WELL AND BIOVENTING WELL INSTALLATION

Between August 18 and 21 1992, ARCO contracted G&M to install 10 soil borings at the Site. Five soil borings were subsequently completed as groundwater monitoring wells (MW-1 through MW-5), and five borings were completed as bioventing wells (BV-1 through BV-5). Petroleum hydrocarbon concentrations were detected above the MTCA Method A Cleanup Levels in soil samples collected from the borings for MW-1, MW-4, MW-5, BV 3, and BV-5. Groundwater samples were collected from each of the five monitoring wells on September 22, 1992. Groundwater samples collected from MW-2, MW-4, and MW-5 contained concentrations of dissolved petroleum hydrocarbons, BTEX, total petroleum hydrocarbons as diesel (TPH-D), and/or total lead in excess of cleanup levels. LNAPL was subsequently measured in wells MW-4 and BV-3 in March 1993. Additional information pertaining to this investigation was reported in G&M's *Site Characterization* dated January 28, 1993.

1.3.5 1993 – MONITORING WELL INSTALLATION AND SOIL VAPOR EXTRACTION PILOT TEST

In early 1993, ARCO contracted G&M to install four additional soil borings to further delineate soil and groundwater contamination at the Site. Two soil borings were subsequently completed as groundwater monitoring wells (MW-6 and MW-7), and two borings were completed as bioventing wells (BV-6 and BV-7). In addition to the subsurface investigation, a soil vapor extraction (SVE) feasibility test was conducted on select bioventing wells. Soil samples collected from MW-6 and BV-7 contained concentrations of petroleum hydrocarbons in excess of cleanup levels. Additional information pertaining to this investigation was reported in G&M's *Additional Site Characterization and Soil Vapor Extraction Field Testing Report* dated July 12, 1993.

1.3.6 SEPTEMBER 1993 – OFFSITE INVESTIGATION

James P. Hurley and Company (JPHC) completed Phase I and Phase II Environmental Site Assessments (ESA) for the adjacent property located at 10800 Roosevelt Way NE, located just south of the ARCO station (Caribbean Apartments). The Phase II ESA included the installation of three soil borings on the Caribbean House Apartments property, two of which were completed as groundwater monitoring wells B1 (JPHC) and B3 (JPHC). The results of the assessment indicated the presence of elevated hydrocarbon concentrations in soil and groundwater. Additional information pertaining to this investigation was reported in JPHCs *Phase II Environmental Site Assessment Report* dated November 20, 1993.

1.3.7 1994 – OFFSITE INVESTIGATION AND WELL INSTALLATION

In early 1994, G&M completed a subsurface investigation on the Caribbean House Apartments property. The investigation consisted of the installation of nine soil borings. Three soil borings were completed as groundwater monitoring wells (MW-8 through MW-10), two as nested pressure and vacuum monitoring wells (VP-1 and VP- 2), one soil vacuum extraction well nested with one air sparge well (SVE-1/AS-1) one SVE well (SVE-2), and two air sparge wells (AS-2 and AS-3). Additional information pertaining to this investigation was reported in G&M's *Off-Site Assessment* dated July 7, 1994.

1.3.8 SEPTEMBER 1994 – SOIL VAPOR EXTRACTION SYSTEM INSTALLATION

In September 1994, G&M installed a soil vapor extraction system with a combination thermal and catalytic oxidizer at the Site. The SVE system extracted from wells BV-3, BV-7 and MW-5. The SVE system was started in November 1994 by Delta Consultants (Delta).

1.3.9 MARCH 1995 – AIR SPARGE PILOT TEST

In March and April 1995, Delta oversaw the installation of two air sparge wells (AS-4 and AS-5), and one monitoring well (MW-11) at the Site. Soil samples AS-5-12 and MW-11-17 contained concentrations of total petroleum hydrocarbons as gasoline (TPH-G) at 1,200 parts per million (ppm) and 140 ppm, respectively. Concentrations of BTEX were detected in AS-5-12, ranging from 4.7 ppm (benzene) to 240 ppm (xylenes). Following installation of the air sparge wells, Delta completed an air sparge pilot test on the newly installed air sparge wells with favorable results. Additional information pertaining to this investigation was reported in Delta's *Air Sparging Pilot Test Report* dated November 8, 1995.

1.3.10 APRIL 1996 – REMEDIATION SYSTEM UPGRADES

In April 1996, the remediation system was shut down for system upgrades. Remediation system upgrades included the addition of air sparge components, the enlargement of existing SVE wells from 2 to 4-inch diameter wells and installing more SVE and air sparge wells. The remediation system was restarted on May 1, 1996.

1.3.11 JULY 1996 – ADDITIONAL ASSESSMENT

In July 1996, Delta oversaw the installation of soil borings B-4 and B-5 and monitoring well MW-12 on the Caribbean House Apartments property for additional assessment and delineation of soil and groundwater impacts. Soil analytical results indicated concentrations of TPH-G and/or benzene from sample B-4 and 20 feet bgs and MW-12 at 10 feet bgs. Additional information pertaining to this investigation was reported in Delta's *Offsite Assessment Activities Report* dated July 1996.

1.3.12 SEPTEMBER 1997 – ENHANCED FLUID RECOVERY PROGRAM

In September 1997, Delta began an enhanced fluid recovery (EFR) program for the recovery of LNAPL and petroleum hydrocarbon impacted groundwater from wells located on the Site and the Caribbean House Apartments property. EFR events were conducted through 2003. Details on volumes recovered are included in groundwater monitoring reports for the Site.

1.3.13 OCTOBER 1999 – AIR SPARGE SYSTEM SHUTDOWN

In October 1999, the air sparge portion of the remediation system was shut down.

1.3.14 AUGUST 2002 – TEMPORARY SYSTEM SHUTDOWN

In August 2002, the SVE system was shut down to evaluate LNAPL rebound.

1.3.15 OCTOBER 2005 – REMEDIATION SYSTEM EXPANSION

In October 2005, Delta oversaw the installation of additional remediation wells at the Site. In preparation for the installation of a dual phase extraction (DPE) remediation system, six extraction wells (EX-1 through EX-6) were installed along the southern portion of the ARCO property. Soil samples were collected during extraction well installation. Soil analytical results indicated the presence of benzene and TPH-G in the soil samples collected from EX-4 at 16.5 and 21 feet bgs. The system was tested and optimized before being placed in full-time operation in the first quarter 2008. The DPE system operated at the Site until fourth quarter 2012, when it was shut down and subsequently removed in August 2014. A total of 6,583,867 gallons of water was treated and discharged to sanitary sewer during the operational lifetime of the DPE system. Additional information was reported in and Delta's *Remediation System Installation Report* dated April 11, 2008.

1.3.16 DECEMBER 2014 – INJECTION WELL INSTALLATION

In December 2014, Innovex Environmental Management, Inc. (Innovex) personnel oversaw the installation of four injection wells IW-1 through IW-4 on the Caribbean House Apartments property to address remaining dissolved-phase and soil bound hydrocarbon impacts.

1.3.17 APRIL 2016 – HYDROGEN PEROXIDE INJECTION

In April 2016, Innovex contracted In-Situ Oxidative Technologies, Inc. (Isotec) to conduct injection of stabilized hydrogen peroxide in injection wells IW-1 through IW-4. On April 19, 2016, injection well IW-2 received 50 gallons of ferrous iron catalyst followed by 50 gallons of stabilized hydrogen peroxide. While preparing for injection in IW-1 Innovex measured and confirmed the presence of approximately 0.25 inches of LNAPL in IW-1. Injections were stopped due to health and safety concerns associated with hydrogen peroxide application into free LNAPL.

1.3.18 JULY 2017 – VAPOR INTRUSION EVALUATION

In February and June 2017, PBS Engineering and Environmental Inc. (PBS) conducted a vapor intrusion evaluation at the Caribbean House Apartments property to determine whether petroleum contamination associated with the Site has the potential to adversely affect indoor air at the Apartments. Three vapor probes (SV-1 through SV-3)

were installed along the north and east sides of the building. Vapor sampling was conducted on February 14, 2017. During this event, SV-2 and SV-3 contained water and were therefore unable to be sampled. The vapor sample from SV-1 contained naphthalene above the Ecology Screening Level (ESL). A second soil vapor sampling event was conducted on June 23, 2017 during which SV-3 still contained water. Samples were collected from SV-1 and SV-2, both of which contained naphthalene above the ESL. Additional information pertaining to this investigation was reported in PBS's *Vapor Intrusion Evaluation* dated July 2017.

1.3.19 AUGUST 2017 – STATION UPGRADE CONFIRMATION SOIL SAMPLING

In August 2017, Antea Group performed confirmation soil sampling during station product line and dispenser upgrade activities. Four soil samples were collected from the bottom of the excavation product piping trench at 2.5 and 4-feet bgs to confirm soil concentrations previously identified as impacted during the 1990 upgrades. Laboratory analytical results for BTEX and TPH-G were not detected in excess of MTCA Method A Cleanup Levels. The historic tank pit location with previous impacted soil above MTCA Method A Cleanup Levels was not accessible during August 2017 upgrades and no soil samples were collected. Additional information was reported in Antea Group's *Confirmation Soil Sampling – Letter Report* dated October 18, 2017.

1.3.20 NOVEMBER 2017 – VAPOR INTRUSION AND INDOOR QUALITY INVESTIGATION

In October 2017, PBS conducted a vapor intrusion and limited indoor air quality investigation at the Caribbean House Apartments to determine if indoor air had been affected by soil vapor intrusion. Indoor and outdoor air samples were collected over 8-hour sampling intervals to compare indoor air to ambient air conditions. No volatile organic compounds (VOC) concentrations exceeded the California Office of Environmental Health Hazard Assessments reference exposure levels adopted by PBS as the most protective cleanup standards for residential receptors. Additional information pertaining to this investigation was reported in PBS's *Vapor Intrusion and Indoor Air Quality Investigation* dated November 17, 2017.

1.3.21 DECEMBER 2018 – ORPHAN TANK DECOMMISSIONING

On December 12, 2018, Antea Group was notified of the presence of an unknown oily substance in an open trench cut at ARCO facility 980. Upon arrival at the site, Antea Group personnel observed the accumulated fluid and collected a sample for profiling. Laboratory analysis identified the fluid as a light, oil-range petroleum product with a chromatogram characteristic of transmission or hydraulic fluid. Between December 12 and 18, 2018, a previously unidentified 140-gallon oil tank was discovered and removed from the Site. Approximately 175 gallons of a mixture of oil, stormwater, sludge, soil, and rinse water was removed from the tank prior to removal from the ground on December 18, 2018. An area approximately 8 feet wide, 8 feet long, and 6 feet deep was excavated from around the tank to remove petroleum impacted soil. Soil samples contained petroleum hydrocarbon impacts in excess of the MTCA Method A Cleanup Levels. On January 2 and 3, 2019, additional soil was removed to extend each sidewall 3 to 4 feet beyond the prior limit and an additional 1 foot of soil was removed from the bottom of the excavation. Following removal of additional soil from the sidewalls, soil samples collected from the north, south and east sidewalls still contained petroleum hydrocarbon impacts in excess of the respective MTCA Method A Cleanup Levels. Due to the limits imposed by buried utilities and fuel dispensers in the area, no additional soil was removed. Additional information pertaining to this investigation was reported in Antea Group's *Underground Storage Tank Removal Report* dated May 13, 2019.

1.3.22 NOVEMBER 2018 AND JANUARY 2019 – VAPOR PROBE INSTALLATION AND NEAR-SLAB SOIL VAPOR SAMPLING

Antea Group oversaw the installation of four soil borings to depths between 5 and 8.25 feet bgs using a hand auger and subsequently completing them as soil vapor probes on November 11 and November 27, 2018. Soil

samples were collected at approximately 5 feet bgs in borings SB-1 and SB-2; 5 feet and 8 feet in SB-3; and 3 feet and 4.5 feet in SB-4. Laboratory analytical results did not indicate petroleum hydrocarbons in excess of MTCA Method A Cleanup Levels. Well screen intervals were positioned from 5.5 to 6 feet bgs in SG-1, from 5 to 5.5 feet bgs in SG-2, from 7.75 to 8.25 feet bgs in SG-3, and 4.5 to 5 feet bgs in SG-4. The depth to groundwater has historically ranged from 12.36 to 18.83 feet bgs in the vicinity of SG-1, from 8.65 to 21.82 in the vicinity of SG-2 and SG-3, and from 5.54 to 17.30 feet bgs in the vicinity of SG-4. The soil vapor probes were constructed in accordance with the provisions set forth in the Petroleum Vapor Intrusion Guidance Document prepared by The Interstate Technology & Regulatory Council (ITRC) Petroleum Vapor Intrusion Team, dated October 2014. Following vapor probe installation, soil vapor conditions were allowed to equilibrate for more than one month before sampling. Antea Group conducted seasonal soil vapor sampling from vapor probes SG-1 and SG-4 on January 15, 2019 and SG-2 on January 30, 2019. A soil vapor sample was not collected from SB-3 due to the presence of water. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene, and hexane were not detected in excess of Washington State ESLs in any of the samples collected. A second round of soil vapor sampling was completed on August 27, 2019 and samples were collected from SG-1, SG-2, SG-3, and SG-4. Laboratory analytical results indicated concentrations of BTEX, MTBE, naphthalene, and hexane were not detected in excess of Washington State ESLs in any of the samples collected. Additional information pertaining to this investigation was reported in Antea Group's *Soil Vapor Probe Installation and Soil Vapor Sampling Report* dated January 7, 2020.

1.3.23 SEPTEMBER 2019 – SITE INVESTIGATION

On September 9th and 10th, 2019 Antea Group oversaw the installation of four soil borings converted to permanent monitoring wells MW-13, MW-14, MW-15, and MW-16. Soil samples collected from MW-13 at 8, 10, and 14 feet bgs exceeded the TPH-G MTCA Method A Cleanup Level at concentrations of 930 milligrams per kilogram (mg/kg), 340 mg/kg, and 120 mg/kg, respectively. The soil sample collected from MW-15 at 5 feet bgs contained a total concentration of combined carcinogenic PAHs of 0.17385 mg/kg. Under WAC 173-340-708(8), Toxicity Equivalency Factors (TEF) are defined to establish Cleanup Levels for carcinogenic PAHs. When PAH concentrations are corrected for toxicity, the total concentration of combined carcinogenic PAHs is 0.03567, which is below the MTCA Method A Cleanup Level for combined carcinogenic PAHs. All other soil samples collected from MW-13, MW-14, MW-15, and MW-16 did not exceed MTCA Method A Cleanup Levels for benzene, TPH-G, TPH-D, or total petroleum hydrocarbons as oil (TPH-O). Groundwater analytical results from MW-13, MW-15, and MW-16 exceeded MTCA Method A Levels for one or more of the following; benzene, TPH-G, TPH-D, or TPH-O. Additional information pertaining to this investigation was reported in Antea Group's *Subsurface Investigation Report* dated November 18, 2019.

1.3.24 SEPTEMBER 2020 – SUBSURFACE INVESTIGATION

In November 2020, two soil borings were advanced at the Caribbean Apartments property and one soil boring was advanced on the property southeast of the Caribbean Apartments building. The three borings were completed as groundwater monitoring wells (MW-17, MW-18, and MW-19). A total of 10 soil samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Laboratory analytical results indicated that concentrations of petroleum hydrocarbons were not detected above laboratory method reporting limits and/or MTCA Method A Cleanup Levels in any of the samples collected. Groundwater was sampled from the new monitoring wells MW-17, MW-18, and MW-19 on December 14, 2020. All samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. None of the December 2020 groundwater samples submitted for analysis contained hydrocarbon concentrations in excess of laboratory method reporting limits and/or MTCA Method A Cleanup Levels. Additional information pertaining to this investigation was reported in Antea Group's *Subsurface Investigation Report* dated February 19, 2021.

1.3.25 SEPTEMBER 2021 – SUBSURFACE INVESTIGATION

In September 2021, two borings were completed as groundwater monitoring wells (MW-20 and MW-21). Both monitoring wells were constructed with a 2-inch diameter schedule 40 PVC well casing. A total of 5 soil samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Laboratory analytical results indicated that concentrations of petroleum hydrocarbons were not detected above MTCA Method A Cleanup Levels in any of the samples collected. Groundwater was sampled from the new monitoring wells MW-20 and MW-21 on September 28, 2021. All samples were submitted to Eurofins-TestAmerica for quantitative chemical analysis. Quantitative laboratory analysis indicated TPH-O concentrations in excess of MTCA Method A Cleanup Levels were present in groundwater samples collected from the newly installed well MW-21. Groundwater sampled from monitoring well MW-20 did not contain concentrations of analyzed constituents above MTCA Method A Cleanup Levels. Additional information pertaining to this investigation was reported in Antea Group's *Subsurface Investigation Report* dated January 14, 2022.

1.3.26 NOVEMBER 2021 – PETROFIX INJECTION

A pilot study was conducted to evaluate the effectiveness of PetroFix™ amendment in the in-situ remediation of petroleum hydrocarbon concentrations in groundwater at the Site. PetroFix™ consists of small particle size activated carbon and an electron acceptor mix of nitrate and sulfate compounds. The activated carbon-based remedial fluid is used to remove dissolved-phase petroleum hydrocarbons through adsorption, while the electron acceptors further stimulate hydrocarbon biodegradation. Antea Group injected PetroFix™ into the subsurface via the existing injection wells IW-1 through IW-4 and monitoring wells MW-13 and MW-15 in November of 2021 to reduce concentrations of petroleum hydrocarbons in groundwater to below MTCA Method A Cleanup Levels in monitoring wells MW-12, MW-13, MW-15, and B1 (JPHC). Baseline and performance monitoring performed during 2022 indicate that PetroFix™ has been effective at reducing petroleum hydrocarbon concentrations by its dual function of sorption and biodegradation. Concentrations decreased to below MTCA Method A Cleanup Levels in monitoring wells MW-4 and MW-11. Following an immediate drop in concentrations to below MTCA Method A Cleanup Levels in monitoring wells MW-12 and B1(JPHC) a slight rebound was observed. Additional sampling and analysis of rebound in those wells will be performed during the semi-annual groundwater monitoring activities. Groundwater trend charts for TPH-D and TPH-O data prior to and following the PetroFix™ injection are included in Appendix C.

1.4 CURRENT SITE STATUS

The Site is listed on Ecology's Leaking Underground Storage Tanks (LUST) list with facility site ID 68996432. The Site was enrolled in Ecology's Voluntary Cleanup Program (VCP) with VCP ID NW2729 but was subsequently terminated from the program in February 2017. All remedial activities are currently being conducted as an independent cleanup action outside of the VCP. The current status on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL) is "Cleanup Started". Prior to November 2022 SSI activity, there were eight monitoring wells on the ARCO property, 11 monitoring wells on the Caribbean Apartments property, and one well on private property southeast of Caribbean Apartments. Select monitoring wells are sampled on a semi-annual basis.

2.0 PROJECT ACTIVITIES

2.1 DRILLING AND SOIL SAMPLING

The subsurface investigation included advancing eight soil borings, two of which were completed as permanent monitoring wells, and the remaining three as soil vapor wells. A summary of soil boring and soil vapor well depths is provided in Table A. Soil boring and soil vapor well locations are presented on Figure 3.

Table A. Summary of soil boring and soil gas well depths.

Soil Boring and Soil Gas Well ID	End of Boring Depth (feet bgs)
MW-23	22
MW-24	24
B-6	8
B-7	6
B-7	15
SG-5	7
SG-6	4
SG-7	5

Cascade Drilling, Inc. (Cascade), of Tacoma, Washington completed the borings and well installation activities in November 2022. Cascade began borehole clearance on November 3, 2022, using a vacuum truck and air-knife to clear each boring to a minimum depth of 6.5 feet bgs. Borings that were less than 6.5 feet bgs were cleared only to the necessary depth of investigation. Air-knife and vacuum truck operations ceased 18-onches above target samples depths for borings B-6, B-7, and B-8 at which time a decontaminated hand auger was used to collect a soil sample. During drilling operations, soil samples were collected by split spoon samplers advanced into the undisturbed soil 18 inches ahead of the boring operation. A summary of boring locations with corresponding sample depths is provided in Table B.

Table B. Summary of boring location with corresponding sample depths.

Boring Location	Sample Depth (feet bgs)
B-6	2, 5, and 8
B-7	6
B-8	2, 5, 10, and 15

Soil samples were collected to characterize subsurface lithology and to provide samples for chemical analyses. Antea Group personnel observed and logged the borings using the Unified Soil Classification System. After collection, each soil sample was field screened for the presence of volatile organic compounds with a photoionization detector (PID) to aid in the selection of representative soil samples for chemical analysis. Discrete soil samples were collected for analytical testing based on depth, indication of petroleum contamination, and moisture content. A total of 8 soil samples were submitted to Pace Analytical (Pace) in Mount Juliet, Tennessee for quantitative chemical analysis following standard chain-of-custody procedures.

The field procedures used during the investigation are provided in Appendix A. Boring logs describing soil horizons, sample recovery, PID screening values, and well completion details are presented in Appendix B.

2.2 MONITORING WELL COMPLETION

Monitoring wells MW-23 and MW-24 were constructed of 2-inch diameter schedule 40 PVC with 0.010-inch slotted screen. The screened interval of monitoring wells MW-23 and MW-24 were 7 to 22 feet bgs and 9 to 24 feet bgs, respectively. The monitoring well screens were surrounded by a sand pack that extended approximately 1 to 2-feet above the top of the screen. The sand pack was followed by a hydrated bentonite seal to approximately 18 inches bgs. Each well was completed with a concrete cap and flush-mounted monument to grade. MW-23 and MW-24 groundwater monitoring wells will be included in the upcoming semi-annual groundwater monitoring activities and the results will be reported in the first half 2023 semi-annual groundwater monitoring report. The

remaining three borings (B-6 through B-8) not completed as monitoring wells were backfilled with hydrated bentonite and the original surface was restored.

2.3 SOIL VAPOR WELL COMPLETION

Soil vapor wells SG-5, SG-6, and SG-7 were constructed of 0.25-inch Teflon tubing with a 0.0057-inch stainless-steel mesh screen. The soil gas well screens were surrounded by a sand pack that extended approximately 6-inches above the top of the screen. The sand pack was followed by dry bentonite, then a pre-hydrated bentonite seal, and completed with a concrete cap and flush-mounted monument to grade. Due to the presence of shallow perched water SG-6 was installed to a total depth of 4 feet bgs, a foot shallower than proposed. SG-6 will still provide accurate near slab soil vapor samples. Soil gas well construction details are provided in Appendix A.

2.4 WELL DEVELOPMENT AND SURVEYING

Prior to the next groundwater monitoring event, monitoring wells MW-23 and MW-24 will be developed to remove fine grained sediments from the sand filter pack. Development will be conducted using dedicated single use bailers or submersible pump to remove a minimum of ten casing volumes or until the groundwater from the monitoring well runs clear. The monitoring wells will be surveyed for the top of casing (TOC) elevation relative to an existing Site monitoring well. Elevations will be surveyed to the nearest 0.01 foot.

2.5 ON-SITE CONTAINMENT OF DRILL CUTTINGS AND DECONTAMINATION WATER

Soil cuttings and decontamination water generated from the subsurface investigation were properly labeled, sealed, and temporarily stored in 55-gallon drums onsite. Antea Group will coordinate the removal of the investigation derived waste.

3.0 PROJECT RESULTS

3.1 SITE GEOLOGY AND HYDROGEOLOGY

The area is in the Puget Sound Lowland geomorphic province, which consists mainly of glacially deposited sediments. The Puget Sound Lowland is a basin lying between the Cascade Mountains to the east and the Olympic Mountains (coastal range) to the west. At least five major advances of continental glacial ice have been identified as having occurred in the Puget Sound Lowlands. Geologic units resulting from these glacial events include complex sequences of lacustrine deposits, advance outwash, glaciomarine drift, till, and recessional outwash. More recent erosional processes have deposited alluvial sand and gravel, primarily along river valleys.
The Site vicinity is underlain by Alderwood Soils, which is a Quaternary stratified sequence consisting of sandy loam with varying amounts of gravel. In addition, Alderwood soils are considered hydrologically as Class C, which indicates slow infiltration rates with layers impeding downward movement of water, or soils with moderately fine or fine textures. Soils observed at the Site during previous investigations include dense to very dense silty sand, sand, gravelly sand, and sandy gravel.

3.2 SUBSURFACE LITHOLOGIC CONDITIONS

Soils encountered during this investigation consisted mostly of silty sand and very fine to medium sand with some mixtures containing cobbles and gravels. Wet soils were encountered beginning at depths between 4.5 and 20 feet bgs. Detailed soil descriptions are presented in the boring logs in Appendix B.

3.3 QUANTITATIVE CHEMICAL ANALYSIS

3.3.1 SOIL ANALYTICAL

Soil samples were analyzed for the presence of the following constituents:

- Benzene, toluene, ethylbenzene (BTEX) and methyl-tertiary-butyl ether (MTBE) by EPA Method 8260B;
- TPH-G by Northwest Method NWTPH-Gx;
- TPH-D and TPH-O by Northwest Method NWTPH-Dx without silica gel cleanup;
- Polynuclear aromatic hydrocarbons (PAHs) and Naphthalene by Method 8270SIM; and
- Resource Conservation and Recovery Act (RCRA) 8 metals using EPA Method 200.8 (waste characterization purposes only).

Quantitative laboratory analysis from the November 2022 SSI event indicated that concentrations of the analyzed constituents were detected above MTCA Method A Cleanup Levels in soil boring B-6 at 5 and 8-feet bgs. The soil sample from B-6 at 5-feet bgs contained concentrations of xylenes (20.5 mg/kg), TPH-G (2,150 mg/kg), and naphthalene (16.1 mg/kg) in excess of the Method A Cleanup Levels. The soil sample from B-6 at 8-feet bgs contained concentrations of xylenes (12.7 mg/kg), TPH-G (1,070 mg/kg), and naphthalene (7.98 mg/kg) in excess of the Method A Cleanup Levels. All other soil samples collected during November 2022 SSI activities were below MTCA Method A Cleanup Levels.

All soil samples were analyzed for PAHs during November 2022 SSI activities and total carcinogenic PAHs for each soil sample, as defined under WAC 173-340-708(e), were below MTCA Method A Cleanup Levels.

Soil analytical results for TPH, VOCs, and Lead are summarized in Table 1 and soil analytical results for PAHs are summarized in Table 2. The Soil Analytical Data Map is presented on Figure 3. A MTCA Soil Boundary Map is presented on Figure 4. A copy of the Soil Laboratory Analytical Report is included in Appendix D.

4.0 SUMMARY

In November 2022, eight soil borings were advanced, two of which were completed as monitoring wells (MW-23 and MW-24) and the remaining three as soil gas wells (SG-5, SG-6, and SG-7). A total of 8 soil samples were submitted to Pace for quantitative chemical analysis. Laboratory analytical results indicated that concentrations of petroleum hydrocarbons were detected above MTCA Method A Cleanup Levels in B-6 at 5 and 8-feet bgs for xylene, TPH-G, and naphthalene. All other soil samples collected were below MTCA Method A Cleanup Levels.

5.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

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7.0 REFERENCES

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Tables

Table 1
Soil Analytical Data - TPH, VOCs, Lead
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT				Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether (MTBE)	TPH-G	TPH-D	TPH-O	Napthalene
		UNIT	FEET	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA METHOD A SOIL				**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**
Well/Boring ID	SAMPLE ID	Date	Depth									
B-1 (1989)	B-1_5-6.5_19890912	9/12/1989	6.5	0.017	0.016	0.006	0.042	--	--	--	--	--
B-1 (1989)	B-1_15-16_19890912	9/12/1989	15-16	< 0.005	0.017	< 0.005	0.01	--	--	--	--	--
B-2 (1989)	B-2_10-10.5_19890912	9/12/1989	10-10.5	< 0.005	0.017	< 0.005	0.012	--	--	--	--	--
B-2 (1989)	B-2_15-16_19890912	9/12/1989	15-16	**0.047**	< 0.005	< 0.005	< 0.005	--	--	--	--	--
B-3 (1989)	B-3_5-6.5_19890912	9/12/1989	5-6.5	**0.11**	0.008	0.004	< 0.005	--	--	--	--	--
B-3 (1989)	B-3_10-11.5_19890912	9/12/1989	10-11.5	**0.032**	0.017	< 0.005	0.014	--	--	--	--	--
B-4 (1989)	B-4_5-6.5_19890912	9/12/1989	5-6.5	0.016	< 0.005	< 0.005	< 0.005	--	--	--	--	--
B-4 (1989)	B-4_10-10.5_19890912	9/12/1989	10-10.5	**2.1**	3.5	3	**18**	--	--	--	--	--
COMPOSITE	COMPOSITE_19890912	9/12/1989	--	< 0.005	< 0.005	0.006	0.032	--	--	--	--	--
EC	EC_10_19901003	10/3/1990	10	**0.2**	0.017 J	0.009 J	0.008 J	--	< 13	< 13	< 13	--
NC	NC_10_19901003	10/3/1990	10	0.006 J	0.006 J	0.006 J	0.006 J	--	< 9.3	< 9.3	< 9.3	--
NE	NE_15_19901003	10/3/1990	15	< 0.006	< 0.006	< 0.006	< 0.006	--	< 9.8	< 9.8	< 9.8	--
SE-3	SE-3_15_19901003	10/3/1990	15	**0.18**	0.022	0.03	0.053	--	**3,200**	< 95	< 95	--
SE-4	SE-4_15_19901003	10/3/1990	15	**0.19**	< 0.006	0.01	0.01	--	< 9.4	< 9.4	< 9.4	--
SW-1	SW-1_15_19901002	10/2/1990	15	**24**	**180**	**90**	**610**	--	**5,400**	< 95	< 95	--
SW-2	SW-2_5_19901002	10/2/1990	5	**1.3**	4.1	3.6	**28**	--	**1,000**	< 93	< 93	--
W-5	W-5_5_19901002	10/2/1990	5	**0.62**	0.39	0.67	4.7	--	**190**	< 98	< 98	--
WOHOLE	WOHOLE_5-5_19901002	10/2/1990	5	--	--	--	--	--	< 93	< 93	< 93	--
WOPILE	WOPILE_19901002	10/2/1990	--	--	--	--	--	--	< 93	< 93	< 93	--
1011A	1011A_2_19901011	10/11/1990	2	**20**	**340**	**140**	**960**	--	**5,800**	< 9.3	< 9.3	--
1011B	1011B_2_19901011	10/11/1990	2	< 1	< 1	< 1	4.4	--	**1,600**	< 12	< 12	--
1011C	1011C_2_19901011	10/11/1990	2	**1.5**	**32**	**11**	**77**	--	**48**	< 9.7	< 9.7	--
1016A	1016A_2_19901016	10/16/1990	2	**0.7**	0.013	0.12	0.49	--	**320**	< 9.8	< 9.8	--
MW-1	MW-1_6_19920818	8/18/1992	6	**0.049**	0.038	0.21	0.72	--	16	--	--	--
MW-1	MW-1_11_19920818	8/18/1992	11	< 0.029	< 0.029	< 0.029	< 0.029	--	< 6	--	--	--
MW-2	MW-2_3.5_19920821	8/21/1992	3.5	< 0.027	0.042	< 0.027	0.068	--	< 5	--	--	--
MW-2	MW-2_13.5_19920821	8/21/1992	13.5	< 0.027	< 0.027	< 0.027	< 0.027	--	< 5	--	--	--
MW-3	MW-3_11_19920818	8/18/1992	11	< 0.027	< 0.027	< 0.027	< 0.027	--	< 5	--	--	--
MW-3	MW-3_16_19920818	8/18/1992	16	< 0.029	< 0.029	< 0.029	< 0.029	--	< 6	--	--	--
MW-4	MW-4_9_19920820	8/20/1992	9	< 0.027	< 0.03	< 0.027	< 0.027	--	< 5	--	--	--
MW-4	MW-4_19_19920820	8/20/1992	19	**1.9**	1.8	0.14	1.2	--	**71**	--	--	--
MW-5	MW-5_6_19920818	8/18/1992	6	**0.077**	0.33	0.037	0.2	--	20	--	--	--
MW-5	MW-5_21_19920818	8/18/1992	21	< 0.027	< 0.027	< 0.027	< 0.027	--	< 5	--	--	--
BV-1	BV-1_6_19920821	8/21/1992	6	< 0.027	< 0.027	< 0.027	0.079	--	< 5	--	--	--
BV-2	BV-2_6.5_19920821	8/21/1992	6.5	< 0.027	< 0.027	< 0.027	< 0.027	--	8	--	--	--
BV-2	BV-2_11.5_19920821	8/21/1992	11.5	< 0.027	< 0.027	< 0.027	< 0.027	--	< 6	--	--	--
BV-3	BV-3_6_19920819	8/19/1992	6	**0.066**	< 0.03	0.038	1.4	--	9.3	< 30	--	--

Table 1
Soil Analytical Data - TPH, VOCs, Lead
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT				Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether (MTBE)	TPH-G	TPH-D	TPH-O	Napthalene
		UNIT	FEET	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA METHOD A SOIL				**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**
BV-3	BV-3_16_19920819	8/19/1992	16	**0.034**	0.087	0.061	0.34	--	**35**	< 28	--	--
BV-4	BV-4_6_19920819	8/19/1992	6	< 0.027	< 0.027	< 0.027	< 0.027	--	< 6	--	--	--
BV-4	BV-4_11_19920819	8/19/1992	11	< 0.028	< 0.028	< 0.028	< 0.028	--	< 6	--	--	--
BV-5	BV-5_5_19920821	8/21/1992	5	**0.1**	< 0.027	3.6	6	--	**5,900**	--	--	--
BV-5	BV-5_10_19920821	8/21/1992	10	**0.095**	0.19	0.077	0.34	--	**36**	--	--	--
MW-6	MW-6_10-10_19930324	3/24/1993	10	**0.19**	3	1.5	6.4	--	**85**	--	--	--
MW-6	MW-6_15-15_19930324	3/24/1993	15	**0.063**	0.13	0.064	0.31	--	6	--	--	--
BV-6	BV-6_5_19930324	3/24/1993	5	< 0.027	< 0.028	< 0.028	< 0.028	--	< 6	--	--	--
BV-6	BV-6_10_19930324	3/24/1993	10	< 0.029	0.04	0.029	0.032	--	< 6	--	--	--
BV-7	BV-7_6_19930324	3/24/1993	6	0.028	0.04	0.069	0.48	--	**76**	--	--	--
BV-7	BV-7_17_19930324	3/24/1993	17	**0.039**	0.15	0.027	0.14	--	< 5	--	--	--
MW-7	MW-7_10_19930324	3/24/1993	10	< 0.027	< 0.027	< 0.027	< 0.027	--	< 5	--	--	--
MW-7	MW-7_15_19930324	3/24/1993	15	< 0.027	< 0.028	< 0.028	< 0.028	--	< 6	--	--	--
B-1 (1993)	B-1_15_19931004	10/4/1993	15	--	--	--	--	--	--	--	--	--
B-1 (1993)	B-1_20_19931004	10/4/1993	20	< 0.5	0.23	0.2	0.74	--	**66**	--	--	--
B-2 (1993	B-2_20_19931004	10/4/1993	20	--	--	--	--	--	--	--	--	--
B-2 (1993)	B-2_25_19931004	10/4/1993	25	--	--	--	--	--	--	--	--	--
B-3 (1993)	B-3_5_19931004	10/4/1993	5	< 0.5	0.062	< 0.05	0.285	--	< 5	--	--	--
VP-1	VP-1_10_19940427	4/27/1994	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	12 D-2	< 100	--
VP-1	VP-1_25_19940427	4/27/1994	25	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
VP-2	VP-2_12.5_19940427	4/27/1994	12.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
VP-2	VP-2_20_19940427	4/27/1994	20	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
MW-8	MW-8_15_19940428	4/28/1994	15	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
MW-8	MW-8_22.5_19940428	4/28/1994	22.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
MW-8	MW-8_27.5_19940428	4/28/1994	27.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
MW-9	MW-9_10_19940429	4/29/1994	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	14 D-2	< 100	--
MW-9	MW-9_22.5_19940429	4/29/1994	22.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
MW-10	MW-10_10_19940427	4/27/1994	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	27	< 100	--
MW-10	MW-10_15_19940427	4/27/1994	15	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	18 D-2	< 100	--
ASVE/AS-1	ASVE/AS-1_10_19940428	4/28/1994	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-1	ASVE/AS-1_25_19940428	4/28/1994	25	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-1	ASVE/AS-1_35_19940428	4/28/1994	35	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-2	ASVE/AS-2_12.5_19940427	4/27/1994	12.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-2	ASVE/AS-2_15_19940427	4/27/1994	15	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-2	ASVE/AS-2_27.5_19940427	4/27/1994	27.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
ASVE/AS-3	ASVE/AS-3_25_19940428	4/28/1994	25	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
AS-3	AS-3_10_19940428	4/28/1994	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--
AS-3	AS-3_12.5_19940428	4/28/1994	12.5	< 0.05	< 0.05	< 0.05	< 0.1	--	< 1	< 10	< 100	--

Table 1
Soil Analytical Data - TPH, VOCs, Lead
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT				Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether (MTBE)	TPH-G	TPH-D	TPH-O	Napthalene
		UNIT	FEET	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA METHOD A SOIL				**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**
MW-12	MW-12_10_19960709	7/9/1996	10	< 0.2	< 0.2	< 0.2	< 0.4	--	**104**	10.6	29.7	--
MW-12	MW-12_12_19960709	7/9/1996	12	< 0.05	< 0.05	< 0.05	< 0.1	--	7.29	< 10	< 25	--
MW-12	MW-12_15_19960709	7/9/1996	15	< 0.05	< 0.05	< 0.05	< 0.1	--	< 5	< 10	< 25	--
B-4 (1996)	B-4_10_19960709	7/9/1996	10	< 0.2	< 0.2	< 0.2	< 0.4	--	**355**	19.2	48	--
B-4 (1996)	B-4_12_19960709	7/9/1996	12	< 0.05	< 0.05	< 0.05	< 0.1	--	15.3	< 10	< 25	--
B-4 (1996)	B-4_20_19960709	7/9/1996	20	**0.823**	1.33	0.37	1.82	--	**536**	34.7	113	--
B-4 (1996)	B-4_22_19960709	7/9/1996	22	< 0.689	0.063	< 0.05	< 0.1	--	20.4	< 10	< 25	--
B-5 (1996)	B-5_10_19960709	7/9/1996	10	< 0.05	< 0.05	< 0.05	< 0.1	--	< 5	< 10	< 25	--
B-5 (1996)	B-5_20_19960709	7/9/1996	20	< 0.05	< 0.05	< 0.05	< 0.1	--	< 5	< 10	< 25	--
EX-1	EX-1_6.5_20051026	10/26/2005	6.5	< 0.0270	< 0.0900	< 0.0900	< 0.270	< 0.0900	< 4.50	< 10.9	< 27.2	--
EX-1	EX-1_10.5_20051026	10/26/2005	10.5	< 0.0264	< 0.0880	< 0.0880	< 0.264	< 0.0880	< 4.40	< 10.8	< 27.0	--
EX-2	EX-2_6.5_20051026	10/26/2005	6.5	< 0.0258	< 0.0861	< 0.0861	< 0.258	< 0.0861	25.9	14.5	47.7	--
EX-3	EX-3_6.5_20051027	10/27/2005	6.5	< 0.0412	< 0.137	< 0.137	< 0.412	< 0.137	< 6.87	15	92.5	--
EX-3	EX-3_11.5_20051027	10/27/2005	11.5	< 0.0271	< 0.0452	< 0.0452	< 0.0904	< 0.0904	< 4.52	< 10.7	< 26.7	--
EX-3	EX-3_16_20051027	10/27/2005	16	< 0.0271	0.0451	0.0469	0.269	< 0.0902	11.8	22.3	< 27.1	--
EX-3	EX-3_20.5_20051027	10/27/2005	20.5	< 0.0353	< 0.0589	< 0.0589	< 0.118	< 0.118	< 5.89	< 12.1	< 30.3	--
EX-4	EX-4_11.5_20051027	10/27/2005	11.5	< 0.0279	< 0.0465	< 0.0465	< 0.0930	< 0.0930	< 4.65	< 10.8	< 27.0	--
EX-4	EX-4_16.5_20051027	10/27/2005	16.5	< 0.0291	< 0.0484	< 0.0484	< 0.0968	< 0.0968	**1,240**	122	272	--
EX-4	EX-4_21_20051027	10/27/2005	21	**0.893**	< 0.0434	0.092	0.109	< 0.0868	16	< 11.0	< 27.6	--
EX-5	EX-5_6.5_20051025	10/25/2005	6.5	< 0.0284	< 0.0473	< 0.0473	< 0.0945	< 0.0945	< 4.73	11.3	38	--
EX-5	EX-5_11_20051025	10/25/2005	11	< 0.0260	< 0.0433	< 0.0433	< 0.0865	< 0.0865	< 4.33	< 10.9	< 27.1	--
EX-5	EX-5_16.5_20051025	10/25/2005	16.5	< 0.0279	< 0.0465	< 0.0465	< 0.0930	< 0.0930	< 4.64	< 10.9	< 27.3	--
EX-6	EX-6_6.5_20051025	10/25/2005	6.5	< 0.0325	< 0.0542	< 0.0542	< 0.108	< 0.108	< 5.42	34.2	238	--
EX-6	EX-6_11_20051025	10/25/2005	11	< 0.0286	< 0.0477	< 0.0477	< 0.0954	< 0.0954	< 4.77	29.7	143	--
EX-6	EX-6_16_20051025	10/25/2005	16	< 0.0276	< 0.0460	< 0.0460	< 0.0921	< 0.0921	< 4.60	20.8	108	--
1011A	1011A_20170817	8/17/2017	4	< 0.030	< 0.050	< 0.050	< 0.20	--	<3.0	--	--	--
1011B	1011B_20170823	8/23/2017	2.5	< 0.030	< 0.050	< 0.050	< 0.20	--	<3.0	--	--	--
1011C	1011C_20170817	8/17/2017	2.5	< 0.030	< 0.050	< 0.050	< 0.20	--	<3.0	--	--	--
1016A	1016A)20170817	8/17/2017	2.5	< 0.030	< 0.050	< 0.050	< 0.20	--	<3.0	--	--	--
SG-1	SG-1-5-11022018	11/2/2018	5	< 0.0017	< 0.0017	< 0.0017	< 0.0051	< 0.0017	14	< 54	93	--
SG-2	SG-2-5-11022018	11/2/2018	5	< 0.0016	< 0.0016	< 0.0016	< 0.0049	< 0.0016	5.4	< 56	64	--
SG-3	SG-3-5-11022018	11/2/2018	5	< 0.0017	< 0.0017	< 0.0017	< 0.0052	< 0.0017	< 4.8	< 55	71	--
SG-3	SG-3-8-11022018	11/2/2018	8	< 0.0017	< 0.0017	< 0.0017	< 0.0051	< 0.0017	< 4.9	< 55	< 55	--
SG-4	SG-4-5-11272018	11/27/2018	5	< 0.0016	< 0.0016	< 0.0016	< 0.0047	< 0.0016	< 4.6	< 49	56	--
HO-B	HO-B-6	12/18/2018	6	**0.1**	< 0.01	0.43	1.24	--	**120**	**2,100**	**3,900**	0.58
HO-B	HO-B2-7	1/3/2019	7	< 0.0050	< 0.01	< 0.01	< 0.03	--	< 3.0	< 25	< 50	--
HO-E	HO-E-4	12/18/2018	4	**0.84**	0.41	**16**	**98**	--	**970**	**3,700**	**14,000**	**7.7**
HO-E	HO-E2-5	1/3/2019	5	**0.48**	< 0.01	2.7	**13.7**	--	**290**	740	**6,400**	--

Table 1
Soil Analytical Data - TPH, VOCs, Lead
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT				Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether (MTBE)	TPH-G	TPH-D	TPH-O	Napthalene
		UNIT	FEET	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA METHOD A SOIL				**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**
HO-N	HO-N-4	12/18/2018	4	**0.056**	< 0.01	0.024	0.05	--	**230**	**4,500**	**2,800**	0.53
HO-N	HO-N2-5	1/2/2019	5	< 0.0050	< 0.01	< 0.01	< 0.03	--	< 3.0	**2,700**	**2,000**	--
HO-PIPE	HO-PIPE-2	12/20/2018	2	< 0.0050	< 0.01	0.37	1.88	--	**64**	1800	**5,400**	0.5
HO-PIPE	HO-PIPE 2-3	1/3/2019	3	< 0.0050	< 0.01	< 0.081	0.29	--	**49**	< 120	**4,200**	--
HO-S	HO-S-4	12/18/2018	4	**0.31**	0.061	1.5	5.7	--	**300**	**8,400**	**5,900**	2.6
HO-S	HO-S2-5	1/2/2019	5	< 0.0050	< 0.01	< 0.01	< 0.03	--	< 3.0	720	**9,000**	--
HO-W	HO-W-4	12/18/2018	4	**0.14**	< 0.01	0.41	0.85	--	**250**	**7,200**	**9,000**	2.3
HO-W	HO-W3-5	1/3/2019	5	< 0.0050	< 0.01	< 0.01	< 0.03	--	< 3.0	< 25	87	--
MW-13	MW-13-5_20190909	9/9/2019	5	--	--	--	--	--	< 6.3	< 60	< 60	<0.0061
MW-13	MW-13-8-20190912 (580-89186-1)	9/12/2019	8	< 0.00081	0.00146	0.0055	--	< 0.00081	**930**	860	760	0.0058
MW-13	MW-13-10-20190912 (580-89186-2)	9/12/2019	10	< 0.00076	0.00030 J	0.0193	--	< 0.00076	**340**	< 54	69	0.0098
MW-13	MW-13-12.5-20190912 (580-89186-3)	9/12/2019	12.5	0.00029 J	< 0.00081	0.00030 J	--	< 0.00081	4.1	< 50	< 50	<0.0046
MW-13	MW-13-14-20190912 (580-89186-4)	9/12/2019	14	0.00121	0.00025 J	0.00111	--	< 0.00077	**120**	< 50	< 50	0.0082
MW-14	MW-14-5_20190909	9/9/2019	5	--	--	--	--	--	< 4.5	< 50	< 50	--
MW-14	MW-14-7.5-20190912 (580-89186-5)	9/12/2019	7.5	< 0.00076	0.00035 J	< 0.00076	--	< 0.00076	< 4.4	< 52	< 52	--
MW-14	MW-14-10-20190912 (580-89186-6)	9/12/2019	10	< 0.00072	< 0.00072	< 0.00072	--	< 0.00072	< 4.2	< 52	< 52	--
MW-15	MW-15-5_20190909	9/9/2019	5	--	--	--	--	--	9.1	< 54	320	0.042
MW-15	MW-15-10-20190911 (580-89147-5)	9/11/2019	10	< 0.00079	< 0.00079	< 0.00079	--	< 0.00079	< 4.4	< 50	< 50	<0.005
MW-15	MW-15-12-20190911 (580-89147-6)	9/11/2019	12	< 0.00080	0.00026 J	< 0.00080	--	< 0.00080	< 4.4	< 51	65	<0.004
MW-15	MW-15-14-20190911 (580-89147-7)	9/11/2019	14	< 0.00078	< 0.00078	< 0.00078	--	< 0.00078	17	< 56	< 56	<0.0041
MW-16	MW-16-5_20190909	9/9/2019	5	--	--	--	--	--	< 5.4	< 56	120	--
MW-16	MW-16-9-20190910 (580-89123-1)	9/10/2019	9	< 0.00079	< 0.00079	< 0.00079	--	< 0.00079	< 4.3	< 51	< 51	--
MW-16	MW-16-12-20190910 (580-89123-2)	9/10/2019	12	< 0.00075	< 0.00075	< 0.00075	--	< 0.00075	< 4.4	< 54	< 54	--
MW-17	MW-17_5_20201117-11172020	11/17/2020	5	< 0.0024	< 0.012	< 0.0024	< 0.012	< 0.0024	< 6.4	< 56	< 56	--
MW-17	MW-17_10_20201118-11182020	11/18/2020	10	< 0.0016	< 0.0080	< 0.0016	< 0.0080	< 0.0016	8.9 H	< 49	< 49	--
MW-17	MW-17_15_20201118-11182020	11/18/2020	15	< 0.0017	< 0.0086	< 0.0017	< 0.0086	< 0.0017	< 4.6	< 54	< 54	--
MW-18	MW-18_5_20201117-11172020	11/17/2020	5	< 0.0020	< 0.010	< 0.0020	< 0.010	< 0.0020	< 6.8	< 61	< 61	--
MW-18	MW-18_12_20201119-11192020	11/19/2020	12	< 0.0017	0.013	0.003	0.017	< 0.0017	< 6.3	< 54	< 54	--
MW-18	MW-18_16_20201119-11192020	11/19/2020	16	< 0.0016	< 0.0080*3	< 0.0016*3	< 0.0080	< 0.0016*	< 5.4	< 57	< 57	--
MW-19	MW-19_3_20201117-11172020	11/17/2020	3	< 0.0018	< 0.0088	< 0.0018	< 0.0088	< 0.0018	< 5.0	< 54	< 54	--
MW-19	MW-19_5_20201119-11192020	11/19/2020	5	< 0.0018	0.043	0.011	0.065	< 0.0018	< 7.0	< 57	< 57	--
MW-19	MW-19_10_20201118-11182020	11/18/2020	10	< 0.0018	< 0.0089	< 0.0018	< 0.0089	< 0.0018	10	< 52	< 52	--
MW-21	MW-21_5.2_20210909	9/9/2021	5.2	< 0.0018*-	< 0.0088	< 0.0018*-	< 0.0132*-	< 0.0018	< 4.7	100	790	0.13
MW-21	MW-21_10_20210909	9/10/2021	10	< 0.0014*-	< 0.0072	< 0.0014*-	< 0.0108*-	< 0.0014	< 4.4	< 56	< 56	<0.0053
MW-21	MW-21_15_20210909	9/10/2021	15	< 0.0017*-	< 0.0083	< 0.0017*-	< 0.0124*-	< 0.0017	15	< 53	< 53	<0.0052
MW-21	MW-21_20_20210909	9/10/2021	20	< 0.0016*-	< 0.0078	< 0.0016*-	< 0.0117*-	< 0.0016	< 4.4	< 53	< 53	<0.0051
MW-21	MW-21_25_20210909	9/10/2021	25	< 0.0016*-	< 0.0082	< 0.0016*-	< 0.0123*-	< 0.0016	< 5.0	< 54	< 54	<0.0052
B-6	B-6-2_20221104	11/4/2022	2	<0.00132	<0.00661	0.0289	0.137	<0.00132	8.63	24.7	<11.5	0.079

Table 1
Soil Analytical Data - TPH, VOCs, Lead
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

CONSTITUENT				Benzene	Toluene	Ethylbenzene	Xylene (Total)	Methyl-tertiary-butyl ether (MTBE)	TPH-G	TPH-D	TPH-O	Napthalene
		UNIT	FEET	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MTCA METHOD A SOIL				**0.03**	**7**	**6**	**9**	**0.1**	**30**	**2000**	**2000**	**5**
B-6	B-6-5_20221104	11/4/2022	5	<0.114	<0.568	3.44	**20.5**	<0.114	**2,150**	325	18.5	**16.1**
B-6	B-6-8_20221104	11/4/2022	8	<0.0107	<0.0536	1.83	**12.7**	<0.0107	**1,070**	70.3	17.9	**7.98**
B-7	B-7-6_20221103	11/3/2022	6	<0.00162	<0.00811	<0.00406	0.0150	<0.00162	<3.27	<22.7	60.9	<0.0227
B-8	B-8-2_20221103	11/3/2022	2	<0.00118	<0.00588	<0.00294	<0.00765	<0.00118	<2.95	<4.31	<10.8	<0.0215
B-8	B-8-5_20221103	11/3/2022	5	0.0012	0.0103	0.00409	0.0182	<0.00118	<2.96	<4.35	<10.9	<0.0217
B-8	B-8-10_20221104	11/4/2022	10	<0.00130	<0.00648	0.00386	0.0131	<0.00130	<3.24	<4.50	<11.3	<0.0225
B-8	B-8-15_20221104	11/4/2022	15	<0.00129	<0.00646	<0.00323	<0.00840	<0.00129	<3.22	<4.50	<11.2	<0.0225

NOTES:
Results in **bold** exceed applicable action limits
TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-O = Total Petroleum Hydrocarbons as Oil
NGV = No given value
mg/kg = milligrams/kilogram
-- = No information available
< = Not detected at or above indicated laboratory reporting limit
F2 = MS/MSD RPD exceeds control limits
H = Sample was prepped or analyzed beyond the specified holding time
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
* = LCS or LCSD is outside acceptance limits.
*3 = ISTD response or retention time outside acceptable limits.
D-2 = Hydrocarbons present in this sample resemble heavy, non-resolvable oil range organics
= Shadded represents soil removed from the site during over-excavation activities in 2018.

Table 2
Soil Analytical Data - PAHs
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

		Sample ID	B-6		B-6		B-6		B-7		B-8	
		Depth	2		5		8		6		2	
		Date	11/4/2022		11/4/2022		11/4/2022		11/3/2022		11/3/2022	
Constituent	**MTCA Method A (mg/kg)**	**Toxicity Equivalency Factor (unitless)**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**
Carcinogenic PAHs												
Benzo(a)anthracene	--	0.10	0.00689	0.000689	<0.00712	0.000712	<0.00694	0.000694	<0.00681	0.000681	<0.00646	0.000646
Benzo(a)pyrene	**0.1**	1.00	<0.00689	0.00689	<0.00712	0.00712	<0.00694	0.00694	<0.00681	0.00681	<0.00646	0.00646
Benzo(b)fluoranthene	--	0.10	<0.00689	0.000689	<0.00712	0.000712	<0.00694	0.000694	<0.00681	0.000681	<0.00646	0.000646
Benzo(k)fluoranthene	--	0.10	<0.00689	0.000689	<0.00712	0.000712	<0.00694	0.000694	<0.00681	0.000681	<0.00646	0.000646
Chrysene	--	0.01	<0.00689	0.0000689	<0.00712	0.0000712	<0.00694	0.0000694	<0.00681	0.0000681	<0.00646	0.0000646
Dibenzo(a,h)anthracene	--	0.10	<0.00689	0.000689	<0.00712	0.000712	<0.00694	0.000694	<0.00681	0.000681	<0.00646	0.000646
Indeno (1,2,3-cd) pyrene	--	0.10	<0.00689	0.000689	<0.00712	0.000712	<0.00694	0.000694	<0.00681	0.000681	<0.00646	0.000646
Total PAHs	**0.1**		0.0482	0.0104	0.0498	0.0108	0.0486	0.0105	0.0477	0.0103	0.0452	0.00975

		Sample ID	B-8		B-8		B-8					
		Depth	5		10		15					
		Date	11/3/2022		11/4/2022		11/4/2022					
Constituent	**MTCA Method A (mg/kg)**	**Toxicity Equivalency Factor (unitless)**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**
Carcinogenic PAHs												
Benzo(a)anthracene	--	0.10	<0.00652	0.000652	<0.00676	0.000676	<0.00675	0.000675				
Benzo(a)pyrene	**0.1**	1.00	<0.00652	0.00652	<0.00676	0.00676	<0.00675	0.00675				
Benzo(b)fluoranthene	--	0.10	<0.00652	0.000652	<0.00676	0.000676	<0.00675	0.000675				
Benzo(k)fluoranthene	--	0.10	<0.00652	0.000652	<0.00676	0.000676	<0.00675	0.000675				
Chrysene	--	0.01	<0.00652	0.0000652	<0.00676	0.0000676	<0.00675	0.0000675				
Dibenzo(a,h)anthracene	--	0.10	<0.00652	0.000652	<0.00676	0.000676	<0.00675	0.000675				
Indeno (1,2,3-cd) pyrene	--	0.10	<0.00652	0.000652	<0.00676	0.000676	<0.00675	0.000675				
Total PAHs	**0.1**		0.0456	0.00985	0.0473	0.0102	0.0473	0.0102				

Table 2
Soil Analytical Data - PAHs
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

		Sample ID	MW-13		MW-13		MW-13		MW-13		MW-13	
		Depth	5		8		10		12.5		14	
		Date	9/9/2019		9/12/2019		9/12/2019		9/12/2019		9/12/2019	
Constituent	**MTCA Method A (mg/kg)**	**Toxicity Equivalency Factor (unitless)**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**
Carcinogenic PAHs												
Benzo(a)anthracene	--	0.10	<0.0061	0.00061	<0.0053	0.00053	<0.0054	0.00054	<0.0046	0.00045	<0.0050	0.0005
Benzo(a)pyrene	**0.1**	1.00	<0.0061	0.0061	<0.0053	0.0053	<0.0054	0.0054	<0.0046	0.0046	<0.0050	0.005
Benzo(b)fluoranthene	--	0.10	<0.0061	0.00061	<0.0053	0.00053	<0.0054	0.00054	<0.0046	0.00046	<0.0050	0.0005
Benzo(k)fluoranthene	--	0.10	<0.0061	0.00061	<0.0053	0.00053	<0.0054	0.00054	<0.0046	0.00046	<0.0050	0.0005
Chrysene	--	0.01	<0.0061	0.000061	<0.0053	0.000053	<0.0054	0.000054	<0.0046	0.000046	<0.0050	0.00005
Dibenzo(a,h)anthracene	--	0.10	<0.0061	0.00061	<0.0053	0.00053	<0.0054	0.00054	<0.0046	0.00046	<0.0050	0.0005
Indeno (1,2,3-cd) pyrene	--	0.10	<0.0061	0.00061	<0.0053	0.00053	<0.0054	0.00054	<0.0046	0.00046	<0.0050	0.0005
Total PAHs	**0.1**		<0.0427	0.009211	<0.0371	0.008003	<0.0378	0.008154	<0.0322	0.006936	<0.035	0.00755

		Sample ID	MW-15		MW-15		MW-15		MW-15		HO-W	
		Depth	5		10		12		14		4	
		Date	9/9/2019		9/11/2019		9/11/2019		9/11/2019		12/18/2018	
Constituent	**MTCA Method A (mg/kg)**	**Toxicity Equivalency Factor (unitless)**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**
Carcinogenic PAHs												
Benzo(a)anthracene	--	0.10	0.031	0.0031	<0.0050	0.0005	<0.0040	0.0004	<0.0041	0.00041	0.062	0.0062
Benzo(a)pyrene	**0.1**	1.00	0.02	0.02	<0.0050	0.005	<0.0040	0.004	<0.0041	0.0041	<0.02	0.02
Benzo(b)fluoranthene	--	0.10	0.039	0.0039	<0.0050	0.0005	<0.0040	0.0004	<0.0041	0.00041	<0.02	0.002
Benzo(k)fluoranthene	--	0.10	0.012	0.0012	<0.0050	0.0005	<0.0040	0.0004	<0.0041	0.00041	<0.02	0.002
Chrysene	--	0.01	0.041 F2	0.0041	<0.0050	0.00005	<0.0040	0.00004	<0.0041	0.000041	<0.02	0.0002
Dibenzo(a,h)anthracene	--	0.10	<0.0057	0.00057	<0.0050	0.0005	<0.0040	0.0004	<0.0041	0.00041	<0.02	0.002
Indeno (1,2,3-cd) pyrene	--	0.10	0.028	0.0028	<0.0050	0.0005	<0.0040	0.0004	<0.0041	0.00041	<0.02	0.002
Total PAHs	**0.1**	--	**0.17385**	0.03567	<0.035	0.00755	<0.028	0.00604	<0.0287	0.006191	**0.182**	0.0344

Table 2
Soil Analytical Data - PAHs
ARCO Facility No. 980
10822 Rosevelt Way NE, Seattle, WA 98125

		Sample ID	HO-N		HO-E		HO-S		HO-B		HO-PIPE	
		Depth	4		4		4		6		2	
		Date	12/18/2018		12/18/2018		12/18/2018		12/18/2018		12/18/2018	
Constituent	**MTCA Method A (mg/kg)**	**Toxicity Equivalency Factor (unitless)**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**	**Measured Soil Concentration (mg/kg)**	**Toxic Equivalent Concentration (mg/kg) 1**
Carcinogenic PAHs												
Benzo(a)anthracene	--	0.10	<0.02	0.002	0.13	0.013	<0.02	0.002	0.033	0.0033	0.083	0.0083
Benzo(a)pyrene	**0.1**	1.00	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02
Benzo(b)fluoranthene	--	0.10	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002
Benzo(k)fluoranthene	--	0.10	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002
Chrysene	--	0.01	<0.02	0.0002	0.14	0.0014	<0.02	0.0002	0.045	0.00045	0.099	0.00099
Dibenzo(a,h)anthracene	--	0.10	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002
Indeno (1,2,3-cd) pyrene	--	0.10	<0.02	0.002	<0.02	0.002	<0.02	0.002	<0.02	0.002	0.026	0.0026
Total PAHs	**0.1**	--	**0.14**	0.0302	**0.37**	0.0424	**0.14**	0.0302	**0.178**	0.03175	**0.288**	0.03789

Notes:

PAH = Polycyclic aromatic hydrocarbons by EPA Method 8270D SIM

mg/kg = milligrams/kilogram

-- = No information available

< = Not detected at or above indicated laboratory reporting limit

F2 = MS/MSD RPD exceeds control limits

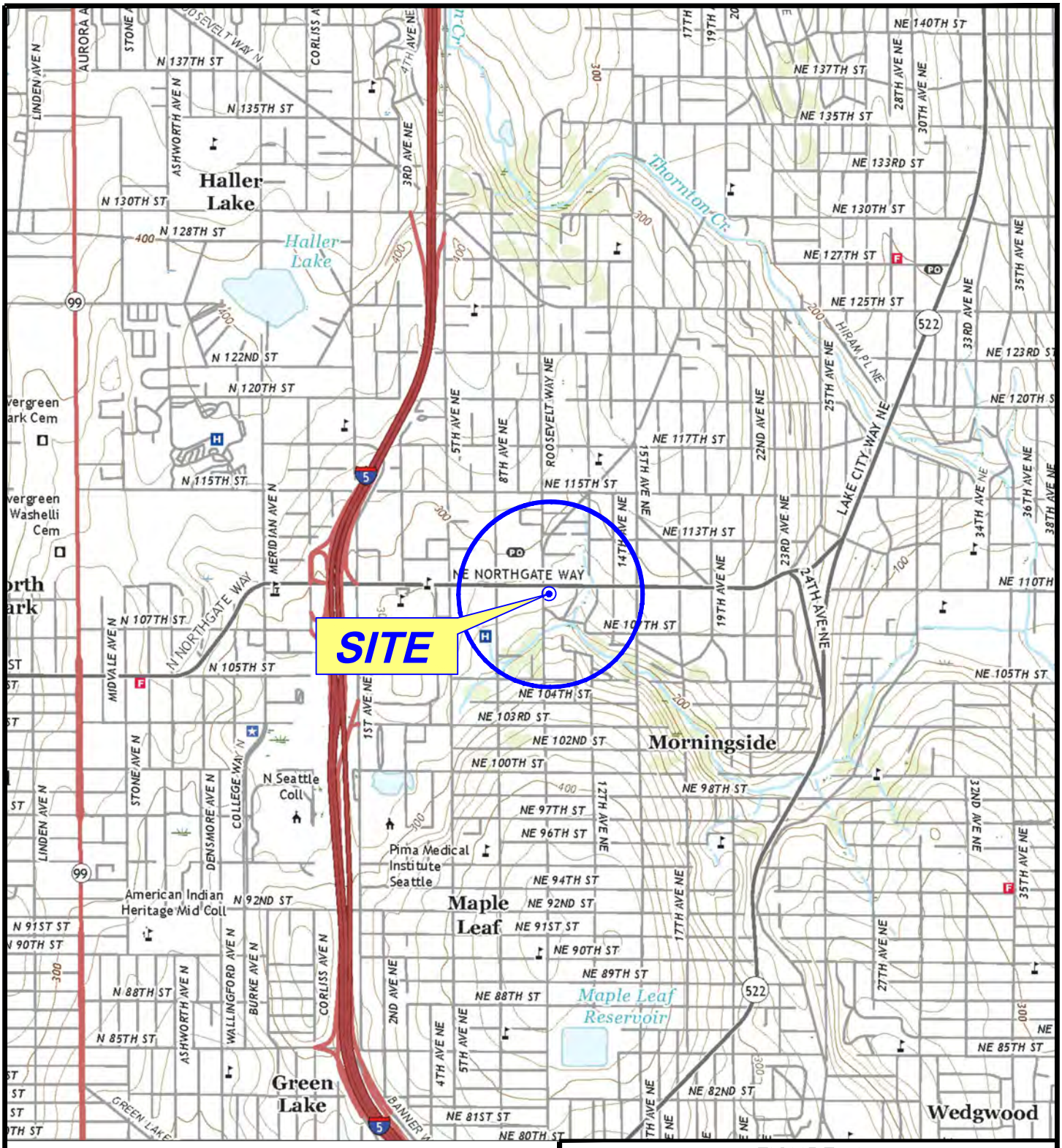
Additional non-carcinogenic PAHs analyzed can be found in the laboratory analytical report

MTCA Method A cleanup level for PAHs is 0.1 mg/kg for the total of all carcinogenic PAHs

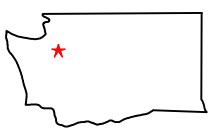
1 = Toxic equivalent concentration calculated by multiplying the measures soil concentration by the toxicity equivalency factor

Values not detected at or above laboraotry reporting limits, the reporting limit value was used in the toxic equivalency calculation

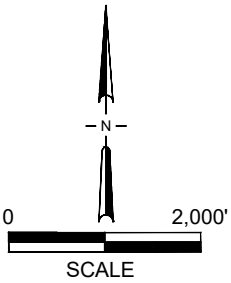
Figures



GENERAL NOTES:
BASE MAP FROM TOPO!
SEATTLE NORTH E., WA. QUADRANGLE
7.5 MINUTE TOPOGRAPHIC MAP



QUADRANGLE LOCATION



SCALE

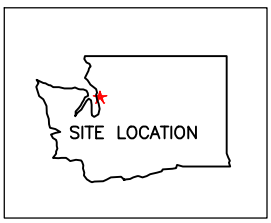
FIGURE 1
SITE LOCATION MAP

ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. WA - 00980 SEATTLE		DRAWN BY J. HIGHFILL	
FILE NO. 0980-SLM18		PREPARED BY M. BERNARD	
DATE 12 Dec 18	REV. 0	REVIEWED BY	

antea group

GENERAL NOTES:
BASE MAP FROM GOOGLE EARTH 2018



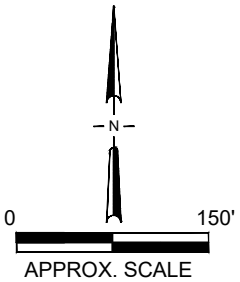
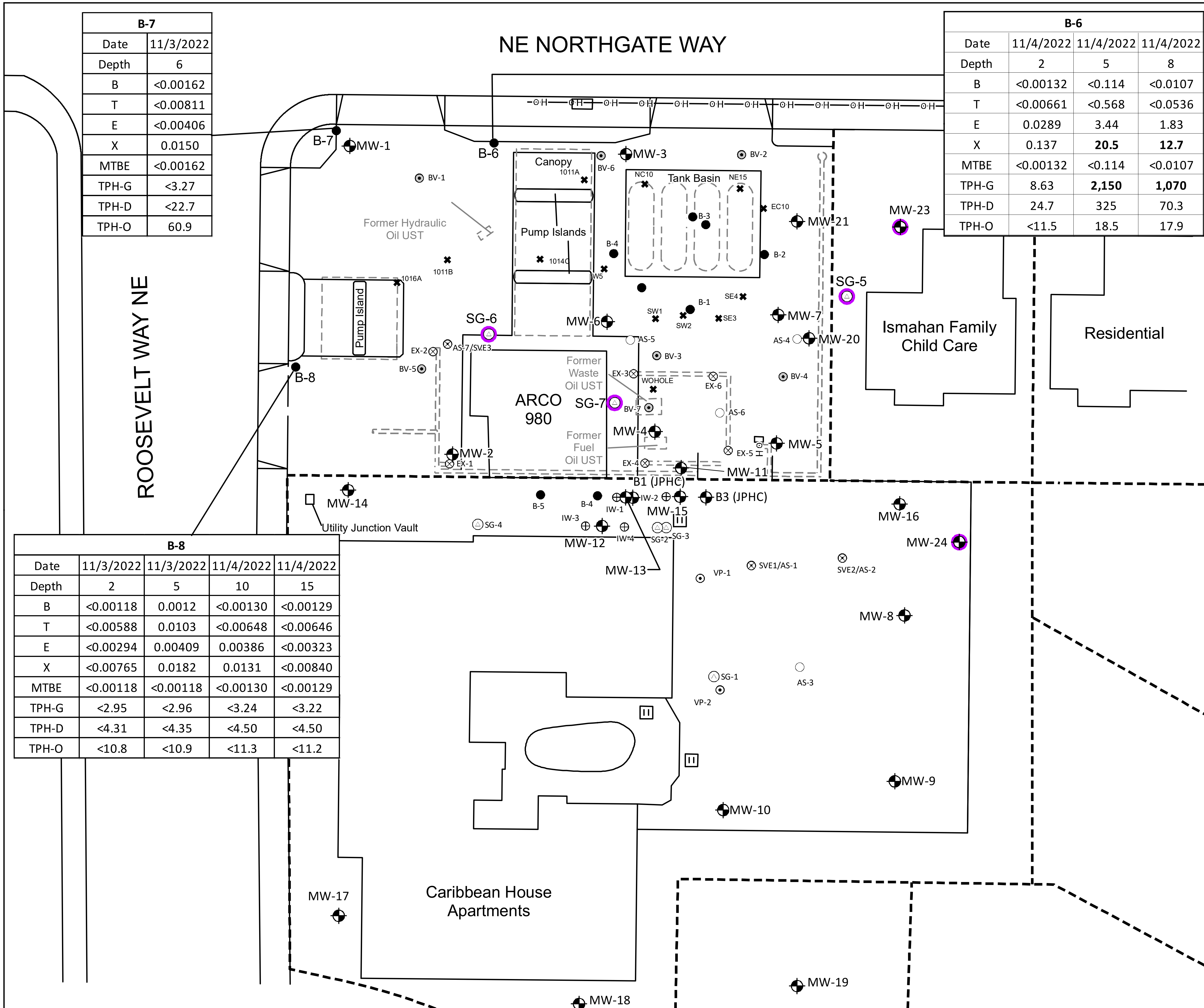


FIGURE 2
SITE AERIAL MAP

ARCO FACILITY NO. 0980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO. WA - 00980 SEATTLE	DRAWN BY J. HIGHFILL	
FILE NO. 980G-SAM18	PREPARED BY M. BERNARD	
DATE 12 DEC 18 / REV. 1	REVIEWED BY	

antea group



B-7	
Date	11/3/2022
Depth	6
B	<0.00162
T	<0.00811
E	<0.00406
X	0.0150
MTBE	<0.00162
TPH-G	<3.27
TPH-D	<22.7
TPH-O	60.9

B-6			
Date	11/4/2022	11/4/2022	11/4/2022
Depth	2	5	8
B	<0.00132	<0.114	<0.0107
T	<0.00661	<0.568	<0.0536
E	0.0289	3.44	1.83
X	0.137	**20.5**	**12.7**
MTBE	<0.00132	<0.114	<0.0107
TPH-G	8.63	**2,150**	**1,070**
TPH-D	24.7	325	70.3
TPH-O	<11.5	18.5	17.9

B-8				
Date	11/3/2022	11/3/2022	11/4/2022	11/4/2022
Depth	2	5	10	15
B	<0.00118	0.0012	<0.00130	<0.00129
T	<0.00588	0.0103	<0.00648	<0.00646
E	<0.00294	0.00409	0.00386	<0.00323
X	<0.00765	0.0182	0.0131	<0.00840
MTBE	<0.00118	<0.00118	<0.00130	<0.00129
TPH-G	<2.95	<2.96	<3.24	<3.22
TPH-D	<4.31	<4.35	<4.50	<4.50
TPH-O	<10.8	<10.9	<11.3	<11.2

LEGEND

- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION
- WELL INSTALLED NOVEMBER 2022
- SOIL SAMPLING LOCATION
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- OVERHEAD UTILITY LINES
- CATCH BASIN

B-6	Boring Location
Date	Sample Date
Depth	Sample Depth (ft)
B	Benzene
T	Toluene
E	Ethybenzene
X	Total Xylenes
MTBE	Methyl-tert-butyl ether
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-O	Total Petroleum Hydrocarbons as Oil

Results in **BOLD** exceed applicable action limits
All results given in milligrams per kilograms (mg/kg)
< = Not detected at or above indicated laboratory reporting limit

FIGURE 3

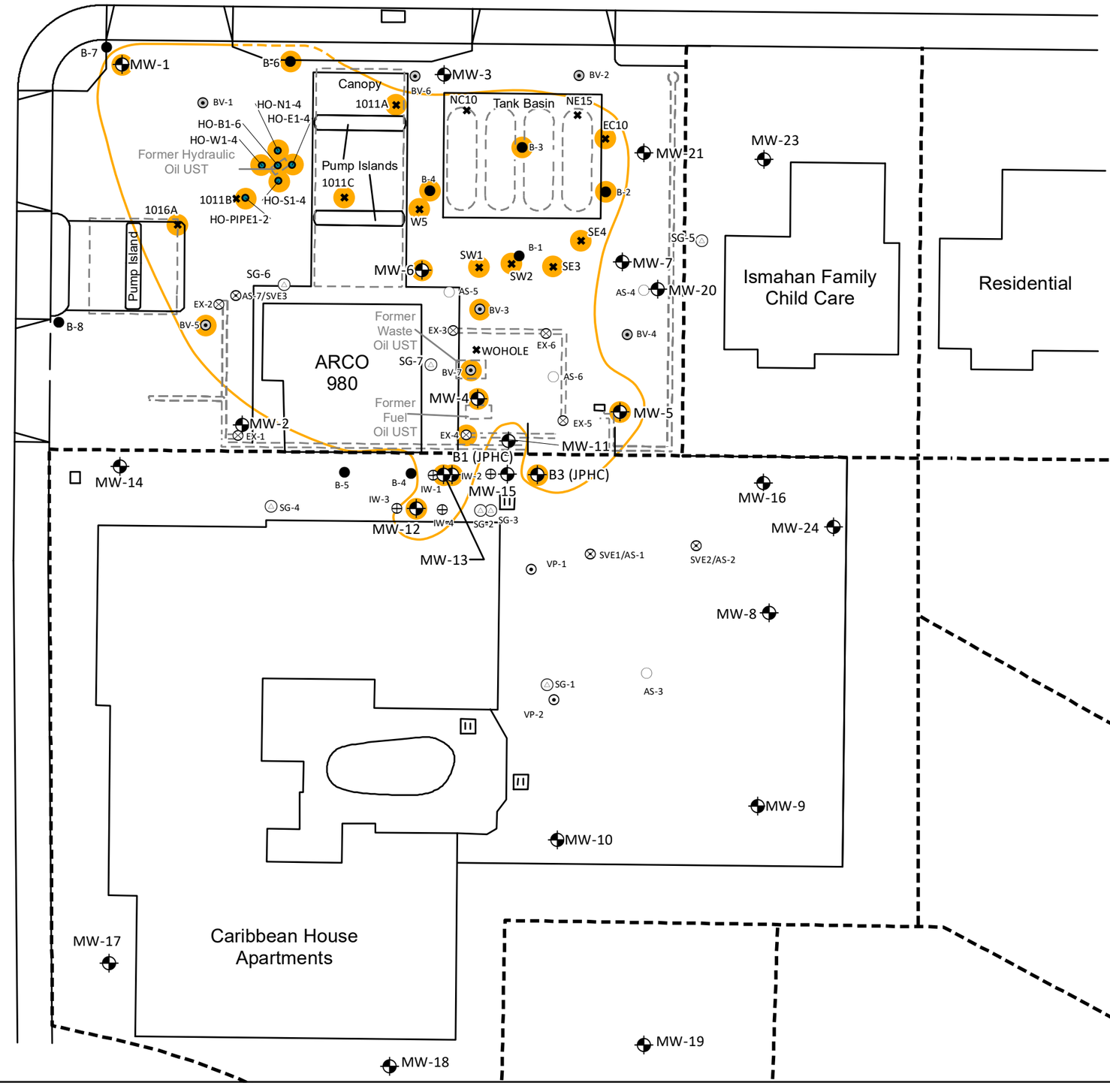
SOIL ANALYTICAL DATA MAP
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
WA-00980	JS	1:360
DATE	REVIEWED BY	MAP SCALE
12/8/2022	MR	1 inch = 30 feet

anteagroup

NE NORTHGATE WAY

ROOSEVELT WAY NE



LEGEND

- HYDRAULIC EXCAVATION SAMPLES
- GROUNDWATER MONITORING WELL
- AIR SPARGING WELL LOCATION
- EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INJECTION WELL LOCATION INSTALLED BY INNOVEX
- SOIL VAPOR EXTRACTION / VACUUM PRESSURE MONITORING POINT
- BIOVENTING WELL LOCATION
- SOIL GAS PROBE LOCATION
- SOIL BORING LOCATION (1989)
- SOIL SAMPLING LOCATION (1990)
- PROPERTY BOUNDARY
- SITE FEATURES
- FORMER SITE FEATURES
- MTCA SOIL EXCEEDANCE
- SOIL MTCA BOUNDARY
- INFERRED SOIL MTCA BOUNDARY
- CATCH BASIN

0 10 20 30 60 90 Feet

N

FIGURE 4

MTCA SITE BOUNDARY MAP - SOIL
ARCO FACILITY NO. 980
10822 ROOSEVELT WAY NE
SEATTLE, WASHINGTON

PROJECT NO.	PREPARED BY	REF SCALE
00980SA211	MB	1:360
DATE	REVIEWED BY	MAP SCALE
12/12/2022	MR	1 inch = 30 feet

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Appendix A - Summary of Field Procedures and Quality Assurance Plan

FIELD PROCEDURES

The boring locations were marked, and the Utility Underground Location Center was contacted at least 72 hours before the Site walk was scheduled. A Site walk was conducted to visually inspect utility markers and indicators. Applied Professional Services, Inc. (APS) of North Bend, Washington was utilized to identify private subsurface utilities. APS swept a search zone of 15 feet in all directions surrounding the proposed boring locations. APS uses Metrotech 810 multi-frequency locators to identify conductive subsurface utilities. All utilities were marked in paint and recorded on a drawing/plot plan.

Prior to drilling, each boring location was cleared to a depth of at least 6.5 feet below ground surface (bgs) and 120 percent of the drilling tool diameter with an airknife, vacuum truck, and/or hand auger. Locations deemed necessary that were within 5 feet of marked utilities required approved variance permits and stipulations of control before breaking ground. Variance controls included: not working within 2 feet of marked utilities, using only airknife and vacuum truck operations to bore, if subsurface resistance or pea gravel is encountered stop work. Following utility clearing, borings were advanced using a track-mounted hollow stem auger drill rig operated by Cascade Drilling, Inc. (Cascade). Discrete soil samples were collected from each boring to characterize site soils with respect to petroleum hydrocarbon impacts.

For shallow soil samples collected during borehole pre-clearance, Cascade would cease air knife and vacuum truck operations 1.5 feet above the desired sample depth, and a hand auger would be used to extend the boring to the desired depth. The hand auger was decontaminated between each sample. After collecting the shallow sample(s), Cascade continued to widen and clear the boring to 6.5 feet bgs. Soil samples at depths greater than 6.5 feet bgs were collected using a split spoon sampler advanced ahead of the auger bits to collect soils samples. Soil samples were transferred from the split spoon to single-use plastic bags for observation and collection of laboratory samples.

Soil samples were collected directly from the hand auger and plastic bags using a single-use syringe sampler and placed into laboratory-supplied 40-milliliter (mL) VOA vials preserved with methanol in accordance with Environmental Protection Agency (EPA) Method 5035A. Additional soil was placed into 4 to 8-ounce laboratory-supplied glass soil jars. The samples were labeled and immediately placed in cold storage until submitted to the laboratory for analysis. The samples were couriered to Pace Analytical (Pace) for quantitative chemical analysis following chain-of-custody documentation.

After sample collection, soil was field screened for the presence of volatile organic compounds with a photoionization detector (PID) to aid in the facilitation of selecting representative soil samples for chemical analysis. The PID was a RAE Systems MiniRAE 3000 PID equipped with a 10.6 electron volt (eV) ultraviolet (UV) lamp and calibrated to a 100-ppm isobutylene calibration gas for direct readings in parts per million (ppm). The operating range of the detector is from 0 to 15,000 parts per million with a minimum detection limit of 0.1 ppm. It should be noted that the PID measurements are considered semi-quantitative data since the instrument detects all organic compounds with ionization potentials less than 10.2 eV. Clear plastic bags were filled to one-third to half capacity and then sealed. Soils in the bags were gently agitated to facilitate the breakup of any lumps and allowed to sit for approximately 10 minutes prior to analyzing the air above the soil in the bag. The PID probe was inserted into an opening of the plastic bag and the maximum vapor concentration was recorded for each soil sample collected.

ANALYTICAL METHODS

SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to delivery to the laboratory. Each sample submitted for analysis was labeled and identified with the project number, date and time of sample collection, sampler, and sample number unique to the sample. This information, in addition to any field measurements, noted names of on-site personnel, and any other pertinent field observations were recorded in the field notes.

Upon arrival at the laboratory, the sample control personnel at the laboratory verified sample integrity and confirmed that the sample was collected in the proper container, packaged correctly, and that there was adequate volume of sample for the required analyses. The laboratory assigned a unique log number for identification of each sample throughout analyses and reporting. The log number was recorded on the chain of custody form and in the legally required logbook maintained in the laboratory. The sample description, date received, client name, and any other relevant information was recorded.

ANALYTICAL QUALITY ASSURANCE

In addition to routine calibration of the analytical instruments with standards and blanks, the analyst is required to run duplicates and spikes on 10 percent of the analyses to insure an added measure of precision and accuracy. Accuracy is also verified through the following:

- U.S. Environmental Protection Agency (EPA) and State certification programs.
- Participation in an inter-laboratory or "round-robin" quality assurance program.
- Verification of results with an alternative method. For example, calcium may be determined by atomic absorption, ion chromatography, or titrimetric methods.

ANALYTICAL METHODS

The analytical tests performed for this evaluation were chosen based upon standard requirements issued by the Washington State Department of Ecology. Select soil and groundwater samples collected during this investigation were analyzed by the following methods:

- Benzene, toluene, ethylbenzene (BTEX) and methyl-tertiary-butyl ether (MTBE) by EPA Method 8260B;
- TPH-G by Northwest Method NWTPH-Gx;
- TPH-D and TPH-O by Northwest Method NWTPH-Dx without silica gel cleanup;
- Polynuclear aromatic hydrocarbons (PAHs) and Naphthalene by Method 8270SIM; and
- Resource Conservation and Recovery Act (RCRA) 8 metals using EPA Method 200.8 (waste characterization purposes only).

Appendix B - Boring Logs

antea group	WELL/BORING: MW-23	Unique Ecology Well ID: BNE 896
	INSTALLATION DATE: 11/3/22	DRILLING METHOD: Hollow Stem
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Direct Push
	CLIENT: BP	BORING DIAMETER: 8.25"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 22'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 7-22' (0.010")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 6-22' (10X20)

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe
Concrete						1					
Bentonite						2			SP		SAND: brown; 95% fine sand; 5% gravel.
						3					
						4					
						5			SW		SAND: brown; 90% fine to coarse sand; 10% gravel.
						6					
			-	0.0	7 12 20	7					
						8			SP		SAND with Silt: brown; 10% silt; 90% fine sand; trace gravel.
						9			SM		Silty SAND: brown; 30% silt; 70% fine sand.
						10					
			DMP	-	50/6"	11			SM		Same as Above.
						12					
						13					
Sand						14					
						15			SM		Silty SAND: 25% silt; 70% fine to medium sand; 5% gravel.
						16					
						17					
						18					
						19					
	▽		WET	-	50/6"	20			SM		Same as Above.
						21					
						22					

CASING ELEVATION	-	DTC: -
SURVEY DATE:	-	
DTW:	-	

antea group	WELL/BORING: MW-24	Unique Ecology Well ID: BNE 898
	INSTALLATION DATE: 11/4/22	DRILLING METHOD: Hollow Stem
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Direct Push
	CLIENT: BP	BORING DIAMETER: 7"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 24.5'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 9–24' (0.010")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 7-24' (10X20)

CASING ELEVATION	- DTC: -
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete						1					
						2					
						3					
Bentonite						4					
						5					
			DRY	0.0	25 50/6"	6			ML		SILT with Sand: light brown/grey; 90% silt; 10% fine sand; trace gravel.
						7					
						8					
			DRY	0.0	50/6"	9			ML		Same as Above.
						10					
						11					
						12					
						13					
Sand						14					
			MST	0.1	50/6"	15			SM		Silty SAND: dark brown; 30% silt; 60% fine sand; 10% gravel; tree roots.
						16					
						17					
						18					
						19					
	▽		WET	-	50/6"	20			SM		No Recovery: split spoon wet.
						21					
						22					

	WELL/BORING: MW-24	Unique Ecology Well ID: BNE 898
	INSTALLATION DATE: 11/4/22	DRILLING METHOD: Hollow Stem
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Direct Push
	CLIENT: BP	BORING DIAMETER: 7"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 24.5'
	CITY: Seattle	WELL CASING: SCH 40 PVC 2"
	STATE: WA	WELL SCREEN: 9–24' (0.010")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 7-24' (10X20)

CASING ELEVATION	- DTC: -
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WET	-	50/6"	23–24			SM		SAND with Silt: 10% silt; 80% fine to medium sand; 10% gravel.
						24–25					
						25–26					
						26–27					
						27–28					
						28–29					
						29–30					
						30–31					
						31–32					
						32–33					
						33–34					
						34–35					
						35–36					
						36–37					
						37–38					
						38–39					
						39–40					
						40–41					
						41–42					
						42–43					
						43–44					

antea group	WELL/BORING: SG-5	Unique Ecology Well ID: BNE 897
	INSTALLATION DATE: 11/3/22	DRILLING METHOD: Air Knife
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 7.67'
	CITY: Seattle	WELL CASING: 0.25" Teflon Tubing
	STATE: WA	WELL SCREEN: 6.67-7.17' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 6.17'-7.67 (10X20)

CASING ELEVATION	-	DTC: -
SURVEY DATE:	-	
DTW:	-	

DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete; Pre-Hydrated Bentonite; Dry Bentonite; Sand			DMP	0.0	-	1–11			SP		SAND with Gravel: brown; 95% fine sand; 5% gravel/cobble.

antea group	WELL/BORING: SG-6	Unique Ecology Well ID: BNE 900
	INSTALLATION DATE: 11/4/22	DRILLING METHOD: Air Knife
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: NA
	CLIENT: BP	BORING DIAMETER: 6"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 5'
	CITY: Seattle	WELL CASING: 0.25" Teflon Tubing
	STATE: WA	WELL SCREEN: 3.5-4' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 3-5' (10X20)

CASING ELEVATION	- DTC: -
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete / Pre-Hydrated Bentonite / Dry Bentonite / Sand	▽	▼	WET	0.0	-	1–11			SW		SAND: brown; fine to medium sand; trace gravel.

	WELL/BORING: SG-7	Unique Ecology Well ID: BNE 899
	INSTALLATION DATE: 11/4/22	DRILLING METHOD: Air Knife
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: NA
	CLIENT: BP	BORING DIAMETER: 5"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 5'
	CITY: Seattle	WELL CASING: 0.25" Teflon Tubing
	STATE: WA	WELL SCREEN: 4-4.5' (0.0057")
	DRILLER: Cascade Drilling, Inc.	SAND PACK: 3.6-5' (10X20)

CASING ELEVATION	- DTC: -
SURVEY DATE:	-
DTW:	-
DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe	

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Concrete / Pre-Hydrated Bentonite / Dry Bentonite / Sand			-	0.0	-	1–11			SW		SAND: brown; fine to medium sand; trace gravel.

antea group	WELL/BORING: B-6	Unique Ecology Well ID: NA
	INSTALLATION DATE: 11/4/22	DRILLING METHOD: Air Knife
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 7"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 8'
	CITY: Seattle	WELL CASING: NA
	STATE: WA	WELL SCREEN: NA
	DRILLER: Cascade Drilling, Inc.	SAND PACK: NA

CASING ELEVATION	-	DTC: -
SURVEY DATE:	-	
DTW:	-	

DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
			DMP	196.0	-	1–2		■	SM		SAND with silt: dark brown; 10% silt; 75% fine to medium sand; 15% gravel.
			DMP	1916	-	4–5		■	ML		Gravelly SILT with Sand: dark grey; 50% clay/silt; 20% fine sand; 30% gravel.
			DMP	295.7	-	7–8		■	SM		Silty SAND with Gravel: dark grey; 15% silt; 70% fine to medium sand; 15% gravel.

antea group	WELL/BORING: B-7	Unique Ecology Well ID: NA
	INSTALLATION DATE: 11/3/22	DRILLING METHOD: Hand Auger
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Hand Auger
	CLIENT: BP	BORING DIAMETER: 8"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 6'
	CITY: Seattle	WELL CASING: NA
	STATE: WA	WELL SCREEN: NA
	DRILLER: Cascade Drilling, Inc.	SAND PACK: NA

CASING ELEVATION	- DTC: -
SURVEY DATE:	-
DTW:	-

DESCRIPTION/LOGGED BY: Jonah Leurquin

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
			DMP	0.3	-	1–22			SM		Silty SAND: dark brown; 15% silt; 80% very fine to fine sand; 5% gravel.

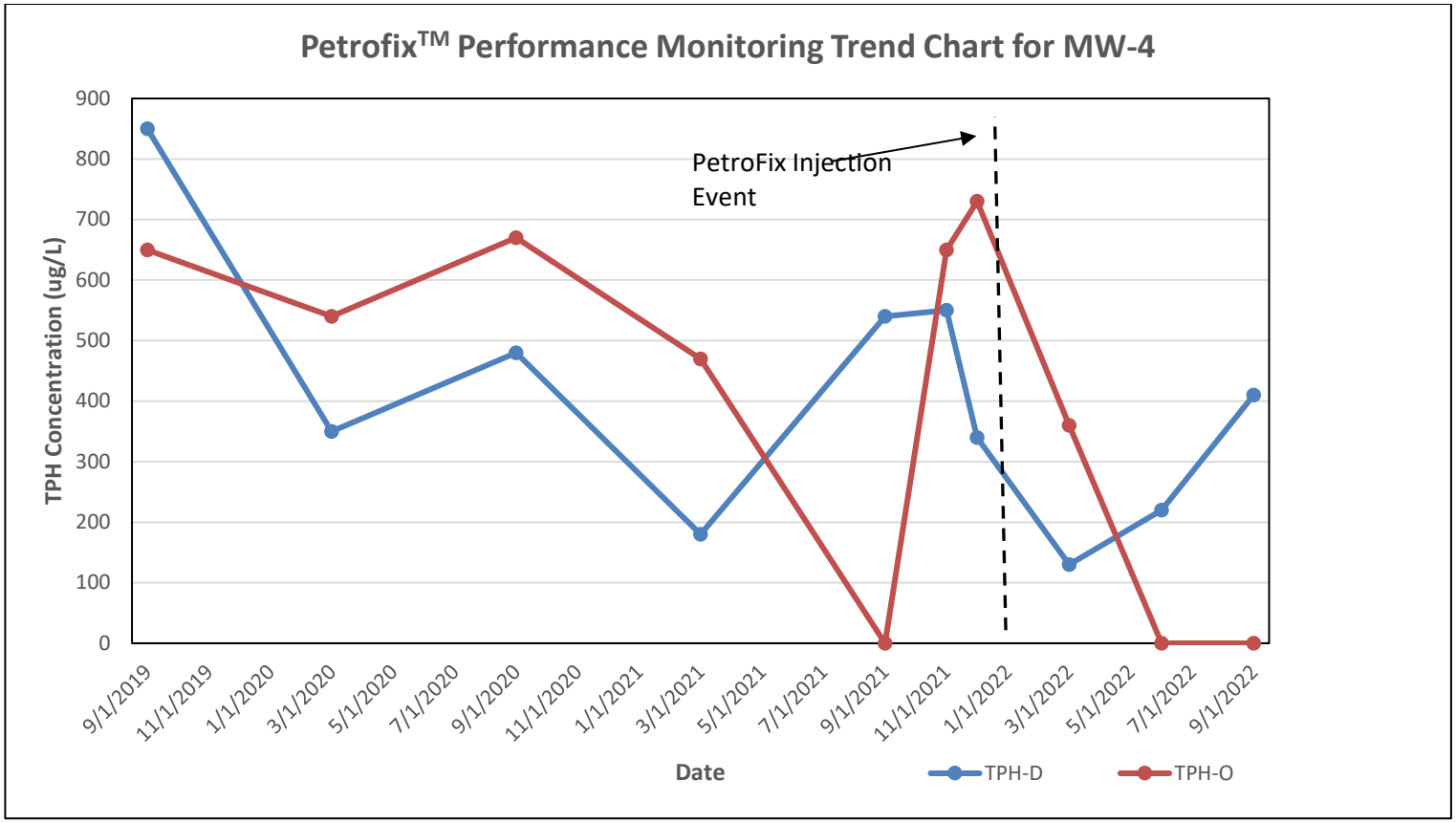
antea group	WELL/BORING: B-8	Unique Ecology Well ID: NA
	INSTALLATION DATE: 11/3/22	DRILLING METHOD: Hand Auger/Hollow Stem
	PROJECT: WA – 00980 Seattle	DRILLING METHOD: Direct Push
	CLIENT: BP	BORING DIAMETER: 8.25"
	LOCATION: 10822 Roosevelt Way NE	BORING DEPTH: 15'
	CITY: Seattle	WELL CASING: NA
	STATE: WA	WELL SCREEN: NA
	DRILLER: Cascade Drilling, Inc.	SAND PACK: NA

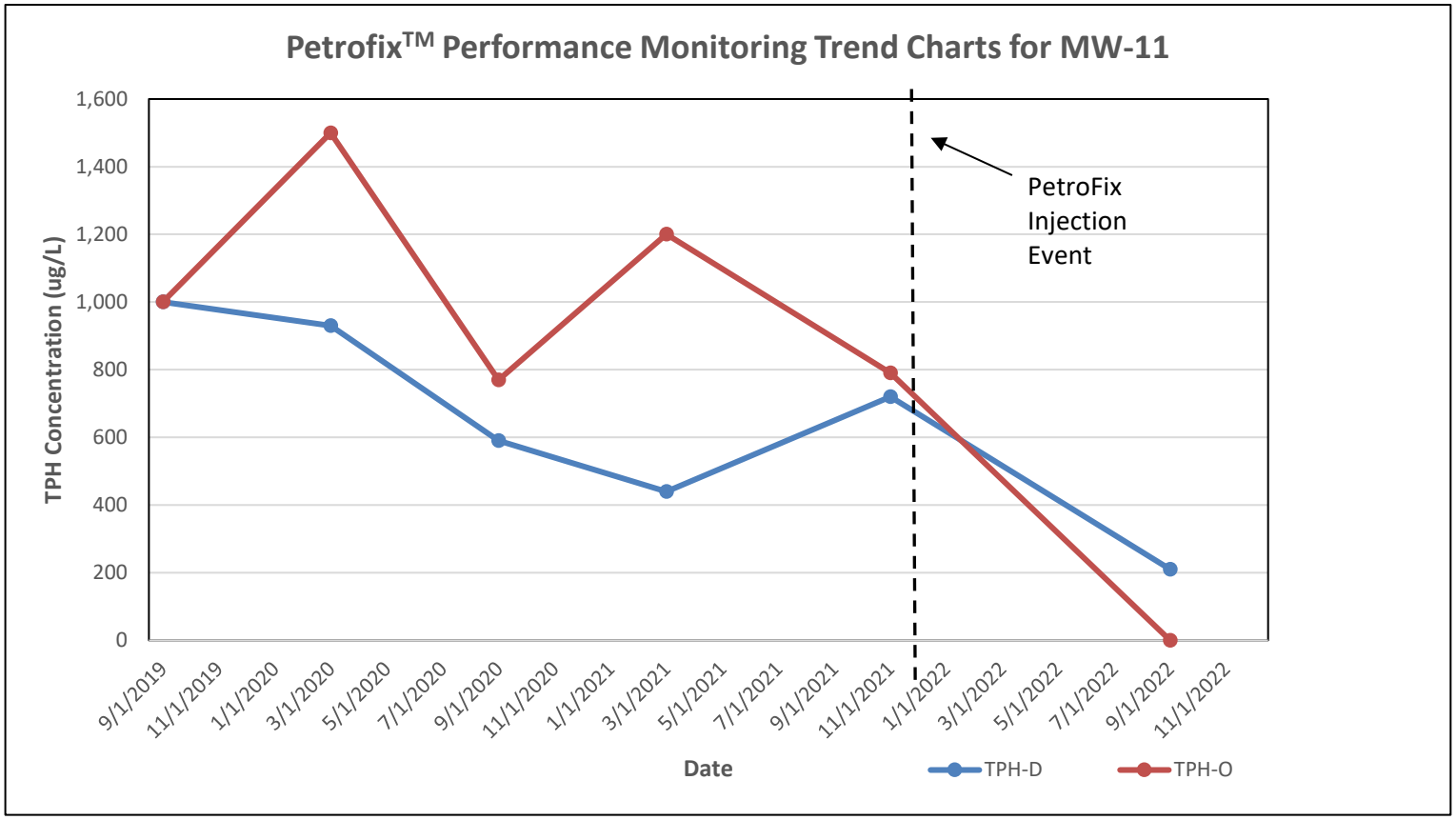
CASING ELEVATION	-	DTC: -
SURVEY DATE:	-	
DTW:	-	

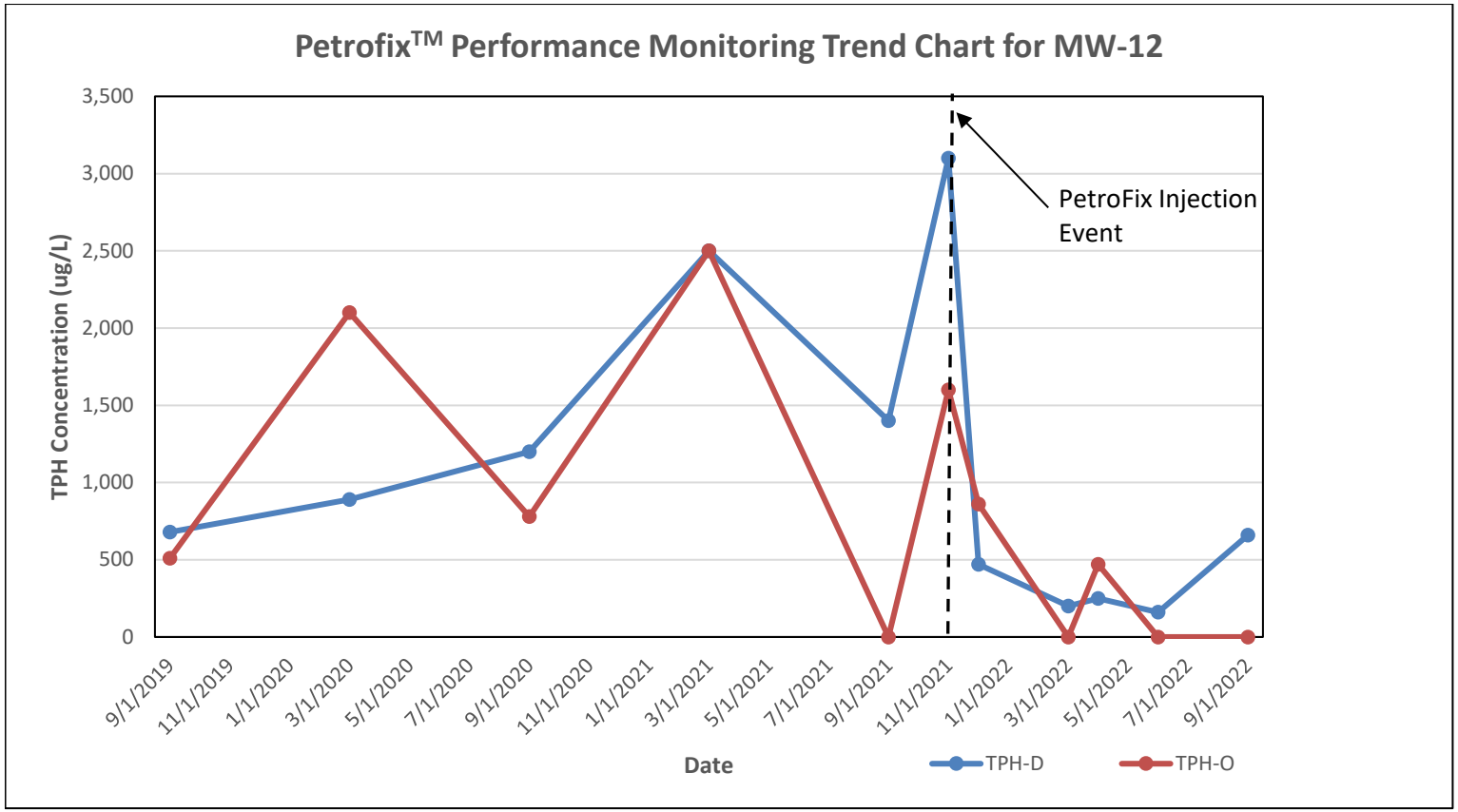
DESCRIPTION/LOGGED BY: Jonah Leurquin and Jesse Schewe

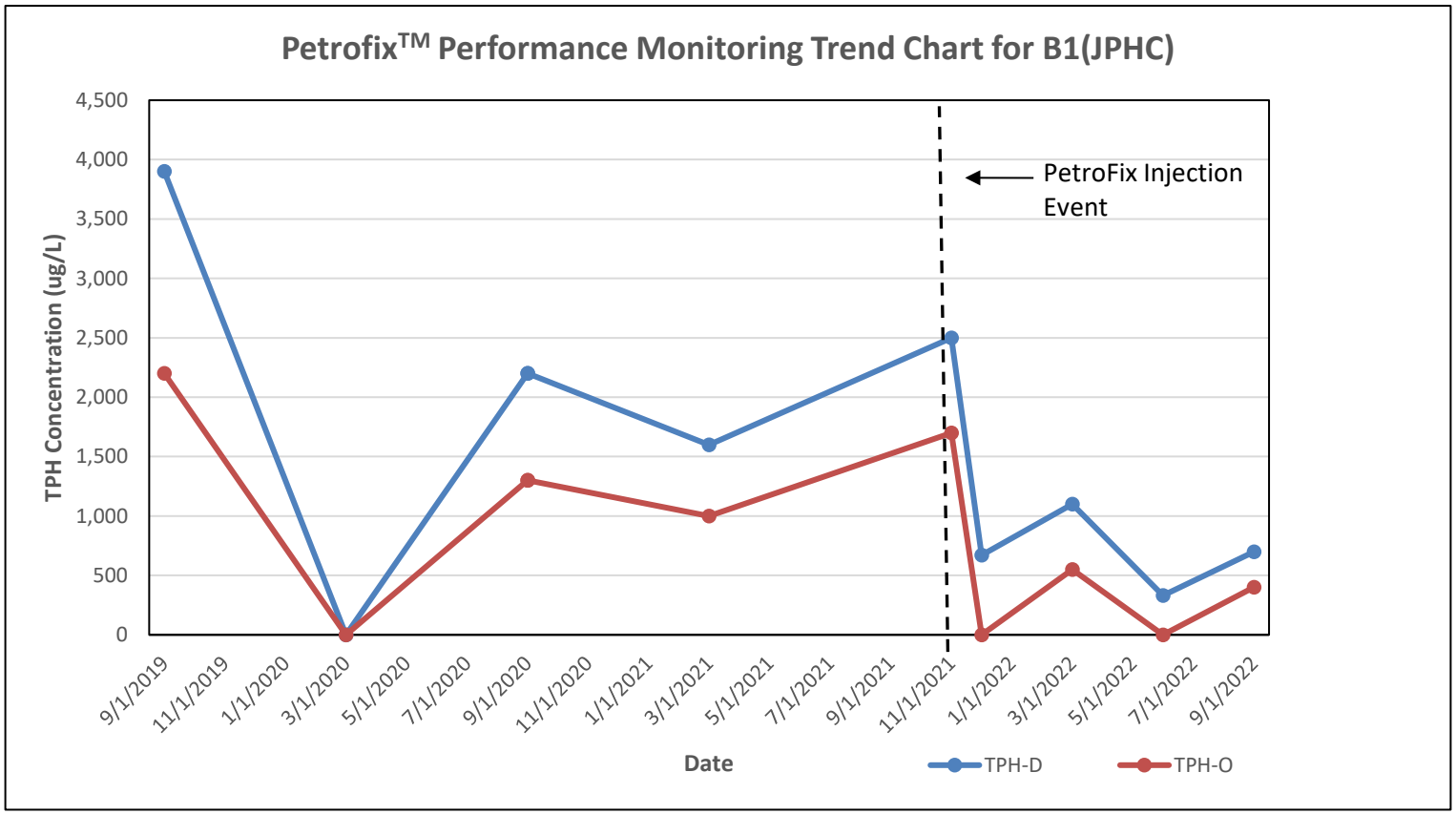
WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
			-	0.0	-	1–4			SC		Clayey SAND with Gravel: grey; 10% clay; 50% medium sand; 40% gravel.
			-	0.0	-	5–8			SP		SAND with Gravel: brown; 80% medium sand; 20% gravel.
			WET	0.0	15 50/6"	9–13			SW		SAND with Silt: grey; 20% silt; 80% fine to medium sand; trace gravel.
			WET	0.0	17 50/6"	14–15			SW SW		SAND: 100% fine to medium sand; trace gravel. SAND: 100% medium to coarse sand; trace gravel.
						16–22					

Appendix C - Petrofix™ Performance Monitoring Trend Charts


Petrofix™ Performance Monitoring Trend Chart for MW-4
TPH Concentration (ug/L)
900
800
700
600
500
400
300
200
100
0
PetroFix Injection Event
9/1/2019
11/1/2019
1/1/2020
3/1/2020
5/1/2020
7/1/2020
9/1/2020
11/1/2020
1/1/2021
3/1/2021
5/1/2021
7/1/2021
9/1/2021
11/1/2021
1/1/2022
3/1/2022
5/1/2022
7/1/2022
9/1/2022
Date
TPH-D
TPH-O


Petrofix™ Performance Monitoring Trend Charts for MW-11
TPH Concentration (ug/L)
1,600
1,400
1,200
1,000
800
600
400
200
0
PetroFix Injection Event
9/1/2019
11/1/2019
1/1/2020
3/1/2020
5/1/2020
7/1/2020
9/1/2020
11/1/2020
1/1/2021
3/1/2021
5/1/2021
7/1/2021
9/1/2021
11/1/2021
1/1/2022
3/1/2022
5/1/2022
7/1/2022
9/1/2022
11/1/2022
Date
TPH-D
TPH-O


Petrofix™ Performance Monitoring Trend Chart for MW-12
TPH Concentration (ug/L)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
PetroFix Injection Event
9/1/2019
11/1/2019
1/1/2020
3/1/2020
5/1/2020
7/1/2020
9/1/2020
11/1/2020
1/1/2021
3/1/2021
5/1/2021
7/1/2021
9/1/2021
11/1/2021
1/1/2022
3/1/2022
5/1/2022
7/1/2022
9/1/2022
Date
TPH-D
TPH-O


Petrofix™ Performance Monitoring Trend Chart for B1(JPHC)
TPH Concentration (ug/L)
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
PetroFix Injection Event
9/1/2019
11/1/2019
1/1/2020
3/1/2020
5/1/2020
7/1/2020
9/1/2020
11/1/2020
1/1/2021
3/1/2021
5/1/2021
7/1/2021
9/1/2021
11/1/2021
1/1/2022
3/1/2022
5/1/2022
7/1/2022
9/1/2022
Date
TPH-D
TPH-O

Appendix D - Soil Laboratory Analytical Report and Chain-of-Custody Documentation

ANALYTICAL REPORT

November 30, 2022

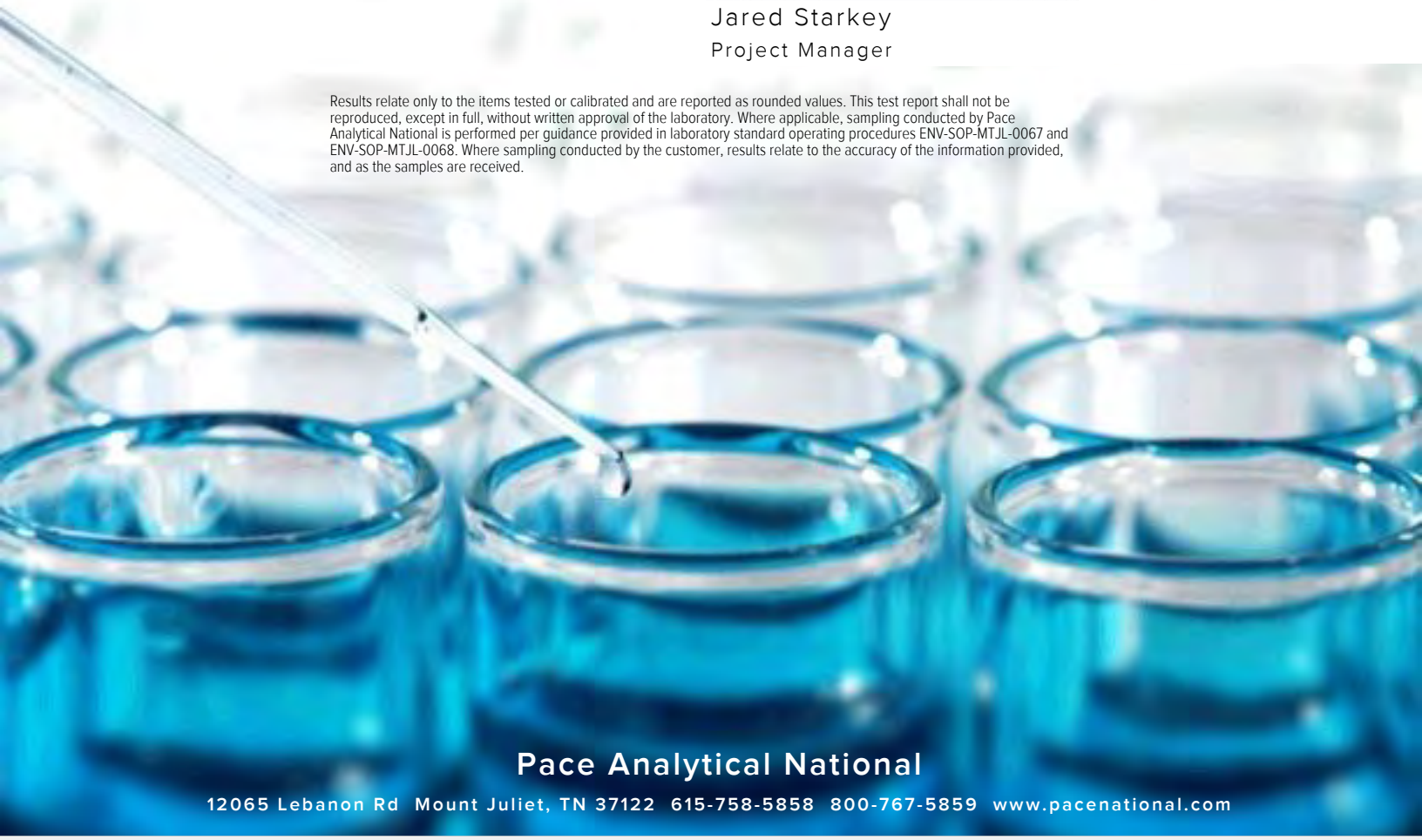
BPLAMP - Antea Group

Sample Delivery Group:	L1555245
Samples Received:	11/08/2022
Project Number:	WA-00980 SEATTLE
Description:	ARCO 580 SEATTLE
Site:	980 ARCO
Report To:	Brad Jackson 205 SE Spokane Street Suite 307 Portland, OR 97202

Entire Report Reviewed By:

Jared Starkey
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

B-8-2_20221103 L1555245-01 Solid

Collected by: JL JS | Collected date/time: 11/03/22 13:00 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958892	25	11/03/22 13:00	11/13/22 12:41	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 13:00	11/12/22 21:44	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 11:33	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 12:42	AMM	Mt. Juliet, TN

B-8-5_20221103 L1555245-02 Solid

Collected by: JL JS | Collected date/time: 11/03/22 13:15 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958892	25	11/03/22 13:15	11/13/22 13:04	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 13:15	11/12/22 22:04	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 14:30	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 12:59	AMM	Mt. Juliet, TN

B-7-6_20221103 L1555245-03 Solid

Collected by: JL JS | Collected date/time: 11/03/22 15:15 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958892	25.8	11/03/22 15:15	11/13/22 13:26	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1.31	11/03/22 15:15	11/12/22 22:24	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	5	11/12/22 05:47	11/12/22 13:14	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 17:18	AMM	Mt. Juliet, TN

B-8-10_20221104 L1555245-04 Solid

Collected by: JL JS | Collected date/time: 11/03/22 09:30 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958892	25	11/03/22 09:30	11/13/22 13:49	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 09:30	11/12/22 22:43	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 12:36	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 15:52	AMM	Mt. Juliet, TN

B-8-15_20221104 L1555245-05 Solid

Collected by: JL JS | Collected date/time: 11/03/22 09:35 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958961	25	11/03/22 09:35	11/15/22 11:17	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 09:35	11/12/22 23:03	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 12:11	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 15:35	AMM	Mt. Juliet, TN

B-6-2_20221104 L1555245-06 Solid

Collected by: JL JS | Collected date/time: 11/03/22 11:15 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958961	25	11/03/22 11:15	11/15/22 11:38	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 11:15	11/12/22 23:22	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 12:24	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 15:17	AMM	Mt. Juliet, TN

B-6-5_20221104 L1555245-07 Solid

Collected by: JL JS | Collected date/time: 11/03/22 11:30 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961440	2000	11/03/22 11:30	11/17/22 14:44	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1959252	80	11/03/22 11:30	11/15/22 20:03	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 14:43	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 15:00	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	20	11/11/22 17:36	11/15/22 17:34	DSH	Mt. Juliet, TN

B-6-8_20221104 L1555245-08 Solid

Collected by: JL JS | Collected date/time: 11/03/22 14:00 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960897	1000	11/03/22 14:00	11/17/22 03:36	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	8	11/03/22 14:00	11/13/22 01:20	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1958430	1	11/12/22 05:47	11/12/22 12:49	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	1	11/11/22 17:36	11/12/22 16:44	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1957245	10	11/11/22 17:36	11/15/22 16:06	AGW	Mt. Juliet, TN

WN.TE.COMP_20221104 L1555245-09 Solid

Collected by: JL JS | Collected date/time: 11/03/22 14:00 | Received date/time: 11/08/22 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1957208	1	11/10/22 17:14	11/10/22 17:51	CMK	Mt. Juliet, TN
Mercury by Method 7471B	WG1957347	1	11/10/22 09:38	11/11/22 09:06	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961559	5	11/22/22 13:25	11/29/22 18:24	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1958961	25	11/03/22 14:00	11/15/22 12:19	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1958599	1	11/03/22 14:00	11/13/22 00:01	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1959252	1	11/03/22 14:00	11/15/22 18:48	JHH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jared Starkey
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		2.95	25	11/13/2022 12:41	WG1958892
(S) a,a,a-Trifluorotoluene(FID)	*95.9*		*77.0-120*		*11/13/2022 12:41*	WG1958892

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00118	1	11/12/2022 21:44	WG1958599
Toluene	ND		0.00588	1	11/12/2022 21:44	WG1958599
Ethylbenzene	ND		0.00294	1	11/12/2022 21:44	WG1958599
Total Xylenes	ND		0.00765	1	11/12/2022 21:44	WG1958599
Methyl tert-butyl ether	ND		0.00118	1	11/12/2022 21:44	WG1958599
(S) Toluene-d8	*108*		*75.0-131*		*11/12/2022 21:44*	WG1958599
(S) 4-Bromofluorobenzene	*106*		*67.0-138*		*11/12/2022 21:44*	WG1958599
(S) 1,2-Dichloroethane-d4	*108*		*70.0-130*		*11/12/2022 21:44*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.31	1	11/12/2022 11:33	WG1958430
Residual Range Organics (RRO)	ND		10.8	1	11/12/2022 11:33	WG1958430
(S) o-Terphenyl	*60.5*		*18.0-148*		*11/12/2022 11:33*	WG1958430

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Acenaphthene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Acenaphthylene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Benzo(a)anthracene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Benzo(a)pyrene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Benzo(b)fluoranthene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Benzo(g,h,i)perylene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Benzo(k)fluoranthene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Chrysene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Dibenz(a,h)anthracene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Fluoranthene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Fluorene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Naphthalene	ND		0.0215	1	11/12/2022 12:42	WG1957245
Phenanthrene	ND		0.00646	1	11/12/2022 12:42	WG1957245
Pyrene	ND		0.00646	1	11/12/2022 12:42	WG1957245
1-Methylnaphthalene	ND		0.0215	1	11/12/2022 12:42	WG1957245
2-Methylnaphthalene	ND		0.0215	1	11/12/2022 12:42	WG1957245
2-Chloronaphthalene	ND		0.0215	1	11/12/2022 12:42	WG1957245
(S) Nitrobenzene-d5	*59.2*		*14.0-149*		*11/12/2022 12:42*	WG1957245
(S) 2-Fluorobiphenyl	*64.9*		*34.0-125*		*11/12/2022 12:42*	WG1957245
(S) p-Terphenyl-d14	*71.7*		*23.0-120*		*11/12/2022 12:42*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.1		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		2.96	25	11/13/2022 13:04	WG1958892
(S) a,a,a-Trifluorotoluene(FID)	*96.7*		*77.0-120*		*11/13/2022 13:04*	WG1958892

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00122		0.00118	1	11/12/2022 22:04	WG1958599
Toluene	0.0103		0.00592	1	11/12/2022 22:04	WG1958599
Ethylbenzene	0.00409		0.00296	1	11/12/2022 22:04	WG1958599
Total Xylenes	0.0182		0.00770	1	11/12/2022 22:04	WG1958599
Methyl tert-butyl ether	ND		0.00118	1	11/12/2022 22:04	WG1958599
(S) Toluene-d8	*113*		*75.0-131*		*11/12/2022 22:04*	WG1958599
(S) 4-Bromofluorobenzene	*111*		*67.0-138*		*11/12/2022 22:04*	WG1958599
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*11/12/2022 22:04*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.35	1	11/12/2022 14:30	WG1958430
Residual Range Organics (RRO)	ND		10.9	1	11/12/2022 14:30	WG1958430
(S) o-Terphenyl	*53.6*		*18.0-148*		*11/12/2022 14:30*	WG1958430

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Acenaphthene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Acenaphthylene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Benzo(a)anthracene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Benzo(a)pyrene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Benzo(b)fluoranthene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Benzo(g,h,i)perylene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Benzo(k)fluoranthene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Chrysene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Dibenz(a,h)anthracene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Fluoranthene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Fluorene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Naphthalene	ND		0.0217	1	11/12/2022 12:59	WG1957245
Phenanthrene	ND		0.00652	1	11/12/2022 12:59	WG1957245
Pyrene	ND		0.00652	1	11/12/2022 12:59	WG1957245
1-Methylnaphthalene	ND		0.0217	1	11/12/2022 12:59	WG1957245
2-Methylnaphthalene	ND		0.0217	1	11/12/2022 12:59	WG1957245
2-Chloronaphthalene	ND		0.0217	1	11/12/2022 12:59	WG1957245
(S) Nitrobenzene-d5	*71.1*		*14.0-149*		*11/12/2022 12:59*	WG1957245
(S) 2-Fluorobiphenyl	*70.1*		*34.0-125*		*11/12/2022 12:59*	WG1957245
(S) p-Terphenyl-d14	*72.5*		*23.0-120*		*11/12/2022 12:59*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.1		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		3.27	25.8	11/13/2022 13:26	WG1958892
(S) a,a,a-Trifluorotoluene(FID)	*97.4*		*77.0-120*		*11/13/2022 13:26*	WG1958892

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00162	1.31	11/12/2022 22:24	WG1958599
Toluene	ND		0.00811	1.31	11/12/2022 22:24	WG1958599
Ethylbenzene	ND		0.00406	1.31	11/12/2022 22:24	WG1958599
Total Xylenes	0.0150		0.0106	1.31	11/12/2022 22:24	WG1958599
Methyl tert-butyl ether	ND		0.00162	1.31	11/12/2022 22:24	WG1958599
(S) Toluene-d8	*107*		*75.0-131*		*11/12/2022 22:24*	WG1958599
(S) 4-Bromofluorobenzene	*109*		*67.0-138*		*11/12/2022 22:24*	WG1958599
(S) 1,2-Dichloroethane-d4	*107*		*70.0-130*		*11/12/2022 22:24*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		22.7	5	11/12/2022 13:14	WG1958430
Residual Range Organics (RRO)	60.9		56.8	5	11/12/2022 13:14	WG1958430
(S) o-Terphenyl	*59.8*		*18.0-148*		*11/12/2022 13:14*	WG1958430

Sample Narrative:

L1555245-03 WG1958430: Sample resembles laboratory standard for Hydraulic Oil.

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Acenaphthene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Acenaphthylene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Benzo(a)anthracene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Benzo(a)pyrene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Benzo(b)fluoranthene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Benzo(g,h,i)perylene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Benzo(k)fluoranthene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Chrysene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Dibenz(a,h)anthracene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Fluoranthene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Fluorene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Naphthalene	ND		0.0227	1	11/12/2022 17:18	WG1957245
Phenanthrene	ND		0.00681	1	11/12/2022 17:18	WG1957245
Pyrene	ND		0.00681	1	11/12/2022 17:18	WG1957245
1-Methylnaphthalene	ND		0.0227	1	11/12/2022 17:18	WG1957245
2-Methylnaphthalene	ND		0.0227	1	11/12/2022 17:18	WG1957245
2-Chloronaphthalene	ND		0.0227	1	11/12/2022 17:18	WG1957245
(S) Nitrobenzene-d5	*61.3*		*14.0-149*		*11/12/2022 17:18*	WG1957245
(S) 2-Fluorobiphenyl	*63.8*		*34.0-125*		*11/12/2022 17:18*	WG1957245

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
(S) p-Terphenyl-d14	*71.5*		*23.0-120*		*11/12/2022 17:18*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		3.24	25	11/13/2022 13:49	WG1958892
(S) a,a,a-Trifluorotoluene(FID)	*96.5*		*77.0-120*		*11/13/2022 13:49*	WG1958892

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00130	1	11/12/2022 22:43	WG1958599
Toluene	ND		0.00648	1	11/12/2022 22:43	WG1958599
Ethylbenzene	0.00386		0.00324	1	11/12/2022 22:43	WG1958599
Total Xylenes	0.0131		0.00843	1	11/12/2022 22:43	WG1958599
Methyl tert-butyl ether	ND		0.00130	1	11/12/2022 22:43	WG1958599
(S) Toluene-d8	*108*		*75.0-131*		*11/12/2022 22:43*	WG1958599
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*11/12/2022 22:43*	WG1958599
(S) 1,2-Dichloroethane-d4	*105*		*70.0-130*		*11/12/2022 22:43*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.50	1	11/12/2022 12:36	WG1958430
Residual Range Organics (RRO)	ND		11.3	1	11/12/2022 12:36	WG1958430
(S) o-Terphenyl	*53.0*		*18.0-148*		*11/12/2022 12:36*	WG1958430

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Acenaphthene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Acenaphthylene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Benzo(a)anthracene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Benzo(a)pyrene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Benzo(b)fluoranthene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Benzo(g,h,i)perylene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Benzo(k)fluoranthene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Chrysene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Dibenz(a,h)anthracene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Fluoranthene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Fluorene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Naphthalene	ND		0.0225	1	11/12/2022 15:52	WG1957245
Phenanthrene	ND		0.00676	1	11/12/2022 15:52	WG1957245
Pyrene	ND		0.00676	1	11/12/2022 15:52	WG1957245
1-Methylnaphthalene	ND		0.0225	1	11/12/2022 15:52	WG1957245
2-Methylnaphthalene	ND		0.0225	1	11/12/2022 15:52	WG1957245
2-Chloronaphthalene	ND		0.0225	1	11/12/2022 15:52	WG1957245
(S) Nitrobenzene-d5	*76.1*		*14.0-149*		*11/12/2022 15:52*	WG1957245
(S) 2-Fluorobiphenyl	*75.0*		*34.0-125*		*11/12/2022 15:52*	WG1957245
(S) p-Terphenyl-d14	*80.3*		*23.0-120*		*11/12/2022 15:52*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.9		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		3.22	25	11/15/2022 11:17	WG1958961
(S) a,a,a-Trifluorotoluene(FID)	*104*		*77.0-120*		*11/15/2022 11:17*	WG1958961

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00129	1	11/12/2022 23:03	WG1958599
Toluene	ND		0.00646	1	11/12/2022 23:03	WG1958599
Ethylbenzene	ND		0.00323	1	11/12/2022 23:03	WG1958599
Total Xylenes	ND		0.00840	1	11/12/2022 23:03	WG1958599
Methyl tert-butyl ether	ND		0.00129	1	11/12/2022 23:03	WG1958599
(S) Toluene-d8	*106*		*75.0-131*		*11/12/2022 23:03*	WG1958599
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*11/12/2022 23:03*	WG1958599
(S) 1,2-Dichloroethane-d4	*109*		*70.0-130*		*11/12/2022 23:03*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.50	1	11/12/2022 12:11	WG1958430
Residual Range Organics (RRO)	ND		11.2	1	11/12/2022 12:11	WG1958430
(S) o-Terphenyl	*49.5*		*18.0-148*		*11/12/2022 12:11*	WG1958430

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Acenaphthene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Acenaphthylene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Benzo(a)anthracene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Benzo(a)pyrene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Benzo(b)fluoranthene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Benzo(g,h,i)perylene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Benzo(k)fluoranthene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Chrysene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Dibenz(a,h)anthracene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Fluoranthene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Fluorene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Naphthalene	ND		0.0225	1	11/12/2022 15:35	WG1957245
Phenanthrene	ND		0.00675	1	11/12/2022 15:35	WG1957245
Pyrene	ND		0.00675	1	11/12/2022 15:35	WG1957245
1-Methylnaphthalene	ND		0.0225	1	11/12/2022 15:35	WG1957245
2-Methylnaphthalene	ND		0.0225	1	11/12/2022 15:35	WG1957245
2-Chloronaphthalene	ND		0.0225	1	11/12/2022 15:35	WG1957245
(S) Nitrobenzene-d5	*60.3*		*14.0-149*		*11/12/2022 15:35*	WG1957245
(S) 2-Fluorobiphenyl	*62.3*		*34.0-125*		*11/12/2022 15:35*	WG1957245
(S) p-Terphenyl-d14	*67.9*		*23.0-120*		*11/12/2022 15:35*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.0		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	8.63		3.31	25	11/15/2022 11:38	WG1958961
(S) a,a,a-Trifluorotoluene(FID)	*104*		*77.0-120*		*11/15/2022 11:38*	WG1958961

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00132	1	11/12/2022 23:22	WG1958599
Toluene	ND		0.00661	1	11/12/2022 23:22	WG1958599
Ethylbenzene	0.0289		0.00330	1	11/12/2022 23:22	WG1958599
Total Xylenes	0.137		0.00859	1	11/12/2022 23:22	WG1958599
Methyl tert-butyl ether	ND		0.00132	1	11/12/2022 23:22	WG1958599
(S) Toluene-d8	*107*		*75.0-131*		*11/12/2022 23:22*	WG1958599
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*11/12/2022 23:22*	WG1958599
(S) 1,2-Dichloroethane-d4	*104*		*70.0-130*		*11/12/2022 23:22*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	24.7		4.60	1	11/12/2022 12:24	WG1958430
Residual Range Organics (RRO)	ND		11.5	1	11/12/2022 12:24	WG1958430
(S) o-Terphenyl	*81.2*		*18.0-148*		*11/12/2022 12:24*	WG1958430

Sample Narrative:

L1555245-06 WG1958430: Sample resembles laboratory standard for Kerosene.

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Acenaphthene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Acenaphthylene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Benzo(a)anthracene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Benzo(a)pyrene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Benzo(b)fluoranthene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Benzo(g,h,i)perylene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Benzo(k)fluoranthene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Chrysene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Dibenz(a,h)anthracene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Fluoranthene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Fluorene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Naphthalene	0.0790		0.0230	1	11/12/2022 15:17	WG1957245
Phenanthrene	ND		0.00689	1	11/12/2022 15:17	WG1957245
Pyrene	ND		0.00689	1	11/12/2022 15:17	WG1957245
1-Methylnaphthalene	ND		0.0230	1	11/12/2022 15:17	WG1957245
2-Methylnaphthalene	0.0533		0.0230	1	11/12/2022 15:17	WG1957245
2-Chloronaphthalene	ND		0.0230	1	11/12/2022 15:17	WG1957245
(S) Nitrobenzene-d5	*64.0*		*14.0-149*		*11/12/2022 15:17*	WG1957245
(S) 2-Fluorobiphenyl	*63.6*		*34.0-125*		*11/12/2022 15:17*	WG1957245

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
(S) p-Terphenyl-d14	*70.0*		*23.0-120*		*11/12/2022 15:17*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.3		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	2150		284	2000	11/17/2022 14:44	WG1961440
(S) a,a,a-Trifluorotoluene(FID)	*99.7*		*77.0-120*		*11/17/2022 14:44*	WG1961440

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.114	80	11/15/2022 20:03	WG1959252
Toluene	ND		0.568	80	11/15/2022 20:03	WG1959252
Ethylbenzene	3.44		0.284	80	11/15/2022 20:03	WG1959252
Total Xylenes	20.5		0.739	80	11/15/2022 20:03	WG1959252
Methyl tert-butyl ether	ND		0.114	80	11/15/2022 20:03	WG1959252
(S) Toluene-d8	*105*		*75.0-131*		*11/15/2022 20:03*	WG1959252
(S) 4-Bromofluorobenzene	*109*		*67.0-138*		*11/15/2022 20:03*	WG1959252
(S) 1,2-Dichloroethane-d4	*72.8*		*70.0-130*		*11/15/2022 20:03*	WG1959252

Sample Narrative:

L1555245-07 WG1959252: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	325		4.74	1	11/12/2022 14:43	WG1958430
Residual Range Organics (RRO)	18.5		11.9	1	11/12/2022 14:43	WG1958430
(S) o-Terphenyl	*64.3*		*18.0-148*		*11/12/2022 14:43*	WG1958430

Sample Narrative:

L1555245-07 WG1958430: Sample resembles laboratory standard for Mineral Spirits

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Acenaphthene	0.0174		0.00712	1	11/12/2022 15:00	WG1957245
Acenaphthylene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Benzo(a)anthracene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Benzo(a)pyrene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Benzo(b)fluoranthene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Benzo(g,h,i)perylene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Benzo(k)fluoranthene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Chrysene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Dibenz(a,h)anthracene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Fluoranthene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Fluorene	0.0248		0.00712	1	11/12/2022 15:00	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00712	1	11/12/2022 15:00	WG1957245
Naphthalene	16.1		0.474	20	11/15/2022 17:34	WG1957245
Phenanthrene	0.0412		0.00712	1	11/12/2022 15:00	WG1957245
Pyrene	0.00898		0.00712	1	11/12/2022 15:00	WG1957245
1-Methylnaphthalene	3.12		0.0237	1	11/12/2022 15:00	WG1957245
2-Methylnaphthalene	9.94		0.474	20	11/15/2022 17:34	WG1957245

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
2-Chloronaphthalene	ND		0.0237	1	11/12/2022 15:00	WG1957245
(S) Nitrobenzene-d5	*175*	J1	*14.0-149*		*11/12/2022 15:00*	WG1957245
(S) Nitrobenzene-d5	*72.1*	J7	*14.0-149*		*11/15/2022 17:34*	WG1957245
(S) 2-Fluorobiphenyl	*73.1*		*34.0-125*		*11/12/2022 15:00*	WG1957245
(S) 2-Fluorobiphenyl	*81.2*	J7	*34.0-125*		*11/15/2022 17:34*	WG1957245
(S) p-Terphenyl-d14	*87.2*	J7	*23.0-120*		*11/15/2022 17:34*	WG1957245
(S) p-Terphenyl-d14	*78.2*		*23.0-120*		*11/12/2022 15:00*	WG1957245

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.5		1	11/10/2022 17:51	WG1957208

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	1070		134	1000	11/17/2022 03:36	WG1960897
(S) a,a,a-Trifluorotoluene(FID)	*96.3*		*77.0-120*		*11/17/2022 03:36*	WG1960897

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0107	8	11/13/2022 01:20	WG1958599
Toluene	ND		0.0536	8	11/13/2022 01:20	WG1958599
Ethylbenzene	1.83		0.0268	8	11/13/2022 01:20	WG1958599
Total Xylenes	12.7		0.0696	8	11/13/2022 01:20	WG1958599
Methyl tert-butyl ether	ND		0.0107	8	11/13/2022 01:20	WG1958599
(S) Toluene-d8	*104*		*75.0-131*		*11/13/2022 01:20*	WG1958599
(S) 4-Bromofluorobenzene	*120*		*67.0-138*		*11/13/2022 01:20*	WG1958599
(S) 1,2-Dichloroethane-d4	*107*		*70.0-130*		*11/13/2022 01:20*	WG1958599

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	70.3		4.62	1	11/12/2022 12:49	WG1958430
Residual Range Organics (RRO)	17.9		11.6	1	11/12/2022 12:49	WG1958430
(S) o-Terphenyl	*57.0*		*18.0-148*		*11/12/2022 12:49*	WG1958430

Sample Narrative:

L1555245-08 WG1958430: Sample resembles laboratory standard for Mineral Spirits

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Acenaphthene	0.00891		0.00694	1	11/12/2022 16:44	WG1957245
Acenaphthylene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Benzo(a)anthracene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Benzo(a)pyrene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Benzo(b)fluoranthene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Benzo(g,h,i)perylene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Benzo(k)fluoranthene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Chrysene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Dibenz(a,h)anthracene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Fluoranthene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Fluorene	0.0121		0.00694	1	11/12/2022 16:44	WG1957245
Indeno(1,2,3-cd)pyrene	ND		0.00694	1	11/12/2022 16:44	WG1957245
Naphthalene	7.98		0.231	10	11/15/2022 16:06	WG1957245
Phenanthrene	0.0203		0.00694	1	11/12/2022 16:44	WG1957245
Pyrene	ND		0.00694	1	11/12/2022 16:44	WG1957245
1-Methylnaphthalene	1.45		0.0231	1	11/12/2022 16:44	WG1957245
2-Methylnaphthalene	3.64		0.0231	1	11/12/2022 16:44	WG1957245
2-Chloronaphthalene	ND		0.0231	1	11/12/2022 16:44	WG1957245
(S) Nitrobenzene-d5	*148*		*14.0-149*		*11/12/2022 16:44*	WG1957245
(S) Nitrobenzene-d5	*0.000*	J2	*14.0-149*		*11/15/2022 16:06*	WG1957245

Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	*61.4*		*34.0-125*		*11/12/2022 16:44*	WG1957245
(S) 2-Fluorobiphenyl	*77.2*		*34.0-125*		*11/15/2022 16:06*	WG1957245
(S) p-Terphenyl-d14	*66.1*		*23.0-120*		*11/12/2022 16:44*	WG1957245
(S) p-Terphenyl-d14	*84.7*		*23.0-120*		*11/15/2022 16:06*	WG1957245

Sample Narrative:

L1555245-08 WG1957245: Surrogate failure due to matrix interference

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.1		1	11/10/2022 17:51	WG1957208

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Mercury	ND		0.0430	1	11/11/2022 09:06	WG1957347

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Arsenic	3.09		1.07	5	11/29/2022 18:24	WG1961559
Barium	46.3		2.68	5	11/29/2022 18:24	WG1961559
Cadmium	ND		1.07	5	11/29/2022 18:24	WG1961559
Chromium	15.9		5.37	5	11/29/2022 18:24	WG1961559
Lead	16.0		2.15	5	11/29/2022 18:24	WG1961559
Selenium	ND		2.68	5	11/29/2022 18:24	WG1961559
Silver	ND		0.537	5	11/29/2022 18:24	WG1961559

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	75.7		2.89	25	11/15/2022 12:19	WG1958961
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*11/15/2022 12:19*	WG1958961

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00115	1	11/13/2022 00:01	WG1958599
Toluene	1.07		0.00575	1	11/13/2022 00:01	WG1958599
Ethylbenzene	0.0515		0.00288	1	11/15/2022 18:48	WG1959252
Total Xylenes	0.365		0.00748	1	11/15/2022 18:48	WG1959252
(S) Toluene-d8	*108*		*75.0-131*		*11/13/2022 00:01*	WG1958599
(S) Toluene-d8	*108*		*75.0-131*		*11/15/2022 18:48*	WG1959252
(S) 4-Bromofluorobenzene	*122*		*67.0-138*		*11/13/2022 00:01*	WG1958599
(S) 4-Bromofluorobenzene	*112*		*67.0-138*		*11/15/2022 18:48*	WG1959252
(S) 1,2-Dichloroethane-d4	*103*		*70.0-130*		*11/13/2022 00:01*	WG1958599
(S) 1,2-Dichloroethane-d4	*65.4*	J2	*70.0-130*		*11/15/2022 18:48*	WG1959252

Method Blank (MB)

(MB) R3859828-1 11/10/22 17:51

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L1555245-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1555245-02 11/10/22 17:51 • (DUP) R3859828-3 11/10/22 17:51

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	92.1	90.7	1	1.49		10

Laboratory Control Sample (LCS)

(LCS) R3859828-2 11/10/22 17:51

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3859943-1 11/11/22 08:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3859943-4 11/11/22 12:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.473	94.6	80.0-120	

L1555654-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555654-01 11/11/22 08:21 • (MS) R3859943-2 11/11/22 08:23 • (MSD) R3859943-3 11/11/22 08:26

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.776	0.116	0.887	0.730	99.2	79.1	1	75.0-125			19.3	20

Method Blank (MB)

(MB) R3866266-1 11/29/22 18:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Chromium	U		0.297	5.00
Lead	U		0.0990	2.00
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500

Laboratory Control Sample (LCS)

(LCS) R3866266-2 11/29/22 18:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	106	106	80.0-120	
Barium	100	103	103	80.0-120	
Cadmium	100	105	105	80.0-120	
Chromium	100	105	105	80.0-120	
Lead	100	104	104	80.0-120	
Selenium	100	111	111	80.0-120	
Silver	20.0	20.7	103	80.0-120	

L1559495-23 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1559495-23 11/29/22 18:08 • (MS) R3866266-5 11/29/22 18:18 • (MSD) R3866266-6 11/29/22 18:21

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	121	14.4	125	146	91.4	108	5	75.0-125			15.0	20
Barium	121	328	376	430	39.6	83.5	5	75.0-125	E J6	E	13.2	20
Cadmium	121	ND	134	141	110	116	5	75.0-125			5.02	20
Chromium	121	33.9	155	164	100	107	5	75.0-125			5.18	20
Lead	121	20.9	145	158	102	113	5	75.0-125			8.51	20
Selenium	121	ND	140	144	114	117	5	75.0-125			2.67	20
Silver	24.3	ND	26.1	27.4	107	112	5	75.0-125			4.86	20

Method Blank (MB)

(MB) R3860794-2 11/13/22 12:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Gasoline Range Organics-NWTPH	0.925	J	0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	*95.9*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3860794-1 11/13/22 11:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	4.75	86.4	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*105*	*77.0-120*	

L1555086-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555086-01 11/13/22 14:34 • (MS) R3860794-3 11/13/22 20:39 • (MSD) R3860794-4 11/13/22 21:01

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	156	ND	152	203	97.1	130	25.5	50.0-150		J3	28.9	27
(S) a,a,a-Trifluorotoluene(FID)					*108*	*114*		*77.0-120*				

Method Blank (MB)

(MB) R3861815-2 11/15/22 10:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Gasoline Range Organics-NWTPH	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	*105*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3861815-1 11/15/22 09:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	5.48	99.6	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*118*	*77.0-120*	

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3862230-2 11/16/22 14:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Gasoline Range Organics-NWTPH	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	*98.2*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3862230-1 11/16/22 12:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	5.84	106	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*113*	*77.0-120*	

Method Blank (MB)

(MB) R3862322-3 11/17/22 14:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Gasoline Range Organics-NWTPH	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	*99.8*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3862322-2 11/17/22 13:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	4.72	85.8	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*77.0-120*	

Method Blank (MB)

(MB) R3860530-2 11/12/22 18:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
Methyl tert-butyl ether	U		0.000350	0.00100
(S) 4-Bromofluorobenzene	*105*			*67.0-138*
(S) Toluene-d8	*110*			*75.0-131*
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3860530-1 11/12/22 17:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.121	96.8	70.0-123	
Toluene	0.125	0.129	103	75.0-121	
Ethylbenzene	0.125	0.121	96.8	74.0-126	
Xylenes, Total	0.375	0.381	102	72.0-127	
Methyl tert-butyl ether	0.125	0.122	97.6	66.0-132	
(S) 4-Bromofluorobenzene			*103*	*67.0-138*	
(S) Toluene-d8			*105*	*75.0-131*	
(S) 1,2-Dichloroethane-d4			*110*	*70.0-130*	

L1555245-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555245-08 11/13/22 01:20 • (MS) R3860530-3 11/13/22 01:40 • (MSD) R3860530-4 11/13/22 01:59

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.14	ND	0.668	0.491	57.9	42.4	8	10.0-149			30.5	37
Toluene	1.14	ND	0.715	0.582	62.8	51.2	8	10.0-156			20.4	38
Ethylbenzene	1.14	1.83	2.33	2.22	43.5	34.1	8	10.0-160			4.71	38
Xylenes, Total	3.41	12.7	13.4	13.5	21.2	25.1	8	10.0-160			0.995	38
Methyl tert-butyl ether	1.14	ND	1.05	1.01	91.9	88.4	8	11.0-147			3.92	35
(S) 4-Bromofluorobenzene					*132*	*116*		*67.0-138*				
(S) Toluene-d8					*102*	*108*		*75.0-131*				
(S) 1,2-Dichloroethane-d4					*106*	*105*		*70.0-130*				

Method Blank (MB)

(MB) R3861489-3 11/15/22 11:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	0.000775	J	0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
Methyl tert-butyl ether	U		0.000350	0.00100
(S) 4-Bromofluorobenzene	*109*			*67.0-138*
(S) Toluene-d8	*101*			*75.0-131*
(S) 1,2-Dichloroethane-d4	*77.8*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3861489-1 11/15/22 10:33 • (LCSD) R3861489-2 11/15/22 10:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.149	0.143	119	114	70.0-123			4.11	20
Toluene	0.125	0.139	0.135	111	108	75.0-121			2.92	20
Ethylbenzene	0.125	0.148	0.144	118	115	74.0-126			2.74	20
Xylenes, Total	0.375	0.453	0.448	121	119	72.0-127			1.11	20
Methyl tert-butyl ether	0.125	0.146	0.147	117	118	66.0-132			0.683	20
(S) 4-Bromofluorobenzene				*113*	*115*	*67.0-138*				
(S) Toluene-d8				*98.6*	*97.9*	*75.0-131*				
(S) 1,2-Dichloroethane-d4				*87.7*	*85.1*	*70.0-130*				

Method Blank (MB)

(MB) R3860310-1 11/12/22 10:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	*74.0*			*18.0-148*

Method Blank (MB)

(MB) R3860336-1 11/12/22 11:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Diesel Range Organics (DRO)	U		1.33	4.00
Residual Range Organics (RRO)	U		3.33	10.0
(S) o-Terphenyl	*74.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3860310-2 11/12/22 10:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	39.8	79.6	50.0-150	
(S) o-Terphenyl			*73.9*	*18.0-148*	

L1555245-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555245-01 11/12/22 11:33 • (MS) R3860336-2 11/12/22 11:46 • (MSD) R3860336-3 11/12/22 11:59

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	53.9	ND	39.0	41.5	69.5	74.1	1	50.0-150			6.16	20
(S) o-Terphenyl					*70.7*	*73.6*		*18.0-148*				

Method Blank (MB)

(MB) R3860695-2 11/12/22 11:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*73.6*			*14.0-149*
(S) 2-Fluorobiphenyl	*75.5*			*34.0-125*
(S) p-Terphenyl-d14	*82.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3860695-1 11/12/22 11:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0534	66.8	50.0-126	
Acenaphthene	0.0800	0.0564	70.5	50.0-120	
Acenaphthylene	0.0800	0.0550	68.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0575	71.9	45.0-120	
Benzo(a)pyrene	0.0800	0.0525	65.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0581	72.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0551	68.9	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0563	70.4	49.0-125	
Chrysene	0.0800	0.0599	74.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0540	67.5	47.0-125	
Fluoranthene	0.0800	0.0603	75.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3860695-1 11/12/22 11:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0592	74.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0572	71.5	46.0-125	
Naphthalene	0.0800	0.0562	70.3	50.0-120	
Phenanthrene	0.0800	0.0569	71.1	47.0-120	
Pyrene	0.0800	0.0590	73.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0557	69.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0568	71.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0545	68.1	50.0-120	
(S) Nitrobenzene-d5			*77.1*	*14.0-149*	
(S) 2-Fluorobiphenyl			*77.3*	*34.0-125*	
(S) p-Terphenyl-d14			*81.3*	*23.0-120*	

L1555245-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555245-04 11/12/22 15:52 • (MS) R3860695-3 11/12/22 16:09 • (MSD) R3860695-4 11/12/22 16:26

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0856	ND	0.0516	0.0563	60.3	65.8	1	10.0-145			8.77	30
Acenaphthene	0.0856	ND	0.0545	0.0599	63.7	70.0	1	14.0-127			9.45	27
Acenaphthylene	0.0856	ND	0.0536	0.0588	62.6	68.7	1	21.0-124			9.22	25
Benzo(a)anthracene	0.0856	ND	0.0546	0.0592	63.8	69.2	1	10.0-139			8.11	30
Benzo(a)pyrene	0.0856	ND	0.0567	0.0618	66.3	72.2	1	10.0-141			8.55	31
Benzo(b)fluoranthene	0.0856	ND	0.0544	0.0599	63.6	70.0	1	10.0-140			9.66	36
Benzo(g,h,i)perylene	0.0856	ND	0.0531	0.0591	62.1	69.1	1	10.0-140			10.6	33
Benzo(k)fluoranthene	0.0856	ND	0.0551	0.0599	64.3	70.0	1	10.0-137			8.42	31
Chrysene	0.0856	ND	0.0597	0.0640	69.7	74.7	1	10.0-145			6.92	30
Dibenz(a,h)anthracene	0.0856	ND	0.0533	0.0576	62.2	67.4	1	10.0-132			7.92	31
Fluoranthene	0.0856	ND	0.0589	0.0643	64.9	71.2	1	10.0-153			8.78	33
Fluorene	0.0856	ND	0.0565	0.0624	66.1	72.9	1	11.0-130			9.85	29
Indeno(1,2,3-cd)pyrene	0.0856	ND	0.0554	0.0609	64.7	71.2	1	10.0-137			9.49	32
Naphthalene	0.0856	ND	0.0582	0.0637	68.0	74.5	1	10.0-135			9.05	27
Phenanthrene	0.0856	ND	0.0569	0.0609	62.6	67.4	1	10.0-144			6.88	31
Pyrene	0.0856	ND	0.0581	0.0629	63.6	69.3	1	10.0-148			8.00	35
1-Methylnaphthalene	0.0856	ND	0.0556	0.0609	65.0	71.2	1	10.0-142			9.08	28
2-Methylnaphthalene	0.0856	ND	0.0571	0.0618	66.7	72.2	1	10.0-137			7.95	28
2-Chloronaphthalene	0.0856	ND	0.0538	0.0589	62.9	68.8	1	29.0-120			8.99	24
(S) Nitrobenzene-d5					*78.8*	*66.8*		*14.0-149*				
(S) 2-Fluorobiphenyl					*75.4*	*65.5*		*34.0-125*				
(S) p-Terphenyl-d14					*79.0*	*77.1*		*23.0-120*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
BPLAMP - Antea Group

205 SE Spokane Street
Suite 307
Portland. OR 97202

Billing Information:
Enfos
205 SE Spokane Street
Suite 307
Portland, OR 97202

Pres Chk

Report to:
Brad Jackson

Email To: brad.jackson@anteagroup.us

Project Description: ARCO 980 Seattle

City/State Collected: Seattle, WA

Please Circle: (PT) MT CT ET

Phone: 425-498-7712

Client Project #: WA-00980 Seattle

Lab Project #: BPLAMPANTEA-980

Collected by (print): JL JS

Site/Facility ID #: 980 ARCO

P.O. #

Collected by (signature):

Quote #

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day X 10 Day (Rad Only)
___ Three Day

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	~~Date~~ Depth	~~Depth~~ Date	Time	No. of Cntrs	M6020RCRA8 4ozClr-NoPres	NWTPHDXNOSGT 4ozClr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	SV8270PAHSIMD 4ozClr-NoPres	V8260BTEXC 40mlAmb/MeOH10ml/Syr	V8260BTEXM 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
B-8-2_20221103	G	SS	11/3/22	2	1300	3		X	X	X	X	X		-01
B-8-5_20221103	G	SS	11/3/22	5	1315	3		X	X	X	X	X		-02
B-7-6_20221103	G	SS	11/3/22	6	1515	3		X	X	X	X	X		-03
B-8-10_20221104	G	SS	11/4/22	10	0930	3		X	X	X	X	X		-04
B-8-15_20221104	G	SS	11/4/22	15	0935	3		X	X	X	X	X		-05
B-6-2_20221104	G	SS	11/4/22	2	1115	3		X	X	X	X	X		-06
B-6-5_20221104	G	SS	11/4/22	5	1130	3		X	X	X	X	X		-07
B-6-8_20221104	G	SS	11/4/22	8	1400	3		X	X	X	X	X		-08
		SS												
		SS												

Chain of Custody Page ___ of ___

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MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1555245
B053

Acctnum: BPLAMPANTEA
Template: T219258
Prelogin: P961118
PM: 546 - Jared Starkey
PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: ~~__Y~~ __N
Bottles arrive intact: ~~__Y~~ __N
Correct bottles used: ~~__Y~~ __N
Sufficient volume sent: ~~__Y~~ __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: ~~__Y~~ __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	11/7/22	1100		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: ~~4.7~~ °C Bottles Received: 5.9 to 5.9 24
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/8 Time: 0800
				Hold: Condition: NCF / OK

Company Name/Address:
BPLAMP - Antea Group

205 SE Spokane Street
Suite 307
Portland. OR 97202

Billing Information:
Enfos
205 SE Spokane Street
Suite 307
Portland, OR 97202

Pres Chk

Report to:
Brad Jackson

Email To: **brad.jackson@anteagroup.us**

Project Description: ARCO 980 Seattle

City/State Collected: Seattle, WA

Please Circle: PT MT CT ET

Phone: **425-498-7712**

Client Project # WA-00980 Seattle

Lab Project # **BPLAMPANTEA-980**

Collected by (print): JL JS

Site/Facility ID # 980 ARCO

P.O. #

Collected by (signature):

Quote #

Immediately
Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day X 10 Day (Rad Only)
___ Three Day

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	M6020RCRA8 4ozClr-NoPres	NWTPHDXNOSGT 4ozClr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	SV8270PAHSIMD 4ozClr-NoPres	V8260BTEXC 40mlAmb/MeOH10ml/Syr	V8260BTEXM 40mlAmb/MeOH10ml/Syr	Remarks	Sample # (lab only)
waste_comp_20221104	Comp	SS	—	11/4/22	1730	3	X		X		X			-09
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												
		SS												

Chain of Custody Page ___ of ___

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Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1555245

Table #

Acctnum: **BPLAMPANTEA**
Template:**T219258**
Prelogin: **P961118**
PM: **546 - Jared Starkey**
PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Waste Sample For RCRA 8, TPH-G, BTEX (8260) (6020) (NWTPHG)

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS X FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	11/7/22	1100		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp °C Bottles Received:
				5.9 to 2.9 24
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
				11/8 0800

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK