

Initial Site Assessment Report

Baker Truck Corral
515 Campbell Street
Baker City, Oregon 97814

Prepared for:
DC & KM, LLC
Baker Truck Corral
515 Campbell Street
Baker City, Oregon 97814
LUST #30-22-0201

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PBS Project 24349.000



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Table of Contents

1	INTRODUCTION	1
2	SITE LOCATION AND DESCRIPTION	1
2.1	Ownership and Regulatory History	1
3	GEOLOGY AND HYDROGEOLOGY	2
4	PURPOSE AND OBJECTIVES	3
5	GEOPHYSICAL SURVEY	3
6	MONITORING WELL INSTALLATION	3
6.1	Monitoring Well Construction	3
6.2	Soil Sampling	4
6.3	Monitoring Well Development	4
6.4	Monitoring Well Surveying	5
7	GROUNDWATER SAMPLING ACTIVITIES	5
8	VAPOR INTRUSION ASSESSMENT	5
9	INVESTIGATION-DERIVED WASTES	6
10	FINDINGS	6
10.1	Field Observations	6
10.2	Initial Free Product Assessment and Depth to Groundwater	6
10.3	Soil Analytical Results	6
10.4	Groundwater Analytical Results	7
10.5	Soil Gas Analytical Results	7
10.6	Quality Control Samples	7
11	INITIAL RISK-BASED EVALUATION	8
11.1	Source of Release	8
11.2	Contaminants of Concern	8
11.3	Facility and Locality of the Facility	9
11.4	Current and Likely Future Uses of Land and Groundwater	9
11.5	Current and Future Receptors	11
11.6	Potentially Complete Soil Exposure Pathways	11
11.7	Potentially Complete Groundwater Exposure Pathways	11
12	DATA EVALUATION AND INITIAL EXPOSURE ASSESSMENT	11
13	CONCLUSIONS	11
14	LIMITATIONS	12

Supporting Data

FIGURES

Figure 1. Site Vicinity
Figure 2. Site Plan
Figure 3. Groundwater Elevation
Figure 4. Q1 Groundwater TPH & BTEX Results
Figure 5. Sub-Slab Sampling Locations
Figure 6. Wells Located in Site Vicinity

TABLES

Table 1. Summary of Soil Sample Analytical Results – TPH, VOCs, and Lead
Table 2. Summary of Soil Sample Analytical Results – PAHs
Table 3. Summary of Groundwater Analytical Results – TPH and VOCs
Table 4. Summary of Groundwater Analytical Results – PAHs and Lead
Table 5. Field Duplicate Sample Evaluation
Table 6. Soil Gas Analytical Results
Table 7. Summary of Leak Check Analysis

APPENDICES

Appendix A: Broadbent Figures and Tables

Appendix B: Geophysical Survey Report, Pacific Geophysics, September 2022

Appendix C: Monitoring Well Construction Logs

Appendix D: Standard Operating Procedures

Drilling and Soil Sampling
Monitoring Well Development
Sampling Groundwater Monitoring Wells
Sub Slab and Soil Gas Sampling

Appendix E: Laboratory Reports

Appendix F: Beneficial Water Use Determination Table and Vicinity Well Logs

Appendix G: Site Photos

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1 INTRODUCTION

PBS Engineering and Environmental Inc. (PBS) is pleased to submit this report summarizing the initial assessment work completed at the Baker Truck Corral, located at 515 Campbell Street in Baker City, Oregon (site; Figure 1). Included in the initial assessment was the installation of 13 monitoring wells and the first quarter (Q1) groundwater monitoring event.

2 SITE LOCATION AND DESCRIPTION

The site is located at 515 Campbell Street, Baker City, Oregon, which is in both the northeast one-quarter of the southeast one-quarter and the southeast one-quarter of the northeast one-quarter of Section 16, Township 9 South, Range 40 East of the Willamette Meridian (see Figure 1). According to the Baker County Assessor, the site resides on Tax Lot 100 and is shown on the assessor's parcel map with map number 09S4016DA. The site is approximately 8.75 acres and is generally flat at an approximate elevation of 3,430 feet above mean sea level.

The site is zoned commercial and is utilized as a truck stop, gas station, convenience store and restaurant. Excluding the two separate fuel canopies, there are two structures constructed on the property. The primary structure is the convenience store and restaurant building, which is attached to a diesel fueling station for semi-trucks (west of the building), and a gasoline fueling station for passenger cars (north of the building). This building also houses showers and a lounge area for truck drivers and offices for employees. The second structure, located to the south of the convenience store and restaurant, was formerly utilized as a tire shop; however, is currently only used by the property owner for storage purposes. According to information provided by the property owner, the former tire repair shop building has never been historically utilized for auto repair. Much of the southern property extent is utilized as both temporary and overnight parking space for semi-trucks and RVs. A truck scale is situated along the west property boundary.

The northern half of the property, including the areas surrounding the convenience store and restaurant building, truck scale, and both fueling stations are paved with asphalt, while the southern extent of the property that is utilized for truck and RV parking (including the areas surrounding the former tire shop building), are mostly gravel (Figure 2).

The site is bounded by commercial properties to the north and west, while a single residential dwelling abuts the southwestern-most corner. The Sam-O-Swim Center and Sam-O Park are located adjacent to the southern property boundary. A wetland fed by the Sam-O Spring and the Interstate 84 (I-84) entrance ramp run parallel to the length of the eastern property boundary. The western adjoining properties are a mix of commercial and light industrial and include a motel located adjacent to the northwest corner.

2.1 Ownership and Regulatory History

The site is currently owned by DC & KM, LLC and was historically developed sometime after 1975 and has only operated as a truck stop. According to an August 1998 No Further Action (NFA) letter provided by the Oregon Department of Environmental Quality (DEQ), six regulated underground storage tanks (USTs) were decommissioned on the site. The USTs were installed in the mid-1970s when the site began fueling operations. Five USTs were decommissioned in-place while one UST was decommissioned by removal. A seventh UST was reported to have been a waste oil tank, however DEQ gave permission to forgo sampling because the tank had been documented to have never contained a regulated product.

A closure in-place sampling plan was approved by DEQ that included 5 sample locations with soil samples to be taken at depths of 6 feet below ground surface (bgs) and 12 feet bgs. Due to site conditions, soil samples were reportedly instead collected from each boring at 5 feet bgs and 10 feet bgs. The soil samples were

analyzed for diesel- and gasoline-range total petroleum hydrocarbons (TPH). Diesel-range total TPH were detected at a maximum concentration of 262 milligrams per kilogram (mg/kg) while gasoline-range TPH were not detected above the method detection limit. It was noted by DEQ that the data submitted indicates groundwater was not impacted, however it is unclear what steps were taken to ensure this, and it does not appear that groundwater samples were collected during the decommissioning. Further, it was noted that samples were not collected from beneath dispenser islands or distribution piping.

In 1996, two 20,000-gallon diesel fuel USTs and one 21,000-gasoline UST were installed south of the diesel fueling area to replace the decommissioned USTs. Each of the new USTs was reported to be constructed of fiberglass reinforced plastic. Additionally, around the same time, the diesel fueling station canopy was moved approximately 20 feet south of its former location.

In 2019 Broadbent and Associates, Inc. (Broadbent) completed a limited subsurface investigation at the site as part of a Phase II Environmental Site Assessment (ESA). Broadbent collected groundwater samples from 10 borings advanced across the property. Varying levels of petroleum contamination were detected in all 10 of the groundwater samples analyzed, with diesel-range TPH concentrations ranging from 290 micrograms per liter ($\mu\text{g/L}$) to 540,000 $\mu\text{g/L}$. Gasoline-range hydrocarbons were only detected in two groundwater samples, at concentrations of 6,500 $\mu\text{g/L}$ and 7,200 $\mu\text{g/L}$. Heavy oil-range TPH were also detected in groundwater at eight boring locations, ranging from 840 $\mu\text{g/L}$ to 17,000 $\mu\text{g/L}$. Soil cuttings from boring SB-4, which indicated the highest concentrations of dissolved TPH during the limited investigation, were noted by field staff to have a visible sheen. Based on the results, soil sampling appears to have been limited to just two soil samples, collected near the two separate fueling areas, which indicated varying concentrations of diesel-, heavy oil-, and gasoline-range TPH and volatile organic compounds (VOCs).

Mr. Kurt Miller notified DEQ of a release in March 2022 and Leaking Underground Storage Tank (LUST) file 01-22-0173 was subsequently opened. Copies of tables and figures from the Broadbent investigation are provided in Appendix A.

3 GEOLOGY AND HYDROGEOLOGY

The site lies near the southwest margin of the Baker Valley, which is a relatively flat area located between the Elkhorn Mountains to the west and the Wallowa Mountains to the east. The Powder River, which is a tributary of the Snake River, runs north through downtown Baker City approximately 0.7 mile to the west of the site. Baker City has a cool, semi-arid climate that averages about 10 inches of precipitation per year.

The surficial geology is characterized by alluvial outwash deposits consisting of unconsolidated, poorly sorted gravel, cobbles, and boulders with intermixed clay, silt and sand. Columbia River Basalt is present at greater depths.¹

Review of boring logs indicate that subsurface soil consists mostly of sand and gravel mixtures with varying amounts of silt from 0 to 15 feet bgs. Static groundwater levels recorded at the site ranged between 4.0 to 5.5 feet bgs. The downgradient groundwater flow direction is assumed to be north based on surface topography.

The Sam-O hot spring is located just south of the site and provides heat for the Sam-O Swim Center, and indoor swimming facility. The spring also feeds a wetland area that is located between the eastern site boundary and I-84.

¹ Oregon Department of Geology and Mineral Industries. (1977). Preliminary Geologic Map of the Baker Quadrangle

4 PURPOSE AND OBJECTIVES

The site assessment is intended to address the following objectives:

- Characterize and delineate soil and groundwater contamination to determine if there is a risk to human health and the environment.
- Determine if free product is present to determine if additional actions, such as product recovery, are necessary.
- Evaluate vapor intrusion risk to current and potential future site occupants.
- Determine if the site is eligible for regulatory closure.

5 GEOPHYSICAL SURVEY

Prior to implementing drilling activities, PBS Engineering and Environmental Inc. (PBS) completed a geophysical survey with Pacific Geophysics of Portland, Oregon between September 7 and September 9, 2022. The survey was performed across the entire site to identify subsurface utilities and features that could act as preferential pathways for contaminant migration. The survey was also completed to better understand where possible sources of contamination, such as tanks and product supply lines, are located.

The geophysical survey was successful in detecting the nest of previously decommissioned USTs, which are located immediately south of the restaurant, and are now partially obstructed by a large walk-in cooler. An abandoned product line was traced from the previously decommissioned UST nest to the original location of the diesel fueling islands (the diesel truck island was relocated farther south with the installation of the new USTs). Product supply lines from the active USTs were traced to the current diesel and gasoline fueling stations. The gasoline supply lines continued toward the gasoline fueling station, running along the west side of the convenience store.

Underground utilities and their depths, as identified during the survey, are illustrated in the attached geophysical survey report in Appendix B.

6 MONITORING WELL INSTALLATION

6.1 Monitoring Well Construction

From November 7 through November 12, 2022, PBS installed 13 monitoring wells in accordance with its October 2022 Site Assessment Work Plan. The monitoring well locations are shown on Figure 3. Monitoring well locations were chosen based on the findings of the September 2022 geophysical survey, as well as known areas of contamination previously identified by the 2019 Broadbent investigation. Additional monitoring wells were placed along the property boundary to delineate the outer limits of groundwater contamination. PBS was unable to install 3 of the proposed monitoring wells (MW-6, MW-11 and MW-12) due to challenging drilling conditions that caused delays to the progress of the well installation work. PBS intends to evaluate at least two quarters of groundwater monitoring results to evaluate what data gaps, if any, could be caused from the uninstalled wells.

The monitoring wells were completed using a sonic drilling rig operated by Cascade Drilling (Cascade) of Clackamas, Oregon. During boring advancement, soil from each boring was continuously logged and field screened for the presence of (VOCs using a photo-ionization detector (PID) and for the presence of petroleum hydrocarbons by sheen testing and visual/olfactory observation. Notable PID detections were only observed in borings MW-1 and MW-8 which had maximum detections 8.8 parts per million (ppm) and 2.5 ppm, respectively. Varying degrees of visual and olfactory evidence of petroleum contamination was observed in soil cuttings recovered while installing wells MW-1, MW-2, MW-5, MW-8, MW-9, and MW-15.

The finished depths of the monitoring wells varied from 11 to 20 feet bgs. PBS generally attempted to construct the wells to allow for a minimum of a 10-foot water column, however in some instances, borehole collapse prevented deeper installation. Wells MW-2 through MW-16 were constructed with 2-inch diameter, schedule 40 polyvinyl chloride (PVC) riser with a minimum 10 feet of screened interval. The screens had size 0.010 factory-slotted screens. 8/20 filter sand was utilized during each well's construction and a bentonite seal was installed above the sand interval. MW-1 was constructed with a wider 4-inch diameter casing that can be utilized to facilitate recovery of light non-aqueous phase liquid (LNAPL), if determined to be necessary. As seasonal-high groundwater depths were understood to be very shallow at the site, Cascade requested a variance from the Oregon Water Resources Department (OWRD) to install screened PVC shallower than 5 feet bgs in wells where LNAPL could be present. Due to high vehicular traffic, wells were completed with a heavy-duty flush mount well monument. Monitoring well construction logs are included in Appendix C.

6.2 Soil Sampling

Soil samples were collected, to characterize undissolved impacts to soil at the site. At each monitoring well location a soil sample was collected at the interval indicating the highest concentration of petroleum contamination, the soil/water interface depth, and if necessary, a vertical delineation sample. A shallow soil sample was also collected from each boring from between 0 to 3 feet bgs to evaluate occupational exposure. In the absence of field evidence of contamination, only a shallow soil sample and soil/water interface sample were collected for analysis. Soil sampling was conducted following PBS' standard operating procedure (SOP) titled Drilling and Soil Sampling, which is included in Appendix D.

The samples were shipped to Pace Analytical in Mt. Juliet, Tennessee, under chain-of-custody documentation and analyzed for the following:

- Gasoline-Range TPH by Method Northwest Method Total Petroleum Hydrocarbons, gasoline extended (NWTPH-Gx)
- Diesel- and Oil-Range TPH by Method Northwest Method Total Petroleum Hydrocarbons, diesel extended (NWTPH-Dx)
- Risk-Based Decision Making VOCs by Environmental Protection Agency (EPA) Method 8260B
- Total Lead by EPA Method 6010

Selected samples with elevated TPH were analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270 SIM.

6.3 Monitoring Well Development

Monitoring wells were developed between November 9 through November 11, 2022 and again November 22 through November 23, 2022. PBS followed the SOP for well development (provided in Appendix D). Due to slower than anticipated drilling progress, several monitoring wells were developed 24 hours from the time of their completion, rather than 48 hours as specified in the SOP. The wells were developed using a whale pump to purge groundwater from each well and a steel bailer was used to surge the wells. Purged water was captured and stored in 55-gallon drums.

A minimum of 10 borehole volumes of water was removed from each well. Final turbidity readings ranged from approximately 94.0 to 575 nephelometric turbidity units (NTUs) and water visually appeared to clear up.

6.4 Monitoring Well Surveying

A PBS survey crew surveyed each monitoring well in December 2022 from the top of the casing to determine its location and elevation. The top-of-casing elevation was surveyed to an accuracy of 0.01 foot, while the spatial location of the well was surveyed to 0.1 foot.

7 GROUNDWATER SAMPLING ACTIVITIES

PBS completed the initial (Q1) groundwater monitoring event on January 4 and January 5, 2022.

Depth to groundwater was measured from the top of the well casing using a decontaminated water level indicator or interface meter, capable of detecting the water level to 0.01 foot.

Monitoring wells were purged and sampled using a peristaltic pump and new disposable polyethylene tubing. A YSI water quality unit (which includes an optical dissolved oxygen probe) was used to record temperature, specific conductivity, dissolved oxygen (DO), pH, and oxidation reduction potential (ORP) during low-flow purging and sampling. In addition, visual turbidity observations were recorded, and a turbidity reading was taken prior to sample collection using an HF Scientific TPW turbidity meter. Samples were collected once the above parameters and the depth to groundwater stabilized in accordance with PBS' SOP for sampling groundwater monitoring wells (Appendix D).

PBS personnel wore new disposable nitrile gloves while collecting each sample. Groundwater samples were placed into laboratory-provided containers. The samples were delivered to Pace Laboratories of Mt. Juliet, Tennessee, under chain-of-custody (COC) documentation and analyzed for the following:

- Gasoline-range TPH by method NWTPH-Gx
- Diesel- and heavy oil-range TPH by method NWTPH-Dx
- RBDM VOCs by EPA Method 8260
- Total lead using EPA Method 6010

Samples from wells MW-1 and MW-5 were additionally analyzed for PAHs due to elevated concentrations of diesel-range TPH detected in both samples.

PBS was unable to locate monitoring well MW-16, located in the southwestern parking lot, due to ice and snow on the ground.

Quality control samples included trip blanks (RBDM VOC analysis only) and one groundwater duplicate sample, collected from monitoring well MW-1, labeled "23Q1 MW-DUP". Copies of the laboratory results and the COC forms are included in Appendix E.

8 VAPOR INTRUSION ASSESSMENT

Concentrations of diesel-range TPH detected in groundwater samples collected during Broadbent's 2019 investigation were noted to exceed the solubility limit (typically 6,000 µg/L) which is used as the Vapor Intrusion into Buildings Risk Based Concentration (RBC) protective of occupational receptors. To assess the vapor intrusion risk, PBS collected two sub-slab vapor samples, one from the store, and another from the restaurant building. The truck stop building has several additions that are situated on a crawlspace foundation, while the original building, comprising much of the eastern extent, is slab-on-grade. The sub-slab vapor samples were collected from the slab-on-grade portions.

DEQ has published a vapor intrusion guidance document (VI Guidance) that establishes protocols for collecting sub-slab vapor and soil gas samples.² PBS collected the sub-slab vapor samples following Sections 3.2.1 and 3.2.2 of the VI Guidance with modifications, as needed, for leak detection. The sample collection process is described in PBS' SOP titled Sub-Slab Vapor and Soil Gas Sampling, a copy of which is in Appendix D.

PBS collected the sub-slab samples using a reusable vapor pin sampling system. Two temporary sampling points were installed by drilling 0.625-inch holes through the concrete floor and into the sub-slab space. PBS performed leak detection monitoring during sampling using helium as a tracer gas. Samples were collected in summa canisters and sorbent tubes obtained from Friedman & Bruya in Seattle, Washington. The holes were patched following sample collection. Sampling locations are shown on Figure 5.

9 INVESTIGATION-DERIVED WASTES

Gloves, tubing, and other disposable field supplies were disposed of as solid waste. Soil cuttings, purged groundwater, and decontamination water were placed into 55-gallon drums that were sealed, labeled, and placed in secure locations onsite for future disposal.

10 FINDINGS

10.1 Field Observations

The surface of most of the site is covered by "chip-seal" asphalt, concrete, and compacted gravel. Generally, the subsurface across the site consisted of gravelly soil with some silts and sands present at shallow depths. Gravel grain size was noted to increase in size with depth. The depth to groundwater, as measured during the Q1 monitoring event, ranged from 2.52 feet below top of casing (btoc) and 5.74 feet btoc.

10.2 Initial Free Product Assessment and Depth to Groundwater

During the Q1 monitoring event, only monitoring wells MW-1 and MW-5 were observed by PBS field staff to have visual or olfactory evidence of contamination. Prior to sampling, PBS staff used an interface probe to gauge monitoring wells MW-1 and MW-5, as both wells are suspected of having the potential to accumulate LNAPL based on observations from the monitoring well installation and analytical data. Measurable product was not detected in MW-1; however, a thin visual film was noted by field staff. The interface probe detected 0.03 feet of LANPL in MW-5. Further examination of the groundwater with a bailer noted a possible thin layer of fuel on top of the water that was described by field staff as clear and indistinguishable.

Analytical results of groundwater samples collected from both wells do not appear representative of conditions where LNAPL would be present. PBS intends to continue evaluating MW-1 and MW-5 for measurable LNAPL during future monitoring events.

Depth to groundwater ranged from 2.52 to 5.79 feet below the top of casing, resulting in groundwater elevations ranging from 3,424.42 to 3,428.80 feet above mean sea level (amsl) and an estimated flow direction trending northwest toward MW-10.

10.3 Soil Analytical Results

Soil sample analytical results from soil samples collected during the monitoring well installation are summarized in Table 1 and Table 2. The following is a summary of the results:

- Diesel-range hydrocarbons were detected in soil samples collected from borings MW-1, MW-3, MW-5, MW-8, MW-9, MW-13, and MW-15 at concentrations ranging from 6.14 mg/kg to 3,870 mg/kg.

² Oregon Department of Environmental Quality. (March 2010). *Guidance for Assessing and Remediating Vapor Intrusion in Buildings*.

- Heavy oil-range hydrocarbons were detected in soil samples collected from borings MW-1, MW-5, MW-8, MW-10, MW-13, MW-14, and MW-15 at concentrations ranging from 13.8 mg/kg to 252 mg/kg.
- Gasoline-range hydrocarbons were detected in soil samples collected from borings MW-1, MW-2, MW-5, MW-8, MW-9, MW-10, and MW-15 at concentrations ranging from 5.38 mg/kg to 448 mg/kg.
- VOCs were detected in soil samples collected from wells MW-1 through MW-5, and soil samples collected from wells MW-8 through MW-10, and MW13.
- Lead was detected in most borings completed at the site at concentrations that ranged from 2.40 mg/kg to 235 mg/kg.
- Several PAHs were detected in soil samples collected from monitoring wells MW-1 and MW-5.

10.4 Groundwater Analytical Results

Groundwater analytical results are summarized in Table 3 and Table 4. The following is a summary of the results:

- Diesel-range hydrocarbons were detected in monitoring wells MW-1, MW-2, MW-5 and MW-10 at concentrations ranging from 147 µg/L to 5,180 µg/L.
- Heavy oil-range hydrocarbons were not detected above applicable reporting limits in any of the monitoring wells.
- Gasoline-range hydrocarbons were detected in monitoring wells MW-1, MW-2, MW-5, MW-8, and MW-10 at concentrations ranging from 151 µg/L to 684 µg/L.
- Several VOCs were detected in monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-8 through MW-10.
- Several PAHs were detected in monitoring wells MW-1 and MW-5.
- Total lead was not detected above applicable reporting limits in any of the groundwater samples.

10.5 Soil Gas Analytical Results

- Diesel- and gasoline-range hydrocarbons were not detected above applicable reporting limits in either of the sub-slab vapor samples collected.
- No VOCs were detected above applicable reporting limits in either sample.

10.6 Quality Control Samples

Quality control (QC) samples were collected as previously described. Results are discussed below.

Duplicate Groundwater Samples

The relative percent difference (RPD) was calculated as the difference between the values divided by the average of the values. For samples with results greater than five times the practical quantitation limit (PQL), an RPD of less than 20% to 35%, depending on the matrix and analytical method, is considered good duplication. For samples with results less than five times the PQL, the difference between the sample and its duplicate must be less than the PQL to meet the quality assurance acceptance criteria. A significant difference between duplicate values for a few parameters would indicate potential problems with the precision of specific analyses. A significant difference for many parameters would indicate potential problems with the sample collection procedures.

A duplicate groundwater sample was collected from monitoring well MW-1 and labeled as 23Q1 MW-DUP. The RPD for the parent and duplicate sample met quality control criteria except for the gasoline detection, which exceeded an RPD of 20% (30%). The results are less than five times the PQL of 100 µg/L; however, the difference between the two results was slightly greater than the PQL. The variability in gasoline concentrations between the parent sample and the duplicate could be due to the volatile nature of gasoline. The results for gasoline-range TPH for this sample are considered estimates.

The RPD calculations are reported on Table 5.

Equipment Rinsate Blanks

An equipment blank was inadvertently not collected from the decontaminated drilling core barrel during the monitoring well installation work. An equipment blank was also not collected during the monitoring event as a peristaltic pump with new disposable polyethylene tubing was utilized for groundwater sample collection.

Trip Blanks

Trip blanks accompanied samples proposed for VOC analysis. There were no detections of VOCs in the trip blanks from the sampling events. Therefore, there are no unexpected introductions of outside contamination to the samples.

11 INITIAL RISK-BASED EVALUATION

A conceptual site model (CSM) describes the known or suspected source of contamination, considers how the contaminants are likely to migrate (pathways), and identifies who is likely to be affected by the contaminants (receptors). For risk to be present at the Site, a source must be present, pathways must be complete, and receptors must be present. Analytical results were screened against DEQ's risk-based concentrations (RBCs)³ to evaluate potential risk. The following sections describe the potentially complete exposure pathways and risk screening.

11.1 Source of Release

The source of the release is suspected to be the abandoned product lines of the decommissioned USTs. The location of the abandoned product lines was identified during the geophysical survey and they are situated near Broadbent's SB-4 boring location, where very high diesel-range TPH was detected in groundwater.

11.2 Contaminants of Concern

Contaminants of concern for soil and groundwater include the following:

- Soil:
 - o Gasoline-range hydrocarbons
 - o Diesel- and heavy oil-range hydrocarbons
 - o Petroleum-related VOCs (Benzene, 1,2-dichloroethane, ethylbenzene, isopropylbenzene, naphthalene, n-propylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total xylenes)
 - o PAHs
 - o Lead

³ DEQ. (September 22, 2003. Updated May 2018). *Risk-Based Decision Making for the Remediation of Contaminated Sites*.

- Groundwater:
 - o Gasoline-range hydrocarbons
 - o Diesel-range hydrocarbons
 - o Petroleum-related VOCs (Benzene, ethylbenzene, isopropylbenzene, n-propylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total xylenes)
 - o PAHs

11.3 Facility and Locality of the Facility

The facility is defined by the DEQ as an area in which hazardous substances or materials may have been deposited, stored, placed, or otherwise have come to be located, and a release has occurred or there is threat of a release. Given the use of the site as truck stop and fueling station, complete with overnight truck parking, the facility is designated as the site boundary.

The locality of the facility (LOF) is defined by Oregon DEQ as the area where human or ecological receptors are reasonably likely to encounter facility-related hazardous substances. The area is determined by considering factors such as the physical and chemical characteristics of the contaminants, the physical characteristics that govern the migration of contaminants (i.e., soil characteristics and groundwater gradient), and human activities in the vicinity. The LOF typically defines the maximum migration extent for each medium, considering all these factors. Based on the initial monitoring event, the LOF for this property is currently bounded by the following wells to the central to the fuel dispensing areas:

- MW-9 near the western property boundary
- MW-16 in the southwestern extent of the property
- MW-8 and MW-10 to the north
- MW-4 near the gasoline dispensers
- MW-3 near the former USTs
- MW-7 to the southeast
- MW-15 to the south

11.4 Current and Likely Future Uses of Land and Groundwater

The primary use of the property is as a fueling station for semi-trucks and passenger vehicles. The site is zoned commercial. Future land use is not anticipated to change.

The Oregon Water Resources Department well query online database provides logs for water wells.⁴ This database was reviewed by PBS on November 11, 2022, for water well logs located within quarter mile for Township 9S, Range 40E, Section 16. Geotechnical boreholes and abandoned wells were not considered beneficial uses for this review.

PBS identified 10 well logs located within a 0.25 mile radius of the Site:

- BAKE50485: This well log lists the address as 935 D Street in Baker City, Oregon (approx. 0.25 mile northwest of the site) which is a residential dwelling. No information about the well's use or construction details are provide in the OWRD log. The well is located downgradient from the site and is considered a potential receptor.
- BAKE50508: The OWRD well identification form lists this well as abandoned. It is located approx. 0.16 mile west of the site at a residential property with the address 2425 Balm Street, in Baker City, Oregon.

⁴ http://apps.wrd.state.or.us/apps/gw/well_log/

No information about the depth of the well or casing intervals is provided in the well log. This well is not considered a potential receptor because it is listed as abandoned.

- BAKE1083: The OWRD well log lists this as a private irrigation well. It is located approximately 0.17 mile southwest of the site at 2101 Balm Street in Baker City, Oregon. The well was completed to a depth of 16 feet bgs. Because the well is situated upgradient of the site and appears to be limited to irrigation use, the well is not considered a potential receptor.
- BAKE1091: The OWRD well log does not list the use of the well. GPS coordinates included in the OWRD information place the well adjacent to a Rodeway Inn. The well is located approximately 0.16 mile northwest (downgradient) of the site). The well log indicates that the well was installed to a total depth of 550 feet bgs and was cased to 145 feet. Based on the depth of the well and casing, the well is not considered a potential receptor.
- BAKE1092: The OWRD well log lists this as a well for stock that was installed in 1949 for the Baker Packing Company, which no longer exists. There is now a Grocery Outlet at the same location as the well, approximately 0.19 mile northeast of the site. The well log indicates that the well was completed to a total depth of 600 feet bgs. No information is provided about casing depth. Given the constructed depth of the well, its specified use for stock and because the well likely no longer exists, the well is not considered a potential receptor. The well is also located cross-gradient of the site.
- BAKE50388: The OWRD well identification form does not list any construction details of the well although it appears to be installed at a private residence located at 990 Washington Avenue, approximately 0.23 mile southwest of the site. Because the well is located upgradient of the site, it is not considered a potential receptor.
- BAKE50474: This well was located approx. 0.24 mile west of the site, however the OWRD well identification form indicates that the well was decommissioned and therefore, it is not considered a potential receptor.
- BAKE50909: The OWRD well identification form lists the well as located approximately 0.24 mile southwest of the site at address 1002 Broadway Street in Baker City, Oregon. No information about the depth of the well or casing intervals is provided in the well log. Because the well is located upgradient from the site, it is not considered a potential receptor.
- BAKE51265: The OWRD well identification form indicates that this well is located approximately 0.15 mile southwest of the site at a residential property with address 2105 Birch Street in Baker City, Oregon. No information is provided about the well's construction details. Because the well is located upgradient of the site, it is not considered a potential receptor.
- BAKE51306: The OWRD well identification form indicates that the well was installed before 1965 to an approximate depth of about 20 to 22 feet bgs. The well is located approximately 0.22 mile southwest of the site at a residential property with address 2080 Balm Street in Baker City, Oregon. Because the well is located upgradient from the site, it is not considered a potential receptor.

A printout of water wells for domestic and irrigation use in Township 9S, Range 40E, Section 16 is included in Appendix F. Identified water well locations are also shown on Figure 6. Based on the distance of the identified wells to the site and the analytical results of the initial monitoring event, it appears unlikely that any of the wells are at risk of being impacted by the release. One well, BAKE50485, is considered a potential receptor. Additional wells could become potential receptors if groundwater flow direction changes during future monitoring events or contaminant concentrations increase in delineation monitoring wells.

PBS plans to mail beneficial well use surveys to the addresses outlined above to further evaluate if the wells are being utilized. The site is known to utilize municipal water and municipal water is readily available to the surrounding area.

11.5 Current and Future Receptors

Current receptors include employees and customers of the Baker Truck Corral. Future receptors include occupational, construction and excavation workers.

11.6 Potentially Complete Soil Exposure Pathways

The following soil pathways are potentially complete:

- Soil ingestion, dermal contact, and inhalation for occupational, construction, and excavation worker receptors
- Volatilization to outdoor air for occupational receptors
- Vapor intrusion into buildings for occupational receptors
- Leaching to groundwater for residential and occupational receptors

11.7 Potentially Complete Groundwater Exposure Pathways

The groundwater pathways are potentially complete:

- Ingestion and inhalation from tap water for residential and occupational receptors
- Volatilization to outdoor air for residential and occupational receptors
- Vapor intrusion into buildings for residential and occupational receptors
- Groundwater in excavation for construction and excavation worker receptors

12 DATA EVALUATION AND INITIAL EXPOSURE ASSESSMENT

Soil concentrations were compared against RBCs for potentially complete exposure pathways. The soil sample concentrations and RBCs are shown in Table 1 and Table 2. There were no RBC exceedances detected for occupational, or construction and excavation worker receptors, except for the leaching to groundwater pathway.

Analytical results and RBCs for groundwater samples collected during the initial monitoring event are shown in Table 3 and Table 4. Only the Inhalation and Ingestion from Tapwater RBC was exceeded for both residential and occupational receptors. Gasoline-range hydrocarbon detections in groundwater are considered estimated based on the quality control analysis in section 10.6. This does not affect the conclusions of this investigation.

Sub-slab vapor sample results indicate that there is not a vapor intrusion risk despite the solubility limit of diesel-range TPH in groundwater being exceeded during the 2019 Broadbent investigation.

13 CONCLUSIONS

Based on the initial assessment work completed at the Baker Truck Corral, there does not appear to be unacceptable risk to any occupants of the site, including occupational receptors or construction and excavation worker receptors. Sub-slab vapor samples did not indicate any detections for contaminants of concern, ruling out vapor intrusion risk to site occupants. The site is connected to the municipal water supply and therefore, there appears to be no risk to occupants of the site. However, several wells were identified within a quarter mile of the site, and risk to offsite receptors is not characterized. Groundwater contamination

appears to be largely contained onsite based on the Q1 monitoring results, but delineation appears currently incomplete. Additional monitoring, and potentially additional delineation may be warranted to characterize risk to offsite receptors prior to being eligible for regulatory closure.

In accordance with PBS' October 2022 Site Assessment Work Plan, additional groundwater monitoring to evaluate seasonal changes in contaminant concentrations and migration is planned. Included with the monitoring will be continued assessment of the presence of LNAPL. If encountered, recovery measures will be taken.

The second (Q2) monitoring event is anticipated to be completed in April 2023.

14 LIMITATIONS

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This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The site as a whole may have other contamination that was not characterized by this study. The findings and conclusions of this report are not scientific certainties but probabilities based on professional judgment concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent that the Site or adjoining land contain no hazardous waste, oil, or other latent conditions beyond that detected or observed by PBS.

PBS Engineering and Environmental Inc.

Nick Thornton	Date
Project Scientist	

Bret Waldron, RG	Date
Senior Geologist	

Figures

Figure 1. Site Vicinity

Figure 2. Site Plan

Figure 3. Q1 Groundwater Elevation

Figure 4. Q1 TPH & BTEX Concentrations

Figure 5. Sub-Slab Sampling Locations

Figure 6. Wells Located in Site Vicinity

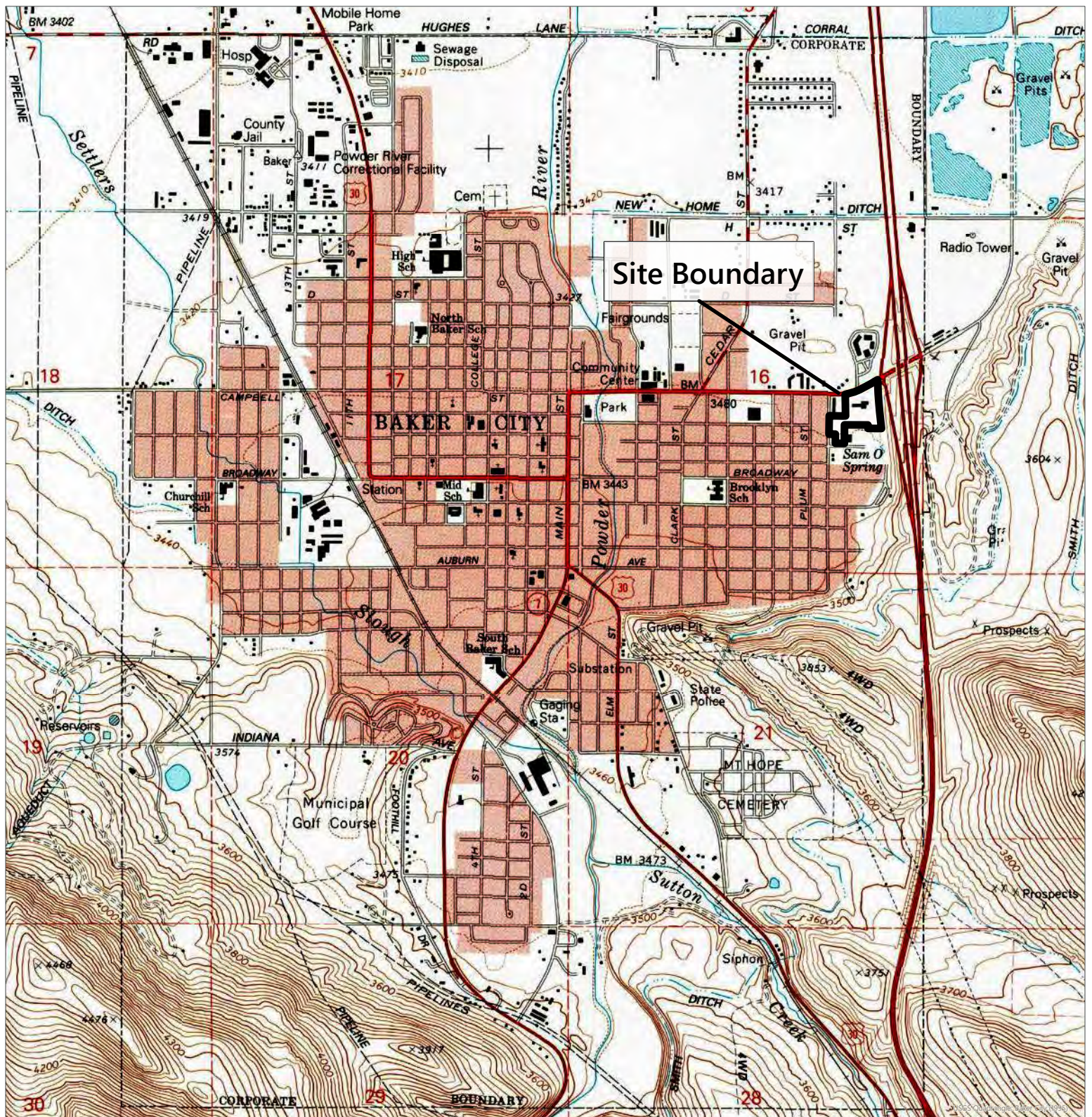


Figure 1 | Site Vicinity

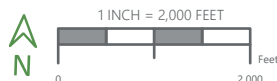
Baker Truck Corral

515 Campbell St, Baker City, Oregon

Date: March 2023 | Project: 24349.000

Legend

 Site Boundary



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

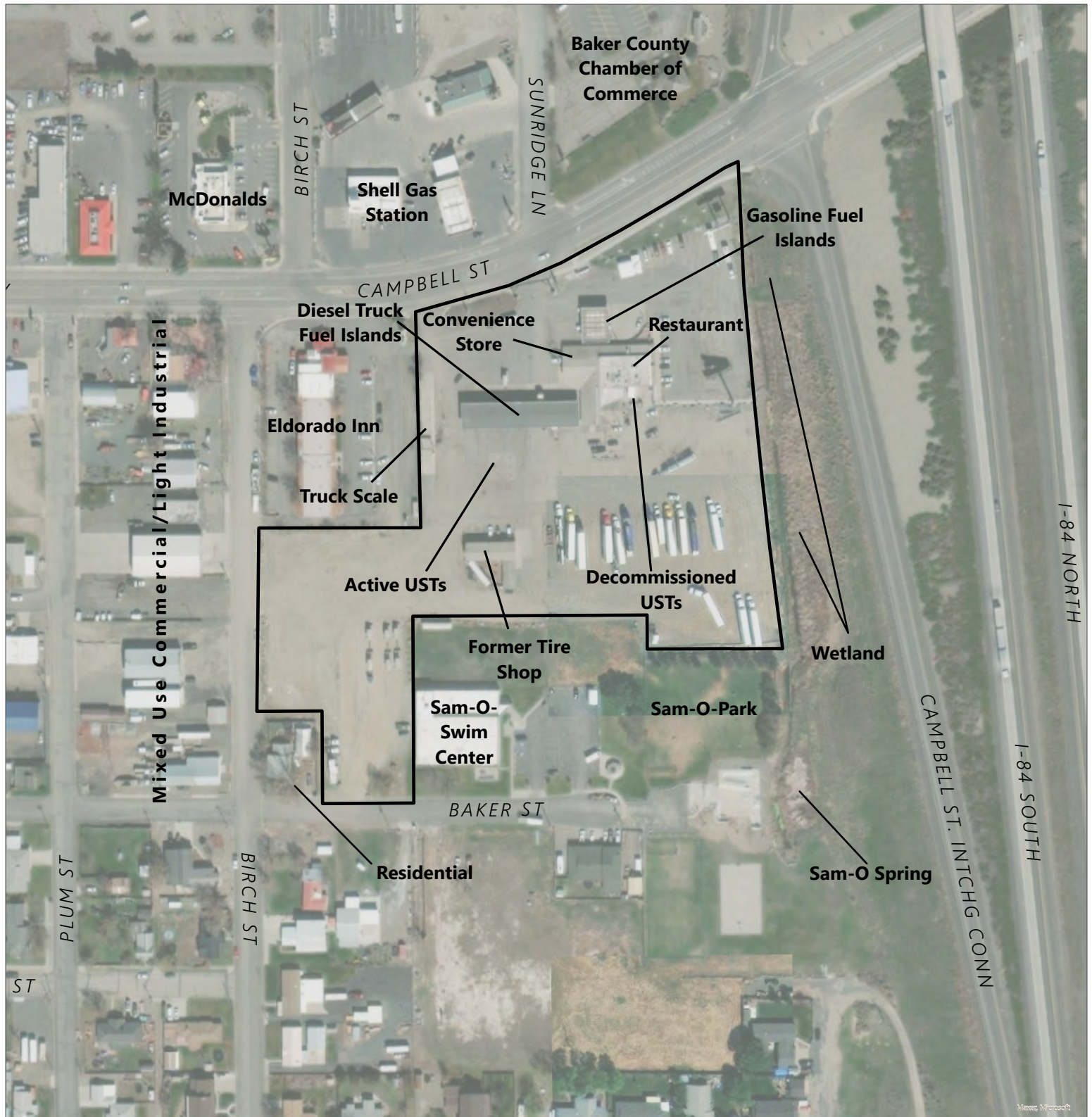
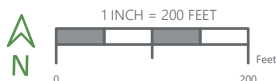


Figure 2 | Site Plan

Baker Truck Corral
 515 Campbell St, Baker City, Oregon
 Date: March 2023 | Project: 24349.000

Legend

 Site Boundary



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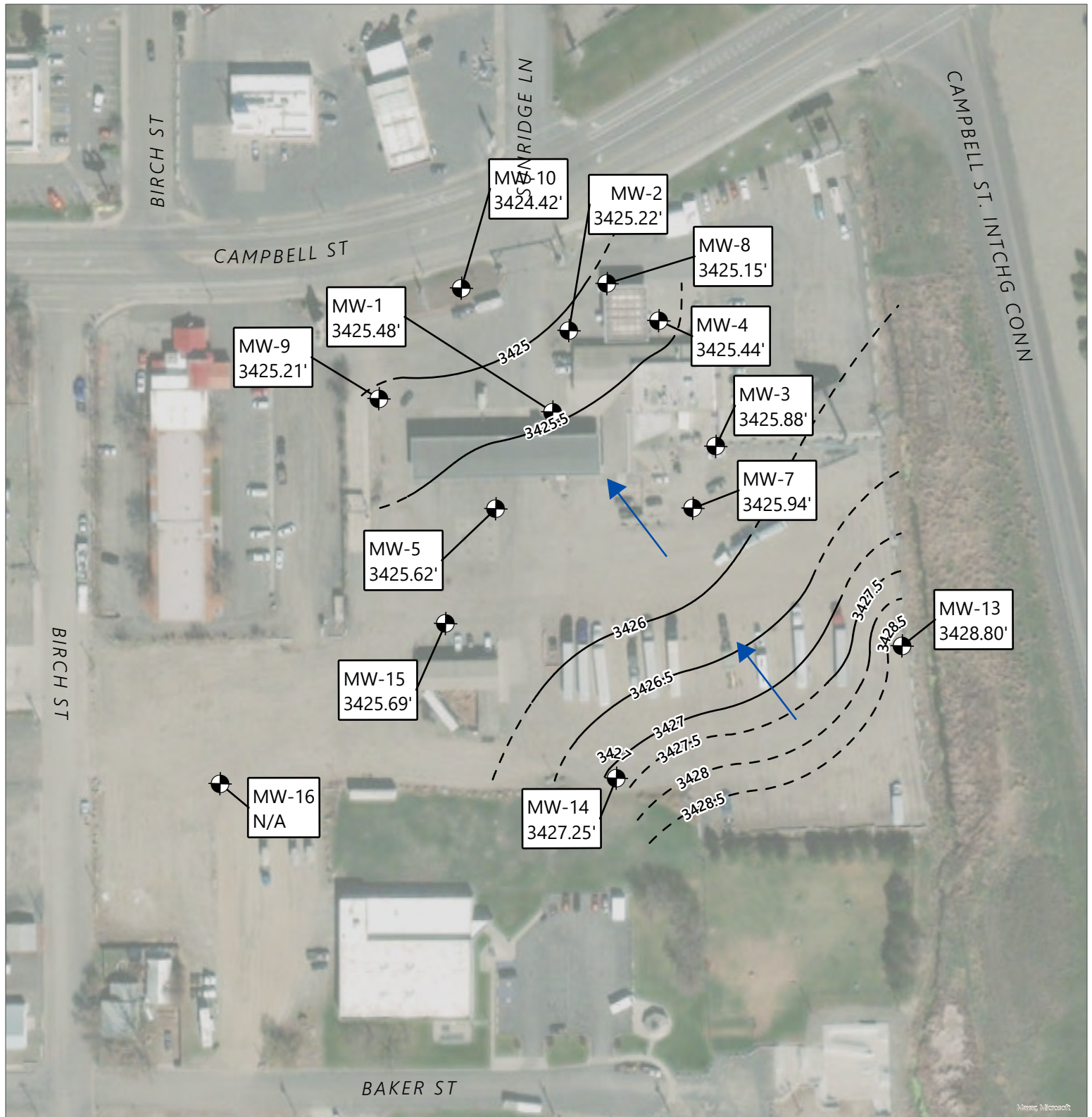


Figure 3 | Groundwater Elevation

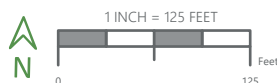
Baker Truck Corral

515 Campbell St, Baker City, Oregon

Date: March 2023 | Project: 24349.000

Legend

- Monitoring Wells (Groundwater Elevation Feet AMSL)
- Groundwater Flow Direction
- Groundwater Contours
- Inferred Groundwater Contours
- Site Boundary



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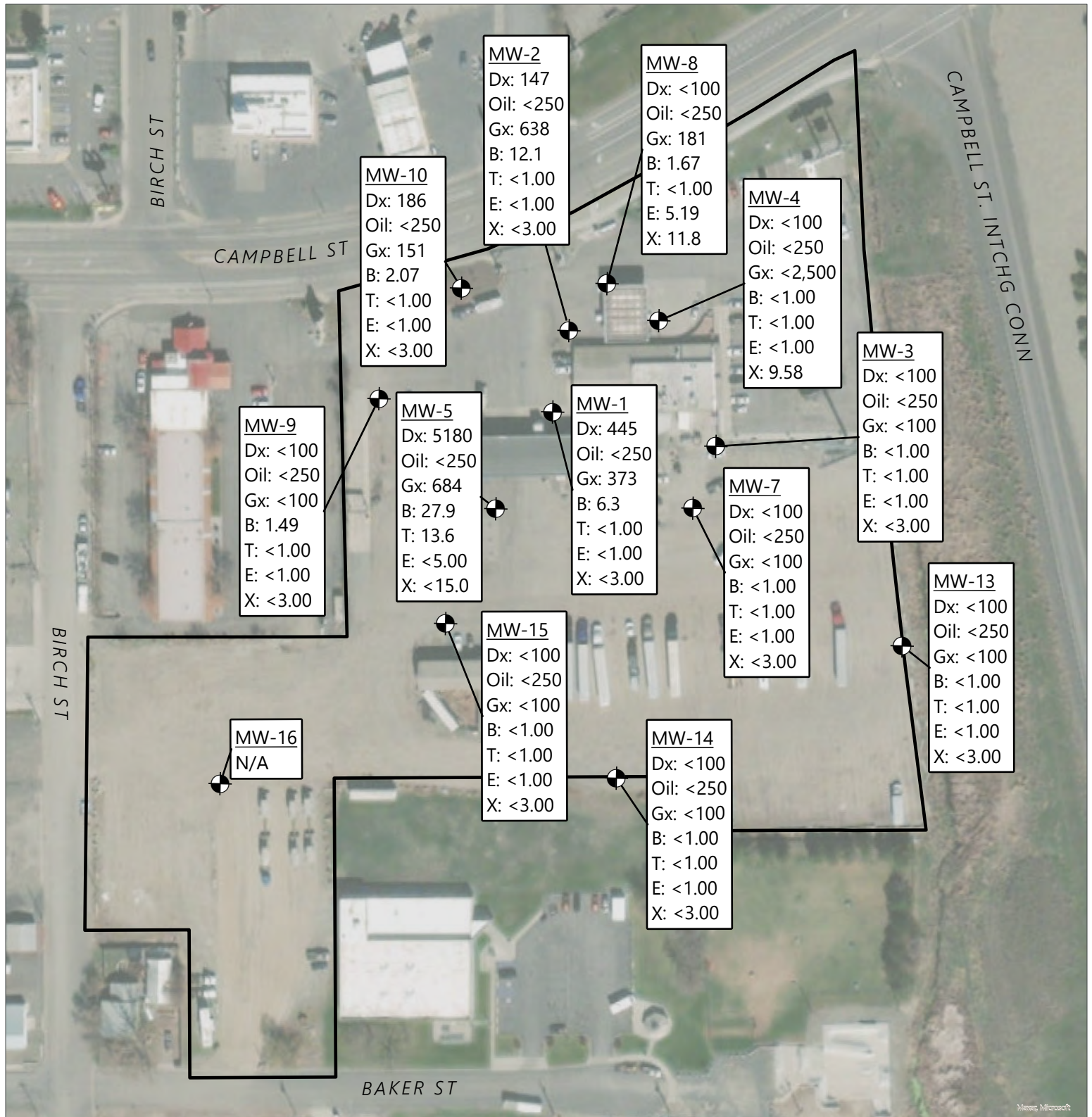


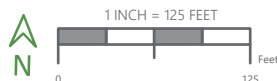
Figure 4 | Q1 Groundwater TPH & BTEX Results

Baker Truck Corral
515 Campbell St, Baker City, Oregon
 Date: March 2023 | Project: 24349.000

Legend

- Monitoring Wells (µ/L)
- Site Boundary

Dx: Diesel Range Hydrocarbons
 Oil: Heavy Oil Range Hydrocarbons
 Gx: Gasoline Range Hydrocarbons
 B: Benzene
 T: Toluene
 E: Ethylbenzene
 X: Xylenes



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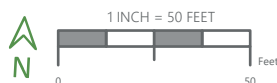


Figure 5 | Sub-Slab Sampling Locations

Baker Truck Corral
515 Campbell St, Baker City, Oregon
 Date: March 2023 | Project: 24349.000

Legend

- Sub-Slab Sampling Locations
- Crawlspace
- Site Boundary



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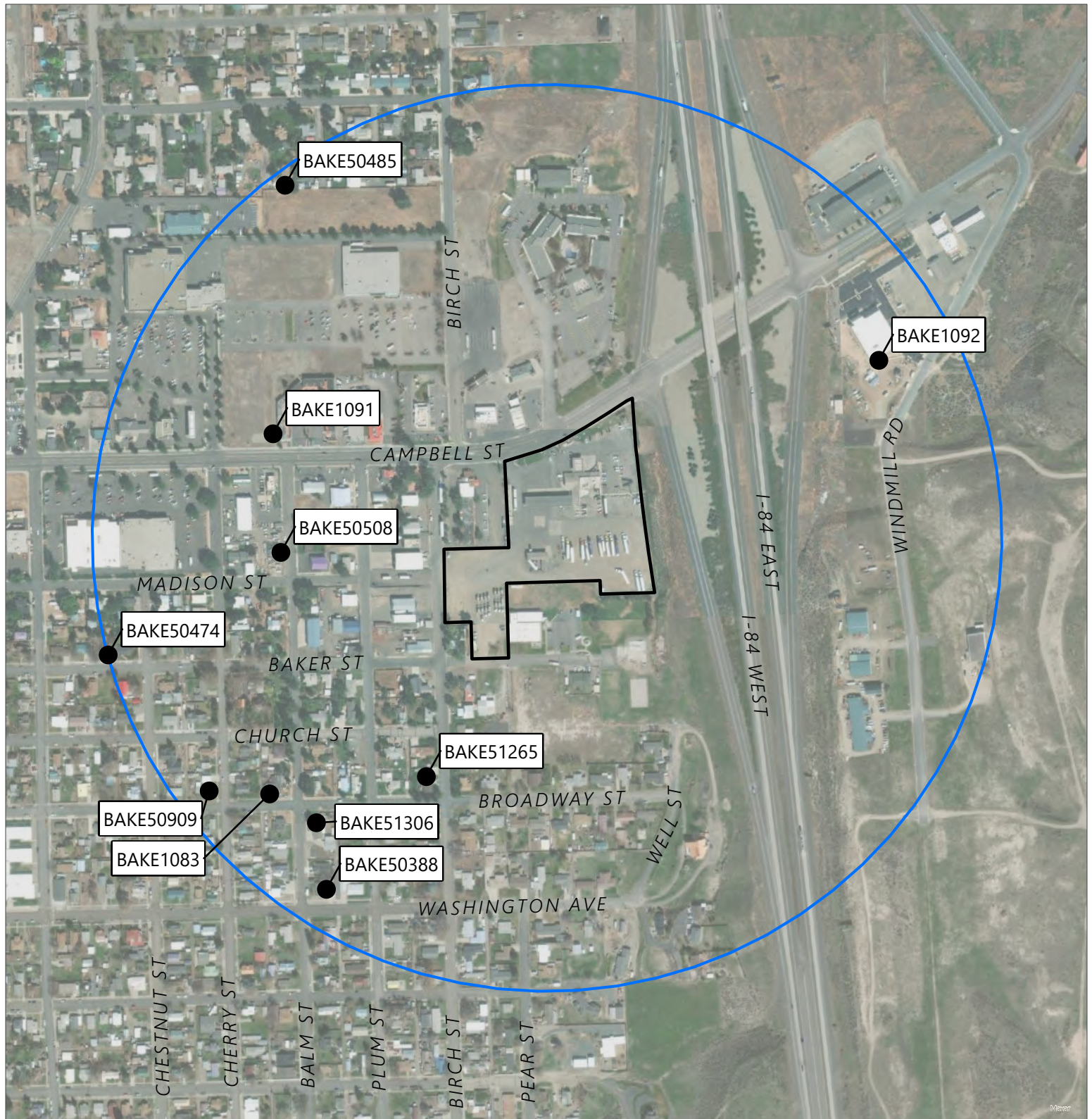
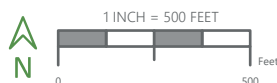


Figure 6 | Wells Located in Site Vicinity

Baker Truck Corral
515 Campbell St, Baker City, Oregon
 Date: March 2023 | Project: 24349.000

- Legend**
- Well Logs
 - Quarter Mile Radius
 - Site Boundary



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Tables

Table 1. Summary of Soil Sample Analytical Results – TPH, VOCs, and Lead

Table 2. Summary of Soil Sample Analytical Results – PAHs

Table 3. Summary of Groundwater Analytical Results – TPH and VOCs

Table 4. Summary of Groundwater Analytical Results – PAHs and Lead

Table 5. Field Duplicate Sample Evaluation

Table 6. Soil Gas Analytical Results

Table 7. Summary of Leak Check Analysis

Table 1. Summary of Soil Analytical Results - TPH, VOCs, and Lead
Baker Truck Corral
515 Campbell Street
Baker City, Oregon
DEQ LUST File No. 30-22-0201

Sample ID	Sample Date	Matrix	Depth Collected (feet bgs)	Total Petroleum Hydrocarbons			VOCs (detections only)										Lead
				Diesel	Heavy Oil	Gasoline	Benzene	1,2-Dichloroethane	Ethylbenzene	Isopropylbenzene	Naphthalene	N-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes, Total	
				mg/kg													
MW1-2.5	11/11/2022	Soil	2.5	454	17.7	448	0.0055	0.0047	0.503	1.06	0.257	8.1	<0.00651	0.0645	0.0955	0.0819	<2.24
MW1-5.0SWI	11/11/2022	Soil	5.0	10.2	<11.2	32.9	0.00211	<0.00312	0.0122	0.0178	0.0269	0.0902	0.00867	<0.00623	<0.00623	0.0174	<2.19
MW1-13.0	11/11/2022	Soil	13.0	<4.55	<11.4	<12.8	--	--	--	--	--	--	--	--	--	--	--
MW2-2.5	11/09/2022	Soil	2.5	<6.14	<15.3	9.78	0.151	<0.00528	0.0105	0.0202	<0.0264	0.0513	<0.0106	0.0116	<0.0106	0.0955	<2.22
MW2-5.0SWI	11/09/2022	Soil	5.0	<4.44	<11.1	<3.10	0.0145	<0.00310	0.00354	0.00317	<0.0155	0.0103	<0.00621	<0.00621	<0.00621	0.00952	25.1
MW2-15.0	11/09/2022	Soil	15.0	<4.29	<10.7	--	--	--	--	--	--	--	--	--	--	--	--
MW3-2.5	11/11/2022	Soil	2.5	<4.20	<10.5	<2.75	0.00168	<0.00275	<0.00275	<0.00275	<0.0137	<0.00550	<0.00550	<0.00550	<0.00550	<0.00715	<2.15
MW3-13.0SWI	11/11/2022	Soil	13.0	25.3	<10.8	<3.05	<0.00122	<0.00305	<0.00305	<0.00305	<0.0153	<0.00609	<0.00609	<0.00609	<0.00609	<0.00792	7.70
MW4-2.5	11/09/2022	Soil	2.5	<5.71	<14.3	<4.76	0.0714	<0.00476	<0.00476	<0.00476	<0.0238	<0.00952	0.0255	<0.00952	<0.00952	0.0457	6.47
MW4-5.0SWI	11/10/2022	Soil	5.0	<4.52	<11.3	<3.30	0.00721	<0.00330	<0.00330	<0.00330	<0.0165	<0.00660	<0.00660	<0.00660	<0.00660	<0.00859	3.66
MW4-15	11/10/2022	Soil	15.0	<4.36	<10.9	<2.96	--	--	--	--	--	--	--	--	--	--	--
MW5-2.5	11/10/2022	Soil	2.5	163	<11.8	<3.52	0.00446	<0.00352	<0.00352	<0.00352	<0.0176	<0.00703	<0.00703	<0.00703	<0.00703	<0.00914	<2.19
MW5-7.0SWI	11/10/2022	Soil	7.0	3,870	59.1	358	0.0863	<0.00298	0.00516	0.451	0.0169	1.23	0.0325	0.0157	<0.00596	0.0129	2.63
MW7-2.5	11/11/2022	Soil	2.5	<4.38	<11.0	<12.1	<0.00121	<0.00302	<0.00302	<0.00302	<0.0151	<0.00604	<0.00604	<0.00604	<0.00604	<0.00785	<2.23
MW7-7.5SWI	11/11/2022	Soil	7.5	<4.47	<11.2	<13.0	<0.00130	<0.00325	<0.00325	<0.00325	<0.0163	<0.00651	<0.00651	<0.00651	<0.00651	<0.00846	<2.10
MW8-2.5	11/09/2022	Soil	2.5	6.14	48.9	187	1.16	0.0136	5.60	0.224	0.0296	0.761	0.17	2.86	0.551	18.3	7.73
MW8-7.0 SWI	11/09/2022	Soil	7.0	<4.29	<10.7	177	0.0951	<0.00298	2.42	0.263	0.715	1.17	0.0561	5.81	1.09	6.25	3.97
MW8-15	11/09/2022	Soil	15.0	<4.49	<11.2	14.9	--	--	--	--	--	--	--	--	--	--	--
MW9-2.5	11/12/2022	Soil	2.5	<4.81	<12.0	6.24	<0.00143	<0.00358	<0.00358	0.0155	<0.0179	0.0291	<0.00716	<0.00716	<0.00716	<0.00931	<2.28
MW9-7.0SWI	11/12/2022	Soil	7.0	163	<11.4	36.7	<0.00130	<0.00324	<0.00324	0.0628	0.0736	0.125	<0.00649	<0.00649	<0.00649	<0.00844	5.33
MW10-2.5	11/09/2022	Soil	2.5	<4.22	13.8	5.38	0.0113	<0.00314	0.00906	<0.00314	<0.0158	<0.00629	0.00732	<0.00629	<0.00629	0.0225	15.3
MW10-7.0 SWI	11/09/2022	Soil	7.0	<4.39	<11.0	<3.53	0.0054	<0.00353	<0.00353	<0.00353	<0.0177	<0.00706	<0.00706	<0.00706	<0.00706	<0.00918	2.40
MW13-2.5	11/07/2022	Soil	2.5	48.2	252	<3.49	0.00385	<0.00349	<0.00349	<0.00349	<0.0175	<0.00699	0.0177	<0.00699	<0.00699	0.0172	3.76
MW13-5.0 SWI	11/07/2022	Soil	5.0	<6.18	<15.5	<5.46	<0.00874	<0.0218	<0.0218	<0.0218	<0.109	<0.0437	<0.0437	<0.0437	<0.0437	<0.0569	<3.09
MW14-2.5	11/08/2022	Soil	2.5	<5.51	36.0	<4.83	<0.00194	<0.00485	<0.00485	<0.00485	<0.0242	<0.00968	<0.00968	<0.00968	<0.00968	<0.0126	235
MW14-5.0 SWI	11/08/2022	Soil	5.0	<6.44	<16.1	<5.63	<0.00225	<0.00563	<0.00563	<0.00563	<0.0282	<0.0113	<0.0113	<0.0113	<0.0113	<0.0146	<3.22
MW15-2.5	11/12/2022	Soil	2.5	6.28	25.1	<3.02	<0.00121	<0.00302	<0.00302	<0.00302	<0.0151	<0.00605	<0.00605	<0.00605	<0.00605	<0.00786	<2.18
MW15-13.0SWI	11/12/2022	Soil	13.0	<4.36	<10.9	10.2	<0.00119	<0.00297	<0.00297	<0.00297	<0.0149	<0.00595	<0.00595	<0.00595	<0.00595	<0.00773	5.33
MW16-2.5	11/08/2022	Soil	2.5	<4.28	<10.7	<2.85	<0.00114	<0.00285	<0.00285	<0.00285	<0.0142	<0.00569	<0.00569	<0.00569	<0.00569	<0.00740	<2.14
MW16-5.0 SWI	11/08/2022	Soil	5.0	<4.22	<10.6	<2.81	<0.00112	<0.00281	<0.00281	<0.00281	<0.0140	<0.00560	<0.00560	<0.00560	<0.00560	<0.00728	<2.11
Oregon DEQ RBC ¹ - Ingestion, Dermal Contact, & Inhalation		Occupational	14,000		20,000	37	NS	150	57,000	23	NS	88,000	6,900	6,900	25,000	800	
		Construction Worker	4,600		9,700	380	NS	1,700	27,000	580	NS	28,000	2,900	2,900	20,000	800	
		Excavation Worker	>MAX		>MAX	11,000	NS	49,000	750,000	16,000	NS	770,000	81,000	81,000	560,000	800	
Oregon DEQ RBC ¹ - Volatilization to Outdoor Air		Occupational	>MAX		69,000	50	NS	160	>Csat	83	NS	>Csat	>Csat	>Csat	>Csat	>Csat	NV
Oregon DEQ RBC ¹ - Vapor Intrusion into Buildings		Occupational	>MAX		>MAX	2.1	NS	17	>Csat	83	NS	>Csat	>Csat	>Csat	>Csat	>Csat	NV
Oregon DEQ RBC ¹ - Leaching to Groundwater		Occupational	>MAX		130	0.10	NS	0.90	>Csat	0.34	NS	490	48.0	53.0	100	30	
Oregon Clean Fill Values ²				1,100		31	0.023	NS	0.22	96	0.077	85.2	23	10	11	1.4	21

Notes:

See laboratory report for full list of analytes.

bgs: below ground surface

mg/kg: milligrams per kilogram

NS: RBC value not set for this analyte

VOC: volatile organic compounds

<: not detected above the laboratory reporting limit

--: analyte not tested

TPH: Total Petroleum Hydrocarbons

>Csat: This soil RBC exceeds the limit of three-phase equilibrium partitioning.

>MAX: The RBC for this pathway is greater than 1,000,000 mg/kg. This substance is not deemed to pose a risk in this scenario.

NV: this chemical is considered nonvolatile for purposes of the exposure calculations

¹Oregon Risk-Based Decision-Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ Sept. 2003, Revised RBCs May 2018.

²Oregon Department of Environmental Quality (DEQ) Clean Fill Determinations Internal Management Directive, February 21, 2019.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

Table 2. Summary of Soil Analytical Results - PAHs
Baker Truck Corral
515 Campbell Street
Baker City, Oregon
DEQ LUST File No. 30-22-0201

Sample ID	Sampling Date	Depth Collected (feet bgs)	Polycyclic Aromatic Hydrocarbons (detections only)								
			Anthracene	Acenaphthene	Fluoranthene	Fluorene	Napthalene	Phenanthrene	Pyrene	1-Methylnaphthalene	2-Methylnaphthalene
			mg/kg								
MW1-2.5	11/11/2022	2.5	0.0117	0.0604	0.0111	0.108	3.00	0.249	0.0221	2.52	6.45
MW5-7.0SWI	11/10/2022	7.0	<0.00657	0.161	0.0142	0.513	<0.0219	0.504	0.105	0.775	0.289
Oregon RBC - Soil Ingestion, Dermal Contact, and Inhalation ¹	Occupational		350,000	70,000	30,000	47,000	23	NS	23,000	NS	NS
	Construction Worker		110,000	21,000	10,000	14,000	580	NS	7,500	NS	NS
	Excavation Worker		>Max	590,000	280,000	390,000	16,000	NS	210,000	NS	NS
Oregon DEQ RBC - Volatilization to Outdoor Air ¹	Occupational		>Max	>Max	NV	>Max	83	NS	>Csat	NS	NS
Oregon DEQ RBC - Vapor Intrusion into Buildings ¹	Occupational		>Max	>Max	NV	>Max	83	NS	>Csat	NS	NS
Oregon DEQ RBC - Leaching to Groundwater ¹	Occupational		>Csat	>Csat	>Csat	>Csat	0.34	NS	>Csat	NS	NS
Oregon Clean Fill Values ²			6.8	0.25	10	3.7	0.077	5.5	10	0.36	11

Notes:

See laboratory report for full list of analytes.

Bold text, if present, indicates an exceedance of one or more of the cleanup levels.

<: Not detected above the laboratory reporting limit

mg/kg: milligrams per kilogram

--: analyte not tested

>MAX: The RBC for this pathway is greater than 1,000,000 mg/kg. This substance is not deemed to pose a risk in this scenario.

>Csat: Soil RBC exceeds the limit of three phase equilibrium partitioning.

bgs: below ground surface

NS: RBC value not set for this analyte

Table 3. Summary of Groundwater Analytical Results - TPH and VOCs
Baker Truck Corral
515 Campbell Street
Baker City, Oregon
DEQ LUST File No. 30-22-0201

Sample ID	Sample Date	Matrix	Location	Total Petroleum Hydrocarbons			VOCs (detections only)							
				Diesel	Heavy Oil	Gasoline	Benzene	Ethylbenzene	Isopropylbenzene	n-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes, Total
				µg/L										
23Q1 MW-1	1/5/2023	Water	MW-1	445	<250	373 J	6.30	<1.00	6.96	7.28	<1.00	<1.00	<1.00	<3.00
23Q1 MW-DUP	1/5/2023	Water	MW-1	464	<250	506 J	6.32	<1.00	6.96	7.25	<1.00	<1.00	<1.00	<3.00
23Q1 MW-2	1/5/2023	Water	MW-2	147	<250	638 J	12.1	<1.00	2.50	12.2	<1.00	<1.00	<1.00	<3.00
23Q1 MW-3	1/5/2023	Water	MW-3	<100	<250	<100 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
23Q1 MW-4	1/5/2023	Water	MW-4	<100	<250	<2,500 J	<1.00	<1.00	<1.00	<1.00	<1.00	3.54	1.15	9.58
23Q1 MW-5	1/5/2023	Water	MW-5	5,180	<250	684 J	27.9	<5.00	<5.00	9.59	13.6	<5.00	<5.00	<15.0
23Q1 MW-7	1/5/2023	Water	MW-7	<100	<250	<100 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
23Q1 MW-8	1/5/2023	Water	MW-8	<100	<250	181 J	1.67	5.19	<1.00	1.20	<1.00	6.05	1.54	11.8
23Q1 MW-9	1/5/2023	Water	MW-9	<100	<250	<100 J	1.49	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
23Q1 MW-10	1/5/2023	Water	MW-10	186	<250	151 J	2.07	<1.00	2.13	1.19	<1.00	<1.00	<1.00	<3.00
23Q1 MW-13	1/5/2023	Water	MW-13	<100	<250	<100 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
23Q1 MW-14	1/5/2023	Water	MW-14	<100	<250	<100 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
23Q1 MW-15	1/5/2023	Water	MW-15	<100	<250	<100 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<3.00
Oregon DEQ RBC ¹ - Ingestion & Inhalation from Tapwater		Residential		100		110	0.46	1.5	440	NS	1,100	54	59	190
		Occupational		430		450	2.1	6.4	2,000	NS	6,300	250	280	830
Oregon DEQ RBC ¹ - Volatilization to Outdoor Air		Occupational		>S		>S	50	160	>S	NS	>S	>S	>S	>S
Oregon DEQ RBC ¹ - Vapor Intrusion into Buildings		Occupational		>S		>S	2.1	17	>S	NS	>S	>S	>S	>S
Oregon DEQ RBC - Groundwater in Excavation ¹		Construction & Excavation Worker		>S		14,000	1,800	4,500	51,000	NS	220,000	6,300	7,500	23,000

Notes:
See laboratory report for full list of analytes.
bgs: below ground surface
µg/L: micrograms per liter
J: reported value is an estimate
NS: RBC value not set for this analyte
VOC: volatile organic compounds
<: not detected above the laboratory reporting limit

>S: This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present
¹Oregon Risk-Based Decision-Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ Sept. 2003, Revised RBCs May 2018.
Bold text, if present, indicates an exceedance of one or more of the cleanup levels. Values less than the regional background concentrations for metals or less than clean fill values are not bolded. In instances where a concentration exceeds clean fill criteria and a RBC value, the respective cleanup value is also bolded.

Table 4. Summary of Groundwater Analytical Results - PAHs and Lead
Baker Truck Corral
515 Campbell Street
Baker City, Oregon
DEQ LUST File No. 30-22-0201

				Polycyclic Aromatic Hydrocarbons						Lead (total)
Sample ID	Sampling Date	Matrix	Location	Acenaphthene	Fluorene	Phenanthrene	Pyrene	1-Methylnaphthalene	2-Methylnaphthalene	
				µg/L						
23Q1 MW-1	1/5/2023	Water	MW-1	0.605	0.661	<0.0500	<0.0500	1.04	<0.250	< 2.00
23Q1 MW-DUP	1/5/2023	Water	MW-1	--	--	--	--	--	--	< 2.00
23Q1 MW-2	1/5/2023	Water	MW-2	--	--	--	--	--	--	< 2.00
23Q1 MW-3	1/5/2023	Water	MW-3	--	--	--	--	--	--	< 2.00
23Q1 MW-4	1/5/2023	Water	MW-4	--	--	--	--	--	--	< 2.00
23Q1 MW-5	1/5/2023	Water	MW-5	1.4	3.6	1.17	0.207	12.3	4.15	< 2.00
23Q1 MW-7	1/5/2023	Water	MW-7	--	--	--	--	--	--	< 2.00
23Q1 MW-8	1/5/2023	Water	MW-8	--	--	--	--	--	--	< 2.00
23Q1 MW-9	1/5/2023	Water	MW-9	--	--	--	--	--	--	< 2.00
23Q1 MW-10	1/5/2023	Water	MW-10	--	--	--	--	--	--	< 2.00
23Q1 MW-13	1/5/2023	Water	MW-13	--	--	--	--	--	--	< 2.00
23Q1 MW-14	1/5/2023	Water	MW-14	--	--	--	--	--	--	< 2.00
23Q1 MW-15	1/5/2023	Water	MW-15	--	--	--	--	--	--	< 2.00
Oregon DEQ RBC ¹ - Ingestion& Inhalation from Tapwater		Residential		510	280	NS	110	NS	NS	15
		Occupational		2,500	1,300	NS	>S	NS	NS	15
Oregon DEQ RBC ¹ - Volatilization to Outdoor Air		Occupational		>S	>S	NS	>S	NS	NS	NV
Oregon DEQ RBC ¹ - Vapor Intrusion into Buildings		Occupational		>S	>S	NS	>S	NS	NS	NV
Oregon DEQ RBC - Groundwater in Excavation ¹		Construction & Excavation Worker		>S	>S	NS	>S	NS	NS	>S

Notes:
See laboratory report for full list of analytes.
Bold text, if present, indicates an exceedance of one or more of the cleanup levels.
<: Not detected above the laboratory reporting limit
µg/L: micrograms per liter
>S: This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present
¹Oregon Risk-Based Decision-Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ Sept. 2003, Revised RBCs May 2018.
NV: this chemical is not considered volatile for the purpose of exposure calculations
NS: RBC value not set for this analyte

Table 5. Field Duplicate Sample Evaluation

Baker Truck Corral
515 Campbell Street
Baker City, Oregon
DEQ LUST File No. 30-22-0201

This table provides an assessment of the relative percent difference (RPD) between a sample and its field duplicate.

Analyte	23Q1 MW-1	23Q1 MW-DUP	RPD	Pass
Diesel	445	464	4%	✓
Heavy Oil	<250	<250	Acceptable	✓
Gasoline	373	506	30%	*
Benzene	6.30	6.32	0%	✓
Ethylbenzene	<1.00	<1.00	Acceptable	✓
Isopropylbenzene	6.96	6.96	0%	✓
n-Propylbenzene	7.28	7.25	0%	✓
Toluene	<1.00	<1.00	Acceptable	✓
1,2,4-Trimethylbenzene	<1.00	<1.00	Acceptable	✓
1,3,5-Trimethylbenzene	<1.00	<1.00	Acceptable	✓
Xylenes, Total	<3.00	<3.00	Acceptable	✓

Results in micrograms per liter (µg/L)
#: For samples with results less than five times the MRL: If the difference between the sample and its duplicate is less than the MRL, then the duplicate sample meets the quality assurance acceptance criteria.
*: The results are outside of acceptable RPD limits and should be considered estimates.
Acceptable: no detection in original or duplicate, or meets quality assurance acceptance criteria
Field Duplicate: Precision indicated by analysis of the field duplicate will be expressed as the relative percent difference (RPD) between a sample and its field duplicate. RPD is calculated as follows:
RPD (%) = Absolute Value of

$$\left| \frac{X_1 - X_2}{(X_1 + X_2) / 2} \right| \bullet 100\%$$

where: X_1 = measured concentration in the first sample
 X_2 = measured concentration in the second sample

An RPD of 20% or less is considered acceptable.

Table 6. Soil Gas Analytical Results

Baker Truck Corral

515 Campbell Street

Baker City, Oregon

DEQ LUST File No. 30-22-0201

		TPH		Volatile Organic Compounds
Sample ID	Sample Date	Diesel Range Organics	Gasoline Range Organics	
		µg/m ³		
SSV-1	11/9/2022	<2,000	<2,100	ND
SSV-2	11/9/2022	<2,000	<2,100	ND
Oregon DEQ RBC ¹ - Vapor Intrusion into Buildings	Occupational	440,000	1,700,000	Varies

Notes:

See laboratory report for full list of analytes

$\mu\text{g}/\text{m}^3$: micrograms per cubic meter

<: not detected above laboratory method reporting limit

ND: Not detected above applicable reporting limits

¹Oregon Risk-Based Decision-Making for the Remediation of Petroleum-Contaminated Sites, Oregon DEQ Sept. 2003, Revised RBCs May 2018

Table 7. Summary of Leak Check Analysis

Baker Truck Corral

515 Campbell Street

Baker City, Oregon

DEQ LUST File No. 30-22-0201

Sample Point	Sample Date	¹ Helium Concentration (shroud)	Helium Concentration (sample)	Percentage of Helium in Sample	Leak Test Results
		ppmv	ppmv	%	pass/fail
SSV-1	11/9/2022	780,000	<6,000	0.13	pass
SSV-2	11/9/2022	766,667	<6,000	0.13	pass

Notes:

¹Readings taken using a Dielectric MGD-20002 Helium Meter (average of pre-sample, mid-sampling, post-sample readings)

ppmv: parts per million volume

pass: percent of helium in sample is less than 5%

<: less than the reported detection limit (RDL)

Appendix A

Broadbent Figures and Tables

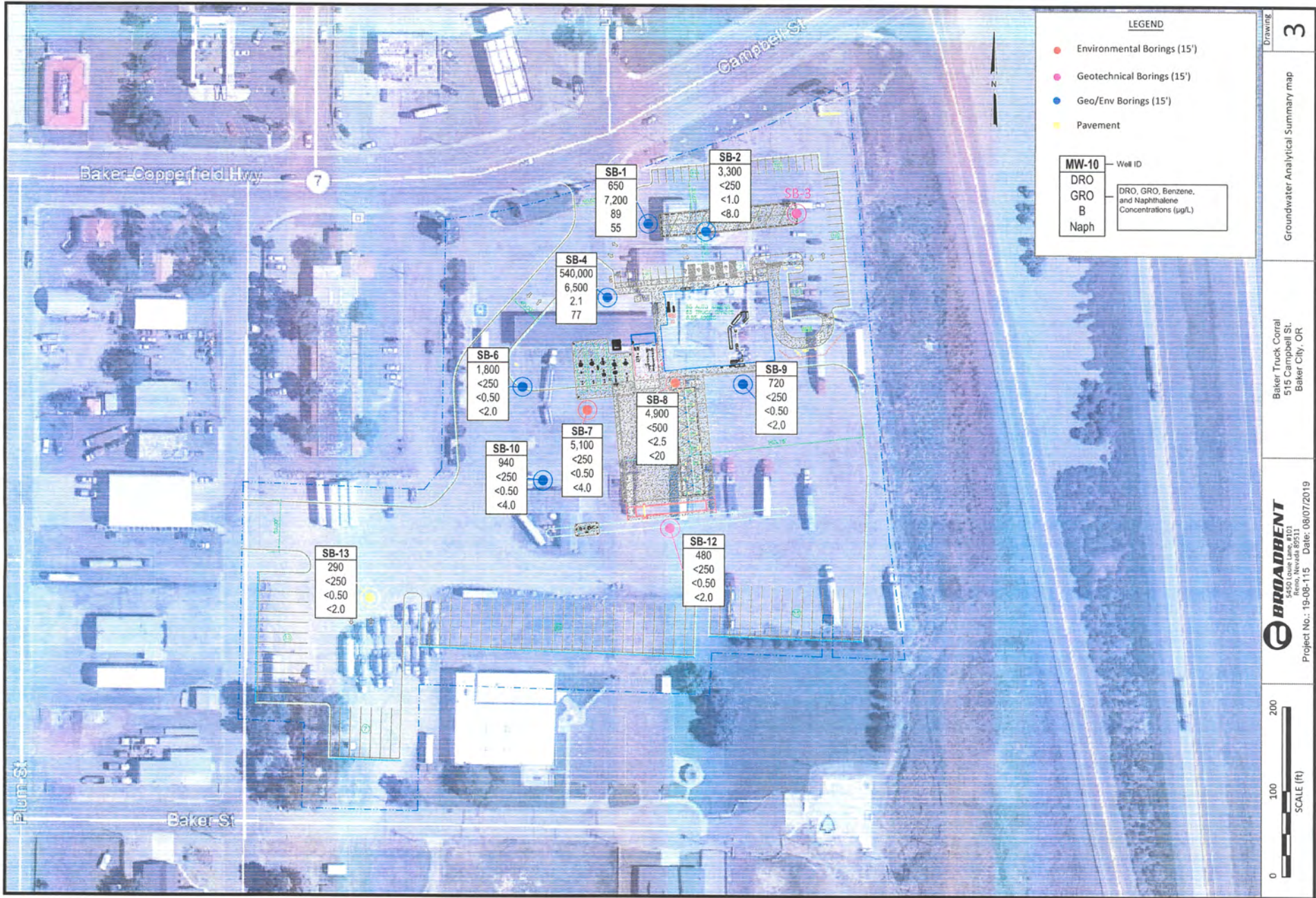


Table 1. Soil Sampling Laboratory Analytical Data
Baker Truck Corral
515 Campbell Street, Baker City, Baker County, Oregon

Soil Sample ID	Sampling Depth (feet bgs)	Sampling Date	Laboratory Analytical Results								
			DRO mg/kg	ORO mg/kg	GRO mg/kg	Benzene µg/kg	Toluene µg/kg	Ethylbenzene µg/kg	Xylenes, Total µg/kg	MTBE µg/kg	Naphthalene µg/kg
SB-1-2.5 FT	2.5	7/3/2019	390 L,C	900 C	210	460	930	3,300	23,000	<75 V	1,700
SB-4-7.5 FT	7.5	7/2/2019	1,100	<100	40	<18 V	<18 V	120	20	<18 V	860
RBC: Occupational Leaching to Groundwater			>Max	>Max	130	0.10	490	0.90	100	0.54	0.34
RBC: Occupational Vapor Intrusion into Buildings			>Max	>Max	>Max	2.1	>Csat	17	>Csat	110	83
RBC: Occupational Ingestion, Dermal Contact, Inhalation			14,000	36,000	20,000	37	88,000	150	25,000	1,100	23
RBC: Occupational Volatization to Outdoor Air			>Max	>Max	69,000	50	>Csat	160	>Csat	1,500	83
RBC: Construction Worker Ingestion, Dermal Contact, Inhalation			4,600	11,000	9,700	380	28,000	1,700	20,000	12,000	580
RBC: Excavation Worker Ingestion, Dermal Contact, Inhalation			>Max	>Max	>Max	11,000	770,000	49,000	560,000	320,000	16,000

RBC = Risk-Based Concentration Screening Levels for Groundwater (State of Oregon Department of Environmental Quality, May 2018)

NOTES:

Concentrations detected above one or more RBC screening level are shaded grey

Concentrations detected above laboratory reporting limits are in bold

Additional constituents (TBA, DIPE, ETBE, and TAME) were not detected above laboratory reporting limits

--- = Not Established

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

MTBE = Methyl Tert-Butyl Ether

TBA = Tertiary Butyl Alcohol

DIPE = Di-isopropyl Ether

ETBE = Ethyl Tertiary Butyl Ether

TAME = Tertiary Amyl Methyl Ether

L = DRO concentration may include contributions from heavier-end hydrocarbons (e.g. motor oil) that elute in the DRO range

C = Reporting concentration includes additional compounds uncharacteristic of common fuels and lubricants

V = Reporting Limits were increased due to high concentrations of target analytes

>S = RBC exceeds the solubility limit for this analyte.

>Csat = This soil RBC exceeds the limit of three-phase equilibrium partitioning.

>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg or 1,000,000 mg/L. Therefore, this substance is deemed not to pose risks in this scenario.

Table 2 - Groundwater Sampling Laboratory Analytical Results
Baker Truck Corral
515 Campbell Street, Baker City, Baker County, Oregon

Sample ID	Date	DRO µg/L	ORO µg/L	GRO µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes, Total µg/L	MTBE µg/L	TBA µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	Naphthalene µg/L
SB-1	7/3/2019	650 K	840	7,200	89	99	250	1,200	<5.0 V	<100 V	<10 V	<10 V	<10 V	55
SB-2	7/2/2019	3,300	<500	<250	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<20*	<2.0*	<2.0*	<2.0*	<8.0*
SB-4	7/2/2019	540,000	17,000	6,500	2.1	<1.0 V	20	3.4	1.3	<20 V	<2.0 V	<2.0 V	<2.0 V	77
SB-6	7/2/2019	1,800 L	11,000	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0	<2.0
SB-7	7/1/2019	5,100	2,400	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0	<4.0*
SB-8	7/1/2019	4,900 L,C	10,000 C	<500*	<2.5*	<2.5*	<2.5*	<2.5*	<2.5*	<50 *	<5.0*	<5.0*	<5.0*	<20*
SB-9	7/3/2019	720 L	6,500	<250	<0.50	<0.50	<0.50	1.3	<0.50	<10	<1.0	<1.0	<1.0	<2.0
SB-10	7/2/2019	940 L	8,900	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0	<4.0*
SB-12	7/3/2019	480 L	4,900	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0	<2.0
SB-13	7/2/2019	290 L	<500	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0	<1.0	<1.0	<2.0
RBC: Occupational Ingestion & Inhalation		430	1,300	450	2.1	6,300	6.4	830	68	---	---	---	---	0.72
RBC: Construction & Excavation Worker		>S	>S	14,000	1,800	220,000	4,500	23,000	63,000	---	---	---	---	500
RBC: Occupational Vapor Intrusion into Buildings		>S	>S	>S	2,800	>S	8,200	>S	870,000	---	---	---	---	11,000
RBC: Occupational Volatilization to Outdoor Air		>S	>S	>S	14,000	>S	43,000	>S	1,500,000	---	---	---	---	16,000

RBC = Risk-Based Concentration Screening Levels for Groundwater (State of Oregon Department of Environmental Quality, May 2018)

NOTES:

Concentrations detected at or above one or more RBC screening level are shaded grey

Concentrations detected above laboratory reporting limits are in bold

Additional constituents analyzed for were not detected above laboratory reporting limits

>S = RBC exceeds the solubility limit for this analyte.

--- = Not Established

µg/L = Micrograms per liter

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

MTBE = Methyl Tert-Butyl Ether

TBA = Tertiary Butyl Alcohol

DIPE = Di-isopropyl Ether

ETBE = Ethyl Tertiary Butyl Ether

TAME = Tertiary Amyl Methyl Ether

L = DRO concentration may include contributions from heavier-end hydrocarbons (e.g. motor oil) that elute in the DRO range

K = DRO concentration may include contributions from lighter-end hydrocarbons (e.g. gasoline) that elute in the DRO range

C = Reporting concentration includes additional compounds uncharacteristic of common fuels and lubricants

V = Reporting Limits were increased due to high concentrations of target analytes

* = Reporting Limits were increased due to insufficient sample volume as a result of damage during shipping

Appendix B

Geophysical Survey Report

Pacific Geophysics, September 2022

**LETTER REPORT**

PROJECT #: 220804

SURVEY DATE: 9/7-9/22

Nick Thornton
PBS Engineering and Environmental [PBS]

Utility Survey 515 Campbell Street Baker City, Oregon

A geophysical survey was conducted across the Baker Truck Corral truck stop located at the address shown above, for PBS. Two generations of underground storage tanks (USTs) and pump islands have operated at the site in the past. Hydrocarbon contamination has been detected and mapped. The present survey was conducted to detect possible pathways of contamination, in the form of pipes and utilities, across the property. A secondary goal was to mark the active and former USTs. Figure 1 shows the survey area and locations of tanks and pump islands.

A Radio Detection TX3 transmitter was used to place a current onto exposed pipes across the site. These included electrical lines from signs and the buildings, power lines for a system of RV hook-up stations, water lines, a firewater line, and the active vent lines. The system's RD8000PDL receiver was used to trace the current and the pipes.

An EM A6 Tracer electromagnetic metal detector was used to scan the entire site for conductive pipes. The instrument was carried along traverses spaced at 25-40 feet in two directions. Several lines were detected and marked on the surface with paint. Pink whiskers were used for two pipes.

A SIR-4000 ground-penetrating radar (GPR) control unit connected to a 400-MHz antenna was used to collect data along traverses spaced every 25-40 feet in two directions. Several of the pipes detected with the Tracer were verified and their depths were noted. Some pipes could not be detected and verified with GPR because of poor data quality resulting from unfavorable soil conditions.

Traverses were made across the active UST nest. The fiberglass tanks were detected and marked on the ground. The inner ends of the northern two tanks that are buried end to end could not be detected. Traverses were also made across the old UST nest. These tanks have reportedly been decommissioned in place. Access to the entire nest was limited by a parked truck and a walk-in cooler. Four tanks were detected and marked.

As shown in Figure 2, several pipes and objects were detected. What follows below is a list of pipes that cross the property lines. They are labeled in Figure 2.

Lines A: Oriented E-W in the asphalt area north of the main building. A natural-gas line and an unknown line exit the east and north property lines.

Lines B: Oriented E-W and N-S, to the north, northwest, and east of the smaller building. Water lines and two sewer service lines exit the property to the west and south. It is possible that a water line runs from the junction of the aforementioned water lines (marked with *) toward the main building in the same trench as the power line.

Lines C: Oriented N-S near and through the new pump island. One exits the property on the north and south, the other turns to the west near the water and sewer service corridor.

Lines D: Oriented N-S and E-W. One was detected near the old tank nest and exits the property line to the south. The latter tees into the former and exits the east property line. They were marked with paint and whiskers.

Figures 3, 4, 5, and 6 are more detailed diagrams showing our results, with pipe depths where detected. A Google Earth .kmz file with all our results accompanies this report.

Nikos Tzetos of Pacific Geophysics conducted the survey for Mr. Nick Thornton of PBS, on September 7, 8, and 9, 2022. Mr. Thornton was on site during the survey. This letter report was written by Nikos Tzetos and emailed to Mr. Thornton on September 21, 2022.



Limitations

The conclusions presented in this report were based upon widely accepted geophysical principles, methods, and equipment. This survey was conducted with limited knowledge of the site, the site history, and the subsurface conditions.

The goal of near-surface geophysics is to provide a rapid means of characterizing the subsurface using non-intrusive methods. Conclusions based upon these methods are generally reliable; however, due to the inherent ambiguity of the methods, no single interpretation of the data can be made. As an example, rocks and roots produce radar reflections that may appear the same as pipes and tanks.

Under reasonable conditions, geophysical surveys are good at detecting changes in the subsurface caused by fabricated objects or changes in subsurface conditions, but they are poor at actually identifying those objects or subsurface conditions.

Objects of interest are not always detectable due to surface and subsurface conditions. The deeper an object is buried, the more difficult it is to detect, and the less accurately it can be located.

The only way to see an object is to physically expose it.

Nikos Tzetos
Pacific Geophysics

September 21, 2022



Appendix A. Geophysical Survey Methods

Ground Penetrating Radar

A Geophysical Survey Systems, Inc. (GSSI) SIR-4000 GPR system coupled to GSSI antennas of various central frequencies is used to obtain the radar data for our surveys.

GPR antennas both transmit and receive electromagnetic energy. EM energy is transmitted into the material the antenna passes over. A portion of that energy is reflected back to the antenna and amplified. Reflections are displayed in real-time in a continuous cross section. Reflections are produced where there is a sufficient electrical contrast between two materials. Changes in the electrical properties (namely the dielectric constant) that produce radar reflections are caused by changes in the moisture content, porosity, mineralogy, and texture of the material. Metallic objects of interest exhibit a strong electrical contrast with the surrounding material and thus produce relatively strong reflections. Non-metallic objects of interest (septic tanks, cesspools, dry wells, and PVC and clay tile pipes) are not always good reflectors.

Radar data are ambiguous. It can be difficult to distinguish the reflection produced by an object of interest from the reflection caused by some natural feature. Rocks or tree roots have reflections that appear similar to reflections from pipes. In concrete investigations reflections produced by metal rebar look exactly like those from electrical conduit or post-tension cables. Objects with too small an electrical contrast may produce no reflections at all and may be missed. Target objects buried below objects with contrasting properties that also produce reflections may be missed (e.g., USTs below roots, concrete pieces, pipes, or rocks). If an object of interest like a UST is buried below the depth of penetration of the radar signal, it will be missed.

In addition to interpreting ambiguous data, radar has several limitations that cannot be controlled by the operator. The radar signal is severely attenuated by electrically conductive material, including wet, clay-rich soil and reinforced concrete. The quality of the data is affected by the surface conditions over which the antenna is pulled. Ideally the antenna should rest firmly on a smooth surface. Rough terrain and tall grass reduce the quality of radar data.

It is the job of an experienced interpreter to examine the GPR profiles and deduce if reflections are from objects of interest. A GPR interpreter cannot see underground but can only interpret reflections based on experience.

The only way to truly identify an object is to excavate.

Hand-held Metal detectors

Schonstedt Magnetic Gradiometer: This magnetometer has two magnetic sensors separated vertically by 10". The magnetic field surrounding a ferrous object is strongest near the object and decreases rapidly as the distance increases. If the magnitude measured by the sensor located in the tip of the Schonstedt is very high, and the magnetic field measured by the sensor located farther up the shaft of the Schonstedt is low, there is a large vertical magnetic gradient, and the instrument responds with a loud whistle indicating the object is near the surface. If there is a small difference in the magnitudes measured by the two sensors, the object is deeper. The instrument responds with a softer tone. A discussion of this instrument is available at Schonstedt.com.

Aqua-Tronics A-6 Tracer: The Aqua-Tronics A-6 Tracer uses a different method of detecting metallic objects. This instrument measures the electrical conductivity of a metal object. It is capable of detecting any electrically conductive metal, including non-ferrous aluminum and brass. The Tracer is capable of detecting three-dimensional objects as well as pipes.

The Tracer consists of a transmitter coil and a receiver coil. In the absence of any electrically conductive material in the vicinity of the Tracer, the electromagnetic field around each coil is balanced.

Basically, the electromagnetic field produced by the transmitter induces an electric current into the area surrounding the instrument. Nearby conductive objects distort the EM field. The balance between the two coils is disturbed and the instrument produces an audible tone and meter indication.

Radio Detection RD8000 PDL pipe and cable detector: This instrument may be used to detect buried, conductive pipes and utilities. It consists of a transmitter and a receiver and can be used in two configurations.



The transmitter may be used to directly apply a small electrical current to exposed, electrically conductive pipes and utilities. The RD receiver is then able to “trace” the underground portion of the pipe or utility, under some conditions for several hundred feet. The transmitter can also induce an electrical current into buried pipes and utilities where direct contact is not available.

The receiver can also be used alone. It has the capability to locate pipes and utilities by detecting the very small electrical currents induced into the features by nearby AM/FM radio stations.

The receiver also has an AC power function that may be used to detect underground power lines.



1. NEW PUMP ISLANDS
2. NEW UST NEST
3. OLD UST NEST



FIGURE

1

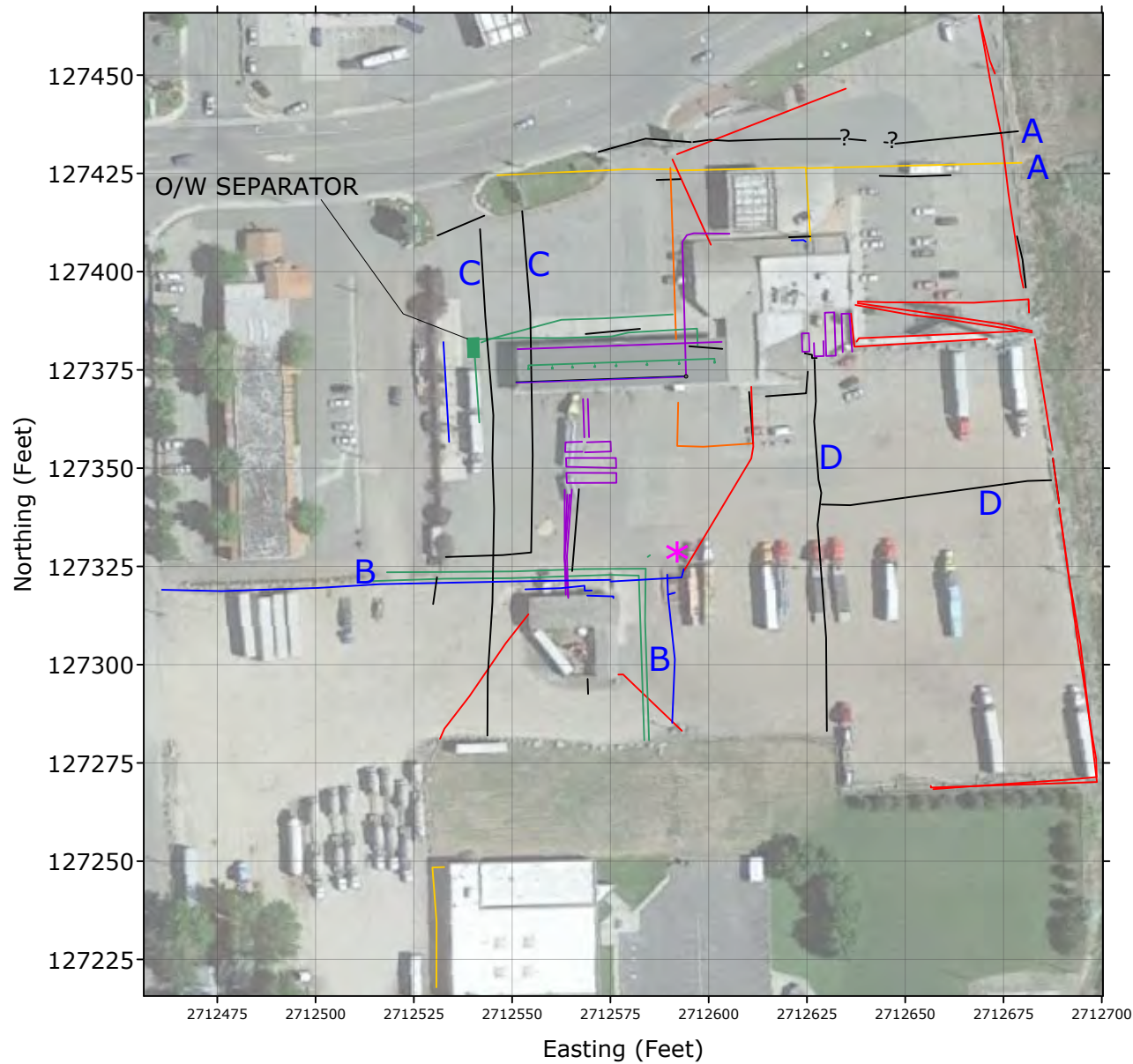
Survey Location and Area

Project:
220804

Utility Survey
515 Campbell Street
Baker City, Oregon

Drawn by : NT

Prepared for: PBS
Base Photo from Google Earth



- UNKNOWN LINE
- POWER
- NATURAL GAS
- SEWER
- WATER
- VENT/PRODUCT LINE
- COMMUNICATIONS
- ▭ UST

Oregon State Plane (1983)



FIGURE

2

Survey Results

Project:
220804

Utility Survey
515 Campbell Street
Baker City, Oregon

Drawn by : NT

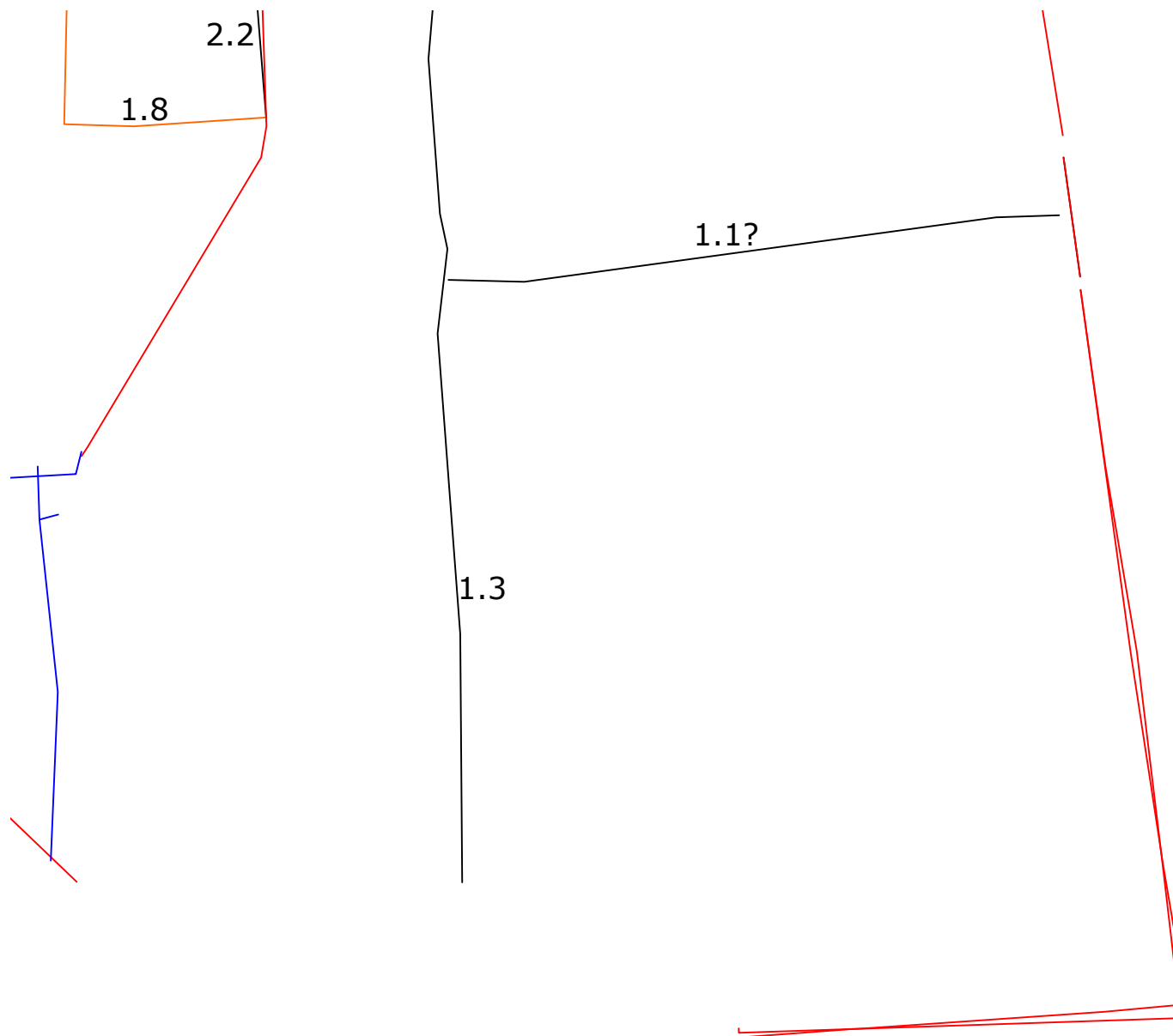
Prepared for: PBS

Survey Dates: September 7-9, 2022



3

Survey Dates: September 7-9, 2022



Oregon State Plane (1983)



FIGURE

4

Pipe Depths-SE Corner

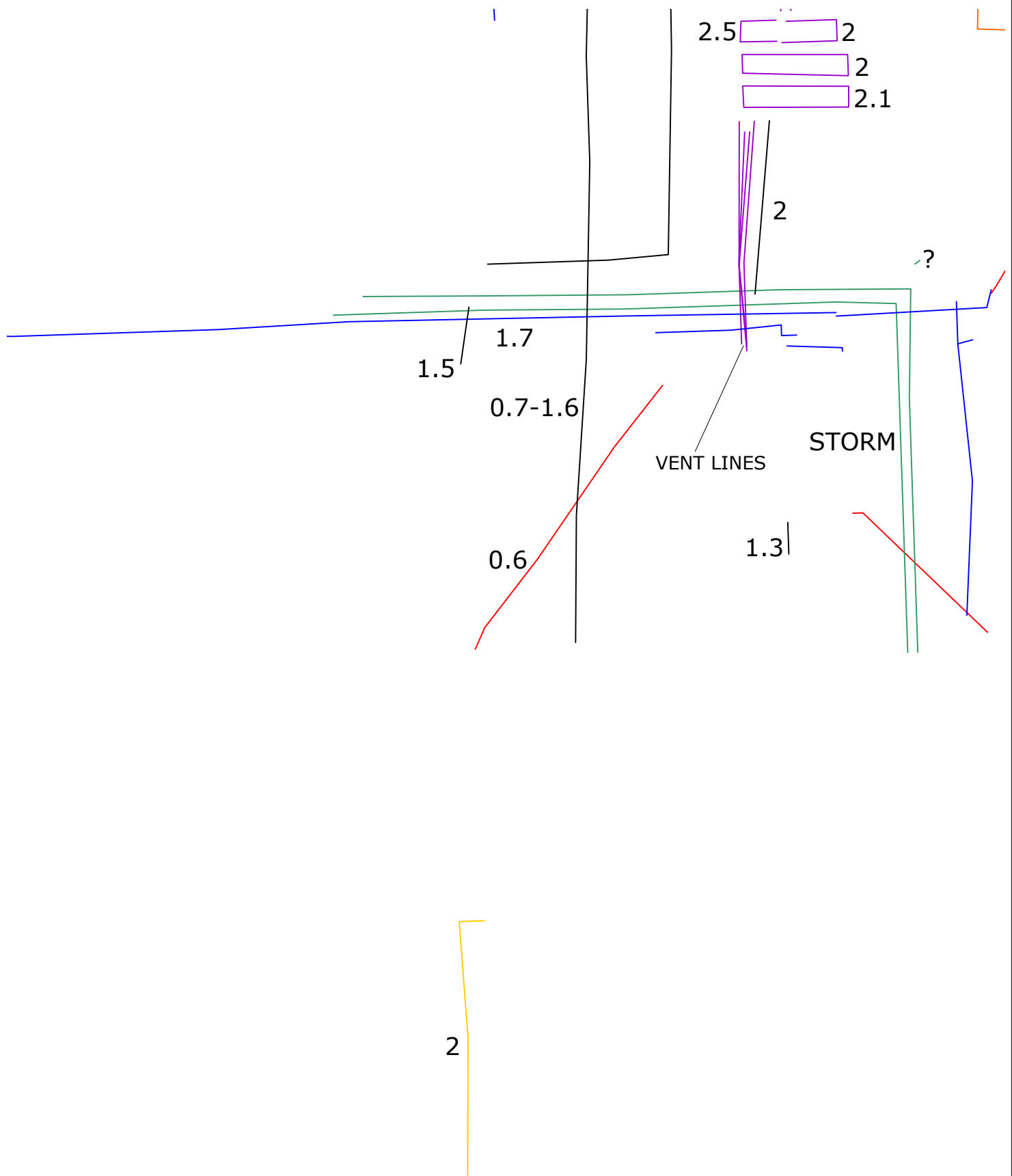
Project:
220804

Utility Survey
515 Campbell Street
Baker City, Oregon

Drawn by : NT

Prepared for: PBS

Survey Dates: September 7-9, 2022



Oregon State Plane (1983)



FIGURE

5

Pipe Depths-SW Corner

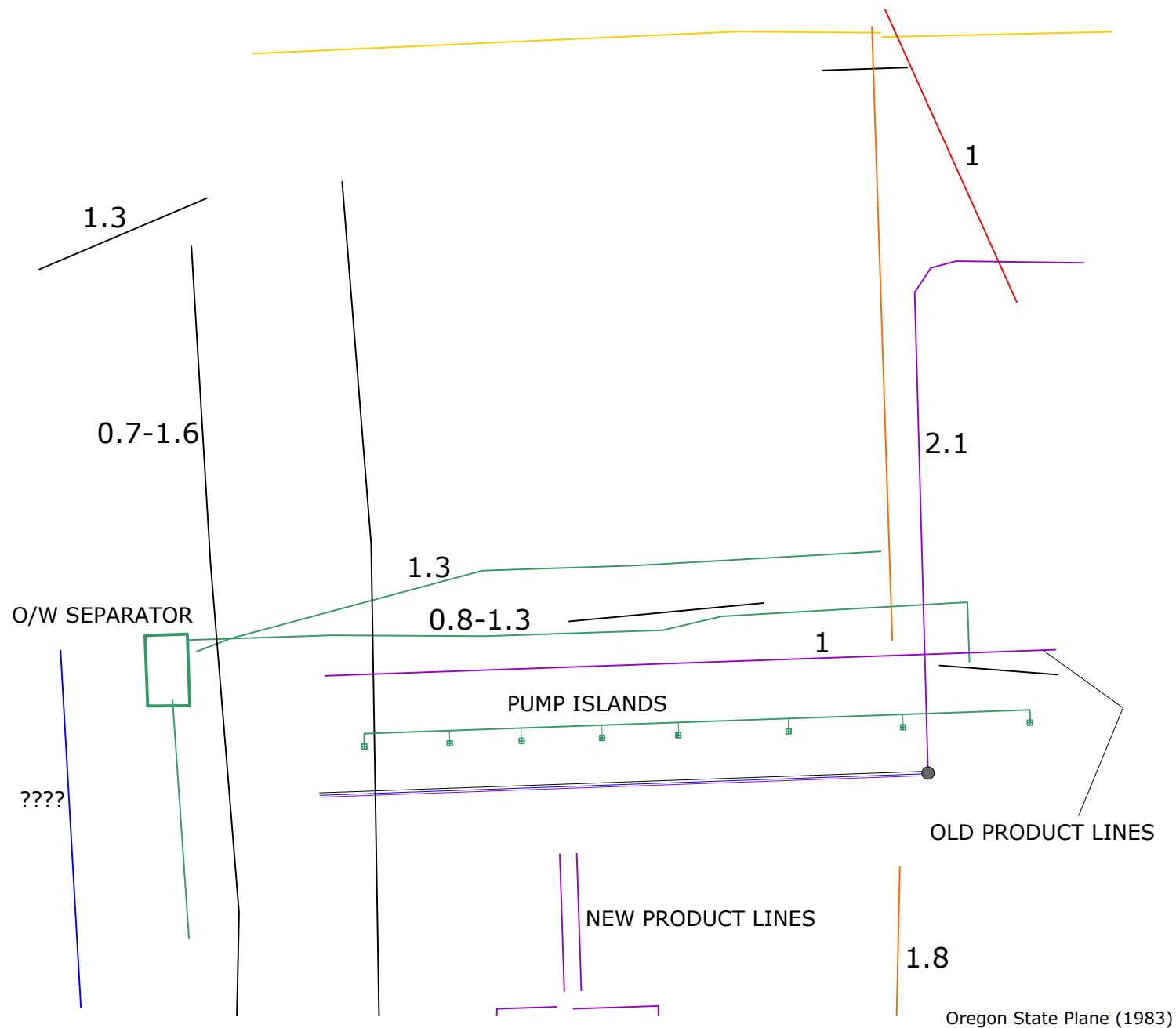
Project:
220804

Utility Survey
515 Campbell Street
Baker City, Oregon

Drawn by : NT

Prepared for: PBS

Survey Dates: September 7-9, 2022



Oregon State Plane (1983)



FIGURE

6

Pipe Depths-NW Corner

Project:
220804

Utility Survey
515 Campbell Street
Baker City, Oregon

Drawn by : NT

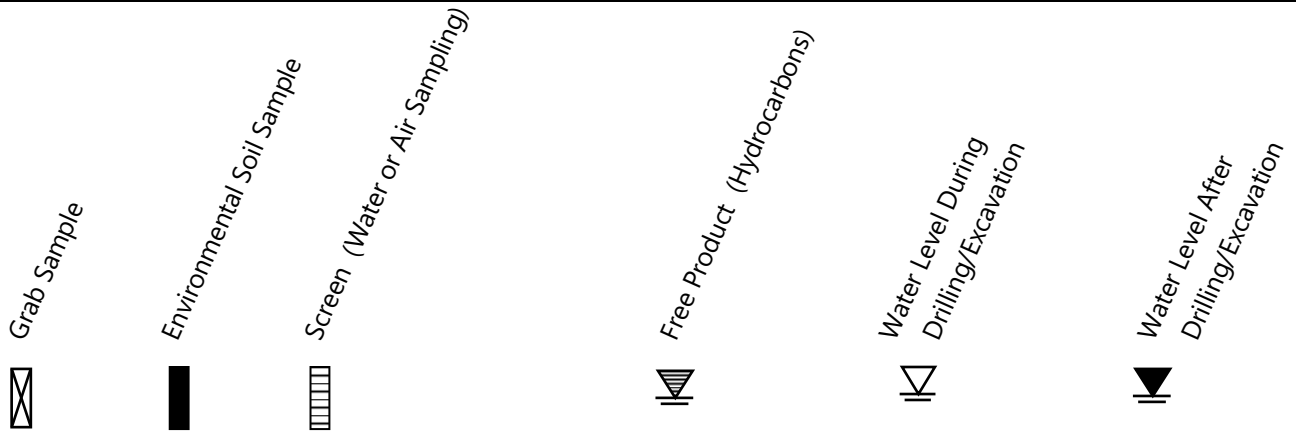
Prepared for: PBS

Survey Dates: September 7-9, 2022

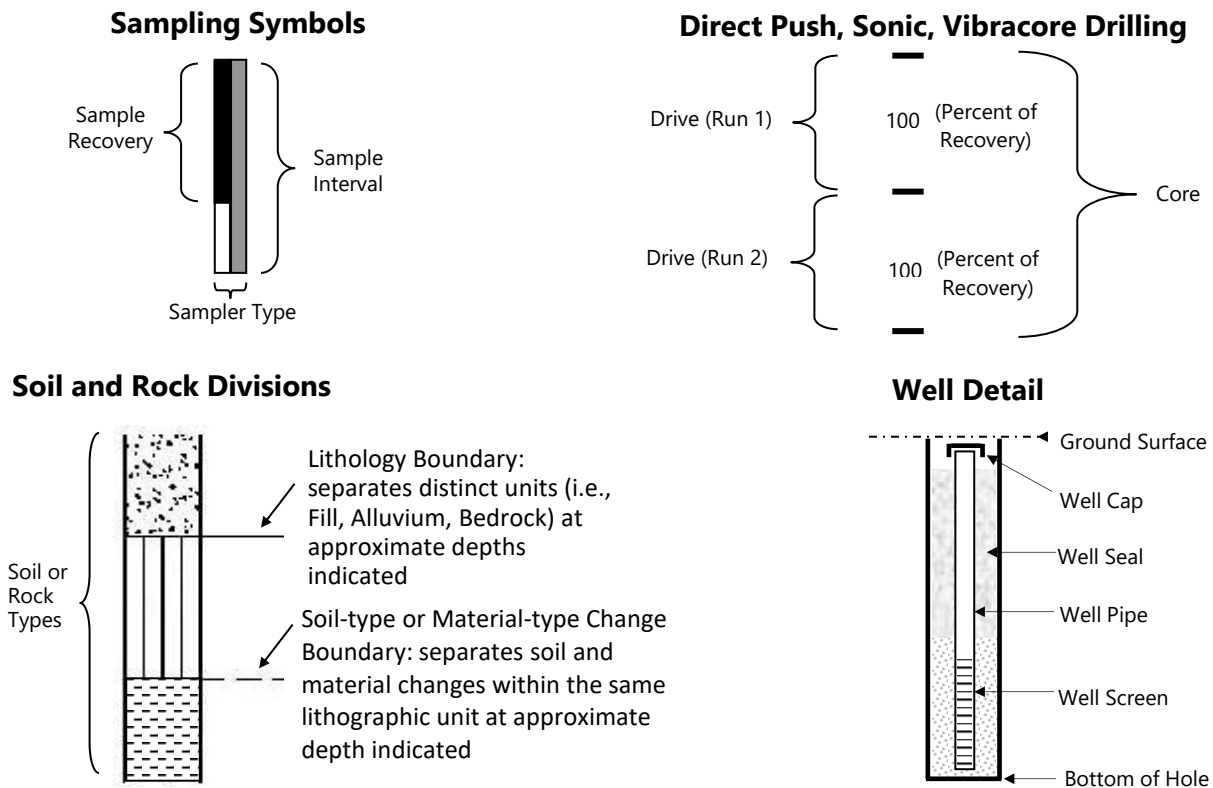
Appendix C

Monitoring Well Construction Logs

SAMPLING DESCRIPTIONS



LOG GRAPHICS



ENVIRONMENTAL TESTING EXPLANATIONS

ATD	At Time of Drilling	PPM	Parts PerMillion
BGS	Below Ground Surface	ND	Not Detected
MSL	Mean Sea Level	NS	No Sheen
MW	Monitoring Well (Water Sampling)	SS	Slight Sheen
OD	Outside Diameter	MS	Moderate Sheen
PID	Photoionization Detector Headspace Analysis	HS	High Sheen

Observations presented on the logs are based on limited field data and are not intended to be used for site engineering or construction decision purposes.



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-1

PBS PROJECT NUMBER:
24349.000

BORING MW-1 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		CONCRETE						
2.0		Gray, poorly graded GRAVEL (GP-GM) with silt and sand; non-plastic; fine sand; fine to coarse, subrounded to subangular gravel; moist		8.8	MW1-2.5		50	Flush-Mount Monument Bentonite 4-inch Diameter PVC Strong diesel odor; appears greasy
4.0								8/20 Sand
6.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet		0.5	MW1-5.0 SWI			0.010-inch Slotted PVC Screen
8.0							50	
10.0				0.3				
12.0								Hole collapsed below 11 feet bgs during well installation
14.0				0.0	MW1-13		100	Field evidence of petroleum contamination dissipates at 13 feet bgs
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 11.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 8-inch

LOGGED BY: N. Thornton
COMPLETED: 11/11/22



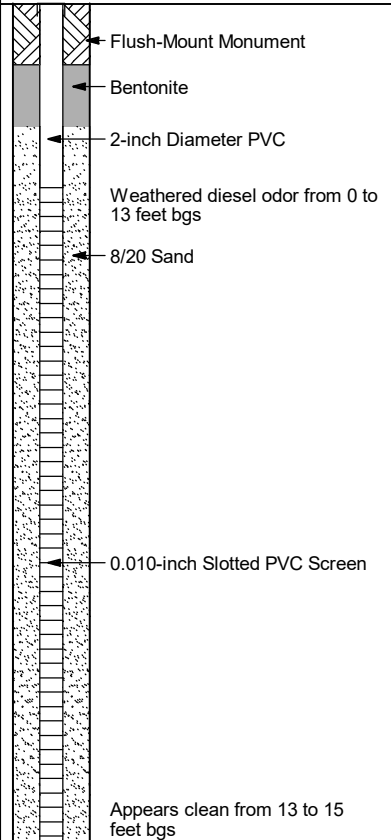
BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-2

PBS PROJECT NUMBER:
24349.000

BORING MW-2 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Dark gray, silty SAND (SM); non-plastic; fine sand; moist						
2.0				0.0	MW2-2.5			
4.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet	▼	0.0	MW2-5.0 SWI			
6.0								
8.0								
10.0				0.0				
12.0								
14.0				0.0	MW2-15			
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								



BORING LOG-ENV CORE 24349.000 MW1-16 20221201 GPJ DATATMPL.GDT PRINT DATE: 2/27/23.RPG

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/09/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-3

PBS PROJECT NUMBER:
24349.000

BORING MW-3 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Brown, poorly graded SAND (SP) with gravel; medium to coarse sand; fine to coarse, subrounded to subangular gravel; damp						
2.0		FILL		0.0	MW3-2.5		20	Flush-Mount Monument Bentonite 2-inch Diameter PVC No field evidence of contamination encountered throughout
4.0								
6.0								
8.0							20	
10.0		PEA GRAVEL		0.0				
12.0		FILL						
14.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet		0.0	MW3-13		100	0.010-inch Slotted PVC Screen
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/11/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-4

PBS PROJECT NUMBER:
24349.000

BORING MW-4 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		CONCRETE						
2.0		Dark brown SILT (ML) with sand; low plasticity; fine sand; moist		0.0	MW4-2.5			Flush-Mount Monument Bentonite 2-inch Diameter PVC
4.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet						No field evidence of contamination encountered throughout
6.0				0.0	MW4-5.0 SWI			
8.0								
10.0				0.0				8/20 Sand
12.0								
14.0				0.0				0.010-inch Slotted PVC Screen
16.0								
18.0								
20.0		Final depth 20.0 feet bgs. Monitoring well installed to 20.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/09/22



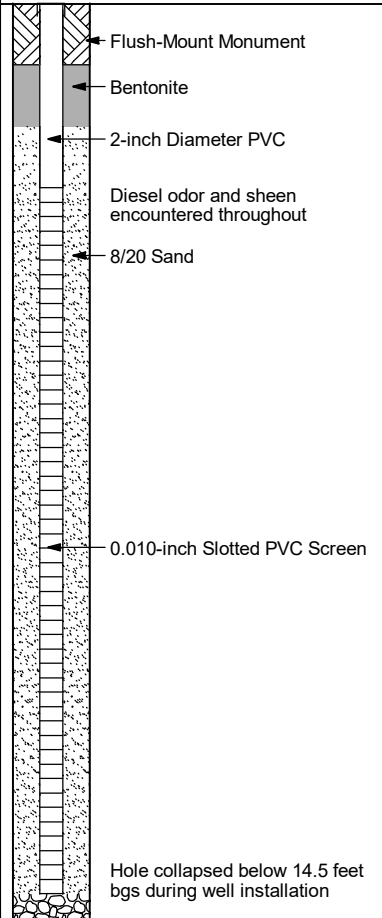
BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-5

PBS PROJECT NUMBER:
24349.000

BORING MW-5 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Brown, sandy SILT (ML); non-plastic; fine sand; damp						
2.0				0.4	MW5-2.5		100	
4.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet						
6.0				0.7	MW5-7.0 SWI		100	
8.0								
10.0								
12.0							100	
14.0				0.2				
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 14.5 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								



BORING LOG-ENV CORE 24349.000 MW1-16 20221201 GPJ DATATMPL.GDT PRINT DATE: 2/27/23.RPG

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/10/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-7

PBS PROJECT NUMBER:
24349.000

BORING MW-7 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
0.0		Gray, silty GRAVEL (GM) with sand						
2.0				0.0	MW7-2.5		100	
4.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel						No field evidence of contamination encountered throughout
6.0				0.0	MW7-7.0 SWI		100	
8.0								
10.0								0.010- inch Slotted PVC Screen
12.0				0.0			100	
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/11/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-8

PBS PROJECT NUMBER:
24349.000

BORING MW-8 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Dark brown, silty GRAVEL (GM) with sand; non-plastic; fine to coarse sand; fine to coarse, subangular gravel; damp						
2.0				2.5	MW8-2.5		100	
4.0								
6.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet		1.4	MW8-7.0 SWI			
8.0								
10.0				1.0			100	
12.0								
14.0				0.1	MW8-15			
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

Flush-Mount Monument
Bentonite
2-inch Diameter PVC
Mild petroleum odor from 0 to 13
feet bgs
8/20 Sand
0.010- inch Slotted PVC Screen
Appears to clean up at 13 feet
bgs

BORING LOG-ENV CORE 24349.000 MW1-16 20221201 GPJ DATATMPL.GDT PRINT DATE: 2/27/23.RPG

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/09/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-9

PBS PROJECT NUMBER:
24349.000

BORING MW-9 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
2.0		Gray, silty GRAVEL (GM); non-plastic; coarse, subrounded to subangular gravel; damp			MW9-2.5		100	Flush-Mount Monument Mild diesel odor
4.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; fine to coarse, subrounded to subangular gravel; wet		0.0				Bentonite
6.0							100	2-inch Diameter PVC
8.0				0.3	MW9-7.0 SWI			8/20 Sand
10.0								Stronger petroleum odor; petroleum odor encountered throughout borehole
12.0		becomes coarse gravel with slight decrease in sand		0.0				0.010-inch Slotted PVC Screen
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/12/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-10

PBS PROJECT NUMBER:
24349.000

BORING MW-10 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Brown, sandy SILT (ML); non-plastic; fine sand; dry						
2.0							70	Flush-Mount Monument Bentonite 2-inch Diameter PVC
4.0		Dark brown, silty GRAVEL (GM) with sand; non-plastic; fine to coarse sand; fine to coarse, subangular gravel; damp		0.0	MW10-2.5			No field evidence of contamination encountered throughout
6.0				0.0				8/20 Sand
8.0					MW10-7.0 SWI		50	
10.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet						0.010-inch Slotted PVC Screen
12.0				0.0			70	
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/09/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-13

PBS PROJECT NUMBER:
24349.000

BORING MW-13 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Brown-gray, poorly graded GRAVEL (GP-GM) with silt and sand; non-plastic; coarse sand; coarse, subangular gravel; damp						
2.0		Gray, poorly graded SAND (SP-SM) with silt; non-plastic; fine sand; damp	▼	0.0	MW13-2.5		100	Flush-Mount Monument Bentonite 2-inch Diameter PVC No field evidence of contamination encountered throughout
4.0				0.0	MW13-5.0 SWI			8/20 Sand
6.0								
8.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet					100	
10.0				0.0				
12.0							100	0.010-inch Slotted PVC Screen
14.0								
16.0								
18.0								
20.0		Final depth 20.0 feet bgs. Monitoring well installed to 20.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/07/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-14

PBS PROJECT NUMBER:
24349.000

BORING MW-14 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Dark brown SILT (ML) with sand and gravel; low plasticity; fine to medium sand; damp						
2.0				0.0	MW14-2.5		100	Flush-Mount Monument
4.0								Bentonite
								2-inch Diameter PVC
								8/20 Sand
6.0		Gray, poorly graded SAND (SP-SM) with silt; non-plastic; fine sand; moist		0.0				0.010-inch Slotted PVC Screen
8.0							100	
10.0				0.0				Light sheen at 9 feet bgs; no odor
12.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet					100	
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/08/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-15

PBS PROJECT NUMBER:
24349.000

BORING MW-15 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Brown, silty GRAVEL (GM); low plasticity; coarse, subangular gravel; dry						
2.0				0.1	MW15-2.5		60	Flush-Mount Monument Light diesel odor
4.0								Bentonite
6.0								2-inch Diameter PVC
8.0								8/20 Sand
10.0		Gray, poorly graded GRAVEL (GP) with sand; coarse sand; coarse, subrounded to subangular gravel; wet						0.010-inch Slotted PVC Screen
12.0				0.4	MW15-13.0 SWI		60	
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded during the initial Q1 monitoring event is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/12/22



BAKER TRUCK CORRAL
BAKER CITY, OREGON

BORING MW-16

PBS PROJECT NUMBER:
24349.000

BORING MW-16 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		Gray, poorly graded GRAVEL (GP-GM) with silt and sand; non-plastic; fine to coarse sand; fine to coarse, subrounded to subangular gravel; moist						
2.0				0.0	MW16-2.5		100	Flush-Mount Monument Bentonite 2-inch Diameter PVC
4.0				0.0	MW16-5.0 SWI			No field evidence of contamination encountered throughout
6.0								8/20 Sand
8.0		becomes coarse sand and coarse gravel					100	
10.0				0.0				0.010-inch Slotted PVC Screen
12.0							100	
14.0								
16.0		Final depth 15.0 feet bgs. Monitoring well installed to 15.0 feet bgs. The depth to groundwater measurement recorded at time of drilling is displayed.						
18.0								
20.0								
22.0								
24.0								

BORING METHOD: Sonic Drilling
DRILLED BY: Cascade Drilling, Inc.
BORING BIT DIAMETER: 6-inch

LOGGED BY: N. Thornton
COMPLETED: 11/08/22

Appendix D

Standard Operating Procedures

Drilling and Soil Sampling

Monitoring Well Development

Sampling Groundwater Monitoring Wells

Sub-Slab and Soil Gas Sampling

STANDARD OPERATING PROCEDURE

Drilling and Soil Sampling Procedures

1 PURPOSE

This Standard Operating Procedure (SOP) provides an overview of mobile drilling methods typically used during environmental investigations along with associated health and safety issues. This document outlines procedures to be followed by PBS personnel during drilling and soil sampling activities. Groundwater and soil gas sample collection through the use of drill rigs are covered under separate SOPs.

2 TYPES OF DRILL RIGS

There are three types of drilling methods that are typically used for environmental investigations: direct push, auger, and sonic. Each type of drilling method is described below. A fourth option, discussed in Section 2.4, is a hand auger tool.

2.1 Direct-Push Drilling

Direct-push drilling methods are a common drilling technology used in environmental investigations due to the small diameter borehole (two and one-quarter inch (2.25")) that generates significantly less investigation-derived waste (IDW). The rigs are hydraulically powered, and use static and percussion force to advance the drill rods. Limited access rigs are available for interior locations while track-mounted rigs allow for sampling in locations with unimproved roads.

The rods are equipped with disposable plastic liners that contain the soil retrieved for observation and sampling. The entire column of rods is removed from the ground each time to retrieve soil for sampling. The rod lengths can be 3, 4, or 5 feet. Because of this, if caving or excessive slough is a concern, the borehole may be temporarily cased to keep it clear and open during soil sample retrieval.

2.2 Hollow Stem Auger Drilling (HSA)

Hollow stem auger drilling methods use hollow corkscrew drilling flights to advance into the subsurface. The borehole is typically 11 inches in diameter, with the flights having a 6-inch inner diameter space in which to retrieve samples or construct wells. The hollow stem auger drill rigs have better capability to penetrate higher density deposits than the direct push probe method. Some direct-push rigs have the capacity to drill with hollow stem auger flights, but these rigs typically do not have the mechanical power to drill through challenging soil. The use of auger drill rigs for environmental investigations is typically for the installation and decommissioning of monitoring wells.

Soil sampling with an auger drill rig is conducted through the use of split spoon samplers or Shelby tubes deployed through the inner hollow space. Split spoon samplers are typically 2.5 feet in length and advanced by hammer weight blow into the undisturbed soil. Shelby tubes are typically used in soft deposits such as clays. Soil brought to the surface on the exterior of drilling flights is considered drill or soil cuttings. Soil samples should not be collected and analyzed from the cuttings because that soil may have come in contact with other soil or contamination from varying depths.

2.3 Rotosonic Drilling

Rotosonic drilling methods (hereafter referenced as sonic method) advance drill rod flights into the ground through the use of vibration, and full-size sonic rigs can advance rods through very challenging unconsolidated geologic formations including large cobbles. The borehole size varies but typically is 4 to 6 inches in diameter.

Due to the nature of the drilling technology, the soil can be disturbed by the vibrations, so consistency and compaction are unreliable. Soil is vibrated out of the lead flight into plastic bags for observation and sampling. The entire column of rods is removed from the ground each time to retrieve soil for sampling; if caving or excessive slough is a concern, the borehole may be temporarily cased to keep it clear during soil sample retrieval.

2.4 Hand Auger Tool

A fourth drilling option is the use of a hand auger tool, sometimes called a handheld auger. This tool, made of steel, is used to bore a hole in soil or sediments. It is intended for use only by hand and is powered by human force by twisting or screwing the tool into the soil. The soil is retrieved through a short barrel that attaches to the base of the auger rods. This tool is used for sites where the soil is relatively easy to penetrate, and when sampling is limited to the upper 5 to 10 feet of the shallow surface. Different barrels are available for coarse-grained or fine-grained material.

3 HEALTH AND SAFETY PLAN

A Health and Safety Plan (HASP) must be developed prior to fieldwork commencing. Typically, a site-specific HASP is prepared from a PBS template for drilling investigations. In all cases, pertinent safety information must be relayed to field personnel, including subcontractors, to communicate mandatory elements from the federal code for hazardous waste operations and emergency response (29 CFR 1910.120(b)(4)).

4 UTILITY LOCATES

Utility locates will be completed on all drilling projects including hand-augered sampling. The property owner or site manager should be interviewed regarding the potential location of buried utilities or other subsurface obstructions on the property. The call-in numbers are provided below. Alternately, PBS personnel can obtain log-ins to file locate requests on-line (Internet Ticket Processing, <http://www.callbeforeyoudig.org/index.asp>).

Oregon Utility Notification Center: 1-800-332-2344
Washington Utility Notification Center: 1-800-424-5555

The Utility Notification Center needs to be contacted at least 48 hours (two business days) in advance to locate utility-owned lines up to the meter (e.g., water, gas, electric), and public utilities within the public right-of-way (e.g., sewer). In addition, a private utility locating company is typically contracted to survey for private utilities such as utility lines from meters to buildings, drain lines, buried electric cables, or irrigation and sprinkler lines.

When filing utility notification requests, PBS personnel should be as specific as possible about where to locate. Washington law requires that the proposed excavation/drilling work areas are field-marked with white paint prior to the locating event.

When beginning a project, PBS personnel must carefully think through where boreholes can be safely drilled, considering both subsurface and overhead obstructions. A site walk may be prudent once the utilities have been marked and prior to the drilling fieldwork. If safe drilling conditions cannot be confirmed, the PBS Project Manager should determine if engineering controls should be implemented, such as shielding or shutting down utility and/or power lines.

SAFETY NOTE: Drill rig masts must be a safe distance from overhead power lines to prevent mast lines and power lines being moved together by wind. Occupational Safety and Health Administration (OSHA) rules for drillers require a minimum distance of 10 feet, with additional spacing required depending on the voltage carried by the power line. The drill rig subcontractor is responsible for ensuring sufficient clearance. However, PBS personnel should verify that potentially unsafe conditions do not exist.

5 SAFETY EQUIPMENT REQUIREMENTS

The following safety equipment is required for all drilling investigations:

- Hard hat
- Hearing protection (ear muffs or plugs, must be worn when drill rig is in operation)
- Safety-toe work boots
- Safety vest
- Gloves (typically disposable)
- Safety goggles or glasses
- Life vests (only when working over water)

6 FIELD EQUIPMENT AND SUPPLIES REQUIREMENTS

The following equipment is typically required for drilling projects when soil sampling will occur. Groundwater or soil gas sampling is discussed in separate SOPs. PBS personnel should confirm that the drilling contractor will provide decontamination water, soap, brushes, and buckets.

General field supplies/equipment includes:

- 5-gallon buckets
- Bags (garbage)
- Bags (plastic zipper-type)
- Camera
- Cellular telephone and phone numbers of client, project laboratory, subcontractors, etc.
- Field notebook or daily log
- Measuring tape
- Paper towels
- Pens
- Spray paint (optional)

Soil sampling supplies/equipment includes:

- Project proposal/scope of work
- Alconox/Liquinox or similar decontamination detergent
- Distilled water (for decontamination)
- Environmental borehole log forms
- Hand auger (if required by scope)
- Ice chest with blue ice or party ice
- Nitrile or other chemically compatible gloves
- Photoionization detector (PID)
- Sample chain-of-custody forms
- Sample containers (ask lab about sample volume, preservatives, etc.)
- Sampling spade or spoons (if required by scope)

7 PRE-DRILLING ACTIVITIES

The following tasks must be performed before beginning work:

- Conduct tailgate safety meeting with all field personnel, including visitors such as the client or regulator; review Health and Safety Plan.
- Install traffic cones/barrier tape or other barrier to control pedestrian and vehicle access to work area as necessary.

The drilling subcontractor is responsible to ensure that the area on which the rig is to be positioned is cleared of removable obstacles and the rig should be leveled if parked on a sloped surface. The cleared/leveled area should be large enough to accommodate the rig and supplies. PBS personnel must confirm that the work area is cleared and safe for work prior to initiating drilling activities.

8 SOIL SAMPLING PROCEDURES

8.1 Logging and Field Screening Soil

Upon retrieval of the soil, describe as per the Geo-Environmental Field Classification chart for soil (included as an attachment). Record observations on an environmental borehole log.

If conducting head-space screening with a PID, remove one-quarter to one-half cup of soil and place in a sealable plastic bag. Seal the bag, break up the soil, and let sit for a minimum of five minutes (in colder weather, either wait for 15 to 30 minutes or put into a warm car or room). The purpose of the headspace screening is to measure what is off-gassing from the sample, and sufficient time must be allowed for that to occur. After the appropriate interval, place the end of the PID probe into the bag (through a small opening in the "zipper") and record the peak value.

If performing sheen testing, place a small sample volume (preferably darker or stained material) in a bowl partially filled with water and observe sheen indicative of petroleum contamination.

8.2 Collecting Soil Samples for Laboratory Analysis

Prior to collecting a sample for laboratory analysis, the sampler should don new gloves. If there are multiple samples to be collected from a single borehole, the gloves should be replaced to avoid cross-contamination.

Collect soil samples using a gloved hand or a clean sampling tool and place directly into the sample jar(s). For volatile organic compounds (VOCs), pack the soil to minimize jar headspace, or field preserve for VOCs using EPA Method 5035 (the field kit is obtained from the laboratory). Label samples as described under Section 8.3 Sample Numbering. Place labeled sample container(s) in the cooler with ice.

8.3 Sample Identification

Sample labels will be completed and attached to the jars in the field to prevent misidentification. All sample labels will include the following information:

- Project name or number
- Sample identification
- Sample collection date and time

The sample identification is unique to a particular sample and the format must be consistently used for all samples collected at the site. The sample identification typically includes the sample location and the collection depth. The sample location is the soil boring number or otherwise designated sample location. Standard abbreviations for sample location types are:

- | | |
|------------------------|---------------------|
| • DP = Direct push | • SO = Surface soil |
| • MW = Monitoring well | • SS = Soil sample |
| • SB = Soil boring | • TP = Test pit |
| • SE = Sediment | • WP = Well point |

Examples of sample identifications are: DP-5 (4'), SS-22 (1'), and MW-3 (15')

Other naming conventions may be used, as long as the labeling is consistent and each location is clearly identifiable.

9 BOREHOLE ABANDONMENT

The licensed driller is responsible for abandoning boreholes in compliance with state regulations. PBS personnel should ensure that this occurs, and that the sealing material (typically bentonite chips) is sufficiently hydrated for a proper seal. State regulations governing this are:

- Oregon Administration Rule (OAR) 690-240
- Washington Administrative Code (WAC) 173-160

10 DECONTAMINATION PROCEDURES

Minimizing the possibility of cross-contamination between samples is a critical component of a successful soil sampling project. This is achieved by consistent and thorough decontamination of sampling equipment, such as drill rods, sampling devices (split spoons, trowels, etc.), and other tools that may come in contact with soil to be sampled.

For drilling equipment, the drilling contractor is responsible for the decontamination procedures. Typically, a pressure washer with hot water or water with added detergent is used to clean drill rods and other equipment. The use of a steam cleaner is not appropriate because of the risk of burns, and steam cleaners do a poor job of removing soil particles from equipment.

For equipment and supplies used by PBS personnel, water with added detergent is typically used for decontamination. Alternately, disposable supplies, such as gloves and sampling scoops, can be used to avoid having to decontaminate them.

PBS field personnel should work with the PBS Project Manager to confirm the appropriate decontamination procedure for each project. For example, it may be important to know the source of the driller's water used for decontamination, and distilled or deionized water may need to be used to clean hand tools.

All water and sludge generated during decontamination will be captured for later disposal. Release of water directly onto the ground or into drains or catch basins is not allowed.

11 INVESTIGATION-DERIVED WASTE

Investigation-derived waste consists of soil cuttings, decontamination water, purge water (if groundwater is encountered), and personal protective equipment (e.g., nitrile gloves, rags, paper towels, Tyvek suits, disposable bailers, and tubing). All disposable personal protective equipment may be disposed of as general refuse unless otherwise instructed by the PBS Project Manager.

Soil cuttings are typically placed in 5-gallon buckets or other appropriate containers during the execution of the fieldwork, and transferred to 55-gallon drums as the project progresses. If appropriate, the cuttings may remain in buckets as long as tight-fitting lids are placed on each bucket. For some projects, the PBS Project Manager may request that decontamination/purge water be placed into the same drums as the soil, instead of keeping the two media separate. Depending on the type of contamination, this may result in cost savings for the client during disposal. Field personnel should confirm how to contain soil and water prior to each field event.

11.1 Drum Labeling

The storage containers must be labeled as hazardous, non-hazardous, or unknown pending laboratory results. The labels must be completed using an indelible marker and include:

- Date that the contents were generated
- Nature of the contents - for example:
 - o Drill cuttings
 - o Purged groundwater
 - o Decontamination water and/or sludge
- Contact phone number in the event emergency response personnel need to identify the contents of the container.

Drums or other storage containers should be placed in as secure a location as possible, which may be a building if the exterior area is not secure from vandalism.

12 POST-DRILLING ACTIVITIES

Upon return to the office, PBS personnel should:

- Clean and calibrate equipment prior to placing back into storage. If there were any operational issues noted, they should be reported immediately to the equipment manager.
- Submit field borehole logs for electronic formatting for future reports.
- Submit the daily field notes to the PBS Project Manager for placement into the project file. If a field notebook was used, and that notebook is not dedicated to that project, a copy of those notebook pages should be submitted.

STANDARD OPERATING PROCEDURE

Development of a Groundwater Monitoring Well

1 PURPOSE

The purpose of monitoring well development is to remove drilling fluids or other fluids introduced during drilling or well installation, stabilize the filter pack, and remove fine-grained sediment entering the well. This is typically done following groundwater monitoring well construction, no sooner than 24 hours following setting of a bentonite seal. If a dry granular bentonite seal is placed, you may begin development as soon as 12 hours (OAR 690-240-0485) following completion. US EPA recommends waiting at least 48 hours, especially if vigorous surging methods are to be used during well construction.

2 EQUIPMENT LIST

- Well lock keys
- Field book
- Electronic water level probe
- Interface probe (if dense or light non-aqueous phase liquids are [DNAPL or LNAPL] is present)
- Knife or scissors
- Decontamination equipment
- Site map and health and safety plan
- Personal Protection Equipment (PPE) appropriate for the site
- Submersible pump, air lift pump or other appropriate pump and associated equipment
- Surge block
- Polyvinyl Chloride (PVC) or stainless steel bailer (close in size to inside diameter of well)
- Disposable tubing, if necessary
- Field water quality monitoring equipment
- Turbidity meter
- Containers for purge water

3 PROCEDURE

The diameter of the well, the total depth of the well, and depth to water will determine the type of pump and equipment used for well development. Surging of the well can be done with a surge block tool or with a submersible pump if it is close in size to the inside diameter of the well. A PVC or stainless steel bailer may work if it is close in size to the inside diameter of the well. The purpose of surging is to suspend as much sediment as possible in the water column so it can be pumped out of the well. It also helps to get the filter pack and aquifer settled and cleaned of fine-grained sediment. The filter pack should have been surged during well construction, prior to placing the overlying seal in the well.

1. Note the general condition of the well. Check the well for damage or evidence of tampering and record pertinent observations. Note any maintenance tasks that should be completed, such as well cap or padlock replacement.
2. Open the well and wait a sufficient period of time for the atmospheric pressure to equalize, allowing the water levels to approach an equilibrium state before taking any measurements.
3. Measure the depth to water (DTW), (and DNAPL or LNAPL if present) relative to the marking on the well casing. If there is no mark, use the north side of the casing. Record the water level in the field book.

4. Measure and record the total depth of the well, making note if the bottom of the well is "soft" and compare it to the finished depth of the well from the well log. Also note the total screen length from the well log.
5. Subtract DTW from total depth for length of water column (WC).
6. Calculate one casing volume as follows:

CF x WC = Number of gallons in one casing volume

CF = conversion factor (dependent on well diameter listed in table below)

WC = length of water column in feet.

Well Diameter (inches)	Conversion Factor (gallons/foot)
1	0.04
2	0.17
4	0.65

Annular space is calculated as follows:

$[(\text{Borehole diameter} - \text{casing diameter} / 2)^2] \times H \times N = \text{Number of gallons in annular space}$

H = length of wetted filter pack in feet

N = porosity of filter pack (0.3 to 0.5)

7. Start by surging the well, moving a surge block tool or bailer up and down the length of the screened interval. Following surging (5 to 10 minutes), remove the surge block and install the pump. Place the pump in the bottom half of the screen and pump at a fairly high rate.
8. After the pump has been pumping for a while, measure turbidity and record it. If water begins to clear, measure turbidity, again. Also, surge the well using the pump. If the water becomes more turbid, continue to pump. Record the time, amount pumped and turbidity in the field book.
9. The amount of water required to be pumped from the well is equal the amount of water put into the boring during well drilling and/or construction plus a minimum of 5 to 10 well bore volumes.

Bore hole volume = Number of gallons in annular space + casing volume

At least five well bore volumes need to be removed for monitoring wells set in silty, clayey sands, or silts. If there are coarse-grained soils in the screened interval such as sands and gravels, then 10 well bore volumes should be removed from the boring.

10. After the bottom portion of the water column clears, move the pump up in the well screen and continue to pump. As the water clears, surge using the pump.
11. An alternative to surge and pump would be to use a PVC or stainless steel bailer, close in size to the inside diameter of the well. The bailer could be used as a surge block, catching both sediment and removal of turbid water. It is particularly effective to bounce the bailer off the bottom of the well casing when there is sediment on the bottom of the well, in order to stir up the sediment and get it re-suspended so it can be removed. Sometimes a combination of both pumping and a bailer may be used.

12. Following development, record total depth of well and compare it to initial measurement and total depth at construction. Any sediment in the bottom of the well should be removed during well development, as much as possible. Also record the final water level and turbidity.
13. Decontaminate all pumps and equipment prior to moving to the next well.
14. All water should be stored in drums, tanks or other container, as appropriate.
15. Wells should be allowed to rest and recover at least 24 to 48 hours prior to sampling.

References

- Oregon Department of Environmental Quality. (1992). Groundwater Monitoring Well Drilling, Construction, and Decommissioning. DEQ Guidance Document. August 24, 1992.
- OAR 690-240 Construction, Maintenance, Alteration, Conversion and Abandonment of Monitoring Wells, Geotechnical holes and Other Holes in Oregon, (as of October 15, 2007).
- US Environmental Protection Agency. (2001). Standard Operating Procedure 2044, Revision 0.1, Monitor Well Development. October 23, 2001.

STANDARD OPERATING PROCEDURE

Sampling Groundwater Monitoring Wells

1 BACKGROUND AND PURPOSE

Groundwater samples are collected from monitoring wells for analysis of physical and chemical parameters, either by using field observations and portable equipment and/or using established laboratory analytical methods. The goal of this process is to obtain groundwater samples that are representative of the aquifer (i.e., avoiding a sample that has been impacted by surface or atmospheric conditions).

Low-flow or zero volume purging and sampling methods were developed to produce samples with the least amount of interference resulting from the collection method. Low-flow purging techniques became the industry standard for collecting a groundwater sample because the methods slow groundwater velocity to the well, minimize turbidity and agitation in the water column, and reduce the volume of purged groundwater requiring disposal. These techniques include the use of pumps dedicated to specific wells or the use of a portable pump system. A zero volume/no purging method requires installation of a collection vessel within the well prior to the sample collection event, allowing the water column within the well to equilibrate with the aquifer prior to retrieving the sample. The appropriate technique is dependent on project-specific goals and data quality requirements. Sampling methodology should be confirmed with the PBS project manager (PM) prior to preparing for groundwater monitoring.

The procedures in this Standard Operating Procedure (SOP) are specific to standard monitoring wells with a single-slotted interval. It is assumed that low-flow purging and sampling protocols are used, although these protocols can be easily adjusted for other sampling methods. Temporary borings advanced for a single field event may be sampled using the techniques presented in this SOP.

2 EQUIPMENT AND SUPPLY LIST

- Well lock keys
- Groundwater Sampling Field Form and Depth to Groundwater Field Form
- Copies of field forms and data tables from previous groundwater monitoring event
- Electronic water level probe or interface probe (if dense or light non-aqueous phase liquids [DNAPL or LNAPL] are potentially present)
- Tubing cutters, knife or scissors (note: some sites do not allow the use of a knife on-site)
- Decontamination equipment
- Measuring cup
- Safety cones
- Bolt cutters
- Replacement well caps, bolts, and padlocks
- Small cup, turkey baster, or large sponge to purge standing water inside well monument
- Fish hooks, stainless steel weight, and fishing line to retrieve objects in the well
- Site map and health and safety plan

- Personal protection equipment (PPE) required for the site, including nitrile gloves (confirm with site-specific health and safety plan)
- Submersible pump or peristaltic pump and associated equipment
- Compressed gas source (nitrogen or air compressor), battery source, or generator and fuel
- Control box
- Disposable tubing, if necessary
- Flow-through cell and water quality parameter meter (e.g. YSI model)
- Buckets or containers for purge water and drum labels
- Sample containers, labels, packaging material
- Coolers and ice for samples

3 PROCEDURE

This section outlines standard procedures used for collecting groundwater samples from a monitoring well. Project Managers may modify or remove tasks as dictated by project needs; for example, turbidity or depth-to-bottom measurements may not be warranted at a site with sufficiently developed wells.

Preparation for a monitoring event begins in the office. The first step is to read the scope of work (e.g., proposal, sampling and analysis plan (SAP), work plan) to determine the number and location of monitoring wells to be sampled, health and safety considerations, quality control (QC) samples needed, sample containers required, and equipment needed for the site (peristaltic pump, bladder pump, both, etc.). Recommended preplanning procedures are as follows:

- Prepare, review, or update Health and Safety Plan (HASP) for the site.
- Obtain appropriate PPE for the site (e.g., hard hat, safety vest, gloves, safety glasses, life vest, flame retardant [FR] shirt or other client-required PPE).
- Determine number and type of samples to be collected.
- Determine which laboratory can meet analytical requirements (required analysis, screening levels).
- Order sample containers from laboratory, making sure to order QC sample containers and at least one extra set of containers. Ensure that a Safety Data Sheet (SDS) is provided for any sample preservative supplied by the laboratory.
- Print all forms needed for sampling event (work plan, HASP, depth to water forms, groundwater sampling forms, labels, chain of custody, etc.).
- Schedule PBS vehicle and equipment use on PBS calendars, as warranted.
- Order rental equipment for sampling event, if not available internally.

After arriving at the site, the following procedures should be followed:

- Don appropriate PPE and place safety cones around the work zone, if required by the HASP or deemed necessary by site conditions.
- Open all of the monitoring wells on-site and wait a minimum of 15 minutes for water levels to approach an equilibrium state with atmospheric pressure before taking any measurements.

- Note the general condition of the well on the depth to groundwater field form. Check well for damage or evidence of tampering, and record pertinent observations. Note any maintenance tasks that should be completed, such as well cap or padlock replacement.
- Collect depth to water measurements from each monitoring well, decontaminating the probe between locations. If possible, gauging should be conducted in order from the least to the most contaminated well. The measurements should be collected from all wells prior to beginning sample collection, unless project scope or site conditions indicate otherwise.
- Measure the depth to water relative to the marking on the well casings. If there is no mark, use the north side of the casing. Record the water level on the depth to groundwater field form. Note if DNAPL or LNAPL is present (this typically requires a meter capable of detecting NAPL-water interfaces). If NAPL is present, additional decontamination procedures will be warranted.
- Measure depth to bottom of well to record if sedimentation in the well has occurred.
- Make sure all information is completed on the depth to groundwater field form and sign and date it.

Sampling a groundwater monitoring well utilizing low-flow techniques relies on stabilization of field water quality parameters to determine when groundwater is representative of aquifer conditions. Measurement of groundwater quality parameters with a water quality parameter meter occurs in a closed system in which groundwater does not come in contact with open air; this is important for valid measurements because dissolved oxygen (DO), oxidation-reduction potential (ORP), and pH measurements can be sensitive to reactions with the atmosphere. A flow-through cell (flow cell) connected to the water quality parameter meter provides this closed system and is used to measure field parameters prior to collecting groundwater samples. Stabilization of selected parameters indicates that collected groundwater is representative of the aquifer and conditions are suitable for sampling to begin. See protocol below for stabilization parameters.

Low-flow purge and sample methods require care when placing a portable pump and/or tubing in the well to minimize disturbance to the water column. Pumping rates must be maintained at 0.1 to 0.5 liter per minute to reduce drawdown; the pump should never be run higher than 0.5 liters per minute prior to sampling.

For monitoring wells, sampling should proceed as follows:

- If using a portable pump setup, slowly lower the pump or tubing to the midpoint of the screen or sample interval. Secure the pump or tubing at the surface to prevent it from moving (not applicable if using dedicated pumps).
- Connect the bladder pump (attaching control box, compressor or nitrogen tank with regulator) or peristaltic pump to flow cell containing water quality parameter probes. Place the water level probe in the well so water levels can be measured as you are pumping. Start the pump and adjust the pumping rate to between 0.1 and 0.5 liters per minute (using a measuring cup to calculate the flow rate). Begin recording readings on the groundwater sampling field form. Be sure to purge the initial volume of water in the tubing before taking a reading.
- During purging, record readings of groundwater parameters (listed below) and water level every 3 to 5 minutes on the groundwater sampling field form. A drawdown of less than 0.3 feet in the water column, once the pumping rate has stabilized, is desirable; however, less permeable aquifer material or a clogged well filter pack may result in a deeper drawdown. At a minimum, the depth-to-water should be stabilized for three consecutive readings taken between 3 to 5 minutes apart (in conjunction with the stabilization of the other parameters). Visually describe and record turbidity. Purging is considered complete when the groundwater parameters have stabilized for three consecutive readings.

Field Parameter	Stabilization Goal
Temperature	+/-3%
Specific Conductance	+/- 3% mS/cm
pH	+/- 0.1 pH units
DO	+/- 10% or +/- 0.3 mg/L
ORP	+/- 10 millivolts
Depth to Water	+/- 0.3 feet

Please note that multi-parameter meters may have a resolution greater than the stabilization goal. Note the meter capabilities. If the field parameters do not stabilize within the stabilization goal, but are within the resolution of the meter, it may be acceptable to collect a sample in this scenario. This MUST be noted on the field form.

- Measure turbidity of the sample water using field instruments prior to sample collection and upon any obvious visual changes in turbidity during sample collection.
- Prior to collecting the water sample, the tubing originating in the well must be disconnected from the influent (inflow) side of the flow cell.
- Directly fill the sample containers from the tubing originating in the well. If you are collecting samples for volatile organic compound (VOC) analysis, you may need to decrease the pump rate to minimize volatilization of compounds from the sample; if this is the case, other samples should be collected first. You may restore the flow rate upon completion of filling sample containers for VOC analysis. Fill unpreserved bottles first. Filtered samples should be collected after all other samples have been collected.
- Groundwater samples collected for VOC analysis must be collected with zero headspace in the sample vial. This can be confirmed by gently tapping the sealed vial against a gloved hand to ensure that air bubbles are not present.
- If a duplicate sample is required for the well, it should be filled concurrently with the regular sample. This is accomplished by alternating bottles of the same type during sample collection (e.g., filling one bottle from each sample, then the second bottle from each sample.)
- Groundwater samples for dissolved metals analysis must be field filtered with a 0.45 micron filter directly connected to the tubing. Mark "field filtered" or "FF" on the bottle label, field form, and chain of custody.
- Prior to filling or just after filling, label each bottle with the project name, sample name, and sample date and time, and make sure it is properly sealed. The sample containers may also be labeled with what analysis will be performed (confirm with Project Manager). Place in a cooler with ice and pack for transportation.
- As necessary, pull pump and discard tubing. Decontaminate the pump based on the decontamination procedures established for the site.
- Make sure all information is completed on the groundwater field form and sign and date it.
- Close and lock the well.
- Contain purge and decontamination water in the appropriate containers as established for the project.
- Dispose of used sampling supplies and other waste in appropriate container as established for the project.

If low-flow sampling is not used at the site, these procedures should be modified as appropriate. The objective is to provide high-quality groundwater samples representative of the aquifer. Modifications to this SOP should keep this objective in mind at all times.

After fieldwork is completed:

- Ensure that chain-of-custody form has necessary information including site name, project manager, sample names, date and time collected, requested analysis, special notes (field filtered, MS/MSD, etc.).
- Scan and save field sheets to project folder on server. Retain original field copies in project folder; these are legal documents and should be retained as per PBS guidelines for document retention.
- Report any sampling or well maintenance issues to the project manager for evaluation and remedy.
- Clean and store PBS equipment for use on next project. Report any equipment damage or malfunctions or missing/depleted calibration solutions to the office equipment manager.
- Ship rental equipment back to vendor immediately to minimize project costs. Borrowed PBS equipment should be returned promptly to the lending office.

References

Puls, R.W. and M.J. Barcelona. *Groundwater Issue Paper: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. US Environmental Protection Agency, EPA 540-S-95-504 (1996).

Yeskis, D. and Bernard Zavala. *Groundwater Issue Paper: Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers*. US Environmental Protection Agency, EPA 542-S-02-001 (May 2002).

STANDARD OPERATING PROCEDURE

Sub-Slab Vapor and Soil Gas Sampling

PURPOSE

Vapor intrusion of volatile organic compounds (VOCs) into occupied structures is considered a critical migration pathway requiring assessment at contaminated sites. Specifically, regulators may require property owners to sample soil gas, sub-slab vapor, or indoor air to assess risk to building occupants.

This standard operating procedure (SOP) is intended to guide soil gas or sub-slab vapor sampling efforts when creating temporary sampling points when Method TO-15 or other analytical methods utilizing a Summa canister as the sampling media are required. The sampling points can be modified to produce a permanent sampling location. The sampling protocols for analysis of soil gas or sub-slab vapor by Method TO-17, which utilizes a sorbent tube as the sampling media (instead of a Summa canister), as well as the sampling of indoor air are presented as separate SOPs.

Soil gas and sub-slab vapor sampling is typically conducted based on prior results from other environmental studies, such as soil or groundwater sampling, or if historical uses indicate a human health risk could be present. A variety of issues can significantly affect the results of soil gas and sub-slab vapor sampling. Adherence to this SOP will help ensure that sampling results are valid and reliable. This SOP assumes that samples will be collected in Summa canisters. If other sampling media is used (such as tedlar bags), some of the steps in this SOP may not apply or may need to be modified.

Use one of the following two methods to conduct the sub-slab vapor or soil gas sampling

METHOD 1 – VAPOR PIN

1 EQUIPMENT LIST

The following table lists standard equipment and tools needed for soil gas and sub-slab vapor sampling. When renting a helium meter, ask the vendor for one that is intended for use in leak detection testing (e.g., MGD-2002 multi-gas leak locator). It should have the ability to purge the line quickly (the equipment company may provide a special filter for this), and preferably, a meter with an active pump (as opposed to passive venting). It does not need to be intrinsically safe UNLESS site conditions require this feature.

Equipment to get from lab	• 1 or 6 liter (L) Summa canister. • One extra Summa canister in the event that a canister fails in the field. • Flow regulator (also known as critical orifice) preset by lab for pre-determined sampling time, not to exceed a flow rate of 200 mL/min. • Vacuum gauge (for verifying vacuum prior to sampling, flow regulator may act in this role). • Tubing (new for each sample location). Must be Teflon, Nylaflo, Peek, or stainless tubing. Do NOT use polyethylene tubing. • Chain of custody and identification tags. • T-fitting (need one for each sampling location, including ferrules and hex nuts for each leg of T).
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Other equipment	• Purging syringe (calibrated, typically for 50 to 60 milliliters [mL]). • Granular bentonite. • Disposable or washable containers (~16 ounces) for mixing bentonite and/or cement. • Water for mixing bentonite and cement. • Sand. • Silicone tubing. • Helium gas tank with regulator. • Helium meter (make sure that it measures in ppm by volume). • On-off valve (two per sampling location). • Vapor Pin with a silicon sleeve (or similar equipment). • Vapor Pin tool and hammer for installation and removal (or similar equipment). • Vapor Pin drill guide (for permanent installations). • Field notebook and/or field forms. • Helium shroud. • Weight for shroud, if needed. • Nuts and ferrules (if you did not receive from lab). • Cap for "shroud air tubing." • Water dam (e.g., 1.5-inch PVC coupler).
Tools	• Scissors. • Rotomhammer/drill for drilling through concrete. • Drill bits (0.625-inch, 1.5-inch). • Crescent wrench (1/2 and 9/16 inch). • Whisk broom/dust pan. • Wet-dry vacuum. • Extra-thin knife/screwdriver. • Extension cord for rotohammer. • Wrench for helium regulator. • Generator (if power is not available)
Supplemental supplies	• Teflon tape (if seal leaks are sustained). • Purging pump with tubing (if purging syringe not used) and charging cord. • Fast setting concrete to patch floor. • Adhesive to repair carpet or tile.

2 LABORATORY

The lab will supply the Summa canisters, flow regulators, gauges, and tubing, and can also provide the purging syringe, if needed. Have the equipment arrive TWO business days prior to sampling, if possible. This allows the lab time to express-mail any additional, broken, or forgotten equipment.

As soon as the shipment is received, ensure that all equipment was provided and verify the vacuum of all Summa canisters. Order an extra gauge, if needed, to check the canisters for pressure prior to leaving the office. Knowing that the canister has sufficient initial vacuum allows for better trouble shooting in the field.

The following information must be provided to the lab to ensure shipment of the correct equipment:

- Size of canister (400 mL, 1 L, 6 L). A 1 L Summa will require a minimum of two times dilution of reporting limits. If this will cause your sample reporting limits to exceed screening criteria, use a larger Summa canister. You MUST know your reporting limits to determine the canister size.
- Type of canister certification (batch vs. individual). Batch certification is usually sufficient for sub-slab vapor and soil gas sampling projects.
- Method reporting limits.
- Tracer gas to be used (the lab must certify container for this prior to shipping). PBS uses Helium as a tracer gas.
- Sample time/flow rate.

Samples should be collected at a rate between 100 and 175 mL per minute (most guidance documents recommend that samples not be collected faster than 200 mL per minute). A flow rate greater than 200 mL/min runs the risk of introducing ambient air dilution to the sample. The sample time for grab samples is calculated by determining an acceptable sample flow rate (perhaps 150 mL/min) and multiplying that by the sample container size. For a 150 mL/min rate, a 1 L Summa canister would require approximately seven minutes. A 6 L Summa canister would require 40 minutes.

3 SUB-SLAB VAPOR INITIAL PROCEDURES

Order equipment as previously identified, and do the following prior to field activities:

- Determine the proposed locations for each sample. Locations should be located at a minimum of 3 feet inside foundation edges or exterior walls to obtain the most representative results.
- Confirm with the property owner/occupant that subsurface utilities will not be impacted when drilling through the slab in these locations.
- Conduct a private utility locates for your locations to check for subslab or subgrade obstructions.
- If possible, determine the slab thickness to confirm that a hand-operated drill can drill through it.
- Determine if carpeting or other flooring will need to be removed prior to drilling, or will require patching.
- Have the helium meter arrive the day before sampling.

Once at the site, sampling should occur as described below.

Drill Hole and Seal Tubing

These instructions assume that all samples will be collected using a Vapor Pin or similar equipment.

- Confirm concrete thickness, if possible, so you'll know when to expect the drill bit to break through bottom of slab.
- If the Vapor Pin will be installed for on-going monitoring (i.e., permanent installation), begin by drilling a hole 2 inches into the concrete using the 1.5-inch drill bit. This larger hole will be used to install a flush-

mount cover. Then insert the Vapor Pin drill guide into this hole so that the smaller diameter drill hole will be centered. Continue with the directions below.

- Drill a hole through the slab using the 0.625-inch drill bit. Drill 1 to 3 inches into backfill or native material beneath the concrete slab.
- Use a 0.625-inch tube brush to clean concrete dust from the hole.
- Use the whisk broom or vacuum to remove concrete dust or loose material from around the drill hole.
- Install a Vapor Pin with a silicon sleeve (the silicon sleeve provides the seal) into the 0.625-inch drilled hole utilizing a dead weight hammer and the Vapor Pin installation/extraction tool (or similar equipment).
- If not drilling the 1.5-inch hole, place a small amount of hydrated bentonite on the concrete surface around the Vapor Pin and insert a water dam into the bentonite.
- Place a silicon mat with a circular cut-out for the Vapor Pin on the concrete surface around the sample point and water dam.
- Add a small piece of silicone tubing to the top of the Vapor Pin for attaching tubing later.
- Add a small amount of water to the inside of the water dam to ensure a good seal is in place.
- Place the shroud over the sample point and thread 0.25-inch tubing through a stopper in the shroud.
- Place a weight on the shroud to prevent it from being moved and compromising the seal integrity, if needed.

For temporary holes, allow 20 to 30 minutes for the hole to equilibrate. If collecting sub-slab gas samples at multiple locations, consider performing these initial activities at each location prior to continuing with the sampling.

4 SOIL GAS INITIAL PROCEDURES

Order equipment as previously identified. Prior to field activities, the following should occur:

- Determine the locations and depths for each sample. Locations should be located at a minimum of 3 feet inside foundation edges or exterior walls to obtain the most representative results.
- Determine if equipment, vehicles, or other stored items will need to be moved prior to the field event.
- Call in a public utility notification.
- Conduct a private utility locates for your locations to check for subgrade utilities/obstructions.
- Arrange for a driller to deploy a Post Run Tubing (PRT) sample system, or equivalent, or arrange with the driller to install a sample point using a hand auger.

Once at the site, sampling should occur as described below.

Drill Hole and Seal Tubing

- Drill a borehole hole using a PRT system, or equivalent. The bottom of the hole should be at least 5.5 feet below ground surface (bgs), as long as this is above the water table.
- Lift up on the drilling rod approximately 6 inches to create a void in the subsurface.
- Insert the PRT fitting to the 0.25-inch tubing and place down the hole. Once it reaches the bottom, screw the fitting onto the PRT sample point (note: the fitting uses left-hand threads).

- Determine the length of 0.25-inch tubing needed to conduct sampling at this location and cut it to that length. Do not forget that there must be enough tubing to go through the helium shroud, connect to the purging T-valve and connect to the Summa canister. Be sure to cut the ends straight with no burrs or jagged edges.
- Mix bentonite with water for sealing.
- Place bentonite around the rod protruding from the ground.
- Insert bentonite evenly around tubing exiting the drill rod, making sure it penetrates fully into the rod. Thread the other tubing end through the helium shroud/stopper. Cover the loose tubing end with a plastic bag or cap to ensure it remains clean until it is connected to the Summa canister.
- Place the shroud over the drill rod and place more bentonite around the base to seal the shroud to the ground.

Sample Train Assembly

- Place the shroud over the sample point, and thread tubing through the shroud and shroud stopper.
- Place a weight on the shroud to prevent it from being moved and compromising the seal integrity, if needed.
- Attach an on-off valve to the end of the tubing, then place additional tubing on the other side of the valve. Turn the valve off.
- Install a T-fitting and a second on-off valve in-line with the sample tubing to allow for purging. Add tubing from the third leg of the T-fitting to the Summa canister.
- Connect the gauge and flow regulator to the Summa canister and tubing. Do not over tighten the fittings.
- Record the canister and flow regulator serial numbers on the field form.
- Ensure that all connections are tight and all valves are closed.

For temporary holes, wait 20 to 30 minutes to allow the hole to equilibrate. If a hand auger was used to install the sample point you must wait 48 hours.

5 LEAK DETECTION TESTING

Shut-in test and field/laboratory test for helium are two testing methods performed for leak detection.

Shut-in Test

Evaluate the integrity of the sample train by performing a vacuum shut-in test. Remove a sufficient volume of air from the sample train using the purging syringe to provide a vacuum of at least -15 inches of mercury (Hg). Observe the gauge for at least two minutes to detect any decrease in measured vacuum. The vacuum must be maintained for at least two minutes. If the vacuum is not maintained, check the fittings and retest.

Helium Test

At this point, you should have the shroud in place with the tubing from the Vapor Pin or soil gas sample point extending from the shroud, and the inlet hose from the helium tank extending into the shroud. Perform these actions:

- Fill the shroud with helium for several seconds and turn off the tank.

- Using the helium meter (meter), measure and record the helium concentration in the shroud in percent (%) or parts-per-million-volume (ppmv) (1% is equivalent to 10,000 ppmv). The target helium concentration is 70 to 90%. Remove the meter from the shroud air tubing and cap the tubing. *Allow meter to clear back to zero.*

Sample Train Purging

- Open the on-off valve to the Vapor Pin or PRT sampling point tubing. The Summa canister remains closed.
- Determine the amount of air that requires purging within the sampling tubing.
 - Determine how much tubing you need to purge (round up to whole feet).
 - Multiply the number of feet by the volume of air within one unit foot of tubing (see multipliers below for various tubing sizes).
 - Determine how much you need to purge from the hole drilled through the concrete slab or PRT sampler (usually 6 inch length).
 - Add the tubing and hole purge volumes together.
 - You want to remove a minimum of two purge volumes, so multiply volume calculated by two.

Size of tubing (inches)	Air volume in mL per one unit foot
1/4	9.7
3/8	21.7
1/2	38.6
5/8	60.3
3/4	86.9
1	154.4

- Connect the purging syringe and turn the on-off valve to ON.
- Purge the calculated volume of air. Draw the air slowly through the syringe, approximating the sample collection flow rate, to minimize the effect of creating a vacuum that could compromise the connections or seals. If your sample collection rate is 150 mL/min, and you need to purge 50 mL, then take approximately 20 seconds to purge the 50 mL or as slowly as possible.
- If you need to purge more than one syringe volume, complete the first purge, turn the valve on the syringe to OFF, depress the syringe to purge the air out of the syringe, turn syringe valve to ON and repeat the purging process.
- When done purging, turn the on-off valve to OFF.
- Connect the meter to the sample point tubing (Vapor Pin or PRT) and allow the meter to run for approximately one minute. Measure the helium concentration.
- If elevated readings on the helium meter (greater than 5,000 ppmv [0.5%]) are detected, make adjustments to seals.
- Once all necessary adjustments have been made, record the helium measurement in the shroud on field sheet following adjustment to seals.

Once the leak detection testing has confirmed the Vapor Pin or PRT seal is sufficient, proceed to sample collection.

6 SAMPLE COLLECTION

- Confirm that all connections remain tight and all valves are closed.
- Close the on-off valve connected to the purging syringe.
- Open the Summa canister by turning its valve approximately one-half turn.
- Immediately record the vacuum on the gauge (it should stabilize very quickly) and the time. The gauge should measure approximately -30 inches Hg (please note that some gauges may read greater than -30 inches Hg). If the vacuum is less than -27 inches Hg, the canister may not have sufficient vacuum for sampling. In this case, select another canister. If another canister is not available, call the project manager and ask how they would like you to proceed.
- Allow the Summa canister to fill, keeping in mind the amount of time determined for sample collection (i.e., what you told the lab to set for a flow regulator time)
- At the mid-point of the sample collection, record the helium concentration in the shroud. Add additional helium if shroud concentration is below 50%, and record the new reading.
- The vacuum gauge should never drop below -5 inches Hg. If the vacuum readings are not matching up with the expected sampling time (the gauge is dropping faster or slower than expected), you will need to use your best judgment as to when to stop the sample collection (or call the lab or project manager to discuss).
- Once the sample has been collected, close the canister valve, be sure it is tightly closed (but do not over tighten), and record the vacuum reading and time.
- Record the helium concentration in the shroud.
- Remove the gauge and flow regulator and replace the canister fitting.
- Fill out the chain of custody and return the containers to the lab with the original chain of custody. Retain a copy of the chain of custody for the project files.

When collecting 6 L Summa canister samples, it is recommended that you monitor the vacuum gauge during the entire sample duration, which can take up to 50 minutes. If the gauge should drop below -5 inches Hg, the sample may be considered void; this can be prevented by watching the gauge. If the gauge drops to 0 inches Hg the sample will need to be re-taken using a new canister.

Drill Hole Abandonment

Once soil gas sampling is completed, the boring will be abandoned by the licensed drilling subcontractor who completed the borehole following applicable state requirements.

Once sub-slab vapor sampling is completed, the following should occur:

- Remove the water from the water dam.
- Clean out the remaining bentonite, cleaning as much as possible from the floor.
- If the sampling location is for one-time use, deploy the Vapor Pin extraction tool to remove the pin.

- Add a small amount of sand to fill the drill hole approximately 1 to 2 inches below the concrete surface (approximately 1 to 2 inches below the bottom of the “seat”). Do NOT overfill with sand as this may compromise your patch.
- Use the whisk broom to remove any loose material at the surface.
- Fill the upper 1 to 2 inches with a quick setting cement grout. Smooth or feather the surface to help create a bond between the slab and the grout.

If the Vapor Pin or similar equipment is for a permanent installation, the following should occur:

- Place a white cap over the tip of the Vapor Pin.
- Install a permanent cover over the capped Vapor Pin (plastic or metal).

7 POST FIELD ACTIVITIES

- Retain all paperwork provided by the lab, including the packing list and certifications. This information must be retained in the permanent project file.
- Decontaminate reusable fittings owned by PBS following the *Standard Operating Procedure for Vapor Pin Decontamination for Vapor Intrusion Assessments*. This includes the Vapor Pin drill guide and any brushes or other tools used for cleaning.
- Return all rental equipment.

Confirming Helium Detections Meet Regulatory Requirements

- Calculate average helium concentration in shroud by taking two or more readings before, during, and after sampling (be sure that meter is reading in ppm by volume).
- When lab results are received, if helium is detected, use this formula to confirm level of leakage:
Level of leakage = lab-detected concentration / shroud concentration
- Be sure you are using the same units (ppm may not always equal ppmv – check your units).
- Some regulatory guidance documents allow up to 5 to 10% helium within a sample. Be sure to check your state’s guidance for allowable levels. Oregon and Washington both allow up to 5% helium for a valid sample.

METHOD 2 – SEALED TUBING

1 EQUIPMENT LIST

The following table lists standard equipment and tools needed for soil or sub-slab gas sampling. When renting a helium meter, ask the vendor for one that is intended for use in leak detection testing. It should have the ability to purge line quickly (the equipment company may provide a special filter for this) and preferably, a meter with an active pump (as opposed to passive venting). It does not need to be intrinsically safe UNLESS site conditions require this feature.

Equipment to get from lab	• 1 or 6 liter (L) Summa canister. • One extra Summa canister in the event that a canister fails in the field. • Flow regulator (also known as critical orifice) preset by lab for pre-determined
----------------------------------	---

	sampling time. • Vacuum gauge (for verifying vacuum prior to sampling). • Tubing (new for each sample location). Must be Teflon, Nylaflow, Peek, or stainless tubing. Do NOT use polyethylene, silicone, or any other type. • Chain of custody and identification tags. • T-valve (need one for each sampling location, including ferrels and hex nuts for each end of T).
Other equipment	• Purging syringe (calibrated, typically for 50 to 60 milliliters [mL]). • Granular bentonite. • Disposable or washable containers (~16 ounces) for mixing bentonite and/or cement. • Water for mixing bentonite and cement. • Sand. • Silicone tubing. • Weight for shroud. • Helium gas with regulator. • Helium meter (make sure that it measures in ppm by volume). • On-off valve (two per sampling location). • Vapor Pin with a silicon sleeve (or similar equipment). • Vapor Pin tool and hammer for installation and removal (or similar equipment). • Field notebook or field forms. • Helium shroud. • Nuts and ferrels (if you did not receive from lab). • Cap for "shroud air tubing." • Water dam (1.5-inch PVC coupler).
Tools	• Scissors. • Rotomhammer/drill for drilling through concrete. • Drill bits (0.625-inch, 1.5-inch). • Crescent wrench (9/16 inch). • Whisk broom/dust pan. • Wet-dry vacuum. • Extra-thin knife/screwdriver. • Extension cord for rotohammer. • Plumber's wrench for helium regulator.
Supplemental	• Teflon tape (if seal leaks are sustained).

supplies	• Purging pump with tubing (if purging syringe not used) and charging cord.
-----------------	---

2 LABORATORY

The lab will supply the Summa canisters, flow regulators, gauges, and tubing, and can also provide the purging syringe, if needed. Have the equipment arrive TWO business days prior to sampling, if possible. This allows the lab time to express-ship any additional or forgotten equipment.

As soon as the shipment is received, ensure that all equipment was provided and verify the vacuum of all Summa canisters. Order an extra gauge, if needed, to check the canisters for pressure prior to leaving the office. Knowing that the canister has sufficient initial vacuum allows for better trouble shooting in the field.

The following information must be provided to the lab to ensure shipment of the correct equipment.

- Size of canister (400 mL, 1 L, 6 L). A 1 L Summa will require a minimum of two times dilution of reporting limits. If this will cause your sample reporting limits to exceed screening criteria, use a larger Summa canister. You MUST know your reporting limits to determine the canister size.
- Type of canister certification (batch vs individual). Batch certification is usually sufficient for sub-slab or soil gas sampling projects.
- Method reporting limits.
- Tracer gas to be used (the lab must certify container for this prior to shipping).
- Sample time.

Samples should be collected at a rate between 100 and 175 milliliters (mL) per minute (most guidance documents recommend that samples not be collected faster than 200 mL per minute). A flow rate greater than 200 mL/min runs the risk of introducing ambient air dilution to the sample. The sample time for grab samples is calculated by determining an acceptable sample flow rate (perhaps 150 mL per minute) and multiplying that by the sample container size. For a 150 mL per minute rate, a 1 L Summa canister would require approximately seven minutes. A 6 L Summa canister would require 40 minutes.

3 SUB-SLAB GAS INITIAL PROCEDURES

Order equipment as previously identified, and do the following prior to field activities:

- Determine the proposed locations for each sample. Locations should be located at a minimum of 3 feet inside foundation edges or exterior walls to obtain the most representative results.
- Confirm with the property owner/occupant that subsurface utilities will not be impacted when drilling through the slab in these locations.
- Conduct a private utility locates for your locations to check for sub-slab or sub-grade obstructions.
- If possible, determine the slab thickness to confirm that a hand-operated drill can drill through it.
- Determine if carpeting or other flooring will need to be removed prior to drilling, or will require patching.
- Get the lab equipment delivered two days prior to sampling and ensure that all equipment was provided.

Once at the site, sampling should occur as described below.

Drill Hole and Seal Tubing

- Confirm concrete thickness, if possible, so you'll know when to expect the drill bit to break through the bottom of slab.
- Drill a hole using the 0.25-inch or 0.5-inch drill bit. Drill approximately two inches into slab backfill or native material beneath the concrete slab.
- Using a 0.5-inch or 0.75-inch drill bit, overdrill the hole by approximately one inch to create a "seat" for sealing the tubing. The drill bit used for overdrilling should be one size larger than the original hole (0.5-inch for a 0.25-inch initial hole, etc.).
- Use the whisk broom to remove concrete dust or loose material from around the drill hole.
- Test the 0.25-inch tubing to ensure it can be pushed completely down the hole. Once it reaches the bottom, keep track of that tubing length as you pull it back out. Ensure there is no material stuck in the bottom of the tubing (if there is, cut the tubing end off and repeat this step). Re-insert the tubing so that the bottom rests approximately one inch from the drilled bottom, making sure it is below the bottom of the slab. If the tubing rests at the bottom of the hole that is okay.
- Determine the length of 0.25-inch tubing needed to conduct sampling at this location and cut it to that length. Do not forget that there must be enough tubing to go through helium shroud, connect to the purging T-valve and connect to the Summa canister. Be sure to cut the ends straight with no burrs or jagged edges.
- Thread the other tubing end through the helium shroud/stopper, leaving enough tubing within the shroud to allow you to install the sealing material. Cover the loose tubing end with a plastic bag to ensure it remains clean until it is connected to the Summa canister.
- Mix bentonite to an appropriate consistency for sealing.
- Insert bentonite evenly around tubing, making sure it penetrates fully into the larger drill hole. Push down with fingers or appropriate tool to ensure a good seal. Take care not to scrape or puncture the tubing.
- At the surface, mound the bentonite against the tubing and smooth away from it to create a tight seal. It is appropriate to moisten the top of the bentonite mound to aid in creating a good seal.

For temporary holes, allow approximately 20 to 30 minutes for the bentonite to seal and the hole to equilibrate. If collecting sub-slab gas samples at multiple locations, consider performing these initial activities at each location prior to continuing with the sampling.

4 SOIL GAS INITIAL PROCEDURES

Order equipment as previously identified. Prior to field activities, the following should occur:

- Determine the locations and depths for each sample. Locations should be located at a minimum of 3 feet inside foundation edges or exterior walls to obtain the most representative results.
- Determine if equipment, vehicles, or other stored items will need to be moved prior to the field event.
- Arrange for a utility locate.
- Arrange for a driller to deploy a Post Run Tubing (PRT) sample system, or equivalent.

Once at the site, sampling should occur as described below.

Drill Hole and Seal Tubing

- Drill a hole using a PRT system, or equivalent. The bottom of the hole should be at least 5.5 feet below ground surface (bgs).
- Lift up on the drilling rod approximately 6 inches to create a void in the subsurface.
- Insert the screw on end to the 0.25-inch tubing and place down the hole. Once it reaches the bottom, screw the fitting onto the PRT sample point (note: the fitting uses left-hand threads).
- Determine the length of 0.25-inch tubing needed to conduct sampling at this location and cut it to that length. Do not forget that there must be enough tubing to go through the helium shroud, connect to the purging T-valve, and connect to the Summa canister. Be sure to cut the ends straight with no burrs or jagged edges.
- Mix bentonite to appropriate thickness for sealing.
- Insert bentonite evenly around tubing exiting the drill rod, making sure it penetrates fully into the rod. Thread the other tubing end through the helium shroud/stopper. Cover the loose tubing end with a plastic bag to ensure it remains clean until it is connected to the Summa canister.
- Place the shroud over the drill rod and place more bentonite around the base to seal the shroud to the ground.

For temporary holes, allow approximately 20 to 30 minutes for the bentonite to seal and the hole to equilibrate.

5 LEAK DETECTION TESTING

In order to perform the leak detection testing, have the shroud in place with the following setup and procedure:

- Tubing from drill hole.
- Tubing for measuring air within shroud (attach tubing onto appropriate fitting if not attached previously).
- Inlet hose from helium tank.
- If needed, place a brick or other weight on the shroud to prevent it from being moved and compromising the seal integrity.
- Fill the shroud with helium for several seconds and turn off the tank.
- Using the helium meter (meter), measure and record the helium concentration through the shroud air tubing in parts-per-million-volume (ppmv) (or know how to readily convert the reading to ppmv). The target helium concentration is 70 to 90 percent. Remove the meter from the shroud air tubing and cap the tubing. Allow meter to clear back to zero.
- Remove the helium tubing from the shroud and put a cap on the brass air fitting immediately.
- Connect the meter to the drill hole tubing and allow the meter to run for approximately a minute. Measure the helium concentration.
- Spray helium around fittings (T, on-off valve and flow regulator connections to Summa canister) and use the helium meter to monitor if any leaks are associated with these fittings.
- If indicated by elevated readings on the helium meter, make adjustments to seals.

- Once all necessary adjustments have been made, record the helium measurement in the shroud on field sheet following adjustment to seals.

Once the leak detection testing has confirmed the drill-hole seal is sufficient, proceed to sample collection.

6 SAMPLE COLLECTION

Sample Train Assembly and Purging

- Install the T-valve and on-off switch in-line with the sample tubing to allow for purging.
- Connect the gauge and flow regulator to the Summa canister and tubing. Do not overtighten the fittings.
- Record the can and flow regulator serial numbers on the field form.
- Ensure that all connections are tight and all valves are closed.
- Determine the amount of air that requires purging within the sampling tubing.
 - Determine how much tubing you need to purge (round up to whole feet).
 - Multiply the number of feet by the volume of air within one unit foot of tubing (see multipliers below for various tubing sizes).
 - You want to remove a minimum of two purge volumes, so multiply volume calculated by two.

Size of tubing (inches)	Air volume in mL per one unit foot
1/4	9.7
3/8	21.7
1/2	38.6
5/8	60.3
3/4	86.9
1	154.4

- Connect the purging syringe and turn the on-off switch to ON.
- Purge the calculated volume of air. Draw the air slowly through the syringe to minimize the effect of creating a vacuum that could compromise the connections or seals. If your sample collection rate is 150 mL per minute, and you need to purge 50 mL, then take approximately 20 seconds to purge the 50 mL or as slowly as possible.
- If you need to purge more than one syringe volume, complete the first purge, turn the switch on the syringe to OFF, depress the syringe to purge the air out of the syringe, turn syringe valve to ON and repeat the purging process.
- When done purging, turn the on-off switch to OFF.

Sample Collection

- Confirm that all connections remain tight and all valves are closed.
- Open the Summa canister by turning its valve approximately one-half turn.

- Immediately record the vacuum on the gauge (it should stabilize very quickly) and the time. The gauge should measure approximately -30 inches mercury (Hg). If the reading is not close to this value, the canister may not have sufficient vacuum for sampling. In this case, call the lab or select another canister.
- Allow the Summa canister to fill, keeping in mind the amount of time determined for sample collection (i.e., what you told the lab to set for a flow regulator time).
- The vacuum gauge should not drop below 3 inches Hg. If the vacuum readings are not keeping pace with the expected sampling time (either the gauge is dropping faster or slower than expected), you will need to use your best judgment as to when to stop the sample collection (or call the lab or project manager to discuss).
- Once the sample has been collected, record the vacuum reading and time.
- Close the canister valve. Be sure it is tightly closed (do not overtighten).
- Remove the gauge and flow regulator and replace the canister fitting.
- Fill out the chain of custody and return the containers to the lab with the original chain of custody. Retain a copy of the chain of custody for the project files.

When collecting 6L Summa canister samples, it is recommended that you watch the vacuum gauge the entire time (which can be up to 50 minutes). If the gauge should drop below 3 inches Hg, the sample may be considered void; this can be prevented by watching the gauge during sampling. If the gauge drops to 0 inches Hg the sample will need to be re-taken using a new canister.

Drill Hole Abandonment

Once sampling is completed at a sub-slab gas location, the following should occur:

- Clean out the remaining bentonite, scraping as much as possible from the drill hole "seat" and sidewalls (do not push down hole but instead place in bag for disposal).
- Add a small amount of sand to fill the drill hole to approximately two inches below the concrete surface (approximately two inches below the bottom of the "seat"). Do NOT overfill with sand as it may compromise your seal.
- Use the whisk broom to remove any loose material at the surface.
- Fill the upper three inches with a quick setting cement grout. Smooth or feather the surface to help create a bond between the slab and the grout.

For soil gas sampling locations, the drill rig operator should abandon the sample point as required by state regulations (Oregon Administrative Rule 690-240 or Washington Administrative Code 173-160).

POST FIELD ACTIVITIES

Retain all paperwork provided by the lab, including the packing list and certifications. This information must be retained in the permanent project file.

Reusable fittings owned by PBS must be decontaminated following PBS' *Standard Operating Procedure for On-Off Valve Decontamination for Vapor Intrusion Assessments*.

ASSESSING LEAK DETECTION RESULTS

Regulatory guidance in Oregon and Washington allow up to 5 percent helium within a sample. To confirm that helium detections meet this regulatory requirement, the following will occur:

- Calculate average helium concentration in shroud ("shroud concentration") by taking two or more readings before and after sampling (the measurements should have been recorded in ppmv).
- When we receive lab results, if helium is detected, use this formula to confirm level of leakage.
Level of leakage = lab-detected concentration / shroud concentration
- Be sure you are using the same units (ppm may not always equal ppmv: check your units).

Appendix E

Laboratory Analytical Reports

PBS Engineering & Env.- POR

Sample Delivery Group: L1556866
Samples Received: 11/11/2022
Project Number: 24349.000
Description: Baker Truck Corral

Report To: David Rukki
4412 S Corbett Ave
Portland, OR 97239

Entire Report Reviewed By:



Brian Ford
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 National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
MW13-2.5 L1556866-01	7
MW13-5.0 SWI L1556866-02	8
MW14-2.5 L1556866-03	9
MW14-5.0 SWI L1556866-04	10
MW16-2.5 L1556866-05	11
MW16-5.0 SWI L1556866-06	12
MW10-2.5 L1556866-07	13
MW10-7.0 SWI L1556866-08	14
MW8-2.5 L1556866-09	15
MW8-7.0 SWI L1556866-10	16
MW8-15 L1556866-11	17
TRIP BLANK L1556866-13	18
Qc: Quality Control Summary	19
Total Solids by Method 2540 G-2011	19
Metals (ICPMS) by Method 6020B	21
Volatile Organic Compounds (GC) by Method NWTPHGX	22
Volatile Organic Compounds (GC/MS) by Method 8260D	24
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	30
Gl: Glossary of Terms	31
Al: Accreditations & Locations	32
Sc: Sample Chain of Custody	33

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

SAMPLE SUMMARY

MW13-2.5 L1556866-01 Solid

Collected by
NT

Collected date/time
11/07/22 14:45

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961450	27.5	11/07/22 14:45	11/17/22 21:16	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962727	1.1	11/07/22 14:45	11/21/22 02:53	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	10	11/15/22 11:25	11/15/22 20:07	TJD	Mt. Juliet, TN

MW13-5.0 SWI L1556866-02 Solid

Collected by
NT

Collected date/time
11/07/22 15:00

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:36	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	26.5	11/07/22 15:00	11/16/22 18:33	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961443	4.24	11/07/22 15:00	11/17/22 20:54	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 15:34	TJD	Mt. Juliet, TN

MW14-2.5 L1556866-03 Solid

Collected by
NT

Collected date/time
11/08/22 10:00

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	10	11/17/22 16:28	11/17/22 22:11	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	28.2	11/08/22 10:00	11/16/22 18:52	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961443	1.13	11/08/22 10:00	11/17/22 21:13	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 19:15	TJD	Mt. Juliet, TN

MW14-5.0 SWI L1556866-04 Solid

Collected by
NT

Collected date/time
11/08/22 10:30

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	25	11/08/22 10:30	11/16/22 19:13	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961443	1	11/08/22 10:30	11/17/22 21:32	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 15:47	TJD	Mt. Juliet, TN

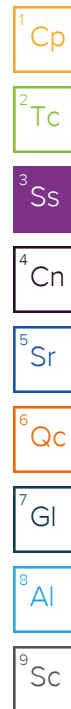
MW16-2.5 L1556866-05 Solid

Collected by
NT

Collected date/time
11/08/22 12:30

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:52	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	25	11/08/22 12:30	11/16/22 19:33	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961443	1	11/08/22 12:30	11/17/22 21:51	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 16:00	TJD	Mt. Juliet, TN



SAMPLE SUMMARY

MW16-5.0 SWI L1556866-06 Solid

Collected by
NT

Collected date/time
11/08/22 12:45

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	25.3	11/08/22 12:45	11/16/22 20:01	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961443	1.01	11/08/22 12:45	11/17/22 22:10	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 16:13	TJD	Mt. Juliet, TN

MW10-2.5 L1556866-07 Solid

Collected by
NT

Collected date/time
11/09/22 07:00

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959059	1	11/15/22 06:59	11/15/22 07:05	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 21:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	28.5	11/09/22 07:00	11/16/22 20:21	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962093	1.14	11/09/22 07:00	11/18/22 13:44	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 19:02	TJD	Mt. Juliet, TN

MW10-7.0 SWI L1556866-08 Solid

Collected by
NT

Collected date/time
11/09/22 07:15

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959060	1	11/15/22 08:09	11/15/22 08:15	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 22:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	30	11/09/22 07:15	11/16/22 20:42	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962093	1.2	11/09/22 07:15	11/18/22 14:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 16:26	TJD	Mt. Juliet, TN

MW8-2.5 L1556866-09 Solid

Collected by
NT

Collected date/time
11/09/22 10:15

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959060	1	11/15/22 08:09	11/15/22 08:15	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 22:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	32.5	11/09/22 10:15	11/16/22 21:03	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962093	1.3	11/09/22 10:15	11/18/22 14:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962727	13	11/09/22 10:15	11/21/22 03:50	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 18:49	TJD	Mt. Juliet, TN

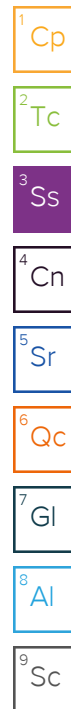
MW8-7.0 SWI L1556866-10 Solid

Collected by
NT

Collected date/time
11/09/22 10:30

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959060	1	11/15/22 08:09	11/15/22 08:15	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961588	5	11/17/22 16:28	11/17/22 22:08	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1960502	25	11/09/22 10:30	11/16/22 21:23	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962093	1	11/09/22 10:30	11/18/22 14:42	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962812	20	11/09/22 10:30	11/20/22 23:31	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 18:36	TJD	Mt. Juliet, TN



SAMPLE SUMMARY

MW8-15 L1556866-11 Solid

Collected by
NT

Collected date/time
11/09/22 10:45

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1959060	1	11/15/22 08:09	11/15/22 08:15	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961450	25	11/09/22 10:45	11/17/22 21:37	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1959340	1	11/15/22 11:25	11/15/22 16:39	TJD	Mt. Juliet, TN

TRIP BLANK L1556866-13 GW

Collected by
NT

Collected date/time
11/09/22 00:00

Received date/time
11/11/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1961728	1	11/18/22 07:08	11/18/22 07:08	ADM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

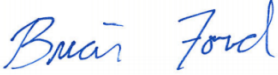
⁷Gl

⁸Al

⁹Sc

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.



Brian Ford
Project Manager

Report Revision History

Level II Report - Version 1: 11/21/22 15:39



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.6		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	3.76		2.28	5	11/17/2022 21:33	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		3.49	27.5	11/17/2022 21:16	WG1961450
(S) a,a,a-Trifluorotoluene(FID)	96.5		77.0-120		11/17/2022 21:16	WG1961450

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.00385		0.00140	1.1	11/21/2022 02:53	WG1962727
1,2-Dibromoethane	ND		0.00349	1.1	11/21/2022 02:53	WG1962727
1,2-Dichloroethane	ND		0.00349	1.1	11/21/2022 02:53	WG1962727
Ethylbenzene	ND		0.00349	1.1	11/21/2022 02:53	WG1962727
Isopropylbenzene	ND		0.00349	1.1	11/21/2022 02:53	WG1962727
Methyl tert-butyl ether	ND		0.00140	1.1	11/21/2022 02:53	WG1962727
Naphthalene	ND		0.0175	1.1	11/21/2022 02:53	WG1962727
n-Propylbenzene	ND		0.00699	1.1	11/21/2022 02:53	WG1962727
Toluene	0.0177		0.00699	1.1	11/21/2022 02:53	WG1962727
1,2,4-Trimethylbenzene	ND		0.00699	1.1	11/21/2022 02:53	WG1962727
1,3,5-Trimethylbenzene	ND		0.00699	1.1	11/21/2022 02:53	WG1962727
Xylenes, Total	0.0172		0.00909	1.1	11/21/2022 02:53	WG1962727
(S) Toluene-d8	103		75.0-131		11/21/2022 02:53	WG1962727
(S) 4-Bromofluorobenzene	96.6		67.0-138		11/21/2022 02:53	WG1962727
(S) 1,2-Dichloroethane-d4	94.3		70.0-130		11/21/2022 02:53	WG1962727

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	48.2		45.7	10	11/15/2022 20:07	WG1959340
Residual Range Organics (RRO)	252		114	10	11/15/2022 20:07	WG1959340
(S) o-Terphenyl	56.4		18.0-148		11/15/2022 20:07	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	64.7		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		3.09	5	11/17/2022 21:36	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		5.46	26.5	11/16/2022 18:33	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	96.9		77.0-120		11/16/2022 18:33	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00874	4.24	11/17/2022 20:54	WG1961443
1,2-Dibromoethane	ND		0.0218	4.24	11/17/2022 20:54	WG1961443
1,2-Dichloroethane	ND		0.0218	4.24	11/17/2022 20:54	WG1961443
Ethylbenzene	ND		0.0218	4.24	11/17/2022 20:54	WG1961443
Isopropylbenzene	ND		0.0218	4.24	11/17/2022 20:54	WG1961443
Methyl tert-butyl ether	ND		0.00874	4.24	11/17/2022 20:54	WG1961443
Naphthalene	ND	J3	0.109	4.24	11/17/2022 20:54	WG1961443
n-Propylbenzene	ND		0.0437	4.24	11/17/2022 20:54	WG1961443
Toluene	ND		0.0437	4.24	11/17/2022 20:54	WG1961443
1,2,4-Trimethylbenzene	ND		0.0437	4.24	11/17/2022 20:54	WG1961443
1,3,5-Trimethylbenzene	ND		0.0437	4.24	11/17/2022 20:54	WG1961443
Xylenes, Total	ND		0.0569	4.24	11/17/2022 20:54	WG1961443
(S) Toluene-d8	106		75.0-131		11/17/2022 20:54	WG1961443
(S) 4-Bromofluorobenzene	101		67.0-138		11/17/2022 20:54	WG1961443
(S) 1,2-Dichloroethane-d4	99.9		70.0-130		11/17/2022 20:54	WG1961443

Sample Narrative:

L1556866-02 WG1961443: Lowest possible dilution due to sample foaming.

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		6.18	1	11/15/2022 15:34	WG1959340
Residual Range Organics (RRO)	ND		15.5	1	11/15/2022 15:34	WG1959340
(S) o-Terphenyl	41.9		18.0-148		11/15/2022 15:34	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	72.5		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	235		5.51	10	11/17/2022 22:11	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

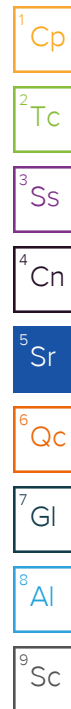
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		4.83	28.2	11/16/2022 18:52	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	92.5		77.0-120		11/16/2022 18:52	WG1960502

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		0.00194	1.13	11/17/2022 21:13	WG1961443
1,2-Dibromoethane	ND		0.00485	1.13	11/17/2022 21:13	WG1961443
1,2-Dichloroethane	ND		0.00485	1.13	11/17/2022 21:13	WG1961443
Ethylbenzene	ND		0.00485	1.13	11/17/2022 21:13	WG1961443
Isopropylbenzene	ND		0.00485	1.13	11/17/2022 21:13	WG1961443
Methyl tert-butyl ether	ND		0.00194	1.13	11/17/2022 21:13	WG1961443
Naphthalene	ND	J3	0.0242	1.13	11/17/2022 21:13	WG1961443
n-Propylbenzene	ND		0.00968	1.13	11/17/2022 21:13	WG1961443
Toluene	ND		0.00968	1.13	11/17/2022 21:13	WG1961443
1,2,4-Trimethylbenzene	ND		0.00968	1.13	11/17/2022 21:13	WG1961443
1,3,5-Trimethylbenzene	ND		0.00968	1.13	11/17/2022 21:13	WG1961443
Xylenes, Total	ND		0.0126	1.13	11/17/2022 21:13	WG1961443
(S) Toluene-d8	102		75.0-131		11/17/2022 21:13	WG1961443
(S) 4-Bromofluorobenzene	99.9		67.0-138		11/17/2022 21:13	WG1961443
(S) 1,2-Dichloroethane-d4	94.0		70.0-130		11/17/2022 21:13	WG1961443

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		5.51	1	11/15/2022 19:15	WG1959340
Residual Range Organics (RRO)	36.0		13.8	1	11/15/2022 19:15	WG1959340
(S) o-Terphenyl	32.9		18.0-148		11/15/2022 19:15	WG1959340



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	62.1		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	ND		3.22	5	11/17/2022 21:40	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

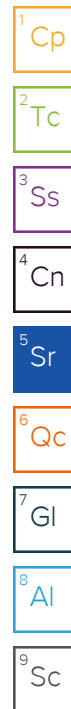
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	ND		5.63	25	11/16/2022 19:13	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	97.5		77.0-120		11/16/2022 19:13	WG1960502

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		0.00225	1	11/17/2022 21:32	WG1961443
1,2-Dibromoethane	ND		0.00563	1	11/17/2022 21:32	WG1961443
1,2-Dichloroethane	ND		0.00563	1	11/17/2022 21:32	WG1961443
Ethylbenzene	ND		0.00563	1	11/17/2022 21:32	WG1961443
Isopropylbenzene	ND		0.00563	1	11/17/2022 21:32	WG1961443
Methyl tert-butyl ether	ND		0.00225	1	11/17/2022 21:32	WG1961443
Naphthalene	ND	J3	0.0282	1	11/17/2022 21:32	WG1961443
n-Propylbenzene	ND		0.0113	1	11/17/2022 21:32	WG1961443
Toluene	ND		0.0113	1	11/17/2022 21:32	WG1961443
1,2,4-Trimethylbenzene	ND		0.0113	1	11/17/2022 21:32	WG1961443
1,3,5-Trimethylbenzene	ND		0.0113	1	11/17/2022 21:32	WG1961443
Xylenes, Total	ND		0.0146	1	11/17/2022 21:32	WG1961443
(S) Toluene-d8	101		75.0-131		11/17/2022 21:32	WG1961443
(S) 4-Bromofluorobenzene	103		67.0-138		11/17/2022 21:32	WG1961443
(S) 1,2-Dichloroethane-d4	90.8		70.0-130		11/17/2022 21:32	WG1961443

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		6.44	1	11/15/2022 15:47	WG1959340
Residual Range Organics (RRO)	ND		16.1	1	11/15/2022 15:47	WG1959340
(S) o-Terphenyl	22.9		18.0-148		11/15/2022 15:47	WG1959340



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	93.5		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.14	5	11/17/2022 21:52	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		2.85	25	11/16/2022 19:33	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	97.8		77.0-120		11/16/2022 19:33	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00114	1	11/17/2022 21:51	WG1961443
1,2-Dibromoethane	ND		0.00285	1	11/17/2022 21:51	WG1961443
1,2-Dichloroethane	ND		0.00285	1	11/17/2022 21:51	WG1961443
Ethylbenzene	ND		0.00285	1	11/17/2022 21:51	WG1961443
Isopropylbenzene	ND		0.00285	1	11/17/2022 21:51	WG1961443
Methyl tert-butyl ether	ND		0.00114	1	11/17/2022 21:51	WG1961443
Naphthalene	ND	J3	0.0142	1	11/17/2022 21:51	WG1961443
n-Propylbenzene	ND		0.00569	1	11/17/2022 21:51	WG1961443
Toluene	ND		0.00569	1	11/17/2022 21:51	WG1961443
1,2,4-Trimethylbenzene	ND		0.00569	1	11/17/2022 21:51	WG1961443
1,3,5-Trimethylbenzene	ND		0.00569	1	11/17/2022 21:51	WG1961443
Xylenes, Total	ND		0.00740	1	11/17/2022 21:51	WG1961443
(S) Toluene-d8	104		75.0-131		11/17/2022 21:51	WG1961443
(S) 4-Bromofluorobenzene	102		67.0-138		11/17/2022 21:51	WG1961443
(S) 1,2-Dichloroethane-d4	93.1		70.0-130		11/17/2022 21:51	WG1961443

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.28	1	11/15/2022 16:00	WG1959340
Residual Range Organics (RRO)	ND		10.7	1	11/15/2022 16:00	WG1959340
(S) o-Terphenyl	51.5		18.0-148		11/15/2022 16:00	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	94.8		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.11	5	11/17/2022 21:55	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

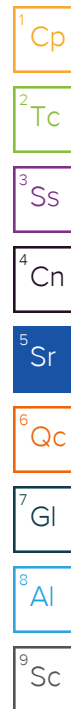
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		2.81	25.3	11/16/2022 20:01	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		11/16/2022 20:01	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00112	1.01	11/17/2022 22:10	WG1961443
1,2-Dibromoethane	ND		0.00281	1.01	11/17/2022 22:10	WG1961443
1,2-Dichloroethane	ND		0.00281	1.01	11/17/2022 22:10	WG1961443
Ethylbenzene	ND		0.00281	1.01	11/17/2022 22:10	WG1961443
Isopropylbenzene	ND		0.00281	1.01	11/17/2022 22:10	WG1961443
Methyl tert-butyl ether	ND		0.00112	1.01	11/17/2022 22:10	WG1961443
Naphthalene	ND	J3	0.0140	1.01	11/17/2022 22:10	WG1961443
n-Propylbenzene	ND		0.00560	1.01	11/17/2022 22:10	WG1961443
Toluene	ND		0.00560	1.01	11/17/2022 22:10	WG1961443
1,2,4-Trimethylbenzene	ND		0.00560	1.01	11/17/2022 22:10	WG1961443
1,3,5-Trimethylbenzene	ND		0.00560	1.01	11/17/2022 22:10	WG1961443
Xylenes, Total	ND		0.00728	1.01	11/17/2022 22:10	WG1961443
(S) Toluene-d8	103		75.0-131		11/17/2022 22:10	WG1961443
(S) 4-Bromofluorobenzene	102		67.0-138		11/17/2022 22:10	WG1961443
(S) 1,2-Dichloroethane-d4	95.3		70.0-130		11/17/2022 22:10	WG1961443

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.22	1	11/15/2022 16:13	WG1959340
Residual Range Organics (RRO)	ND		10.6	1	11/15/2022 16:13	WG1959340
(S) o-Terphenyl	46.2		18.0-148		11/15/2022 16:13	WG1959340



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	94.8		1	11/15/2022 07:05	WG1959059

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	15.3		2.11	5	11/17/2022 21:58	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

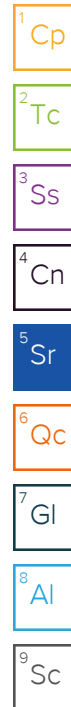
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	5.38		3.14	28.5	11/16/2022 20:21	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	96.4		77.0-120		11/16/2022 20:21	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.0113		0.00126	1.14	11/18/2022 13:44	WG1962093
1,2-Dibromoethane	ND		0.00314	1.14	11/18/2022 13:44	WG1962093
1,2-Dichloroethane	ND		0.00314	1.14	11/18/2022 13:44	WG1962093
Ethylbenzene	0.00906		0.00314	1.14	11/18/2022 13:44	WG1962093
Isopropylbenzene	ND		0.00314	1.14	11/18/2022 13:44	WG1962093
Methyl tert-butyl ether	ND		0.00126	1.14	11/18/2022 13:44	WG1962093
Naphthalene	ND		0.0158	1.14	11/18/2022 13:44	WG1962093
n-Propylbenzene	ND		0.00629	1.14	11/18/2022 13:44	WG1962093
Toluene	0.00732		0.00629	1.14	11/18/2022 13:44	WG1962093
1,2,4-Trimethylbenzene	ND		0.00629	1.14	11/18/2022 13:44	WG1962093
1,3,5-Trimethylbenzene	ND		0.00629	1.14	11/18/2022 13:44	WG1962093
Xylenes, Total	0.0225		0.00817	1.14	11/18/2022 13:44	WG1962093
(S) Toluene-d8	106		75.0-131		11/18/2022 13:44	WG1962093
(S) 4-Bromofluorobenzene	97.3		67.0-138		11/18/2022 13:44	WG1962093
(S) 1,2-Dichloroethane-d4	102		70.0-130		11/18/2022 13:44	WG1962093

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.22	1	11/15/2022 19:02	WG1959340
Residual Range Organics (RRO)	13.8		10.5	1	11/15/2022 19:02	WG1959340
(S) o-Terphenyl	44.9		18.0-148		11/15/2022 19:02	WG1959340



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.2		1	11/15/2022 08:15	WG1959060

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	2.40		2.19	5	11/17/2022 22:01	WG1961588

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		3.53	30	11/16/2022 20:42	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	96.9		77.0-120		11/16/2022 20:42	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00540		0.00141	1.2	11/18/2022 14:03	WG1962093
1,2-Dibromoethane	ND		0.00353	1.2	11/18/2022 14:03	WG1962093
1,2-Dichloroethane	ND		0.00353	1.2	11/18/2022 14:03	WG1962093
Ethylbenzene	ND		0.00353	1.2	11/18/2022 14:03	WG1962093
Isopropylbenzene	ND		0.00353	1.2	11/18/2022 14:03	WG1962093
Methyl tert-butyl ether	ND		0.00141	1.2	11/18/2022 14:03	WG1962093
Naphthalene	ND		0.0177	1.2	11/18/2022 14:03	WG1962093
n-Propylbenzene	ND		0.00706	1.2	11/18/2022 14:03	WG1962093
Toluene	ND		0.00706	1.2	11/18/2022 14:03	WG1962093
1,2,4-Trimethylbenzene	ND		0.00706	1.2	11/18/2022 14:03	WG1962093
1,3,5-Trimethylbenzene	ND		0.00706	1.2	11/18/2022 14:03	WG1962093
Xylenes, Total	ND		0.00918	1.2	11/18/2022 14:03	WG1962093
(S) Toluene-d8	103		75.0-131		11/18/2022 14:03	WG1962093
(S) 4-Bromofluorobenzene	97.8		67.0-138		11/18/2022 14:03	WG1962093
(S) 1,2-Dichloroethane-d4	94.8		70.0-130		11/18/2022 14:03	WG1962093

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.39	1	11/15/2022 16:26	WG1959340
Residual Range Organics (RRO)	ND		11.0	1	11/15/2022 16:26	WG1959340
(S) o-Terphenyl	43.9		18.0-148		11/15/2022 16:26	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	76.4		1	11/15/2022 08:15	WG1959060

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	7.73		2.62	5	11/17/2022 22:05	WG1961588

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	187		5.03	32.5	11/16/2022 21:03	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	111		77.0-120		11/16/2022 21:03	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	1.16		0.00201	1.3	11/18/2022 14:23	WG1962093
1,2-Dibromoethane	ND		0.00503	1.3	11/18/2022 14:23	WG1962093
1,2-Dichloroethane	0.0136		0.00503	1.3	11/18/2022 14:23	WG1962093
Ethylbenzene	5.60		0.0503	13	11/21/2022 03:50	WG1962727
Isopropylbenzene	0.224		0.00503	1.3	11/18/2022 14:23	WG1962093
Methyl tert-butyl ether	ND		0.00201	1.3	11/18/2022 14:23	WG1962093
Naphthalene	0.0296		0.0252	1.3	11/18/2022 14:23	WG1962093
n-Propylbenzene	0.761		0.0101	1.3	11/18/2022 14:23	WG1962093
Toluene	0.170		0.0101	1.3	11/18/2022 14:23	WG1962093
1,2,4-Trimethylbenzene	2.86		0.0101	1.3	11/18/2022 14:23	WG1962093
1,3,5-Trimethylbenzene	0.551		0.0101	1.3	11/18/2022 14:23	WG1962093
Xylenes, Total	18.3		0.131	13	11/21/2022 03:50	WG1962727
(S) Toluene-d8	100		75.0-131		11/18/2022 14:23	WG1962093
(S) Toluene-d8	94.4		75.0-131		11/21/2022 03:50	WG1962727
(S) 4-Bromofluorobenzene	97.5		67.0-138		11/18/2022 14:23	WG1962093
(S) 4-Bromofluorobenzene	109		67.0-138		11/21/2022 03:50	WG1962727
(S) 1,2-Dichloroethane-d4	93.8		70.0-130		11/18/2022 14:23	WG1962093
(S) 1,2-Dichloroethane-d4	107		70.0-130		11/21/2022 03:50	WG1962727

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	6.14		5.24	1	11/15/2022 18:49	WG1959340
Residual Range Organics (RRO)	48.9		13.1	1	11/15/2022 18:49	WG1959340
(S) o-Terphenyl	62.9		18.0-148		11/15/2022 18:49	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.3		1	11/15/2022 08:15	WG1959060

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	3.97		2.14	5	11/17/2022 22:08	WG1961588

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	177		2.98	25	11/16/2022 21:23	WG1960502
(S) a,a,a-Trifluorotoluene(FID)	111		77.0-120		11/16/2022 21:23	WG1960502

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0951		0.00119	1	11/18/2022 14:42	WG1962093
1,2-Dibromoethane	ND		0.00298	1	11/18/2022 14:42	WG1962093
1,2-Dichloroethane	ND		0.00298	1	11/18/2022 14:42	WG1962093
Ethylbenzene	2.42		0.0596	20	11/20/2022 23:31	WG1962812
Isopropylbenzene	0.263		0.00298	1	11/18/2022 14:42	WG1962093
Methyl tert-butyl ether	ND		0.00119	1	11/18/2022 14:42	WG1962093
Naphthalene	0.715		0.298	20	11/20/2022 23:31	WG1962812
n-Propylbenzene	1.17		0.00596	1	11/18/2022 14:42	WG1962093
Toluene	0.0561		0.00596	1	11/18/2022 14:42	WG1962093
1,2,4-Trimethylbenzene	5.81		0.119	20	11/20/2022 23:31	WG1962812
1,3,5-Trimethylbenzene	1.09		0.00596	1	11/18/2022 14:42	WG1962093
Xylenes, Total	6.25		0.155	20	11/20/2022 23:31	WG1962812
(S) Toluene-d8	95.1		75.0-131		11/18/2022 14:42	WG1962093
(S) Toluene-d8	107		75.0-131		11/20/2022 23:31	WG1962812
(S) 4-Bromofluorobenzene	98.6		67.0-138		11/18/2022 14:42	WG1962093
(S) 4-Bromofluorobenzene	110		67.0-138		11/20/2022 23:31	WG1962812
(S) 1,2-Dichloroethane-d4	99.3		70.0-130		11/18/2022 14:42	WG1962093
(S) 1,2-Dichloroethane-d4	81.8		70.0-130		11/20/2022 23:31	WG1962812

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.29	1	11/15/2022 18:36	WG1959340
Residual Range Organics (RRO)	ND		10.7	1	11/15/2022 18:36	WG1959340
(S) o-Terphenyl	47.1		18.0-148		11/15/2022 18:36	WG1959340

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

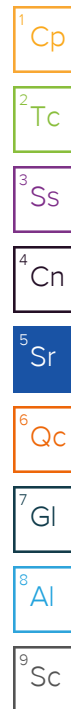
Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.0		1	11/15/2022 08:15	WG1959060

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	14.9		3.15	25	11/17/2022 21:37	WG1961450
(S) o,a,a-Trifluorotoluene(FID)	87.0		77.0-120		11/17/2022 21:37	WG1961450

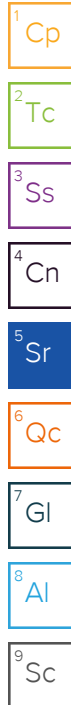
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.49	1	11/15/2022 16:39	WG1959340
Residual Range Organics (RRO)	ND		11.2	1	11/15/2022 16:39	WG1959340
(S) o-Terphenyl	57.2		18.0-148		11/15/2022 16:39	WG1959340



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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	11/18/2022 07:08	WG1961728
Ethylbenzene	ND		1.00	1	11/18/2022 07:08	WG1961728
Toluene	ND		1.00	1	11/18/2022 07:08	WG1961728
Xylenes, Total	ND		3.00	1	11/18/2022 07:08	WG1961728
Methyl tert-butyl ether	ND		1.00	1	11/18/2022 07:08	WG1961728
Naphthalene	ND		5.00	1	11/18/2022 07:08	WG1961728
1,2-Dibromoethane	ND		1.00	1	11/18/2022 07:08	WG1961728
1,2-Dichloroethane	ND		1.00	1	11/18/2022 07:08	WG1961728
Isopropylbenzene	ND		1.00	1	11/18/2022 07:08	WG1961728
n-Propylbenzene	ND		1.00	1	11/18/2022 07:08	WG1961728
1,2,4-Trimethylbenzene	ND		1.00	1	11/18/2022 07:08	WG1961728
1,3,5-Trimethylbenzene	ND	C3	1.00	1	11/18/2022 07:08	WG1961728
(S) Toluene-d8	105		80.0-120		11/18/2022 07:08	WG1961728
(S) 4-Bromofluorobenzene	107		77.0-126		11/18/2022 07:08	WG1961728
(S) 1,2-Dichloroethane-d4	84.3		70.0-130		11/18/2022 07:08	WG1961728



Method Blank (MB)

(MB) R3861257-1 11/15/22 07:05

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00200			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1556866-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1556866-02 11/15/22 07:05 • (DUP) R3861257-3 11/15/22 07:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	64.7	64.9	1	0.316		10

⁷Gl

⁸Al

Laboratory Control Sample (LCS)

(LCS) R3861257-2 11/15/22 07:05

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

⁹Sc

Method Blank (MB)

(MB) R3861278-1 11/15/22 08:15

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00300			

L1556879-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1556879-01 11/15/22 08:15 • (DUP) R3861278-3 11/15/22 08:15

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	97.3	97.6	1	0.342		10

Laboratory Control Sample (LCS)

(LCS) R3861278-2 11/15/22 08:15

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3862481-1 11/17/22 20:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Lead	U		0.0990	2.00

Laboratory Control Sample (LCS)

(LCS) R3862481-2 11/17/22 20:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	100	86.1	86.1	80.0-120	

L1556866-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556866-03 11/17/22 20:18 • (MS) R3862481-5 11/17/22 20:28 • (MSD) R3862481-6 11/17/22 20:31

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 %
Lead	138	221	319	291	71.0	51.2	5	75.0-125	J6	J6	8.96	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3861908-2 11/16/22 14:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHG C6 - C12	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	98.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3861908-1 11/16/22 12:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHG C6 - C12	5.50	5.84	106	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			113	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3862742-3 11/17/22 20:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHG C6 - C12	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120

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

(LCS) R3862742-1 11/17/22 19:13 • (LCSD) R3862742-2 11/17/22 19:46

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 %
TPHG C6 - C12	5.50	5.61	5.38	102	97.8	71.0-124			4.19	20
(S) a,a,a-Trifluorotoluene(FID)				114	113	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) R3862555-3 11/17/22 12:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	0.00153	U	0.000737	0.00250
Isopropylbenzene	0.000625	U	0.000425	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Toluene	0.00150	U	0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	108			75.0-131
(S) 4-Bromofluorobenzene	99.1			67.0-138
(S) 1,2-Dichloroethane-d4	98.8			70.0-130

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

(LCS) R3862555-1 11/17/22 10:25 • (LCSD) R3862555-2 11/17/22 10:44

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	0.135	0.141	108	113	70.0-123			4.35	20
1,2-Dibromoethane	0.125	0.120	0.121	96.0	96.8	74.0-128			0.830	20
1,2-Dichloroethane	0.125	0.131	0.136	105	109	65.0-131			3.75	20
Ethylbenzene	0.125	0.128	0.135	102	108	74.0-126			5.32	20
Isopropylbenzene	0.125	0.123	0.141	98.4	113	72.0-127			13.6	20
Methyl tert-butyl ether	0.125	0.141	0.136	113	109	66.0-132			3.61	20
Naphthalene	0.125	0.118	0.152	94.4	122	59.0-130		J3	25.2	20
n-Propylbenzene	0.125	0.135	0.127	108	102	74.0-126			6.11	20
Toluene	0.125	0.132	0.131	106	105	75.0-121			0.760	20
1,2,4-Trimethylbenzene	0.125	0.128	0.129	102	103	70.0-126			0.778	20
1,3,5-Trimethylbenzene	0.125	0.128	0.120	102	96.0	73.0-127			6.45	20
Xylenes, Total	0.375	0.365	0.400	97.3	107	72.0-127			9.15	20
(S) Toluene-d8				101	95.4	75.0-131				
(S) 4-Bromofluorobenzene				96.9	107	67.0-138				
(S) 1,2-Dichloroethane-d4				110	108	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3863145-3 11/18/22 11:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Isopropylbenzene	U		0.000425	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	103			75.0-131
(S) 4-Bromofluorobenzene	96.9			67.0-138
(S) 1,2-Dichloroethane-d4	94.7			70.0-130

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

(LCS) R3863145-1 11/18/22 10:21 • (LCSD) R3863145-2 11/18/22 10:40

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	0.125	0.129	100	103	70.0-123			3.15	20
1,2-Dibromoethane	0.125	0.108	0.112	86.4	89.6	74.0-128			3.64	20
1,2-Dichloroethane	0.125	0.119	0.122	95.2	97.6	65.0-131			2.49	20
Ethylbenzene	0.125	0.115	0.115	92.0	92.0	74.0-126			0.000	20
Isopropylbenzene	0.125	0.109	0.114	87.2	91.2	72.0-127			4.48	20
Methyl tert-butyl ether	0.125	0.123	0.125	98.4	100	66.0-132			1.61	20
Naphthalene	0.125	0.123	0.128	98.4	102	59.0-130			3.98	20
n-Propylbenzene	0.125	0.124	0.129	99.2	103	74.0-126			3.95	20
Toluene	0.125	0.118	0.123	94.4	98.4	75.0-121			4.15	20
1,2,4-Trimethylbenzene	0.125	0.118	0.124	94.4	99.2	70.0-126			4.96	20
1,3,5-Trimethylbenzene	0.125	0.117	0.124	93.6	99.2	73.0-127			5.81	20
Xylenes, Total	0.375	0.330	0.340	88.0	90.7	72.0-127			2.99	20
(S) Toluene-d8				98.1	101	75.0-131				
(S) 4-Bromofluorobenzene				96.7	98.3	67.0-138				
(S) 1,2-Dichloroethane-d4				106	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1557268-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557268-01 11/18/22 15:01 • (MS) R3863145-4 11/18/22 20:06 • (MSD) R3863145-5 11/18/22 20:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	ND	0.128	0.143	102	114	1	10.0-149			11.1	37
1,2-Dibromoethane	0.125	ND	0.111	0.117	88.8	93.6	1	10.0-148			5.26	34
1,2-Dichloroethane	0.125	ND	0.105	0.112	84.0	89.6	1	10.0-148			6.45	35
Ethylbenzene	0.125	ND	0.127	0.143	102	114	1	10.0-160			11.9	38
Isopropylbenzene	0.125	ND	0.119	0.132	95.2	106	1	10.0-155			10.4	38
Methyl tert-butyl ether	0.125	ND	0.0993	0.110	79.4	88.0	1	11.0-147			10.2	35
Naphthalene	0.125	ND	0.156	0.145	111	102	1	10.0-160			7.31	36
n-Propylbenzene	0.125	ND	0.142	0.150	114	120	1	10.0-158			5.48	38
Toluene	0.125	ND	0.134	0.144	107	115	1	10.0-156			7.19	38
1,2,4-Trimethylbenzene	0.125	ND	0.181	0.153	68.1	45.7	1	10.0-160			16.8	36
1,3,5-Trimethylbenzene	0.125	0.0178	0.139	0.146	111	117	1	10.0-160			4.91	38
Xylenes, Total	0.375	ND	0.321	0.389	78.1	96.2	1	10.0-160			19.2	38
(S) Toluene-d8					100	102		75.0-131				
(S) 4-Bromofluorobenzene					96.0	95.3		67.0-138				
(S) 1,2-Dichloroethane-d4					90.2	94.3		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3863503-3 11/20/22 19:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Isopropylbenzene	U		0.000425	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	104			75.0-131
(S) 4-Bromofluorobenzene	99.0			67.0-138
(S) 1,2-Dichloroethane-d4	88.9			70.0-130

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

(LCS) R3863503-1 11/20/22 18:13 • (LCSD) R3863503-2 11/20/22 18:32

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	0.132	0.122	106	97.6	70.0-123			7.87	20
1,2-Dibromoethane	0.125	0.113	0.106	90.4	84.8	74.0-128			6.39	20
1,2-Dichloroethane	0.125	0.125	0.118	100	94.4	65.0-131			5.76	20
Ethylbenzene	0.125	0.125	0.117	100	93.6	74.0-126			6.61	20
Isopropylbenzene	0.125	0.132	0.124	106	99.2	72.0-127			6.25	20
Methyl tert-butyl ether	0.125	0.131	0.124	105	99.2	66.0-132			5.49	20
Naphthalene	0.125	0.160	0.150	128	120	59.0-130			6.45	20
n-Propylbenzene	0.125	0.119	0.111	95.2	88.8	74.0-126			6.96	20
Toluene	0.125	0.119	0.112	95.2	89.6	75.0-121			6.06	20
1,2,4-Trimethylbenzene	0.125	0.124	0.115	99.2	92.0	70.0-126			7.53	20
1,3,5-Trimethylbenzene	0.125	0.118	0.107	94.4	85.6	73.0-127			9.78	20
Xylenes, Total	0.375	0.363	0.345	96.8	92.0	72.0-127			5.08	20
(S) Toluene-d8				93.9	92.3	75.0-131				
(S) 4-Bromofluorobenzene				106	107	67.0-138				
(S) 1,2-Dichloroethane-d4				109	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3863462-2 11/20/22 20:33

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Ethylbenzene	U		0.000737	0.00250
Naphthalene	U		0.00488	0.0125
1,2,4-Trimethylbenzene	U		0.00158	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	109			75.0-131
(S) 4-Bromofluorobenzene	107			67.0-138
(S) 1,2-Dichloroethane-d4	73.0			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3863462-1 11/20/22 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ethylbenzene	0.125	0.139	111	74.0-126	
Naphthalene	0.125	0.138	110	59.0-130	
1,2,4-Trimethylbenzene	0.125	0.124	99.2	70.0-126	
Xylenes, Total	0.375	0.422	113	72.0-127	
(S) Toluene-d8			104	75.0-131	
(S) 4-Bromofluorobenzene			112	67.0-138	
(S) 1,2-Dichloroethane-d4			91.9	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3863061-3 11/18/22 06:46

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Ethylbenzene	U		0.137	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	103			77.0-126
(S) 1,2-Dichloroethane-d4	84.2			70.0-130

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

(LCS) R3863061-1 11/18/22 05:42 • (LCSD) R3863061-2 11/18/22 06:03

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.53	4.69	90.6	93.8	70.0-123			3.47	20
Ethylbenzene	5.00	4.64	4.82	92.8	96.4	79.0-123			3.81	20
Toluene	5.00	4.51	4.74	90.2	94.8	79.0-120			4.97	20
Xylenes, Total	15.0	13.4	14.5	89.3	96.7	79.0-123			7.89	20
Methyl tert-butyl ether	5.00	4.30	4.49	86.0	89.8	68.0-125			4.32	20
Naphthalene	5.00	4.54	5.07	90.8	101	54.0-135			11.0	20
1,2-Dibromoethane	5.00	4.55	4.86	91.0	97.2	80.0-122			6.59	20
1,2-Dichloroethane	5.00	4.45	4.63	89.0	92.6	70.0-128			3.96	20
Isopropylbenzene	5.00	4.39	4.61	87.8	92.2	76.0-127			4.89	20
n-Propylbenzene	5.00	4.04	4.11	80.8	82.2	77.0-124			1.72	20
1,2,4-Trimethylbenzene	5.00	4.06	4.19	81.2	83.8	76.0-121			3.15	20
1,3,5-Trimethylbenzene	5.00	3.95	4.15	79.0	83.0	76.0-122			4.94	20
(S) Toluene-d8				103	106	80.0-120				
(S) 4-Bromofluorobenzene				102	106	77.0-126				
(S) 1,2-Dichloroethane-d4				86.2	84.0	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3861415-1 11/15/22 15:08

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	55.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3861415-2 11/15/22 15:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	31.0	62.0	50.0-150	
(S) o-Terphenyl			71.6	18.0-148	

L1556866-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556866-01 11/15/22 20:07 • (MS) R3861415-3 11/15/22 20:20 • (MSD) R3861415-4 11/15/22 20:33

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)	56.5	48.2	111	114	112	117	10	50.0-150			2.03	20
(S) o-Terphenyl					65.6	49.4		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

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Sr

6
Qc

7
Gl

8
Al

9
Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

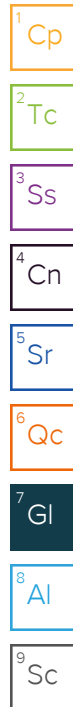
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Abbreviations and Definitions

(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
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.



ACCREDITATIONS & LOCATIONS

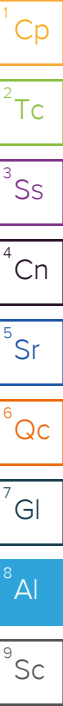
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

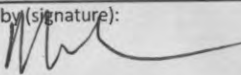
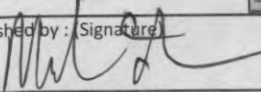
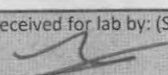
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	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	LA000356
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: PBS Engineering & Env.- POR 4412 S Corbett Ave Portland, OR 97239		Billing Information: Accounts Payable 4412 S Corbett Ave Portland, OR 97239		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page 1 of 2			
Report to: David Rukki Nick Thornton		Email To: David.Rukki@pbsusa.com; Nick.Thornton@pbsu														 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			
Project Description: Baker Truck Corral		City/State Collected: OR		Please Circle: PT MT CT ET												SDG # 1556866 C036			
Phone: 503-248-1939		Client Project # 24349.000		Lab Project # PBSENGPOR-24349000												Acctnum: PBSENGPOR Template: T219243 Prelogin: P961098 PM: 110 - Brian Ford PB:			
Collected by (print): NT		Site/Facility ID #		P.O. #												Shipped Via:			
Collected by (signature): 		Rush? (Lab MUST Be Notified) Same Day Five Day Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		Quote #												Remarks			
Immediately Packed on Ice N ☐ Y ☒		Date Results Needed		No. of Cntrs												Sample # (lab only)			
Sample ID		Comp/Grab		Matrix *		Depth		Date		Time									
MW13-2.5				SS				11/7/22		1445		3		X		X			
MW13-5.0 SWI				SS				11/7/22		1500		2		X		X			
MW14-2.5				SS				11/8/22		1000		2		X		X			
MW14-5.0 SWI				SS				11/8/22		1030		2		X		X			
MW16-2.5				SS				11/8/22		1230		2		X		X			
MW16-5.0 SWI				SS				11/8/22		1245		2		X		X			
MW10-2.5				SS				11/9/22		0700		2		X		X			
MW10-7.0 SWI				SS				11/9/22		0715		2		X		X			
MW8-2.5				SS				11/9/22		1015		2		X		X			
MW8-7.0 SWI				SS				11/9/22		1030		32		X		X			
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other		Remarks:		pH _____ Temp _____ Flow _____ Other _____												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			
Samples returned via: ☒ UPS ☒ FedEx ☐ Courier		Tracking # 6126 6531 6067																	
Relinquished by: (Signature) 		Date: 11/9/22		Time: 1500		Received by: (Signature)		Trip Blank Received: ☒ Yes/ No HCL / MeOH TBR											
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Temp: 5.4 °C 61/40=2.1 25											
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature) 		Date: 11/11 Time: 0900											
								Hold:		Condition: NCF / OK									

Company Name/Address:
PBS Engineering & Env.- POR

4412 S Corbett Ave
Portland, OR 97239

Billing Information:

Accounts Payable
4412 S Corbett Ave
Portland, OR 97239

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Report to:
David Rukki Nick Thornton

Email To:
David.Rukki@pbsuse.com; Nick.Thornton@pbsu

Project Description:
Baker Truck Corral

City/State
Collected: OR

Please Circle:
PT MT CT ET

Phone: 503-248-1939

Client Project #
24349.000

Lab Project #
PBSENGPOR-24349000

Collected by (print):
NT

Site/Facility ID #

P.O. #

Collected by (signature):

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

Quote #

Date Results Needed

No.
of
Cnts

Immediately
Packed on Ice N Y X

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts	NWTPHDX w/ silica 8ozClr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	PAHs 8270ESIM 8ozClr-NoPres	RCRA8 Metals 6020 8ozClr-NoPres	VOCs 8260D 40mlAmb/MeOH10ml/Syr								
MW8-15	G	SS		11/9/22	1045	2	X	X											
SED-comp	Comp	SS		11/9/22	1230	2	X	X											
Trip Blank		SS									X								
		SS																	
		SS																	
		SS																	
		SS																	
		SS																	
		SS																	
		SS																	
		SS																	

* 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 #
6126 6531 6067

Relinquished by: (Signature)

Date:
11/9/22

Time:
1500

Received by: (Signature)

Trip Blank Received: Yes No
HCB/ MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp:
11.1 to 21.1 °C

Bottles Received: 25

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date:
11/11

Time:
0900

Hold:

Condition:
NCF / OK

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

PBS Engineering & Env.- POR

Sample Delivery Group: L1558011
Samples Received: 11/15/2022
Project Number: 24349.000
Description: Baker Truck Corral

Report To: David Rukki
4412 S Corbett Ave
Portland, OR 97239

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Entire Report Reviewed By:



Brian Ford
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 National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	7
Sr: Sample Results	8
MW2-2.5 L1558011-01	8
MW2-5.0SWI L1558011-02	9
MW4-2.5 L1558011-03	10
MW4-5.0SWI L1558011-04	11
MW4-15 L1558011-05	12
MW5-2.5 L1558011-06	13
MW5-7.0SWI L1558011-07	14
MW1-2.5 L1558011-08	15
MW1-5.0SWI L1558011-09	16
MW1-13.0 L1558011-10	17
MW7-2.5 L1558011-11	18
MW7-7.5SWI L1558011-12	19
MW3-2.5 L1558011-13	20
MW3-13.0SWI L1558011-14	21
MW15-2.5 L1558011-15	22
MW15-13.0SWI L1558011-16	23
MW9-2.5 L1558011-17	24
MW9-7.0SWI L1558011-18	25
TB L1558011-19	26
MW2-15.0 L1558011-20	27
Qc: Quality Control Summary	28
Total Solids by Method 2540 G-2011	28
Metals (ICPMS) by Method 6020B	31
Volatile Organic Compounds (GC) by Method NWTPHGX	34
Volatile Organic Compounds (GC/MS) by Method 8260D	37
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	40
Gl: Glossary of Terms	42
Al: Accreditations & Locations	44
Sc: Sample Chain of Custody	45

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

SAMPLE SUMMARY

MW2-2.5 L1558011-01 Solid

Collected by
NT

Collected date/time
11/09/22 14:45

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961432	5	11/28/22 17:46	11/29/22 21:54	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	25	11/09/22 14:45	11/18/22 19:21	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/09/22 14:45	11/18/22 16:14	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:05	JAS	Mt. Juliet, TN

MW2-5.0SWI L1558011-02 Solid

Collected by
NT

Collected date/time
11/09/22 15:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961432	5	11/28/22 17:46	11/29/22 21:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	25	11/09/22 15:00	11/18/22 19:42	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/09/22 15:00	11/18/22 16:34	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:18	JAS	Mt. Juliet, TN

MW4-2.5 L1558011-03 Solid

Collected by
NT

Collected date/time
11/09/22 15:15

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961432	5	11/28/22 17:46	11/29/22 22:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	25	11/09/22 15:15	11/18/22 20:02	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/09/22 15:15	11/18/22 16:53	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 18:08	JAS	Mt. Juliet, TN

MW4-5.0SWI L1558011-04 Solid

Collected by
NT

Collected date/time
11/10/22 11:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:02	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	25	11/10/22 11:00	11/18/22 20:23	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/10/22 11:00	11/18/22 17:12	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:43	JAS	Mt. Juliet, TN

MW4-15 L1558011-05 Solid

Collected by
NT

Collected date/time
11/10/22 11:45

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	25	11/10/22 11:45	11/18/22 20:43	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:18	JAS	Mt. Juliet, TN

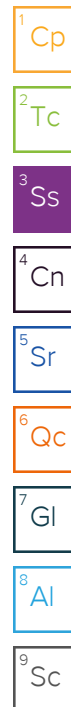
MW5-2.5 L1558011-06 Solid

Collected by
NT

Collected date/time
11/10/22 16:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1961589	26	11/10/22 16:00	11/18/22 21:04	ACG	Mt. Juliet, TN



SAMPLE SUMMARY

MW5-2.5 L1558011-06 Solid

Collected by
NT

Collected date/time
11/10/22 16:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1.04	11/10/22 16:00	11/18/22 17:31	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:55	JAS	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

MW5-7.0SWI L1558011-07 Solid

Collected by
NT

Collected date/time
11/10/22 16:15

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:08	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	250	11/10/22 16:15	11/21/22 17:48	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/10/22 16:15	11/18/22 17:50	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:55	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	50	11/18/22 10:48	11/19/22 09:46	JAS	Mt. Juliet, TN

Collected by
NT

Collected date/time
11/11/22 08:45

Received date/time
11/15/22 09:00

MW1-2.5 L1558011-08 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961432	5	11/28/22 17:46	11/29/22 20:13	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	250	11/11/22 08:45	11/21/22 18:10	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/11/22 08:45	11/18/22 18:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	10	11/11/22 08:45	11/24/22 04:35	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 18:08	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	5	11/18/22 10:48	11/19/22 09:34	JAS	Mt. Juliet, TN

Collected by
NT

Collected date/time
11/11/22 09:30

Received date/time
11/15/22 09:00

MW1-5.0SWI L1558011-09 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:12	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	200	11/11/22 09:30	11/21/22 18:33	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1	11/11/22 09:30	11/24/22 02:06	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:43	JAS	Mt. Juliet, TN

Collected by
NT

Collected date/time
11/11/22 10:00

Received date/time
11/15/22 09:00

MW1-13.0 L1558011-10 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	100	11/11/22 10:00	11/21/22 18:56	BAM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:30	JAS	Mt. Juliet, TN

Collected by
NT

Collected date/time
11/11/22 12:30

Received date/time
11/15/22 09:00

MW7-2.5 L1558011-11 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:23	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	100	11/11/22 12:30	11/21/22 19:18	BAM	Mt. Juliet, TN

SAMPLE SUMMARY

MW7-2.5 L1558011-11 Solid

				Collected by NT	Collected date/time 11/11/22 12:30	Received date/time 11/15/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/11/22 12:30	11/18/22 18:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1	11/11/22 12:30	11/24/22 02:28	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1961671	1	11/18/22 10:48	11/18/22 17:30	JAS	Mt. Juliet, TN

MW7-7.5SWI L1558011-12 Solid

				Collected by NT	Collected date/time 11/11/22 12:45	Received date/time 11/15/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:27	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962786	106	11/11/22 12:45	11/21/22 19:41	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1.06	11/11/22 12:45	11/18/22 19:06	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1.06	11/11/22 12:45	11/24/22 02:49	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 06:16	TJD	Mt. Juliet, TN

MW3-2.5 L1558011-13 Solid

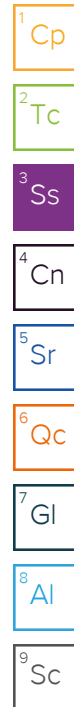
				Collected by NT	Collected date/time 11/11/22 16:00	Received date/time 11/15/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	25	11/11/22 16:00	11/19/22 00:45	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/11/22 16:00	11/18/22 19:25	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1	11/11/22 16:00	11/24/22 03:10	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 06:30	TJD	Mt. Juliet, TN

MW3-13.0SWI L1558011-14 Solid

				Collected by NT	Collected date/time 11/11/22 16:15	Received date/time 11/15/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	26.5	11/11/22 16:15	11/19/22 01:07	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1.06	11/11/22 16:15	11/18/22 19:44	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1.06	11/11/22 16:15	11/24/22 03:32	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 06:44	TJD	Mt. Juliet, TN

MW15-2.5 L1558011-15 Solid

				Collected by NT	Collected date/time 11/12/22 08:00	Received date/time 11/15/22 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:37	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	25	11/12/22 08:00	11/19/22 01:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/12/22 08:00	11/18/22 20:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1	11/12/22 08:00	11/24/22 03:53	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 08:49	JAS	Mt. Juliet, TN



SAMPLE SUMMARY

MW15-13.0SWI L1558011-16 Solid

Collected by
NT

Collected date/time
11/12/22 08:15

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1966023	5	11/28/22 16:36	11/28/22 21:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	25	11/12/22 08:15	11/19/22 01:53	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/12/22 08:15	11/18/22 20:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1964499	1	11/12/22 08:15	11/24/22 04:14	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 06:58	TJD	Mt. Juliet, TN

MW9-2.5 L1558011-17 Solid

Collected by
NT

Collected date/time
11/12/22 11:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961559	5	11/22/22 13:25	11/29/22 18:47	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	25	11/12/22 11:00	11/19/22 02:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/12/22 11:00	11/18/22 20:41	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 07:11	TJD	Mt. Juliet, TN

MW9-7.0SWI L1558011-18 Solid

Collected by
NT

Collected date/time
11/12/22 11:15

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960385	1	11/16/22 15:21	11/16/22 15:49	CMK	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1961559	5	11/22/22 13:25	11/29/22 18:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1962273	25	11/12/22 11:15	11/19/22 02:38	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962211	1	11/12/22 11:15	11/18/22 21:00	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 07:25	TJD	Mt. Juliet, TN

TB L1558011-19 GW

Collected by
NT

Collected date/time
11/09/22 00:00

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1962293	1	11/21/22 01:04	11/21/22 01:04	ACG	Mt. Juliet, TN

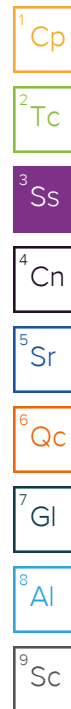
MW2-15.0 L1558011-20 Solid

Collected by
NT

Collected date/time
11/09/22 15:15

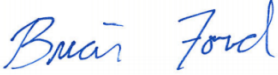
Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1961083	1	11/17/22 08:48	11/17/22 08:54	CMK	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1962628	1	11/20/22 20:13	11/21/22 07:39	TJD	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.



Brian Ford
Project Manager

Report Revision History

Level II Report - Version 1: 11/30/22 12:22



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	65.2		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	6.12		3.07	5	11/29/2022 21:54	WG1961432

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	9.78		5.28	25	11/18/2022 19:21	WG1961589
(S) a,a,a-Trifluorotoluene(FID)	98.0		77.0-120		11/18/2022 19:21	WG1961589

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.151		0.00211	1	11/18/2022 16:14	WG1962211
1,2-Dibromoethane	ND		0.00528	1	11/18/2022 16:14	WG1962211
1,2-Dichloroethane	ND		0.00528	1	11/18/2022 16:14	WG1962211
Ethylbenzene	0.0105		0.00528	1	11/18/2022 16:14	WG1962211
Isopropylbenzene	0.0202	C5	0.00528	1	11/18/2022 16:14	WG1962211
Methyl tert-butyl ether	ND		0.00211	1	11/18/2022 16:14	WG1962211
Naphthalene	ND	J3	0.0264	1	11/18/2022 16:14	WG1962211
n-Propylbenzene	0.0513		0.0106	1	11/18/2022 16:14	WG1962211
Toluene	ND		0.0106	1	11/18/2022 16:14	WG1962211
1,2,4-Trimethylbenzene	0.0116		0.0106	1	11/18/2022 16:14	WG1962211
1,3,5-Trimethylbenzene	ND		0.0106	1	11/18/2022 16:14	WG1962211
Xylenes, Total	0.0955		0.0137	1	11/18/2022 16:14	WG1962211
(S) Toluene-d8	112		75.0-131		11/18/2022 16:14	WG1962211
(S) 4-Bromofluorobenzene	101		67.0-138		11/18/2022 16:14	WG1962211
(S) 1,2-Dichloroethane-d4	87.4		70.0-130		11/18/2022 16:14	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		6.14	1	11/18/2022 17:05	WG1961671
Residual Range Organics (RRO)	ND		15.3	1	11/18/2022 17:05	WG1961671
(S) o-Terphenyl	45.6		18.0-148		11/18/2022 17:05	WG1961671

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	90.0		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.22	5	11/29/2022 21:58	WG1961432

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		3.10	25	11/18/2022 19:42	WG1961589
(S) a,a,a-Trifluorotoluene(FID)	97.9		77.0-120		11/18/2022 19:42	WG1961589

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.0145		0.00124	1	11/18/2022 16:34	WG1962211
1,2-Dibromoethane	ND		0.00310	1	11/18/2022 16:34	WG1962211
1,2-Dichloroethane	ND		0.00310	1	11/18/2022 16:34	WG1962211
Ethylbenzene	0.00354		0.00310	1	11/18/2022 16:34	WG1962211
Isopropylbenzene	0.00317	C5	0.00310	1	11/18/2022 16:34	WG1962211
Methyl tert-butyl ether	ND		0.00124	1	11/18/2022 16:34	WG1962211
Naphthalene	ND	J3	0.0155	1	11/18/2022 16:34	WG1962211
n-Propylbenzene	0.0103		0.00621	1	11/18/2022 16:34	WG1962211
Toluene	ND		0.00621	1	11/18/2022 16:34	WG1962211
1,2,4-Trimethylbenzene	ND		0.00621	1	11/18/2022 16:34	WG1962211
1,3,5-Trimethylbenzene	ND		0.00621	1	11/18/2022 16:34	WG1962211
Xylenes, Total	0.00952		0.00807	1	11/18/2022 16:34	WG1962211
(S) Toluene-d8	110		75.0-131		11/18/2022 16:34	WG1962211
(S) 4-Bromofluorobenzene	101		67.0-138		11/18/2022 16:34	WG1962211
(S) 1,2-Dichloroethane-d4	89.0		70.0-130		11/18/2022 16:34	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.44	1	11/18/2022 17:18	WG1961671
Residual Range Organics (RRO)	ND		11.1	1	11/18/2022 17:18	WG1961671
(S) o-Terphenyl	70.6		18.0-148		11/18/2022 17:18	WG1961671

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	70.0		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	25.1		2.86	5	11/29/2022 22:01	WG1961432

Volatile Organic Compounds (GC) by Method NWTPHGX

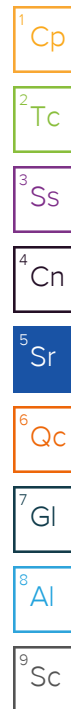
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		4.76	25	11/18/2022 20:02	WG1961589
(S) a,a,a-Trifluorotoluene(FID)	96.0		77.0-120		11/18/2022 20:02	WG1961589

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.0714		0.00190	1	11/18/2022 16:53	WG1962211
1,2-Dibromoethane	ND		0.00476	1	11/18/2022 16:53	WG1962211
1,2-Dichloroethane	ND		0.00476	1	11/18/2022 16:53	WG1962211
Ethylbenzene	ND		0.00476	1	11/18/2022 16:53	WG1962211
Isopropylbenzene	ND		0.00476	1	11/18/2022 16:53	WG1962211
Methyl tert-butyl ether	ND		0.00190	1	11/18/2022 16:53	WG1962211
Naphthalene	ND	J3	0.0238	1	11/18/2022 16:53	WG1962211
n-Propylbenzene	ND		0.00952	1	11/18/2022 16:53	WG1962211
Toluene	0.0255		0.00952	1	11/18/2022 16:53	WG1962211
1,2,4-Trimethylbenzene	ND		0.00952	1	11/18/2022 16:53	WG1962211
1,3,5-Trimethylbenzene	ND		0.00952	1	11/18/2022 16:53	WG1962211
Xylenes, Total	0.0457		0.0124	1	11/18/2022 16:53	WG1962211
(S) Toluene-d8	113		75.0-131		11/18/2022 16:53	WG1962211
(S) 4-Bromofluorobenzene	102		67.0-138		11/18/2022 16:53	WG1962211
(S) 1,2-Dichloroethane-d4	83.6		70.0-130		11/18/2022 16:53	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		5.71	1	11/18/2022 18:08	WG1961671
Residual Range Organics (RRO)	ND		14.3	1	11/18/2022 18:08	WG1961671
(S) o-Terphenyl	59.3		18.0-148		11/18/2022 18:08	WG1961671



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	88.5		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	6.47		2.26	5	11/28/2022 21:02	WG1966023

Volatile Organic Compounds (GC) by Method NWTPHGX

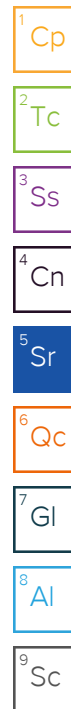
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		3.30	25	11/18/2022 20:23	WG1961589
(S) a,a,a-Trifluorotoluene(FID)	96.8		77.0-120		11/18/2022 20:23	WG1961589

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.00721		0.00132	1	11/18/2022 17:12	WG1962211
1,2-Dibromoethane	ND		0.00330	1	11/18/2022 17:12	WG1962211
1,2-Dichloroethane	ND		0.00330	1	11/18/2022 17:12	WG1962211
Ethylbenzene	ND		0.00330	1	11/18/2022 17:12	WG1962211
Isopropylbenzene	ND		0.00330	1	11/18/2022 17:12	WG1962211
Methyl tert-butyl ether	ND		0.00132	1	11/18/2022 17:12	WG1962211
Naphthalene	ND	J3	0.0165	1	11/18/2022 17:12	WG1962211
n-Propylbenzene	ND		0.00660	1	11/18/2022 17:12	WG1962211
Toluene	ND		0.00660	1	11/18/2022 17:12	WG1962211
1,2,4-Trimethylbenzene	ND		0.00660	1	11/18/2022 17:12	WG1962211
1,3,5-Trimethylbenzene	ND		0.00660	1	11/18/2022 17:12	WG1962211
Xylenes, Total	ND		0.00859	1	11/18/2022 17:12	WG1962211
(S) Toluene-d8	117		75.0-131		11/18/2022 17:12	WG1962211
(S) 4-Bromofluorobenzene	97.9		67.0-138		11/18/2022 17:12	WG1962211
(S) 1,2-Dichloroethane-d4	86.1		70.0-130		11/18/2022 17:12	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.52	1	11/18/2022 17:43	WG1961671
Residual Range Organics (RRO)	ND		11.3	1	11/18/2022 17:43	WG1961671
(S) o-Terphenyl	80.5		18.0-148		11/18/2022 17:43	WG1961671



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	91.7		1	11/16/2022 16:18	WG1960384

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		2.96	25	11/18/2022 20:43	WG1961589
(S) o,a,a-Trifluorotoluene(FID)	97.5		77.0-120		11/18/2022 20:43	WG1961589

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.36	1	11/18/2022 17:18	WG1961671
Residual Range Organics (RRO)	ND		10.9	1	11/18/2022 17:18	WG1961671
(S) o-Terphenyl	75.6		18.0-148		11/18/2022 17:18	WG1961671

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.8		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	3.66		2.36	5	11/28/2022 21:05	WG1966023

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		3.52	26	11/18/2022 21:04	WG1961589
(S) a,a,a-Trifluorotoluene(FID)	97.4		77.0-120		11/18/2022 21:04	WG1961589

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00446		0.00141	1.04	11/18/2022 17:31	WG1962211
1,2-Dibromoethane	ND		0.00352	1.04	11/18/2022 17:31	WG1962211
1,2-Dichloroethane	ND		0.00352	1.04	11/18/2022 17:31	WG1962211
Ethylbenzene	ND		0.00352	1.04	11/18/2022 17:31	WG1962211
Isopropylbenzene	ND		0.00352	1.04	11/18/2022 17:31	WG1962211
Methyl tert-butyl ether	ND		0.00141	1.04	11/18/2022 17:31	WG1962211
Naphthalene	ND	J3	0.0176	1.04	11/18/2022 17:31	WG1962211
n-Propylbenzene	ND		0.00703	1.04	11/18/2022 17:31	WG1962211
Toluene	ND		0.00703	1.04	11/18/2022 17:31	WG1962211
1,2,4-Trimethylbenzene	ND		0.00703	1.04	11/18/2022 17:31	WG1962211
1,3,5-Trimethylbenzene	ND		0.00703	1.04	11/18/2022 17:31	WG1962211
Xylenes, Total	ND		0.00914	1.04	11/18/2022 17:31	WG1962211
(S) Toluene-d8	115		75.0-131		11/18/2022 17:31	WG1962211
(S) 4-Bromofluorobenzene	99.6		67.0-138		11/18/2022 17:31	WG1962211
(S) 1,2-Dichloroethane-d4	80.5		70.0-130		11/18/2022 17:31	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	163		4.72	1	11/18/2022 17:55	WG1961671
Residual Range Organics (RRO)	ND		11.8	1	11/18/2022 17:55	WG1961671
(S) o-Terphenyl	95.0		18.0-148		11/18/2022 17:55	WG1961671

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.3		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	ND		2.19	5	11/28/2022 21:08	WG1966023

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	358		29.8	250	11/21/2022 17:48	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	98.6		77.0-120		11/21/2022 17:48	WG1962786

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

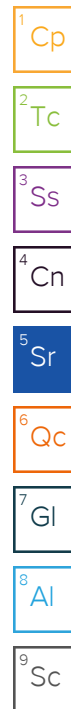
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0863		0.00119	1	11/18/2022 17:50	WG1962211
1,2-Dibromoethane	ND		0.00298	1	11/18/2022 17:50	WG1962211
1,2-Dichloroethane	ND		0.00298	1	11/18/2022 17:50	WG1962211
Ethylbenzene	0.00516		0.00298	1	11/18/2022 17:50	WG1962211
Isopropylbenzene	0.451	C5	0.00298	1	11/18/2022 17:50	WG1962211
Methyl tert-butyl ether	ND		0.00119	1	11/18/2022 17:50	WG1962211
Naphthalene	0.0169	J3	0.0149	1	11/18/2022 17:50	WG1962211
n-Propylbenzene	1.23		0.00596	1	11/18/2022 17:50	WG1962211
Toluene	0.0325		0.00596	1	11/18/2022 17:50	WG1962211
1,2,4-Trimethylbenzene	0.0157		0.00596	1	11/18/2022 17:50	WG1962211
1,3,5-Trimethylbenzene	ND		0.00596	1	11/18/2022 17:50	WG1962211
Xylenes, Total	0.0129		0.00775	1	11/18/2022 17:50	WG1962211
(S) Toluene-d8	105		75.0-131		11/18/2022 17:50	WG1962211
(S) 4-Bromofluorobenzene	161	J1	67.0-138		11/18/2022 17:50	WG1962211
(S) 1,2-Dichloroethane-d4	81.6		70.0-130		11/18/2022 17:50	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	3870		219	50	11/19/2022 09:46	WG1961671
Residual Range Organics (RRO)	59.1		11.0	1	11/18/2022 17:55	WG1961671
(S) o-Terphenyl	0.000	J2	18.0-148		11/18/2022 17:55	WG1961671
(S) o-Terphenyl	0.000	J7	18.0-148		11/19/2022 09:46	WG1961671

Sample Narrative:

L1558011-07 WG1961671: Surrogate failure due to matrix interference



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.6		1	11/16/2022 16:18	WG1960384

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	2.63		2.26	5	11/29/2022 20:13	WG1961432

Volatile Organic Compounds (GC) by Method NWTPHGX

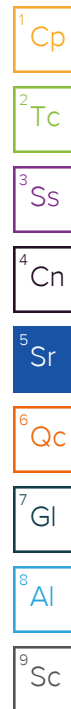
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Gasoline Range Organics-NWTPH	448		32.6	250	11/21/2022 18:10	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	99.1		77.0-120		11/21/2022 18:10	WG1962786

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00550		0.00130	1	11/18/2022 18:09	WG1962211
1,2-Dibromoethane	ND		0.00326	1	11/18/2022 18:09	WG1962211
1,2-Dichloroethane	0.00470		0.00326	1	11/18/2022 18:09	WG1962211
Ethylbenzene	0.503		0.00326	1	11/18/2022 18:09	WG1962211
Isopropylbenzene	1.06	C5	0.00326	1	11/18/2022 18:09	WG1962211
Methyl tert-butyl ether	ND		0.00130	1	11/18/2022 18:09	WG1962211
Naphthalene	0.257	J3	0.0163	1	11/18/2022 18:09	WG1962211
n-Propylbenzene	8.10		0.0651	10	11/24/2022 04:35	WG1964499
Toluene	ND		0.00651	1	11/18/2022 18:09	WG1962211
1,2,4-Trimethylbenzene	0.0645		0.00651	1	11/18/2022 18:09	WG1962211
1,3,5-Trimethylbenzene	0.0955		0.00651	1	11/18/2022 18:09	WG1962211
Xylenes, Total	0.0819		0.00847	1	11/18/2022 18:09	WG1962211
(S) Toluene-d8	84.5		75.0-131		11/18/2022 18:09	WG1962211
(S) Toluene-d8	108		75.0-131		11/24/2022 04:35	WG1964499
(S) 4-Bromofluorobenzene	92.6		67.0-138		11/18/2022 18:09	WG1962211
(S) 4-Bromofluorobenzene	107		67.0-138		11/24/2022 04:35	WG1964499
(S) 1,2-Dichloroethane-d4	81.7		70.0-130		11/18/2022 18:09	WG1962211
(S) 1,2-Dichloroethane-d4	94.8		70.0-130		11/24/2022 04:35	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	454		22.6	5	11/19/2022 09:34	WG1961671
Residual Range Organics (RRO)	17.7		11.3	1	11/18/2022 18:08	WG1961671
(S) o-Terphenyl	114		18.0-148		11/19/2022 09:34	WG1961671
(S) o-Terphenyl	109		18.0-148		11/18/2022 18:08	WG1961671



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.3		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.24	5	11/28/2022 21:12	WG1966023

Volatile Organic Compounds (GC) by Method NWTPHGX

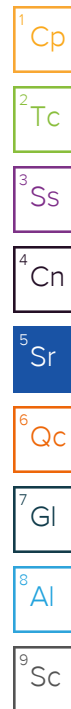
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	32.9		24.9	200	11/21/2022 18:33	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		11/21/2022 18:33	WG1962786

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.00211		0.00125	1	11/24/2022 02:06	WG1964499
1,2-Dibromoethane	ND		0.00312	1	11/24/2022 02:06	WG1964499
1,2-Dichloroethane	ND		0.00312	1	11/24/2022 02:06	WG1964499
Ethylbenzene	0.0122		0.00312	1	11/24/2022 02:06	WG1964499
Isopropylbenzene	0.0178		0.00312	1	11/24/2022 02:06	WG1964499
Methyl tert-butyl ether	ND		0.00125	1	11/24/2022 02:06	WG1964499
Naphthalene	0.0269		0.0156	1	11/24/2022 02:06	WG1964499
n-Propylbenzene	0.0902		0.00623	1	11/24/2022 02:06	WG1964499
Toluene	0.00867		0.00623	1	11/24/2022 02:06	WG1964499
1,2,4-Trimethylbenzene	ND		0.00623	1	11/24/2022 02:06	WG1964499
1,3,5-Trimethylbenzene	ND		0.00623	1	11/24/2022 02:06	WG1964499
Xylenes, Total	0.0174		0.00810	1	11/24/2022 02:06	WG1964499
(S) Toluene-d8	116		75.0-131		11/24/2022 02:06	WG1964499
(S) 4-Bromofluorobenzene	98.9		67.0-138		11/24/2022 02:06	WG1964499
(S) 1,2-Dichloroethane-d4	78.4		70.0-130		11/24/2022 02:06	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	10.2		4.48	1	11/18/2022 17:43	WG1961671
Residual Range Organics (RRO)	ND		11.2	1	11/18/2022 17:43	WG1961671
(S) o-Terphenyl	56.0		18.0-148		11/18/2022 17:43	WG1961671



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.9		1	11/16/2022 15:49	WG1960385

¹Cp

²Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		12.8	100	11/21/2022 18:56	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		11/21/2022 18:56	WG1962786

³Ss

⁴Cn

Sample Narrative:

L1558011-10 WG1962786: Minimum dilution due to foamy matrix.

⁵Sr

⁶Qc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.55	1	11/18/2022 17:30	WG1961671
Residual Range Organics (RRO)	ND		11.4	1	11/18/2022 17:30	WG1961671
(S) o-Terphenyl	82.7		18.0-148		11/18/2022 17:30	WG1961671

⁷Gl

⁸Al

⁹Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.3		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	ND		2.19	5	11/28/2022 21:23	WG1966023

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		12.1	100	11/21/2022 19:18	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		11/21/2022 19:18	WG1962786

Sample Narrative:

L1558011-11 WG1962786: Minimum dilution due to foamy matrix.

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		0.00121	1	11/18/2022 18:47	WG1962211
1,2-Dibromoethane	ND		0.00302	1	11/18/2022 18:47	WG1962211
1,2-Dichloroethane	ND		0.00302	1	11/18/2022 18:47	WG1962211
Ethylbenzene	ND		0.00302	1	11/18/2022 18:47	WG1962211
Isopropylbenzene	ND		0.00302	1	11/24/2022 02:28	WG1964499
Methyl tert-butyl ether	ND		0.00121	1	11/18/2022 18:47	WG1962211
Naphthalene	ND		0.0151	1	11/24/2022 02:28	WG1964499
n-Propylbenzene	ND		0.00604	1	11/24/2022 02:28	WG1964499
Toluene	ND		0.00604	1	11/18/2022 18:47	WG1962211
1,2,4-Trimethylbenzene	ND		0.00604	1	11/18/2022 18:47	WG1962211
1,3,5-Trimethylbenzene	ND		0.00604	1	11/18/2022 18:47	WG1962211
Xylenes, Total	ND		0.00785	1	11/18/2022 18:47	WG1962211
(S) Toluene-d8	115		75.0-131		11/18/2022 18:47	WG1962211
(S) Toluene-d8	118		75.0-131		11/24/2022 02:28	WG1964499
(S) 4-Bromofluorobenzene	103		67.0-138		11/18/2022 18:47	WG1962211
(S) 4-Bromofluorobenzene	98.2		67.0-138		11/24/2022 02:28	WG1964499
(S) 1,2-Dichloroethane-d4	80.3		70.0-130		11/18/2022 18:47	WG1962211
(S) 1,2-Dichloroethane-d4	77.4		70.0-130		11/24/2022 02:28	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.38	1	11/18/2022 17:30	WG1961671
Residual Range Organics (RRO)	ND		11.0	1	11/18/2022 17:30	WG1961671
(S) o-Terphenyl	77.5		18.0-148		11/18/2022 17:30	WG1961671

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.5		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	ND		2.23	5	11/28/2022 21:27	WG1966023

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		13.0	106	11/21/2022 19:41	WG1962786
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		11/21/2022 19:41	WG1962786

Sample Narrative:

L1558011-12 WG1962786: Minimum dilution due to foamy matrix.

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	1.06	11/18/2022 19:06	WG1962211
1,2-Dibromoethane	ND		0.00325	1.06	11/18/2022 19:06	WG1962211
1,2-Dichloroethane	ND		0.00325	1.06	11/18/2022 19:06	WG1962211
Ethylbenzene	ND		0.00325	1.06	11/18/2022 19:06	WG1962211
Isopropylbenzene	ND		0.00325	1.06	11/24/2022 02:49	WG1964499
Methyl tert-butyl ether	ND		0.00130	1.06	11/18/2022 19:06	WG1962211
Naphthalene	ND		0.0163	1.06	11/24/2022 02:49	WG1964499
n-Propylbenzene	ND		0.00651	1.06	11/24/2022 02:49	WG1964499
Toluene	ND		0.00651	1.06	11/18/2022 19:06	WG1962211
1,2,4-Trimethylbenzene	ND		0.00651	1.06	11/18/2022 19:06	WG1962211
1,3,5-Trimethylbenzene	ND		0.00651	1.06	11/18/2022 19:06	WG1962211
Xylenes, Total	ND		0.00846	1.06	11/18/2022 19:06	WG1962211
(S) Toluene-d8	114		75.0-131		11/18/2022 19:06	WG1962211
(S) Toluene-d8	117		75.0-131		11/24/2022 02:49	WG1964499
(S) 4-Bromofluorobenzene	102		67.0-138		11/18/2022 19:06	WG1962211
(S) 4-Bromofluorobenzene	96.5		67.0-138		11/24/2022 02:49	WG1964499
(S) 1,2-Dichloroethane-d4	80.8		70.0-130		11/18/2022 19:06	WG1962211
(S) 1,2-Dichloroethane-d4	76.6		70.0-130		11/24/2022 02:49	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	ND		4.47	1	11/21/2022 06:16	WG1962628
Residual Range Organics (RRO)	ND		11.2	1	11/21/2022 06:16	WG1962628
(S) o-Terphenyl	68.4		18.0-148		11/21/2022 06:16	WG1962628

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	95.2		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.10	5	11/28/2022 21:30	WG1966023

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		2.75	25	11/19/2022 00:45	WG1962273
(S) a,a,a-Trifluorotoluene(FID)	96.8		77.0-120		11/19/2022 00:45	WG1962273

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	0.00168		0.00110	1	11/18/2022 19:25	WG1962211
1,2-Dibromoethane	ND		0.00275	1	11/18/2022 19:25	WG1962211
1,2-Dichloroethane	ND		0.00275	1	11/18/2022 19:25	WG1962211
Ethylbenzene	ND		0.00275	1	11/18/2022 19:25	WG1962211
Isopropylbenzene	ND		0.00275	1	11/24/2022 03:10	WG1964499
Methyl tert-butyl ether	ND		0.00110	1	11/18/2022 19:25	WG1962211
Naphthalene	ND	J3	0.0137	1	11/18/2022 19:25	WG1962211
n-Propylbenzene	ND		0.00550	1	11/24/2022 03:10	WG1964499
Toluene	ND		0.00550	1	11/18/2022 19:25	WG1962211
1,2,4-Trimethylbenzene	ND		0.00550	1	11/18/2022 19:25	WG1962211
1,3,5-Trimethylbenzene	ND		0.00550	1	11/18/2022 19:25	WG1962211
Xylenes, Total	ND		0.00715	1	11/18/2022 19:25	WG1962211
(S) Toluene-d8	108		75.0-131		11/18/2022 19:25	WG1962211
(S) Toluene-d8	115		75.0-131		11/24/2022 03:10	WG1964499
(S) 4-Bromofluorobenzene	107		67.0-138		11/18/2022 19:25	WG1962211
(S) 4-Bromofluorobenzene	98.9		67.0-138		11/24/2022 03:10	WG1964499
(S) 1,2-Dichloroethane-d4	89.8		70.0-130		11/18/2022 19:25	WG1962211
(S) 1,2-Dichloroethane-d4	79.3		70.0-130		11/24/2022 03:10	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.20	1	11/21/2022 06:30	WG1962628
Residual Range Organics (RRO)	ND		10.5	1	11/21/2022 06:30	WG1962628
(S) o-Terphenyl	61.9		18.0-148		11/21/2022 06:30	WG1962628

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	92.9		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.15	5	11/28/2022 21:33	WG1966023

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		3.05	26.5	11/19/2022 01:07	WG1962273
(S) a,a,a-Trifluorotoluene(FID)	97.5		77.0-120		11/19/2022 01:07	WG1962273

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00122	1.06	11/18/2022 19:44	WG1962211
1,2-Dibromoethane	ND		0.00305	1.06	11/18/2022 19:44	WG1962211
1,2-Dichloroethane	ND		0.00305	1.06	11/18/2022 19:44	WG1962211
Ethylbenzene	ND		0.00305	1.06	11/18/2022 19:44	WG1962211
Isopropylbenzene	ND		0.00305	1.06	11/18/2022 19:44	WG1962211
Methyl tert-butyl ether	ND		0.00122	1.06	11/18/2022 19:44	WG1962211
Naphthalene	ND	J3	0.0153	1.06	11/18/2022 19:44	WG1962211
n-Propylbenzene	ND		0.00609	1.06	11/24/2022 03:32	WG1964499
Toluene	ND		0.00609	1.06	11/18/2022 19:44	WG1962211
1,2,4-Trimethylbenzene	ND		0.00609	1.06	11/18/2022 19:44	WG1962211
1,3,5-Trimethylbenzene	ND		0.00609	1.06	11/18/2022 19:44	WG1962211
Xylenes, Total	ND		0.00792	1.06	11/18/2022 19:44	WG1962211
(S) Toluene-d8	115		75.0-131		11/18/2022 19:44	WG1962211
(S) Toluene-d8	117		75.0-131		11/24/2022 03:32	WG1964499
(S) 4-Bromofluorobenzene	105		67.0-138		11/18/2022 19:44	WG1962211
(S) 4-Bromofluorobenzene	98.0		67.0-138		11/24/2022 03:32	WG1964499
(S) 1,2-Dichloroethane-d4	81.3		70.0-130		11/18/2022 19:44	WG1962211
(S) 1,2-Dichloroethane-d4	76.5		70.0-130		11/24/2022 03:32	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	25.3		4.31	1	11/21/2022 06:44	WG1962628
Residual Range Organics (RRO)	ND		10.8	1	11/21/2022 06:44	WG1962628
(S) o-Terphenyl	62.4		18.0-148		11/21/2022 06:44	WG1962628

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.0		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Lead	7.70		2.20	5	11/28/2022 21:37	WG1966023

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		3.02	25	11/19/2022 01:30	WG1962273
(S) a, a, a-Trifluorotoluene(FID)	97.7		77.0-120		11/19/2022 01:30	WG1962273

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		0.00121	1	11/18/2022 20:03	WG1962211
1,2-Dibromoethane	ND		0.00302	1	11/18/2022 20:03	WG1962211
1,2-Dichloroethane	ND		0.00302	1	11/18/2022 20:03	WG1962211
Ethylbenzene	ND		0.00302	1	11/18/2022 20:03	WG1962211
Isopropylbenzene	ND		0.00302	1	11/18/2022 20:03	WG1962211
Methyl tert-butyl ether	ND		0.00121	1	11/18/2022 20:03	WG1962211
Naphthalene	ND	J3	0.0151	1	11/18/2022 20:03	WG1962211
n-Propylbenzene	ND		0.00605	1	11/24/2022 03:53	WG1964499
Toluene	ND		0.00605	1	11/18/2022 20:03	WG1962211
1,2,4-Trimethylbenzene	ND		0.00605	1	11/18/2022 20:03	WG1962211
1,3,5-Trimethylbenzene	ND		0.00605	1	11/18/2022 20:03	WG1962211
Xylenes, Total	ND		0.00786	1	11/18/2022 20:03	WG1962211
(S) Toluene-d8	115		75.0-131		11/18/2022 20:03	WG1962211
(S) Toluene-d8	119		75.0-131		11/24/2022 03:53	WG1964499
(S) 4-Bromofluorobenzene	106		67.0-138		11/18/2022 20:03	WG1962211
(S) 4-Bromofluorobenzene	101		67.0-138		11/24/2022 03:53	WG1964499
(S) 1,2-Dichloroethane-d4	83.2		70.0-130		11/18/2022 20:03	WG1962211
(S) 1,2-Dichloroethane-d4	78.3		70.0-130		11/24/2022 03:53	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Diesel Range Organics (DRO)	6.28		4.40	1	11/21/2022 08:49	WG1962628
Residual Range Organics (RRO)	25.1		11.0	1	11/21/2022 08:49	WG1962628
(S) o-Terphenyl	66.3		18.0-148		11/21/2022 08:49	WG1962628

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	91.7		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.18	5	11/28/2022 21:40	WG1966023

Volatile Organic Compounds (GC) by Method NWTPHGX

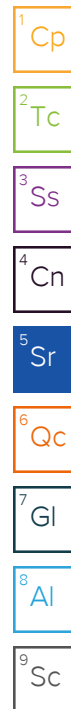
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	10.2	B	2.97	25	11/19/2022 01:53	WG1962273
(S) a, a, a-Trifluorotoluene(FID)	98.3		77.0-120		11/19/2022 01:53	WG1962273

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00119	1	11/18/2022 20:23	WG1962211
1,2-Dibromoethane	ND		0.00297	1	11/18/2022 20:23	WG1962211
1,2-Dichloroethane	ND		0.00297	1	11/18/2022 20:23	WG1962211
Ethylbenzene	ND		0.00297	1	11/18/2022 20:23	WG1962211
Isopropylbenzene	ND		0.00297	1	11/18/2022 20:23	WG1962211
Methyl tert-butyl ether	ND		0.00119	1	11/18/2022 20:23	WG1962211
Naphthalene	ND	J3	0.0149	1	11/18/2022 20:23	WG1962211
n-Propylbenzene	ND		0.00595	1	11/24/2022 04:14	WG1964499
Toluene	ND		0.00595	1	11/18/2022 20:23	WG1962211
1,2,4-Trimethylbenzene	ND		0.00595	1	11/18/2022 20:23	WG1962211
1,3,5-Trimethylbenzene	ND		0.00595	1	11/18/2022 20:23	WG1962211
Xylenes, Total	ND		0.00773	1	11/18/2022 20:23	WG1962211
(S) Toluene-d8	113		75.0-131		11/18/2022 20:23	WG1962211
(S) Toluene-d8	113		75.0-131		11/24/2022 04:14	WG1964499
(S) 4-Bromofluorobenzene	107		67.0-138		11/18/2022 20:23	WG1962211
(S) 4-Bromofluorobenzene	98.5		67.0-138		11/24/2022 04:14	WG1964499
(S) 1,2-Dichloroethane-d4	81.6		70.0-130		11/18/2022 20:23	WG1962211
(S) 1,2-Dichloroethane-d4	73.5		70.0-130		11/24/2022 04:14	WG1964499

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.36	1	11/21/2022 06:58	WG1962628
Residual Range Organics (RRO)	ND		10.9	1	11/21/2022 06:58	WG1962628
(S) o-Terphenyl	48.3		18.0-148		11/21/2022 06:58	WG1962628



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	83.1		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	5.33		2.41	5	11/29/2022 18:47	WG1961559

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	6.24	B	3.58	25	11/19/2022 02:15	WG1962273
(S) a,a,a-Trifluorotoluene(FID)	98.1		77.0-120		11/19/2022 02:15	WG1962273

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00143	1	11/18/2022 20:41	WG1962211
1,2-Dibromoethane	ND		0.00358	1	11/18/2022 20:41	WG1962211
1,2-Dichloroethane	ND		0.00358	1	11/18/2022 20:41	WG1962211
Ethylbenzene	ND		0.00358	1	11/18/2022 20:41	WG1962211
Isopropylbenzene	0.0155	C5	0.00358	1	11/18/2022 20:41	WG1962211
Methyl tert-butyl ether	ND		0.00143	1	11/18/2022 20:41	WG1962211
Naphthalene	ND	J3	0.0179	1	11/18/2022 20:41	WG1962211
n-Propylbenzene	0.0291		0.00716	1	11/18/2022 20:41	WG1962211
Toluene	ND		0.00716	1	11/18/2022 20:41	WG1962211
1,2,4-Trimethylbenzene	ND		0.00716	1	11/18/2022 20:41	WG1962211
1,3,5-Trimethylbenzene	ND		0.00716	1	11/18/2022 20:41	WG1962211
Xylenes, Total	ND		0.00931	1	11/18/2022 20:41	WG1962211
(S) Toluene-d8	114		75.0-131		11/18/2022 20:41	WG1962211
(S) 4-Bromofluorobenzene	105		67.0-138		11/18/2022 20:41	WG1962211
(S) 1,2-Dichloroethane-d4	81.9		70.0-130		11/18/2022 20:41	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.81	1	11/21/2022 07:11	WG1962628
Residual Range Organics (RRO)	ND		12.0	1	11/21/2022 07:11	WG1962628
(S) o-Terphenyl	67.5		18.0-148		11/21/2022 07:11	WG1962628

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	87.8		1	11/16/2022 15:49	WG1960385

Metals (ICPMS) by Method 6020B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Lead	ND		2.28	5	11/29/2022 18:51	WG1961559

Volatile Organic Compounds (GC) by Method NWTPHGX

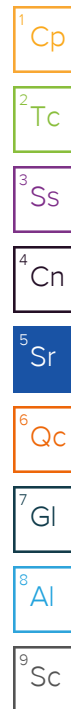
Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	36.7		3.24	25	11/19/2022 02:38	WG1962273
(S) a,a,a-Trifluorotoluene(FID)	97.3		77.0-120		11/19/2022 02:38	WG1962273

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

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	ND		0.00130	1	11/18/2022 21:00	WG1962211
1,2-Dibromoethane	ND		0.00324	1	11/18/2022 21:00	WG1962211
1,2-Dichloroethane	ND		0.00324	1	11/18/2022 21:00	WG1962211
Ethylbenzene	ND		0.00324	1	11/18/2022 21:00	WG1962211
Isopropylbenzene	0.0628	C5	0.00324	1	11/18/2022 21:00	WG1962211
Methyl tert-butyl ether	ND		0.00130	1	11/18/2022 21:00	WG1962211
Naphthalene	0.0736	J3	0.0162	1	11/18/2022 21:00	WG1962211
n-Propylbenzene	0.125		0.00649	1	11/18/2022 21:00	WG1962211
Toluene	ND		0.00649	1	11/18/2022 21:00	WG1962211
1,2,4-Trimethylbenzene	ND		0.00649	1	11/18/2022 21:00	WG1962211
1,3,5-Trimethylbenzene	ND		0.00649	1	11/18/2022 21:00	WG1962211
Xylenes, Total	ND		0.00844	1	11/18/2022 21:00	WG1962211
(S) Toluene-d8	114		75.0-131		11/18/2022 21:00	WG1962211
(S) 4-Bromofluorobenzene	115		67.0-138		11/18/2022 21:00	WG1962211
(S) 1,2-Dichloroethane-d4	81.7		70.0-130		11/18/2022 21:00	WG1962211

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	163		4.56	1	11/21/2022 07:25	WG1962628
Residual Range Organics (RRO)	ND		11.4	1	11/21/2022 07:25	WG1962628
(S) o-Terphenyl	61.6		18.0-148		11/21/2022 07:25	WG1962628



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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	11/21/2022 01:04	WG1962293
Ethylbenzene	ND		1.00	1	11/21/2022 01:04	WG1962293
Toluene	ND		1.00	1	11/21/2022 01:04	WG1962293
Xylenes, Total	ND		3.00	1	11/21/2022 01:04	WG1962293
Methyl tert-butyl ether	ND		1.00	1	11/21/2022 01:04	WG1962293
Naphthalene	ND	C3	5.00	1	11/21/2022 01:04	WG1962293
1,2-Dibromoethane	ND		1.00	1	11/21/2022 01:04	WG1962293
1,2-Dichloroethane	ND		1.00	1	11/21/2022 01:04	WG1962293
Isopropylbenzene	ND		1.00	1	11/21/2022 01:04	WG1962293
n-Propylbenzene	ND		1.00	1	11/21/2022 01:04	WG1962293
1,2,4-Trimethylbenzene	ND		1.00	1	11/21/2022 01:04	WG1962293
1,3,5-Trimethylbenzene	ND		1.00	1	11/21/2022 01:04	WG1962293
(S) Toluene-d8	111		80.0-120		11/21/2022 01:04	WG1962293
(S) 4-Bromofluorobenzene	90.6		77.0-126		11/21/2022 01:04	WG1962293
(S) 1,2-Dichloroethane-d4	103		70.0-130		11/21/2022 01:04	WG1962293

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	93.2		1	11/17/2022 08:54	WG1961083

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result (dry) mg/kg	Qualifier	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		4.29	1	11/21/2022 07:39	WG1962628
Residual Range Organics (RRO)	ND		10.7	1	11/21/2022 07:39	WG1962628
(S) o-Terphenyl	60.0		18.0-148		11/21/2022 07:39	WG1962628

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3862160-1 11/16/22 16:18

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00300			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1558011-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1558011-08 11/16/22 16:18 • (DUP) R3862160-3 11/16/22 16:18

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	88.6	88.2	1	0.458		10

Laboratory Control Sample (LCS)

(LCS) R3862160-2 11/16/22 16:18

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

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3862154-1 11/16/22 15:49

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00300			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1558011-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1558011-18 11/16/22 15:49 • (DUP) R3862154-3 11/16/22 15:49

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	87.8	89.8	1	2.25		10

Laboratory Control Sample (LCS)

(LCS) R3862154-2 11/16/22 15:49

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

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3862526-1 11/17/22 08:54

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00100			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1558346-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1558346-01 11/17/22 08:54 • (DUP) R3862526-3 11/17/22 08:54

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	79.7	82.0	1	2.82		10

Laboratory Control Sample (LCS)

(LCS) R3862526-2 11/17/22 08:54

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

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3866304-1 11/29/22 20:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Lead	U		0.0990	2.00

Laboratory Control Sample (LCS)

(LCS) R3866304-2 11/29/22 20:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	100	98.5	98.5	80.0-120	

L1558011-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558011-08 11/29/22 20:13 • (MS) R3866304-5 11/29/22 20:23 • (MSD) R3866304-6 11/29/22 20:27

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 %
Lead	113	2.63	110	111	95.1	96.4	5	75.0-125			1.28	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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
Lead	U		0.0990	2.00

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
Lead	100	104	104	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 %
Lead	121	20.9	145	158	102	113	5	75.0-125			8.51	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3865820-1 11/28/22 20:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Lead	U		0.0990	2.00

Laboratory Control Sample (LCS)

(LCS) R3865820-2 11/28/22 20:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	100	96.1	96.1	80.0-120	

L1557235-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557235-01 11/28/22 20:08 • (MS) R3865820-5 11/28/22 20:18 • (MSD) R3865820-6 11/28/22 20:22

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 %
Lead	123	17.2	141	132	100	93.2	5	75.0-125			6.27	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3863002-2 11/18/22 11:03

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)	97.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3863002-1 11/18/22 09:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	5.45	99.1	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			113	77.0-120	

L1557318-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557318-02 11/18/22 18:40 • (MS) R3863002-3 11/18/22 21:24 • (MSD) R3863002-4 11/18/22 21:45

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	154	ND	150	147	96.8	95.2	25	50.0-150			1.67	27
(S) a,a,a-Trifluorotoluene(FID)					112	112		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) R3863151-2 11/18/22 19:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHG C6 - C12	1.09	⬇	0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3863151-1 11/18/22 19:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHG C6 - C12	5.50	4.63	84.2	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

L1558011-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558011-13 11/19/22 00:45 • (MS) R3863151-3 11/19/22 05:17 • (MSD) R3863151-4 11/19/22 16:20

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	152	ND	136	110	89.0	71.6	25	50.0-150			21.4	27
(S) a,a,a-Trifluorotoluene(FID)					103	102		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3863603-2 11/21/22 11:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHG C6 - C12	U		0.848	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

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

(LCS) R3863603-1 11/21/22 09:52 • (LCSD) R3863603-3 11/21/22 12:43

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 %
TPHG C6 - C12	5.50	6.03	5.01	110	91.1	71.0-124			18.5	20
(S) a,a,a-Trifluorotoluene(FID)				111	110	77.0-120				

L1557275-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557275-01 11/21/22 16:06 • (MS) R3863603-4 11/21/22 20:33 • (MSD) R3863603-5 11/21/22 20:55

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	146	958	206	202	0.000	0.000	25	50.0-150	V	V	1.92	27
(S) a,a,a-Trifluorotoluene(FID)					109	108		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) R3864506-2 11/18/22 10:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Isopropylbenzene	U		0.000425	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	117			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	80.4			70.0-130

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

(LCS) R3864506-1 11/18/22 09:40 • (LCSD) R3864506-3 11/18/22 14:55

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	0.121	0.129	96.8	103	70.0-123			6.40	20
1,2-Dibromoethane	0.125	0.144	0.148	115	118	74.0-128			2.74	20
1,2-Dichloroethane	0.125	0.113	0.124	90.4	99.2	65.0-131			9.28	20
Ethylbenzene	0.125	0.141	0.147	113	118	74.0-126			4.17	20
Isopropylbenzene	0.125	0.153	0.157	122	126	72.0-127			2.58	20
Methyl tert-butyl ether	0.125	0.115	0.130	92.0	104	66.0-132			12.2	20
Naphthalene	0.125	0.101	0.0756	80.8	60.5	59.0-130		J3	28.8	20
n-Propylbenzene	0.125	0.142	0.147	114	118	74.0-126			3.46	20
Toluene	0.125	0.137	0.136	110	109	75.0-121			0.733	20
1,2,4-Trimethylbenzene	0.125	0.140	0.141	112	113	70.0-126			0.712	20
1,3,5-Trimethylbenzene	0.125	0.143	0.146	114	117	73.0-127			2.08	20
Xylenes, Total	0.375	0.461	0.468	123	125	72.0-127			1.51	20
(S) Toluene-d8				112	108	75.0-131				
(S) 4-Bromofluorobenzene				104	105	67.0-138				
(S) 1,2-Dichloroethane-d4				82.6	92.8	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3864906-3 11/24/22 01:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
1,2-Dibromoethane	U		0.000648	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
Ethylbenzene	U		0.000737	0.00250
Isopropylbenzene	U		0.000425	0.00250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	118			75.0-131
(S) 4-Bromofluorobenzene	98.3			67.0-138
(S) 1,2-Dichloroethane-d4	79.8			70.0-130

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

(LCS) R3864906-1 11/24/22 00:15 • (LCSD) R3864906-2 11/24/22 00:37

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	0.110	0.106	88.0	84.8	70.0-123			3.70	20
1,2-Dibromoethane	0.125	0.0997	0.0940	79.8	75.2	74.0-128			5.89	20
1,2-Dichloroethane	0.125	0.119	0.118	95.2	94.4	65.0-131			0.844	20
Ethylbenzene	0.125	0.133	0.123	106	98.4	74.0-126			7.81	20
Isopropylbenzene	0.125	0.136	0.125	109	100	72.0-127			8.43	20
Methyl tert-butyl ether	0.125	0.105	0.0989	84.0	79.1	66.0-132			5.98	20
Naphthalene	0.125	0.102	0.0981	81.6	78.5	59.0-130			3.90	20
n-Propylbenzene	0.125	0.122	0.119	97.6	95.2	74.0-126			2.49	20
Toluene	0.125	0.125	0.117	100	93.6	75.0-121			6.61	20
1,2,4-Trimethylbenzene	0.125	0.113	0.110	90.4	88.0	70.0-126			2.69	20
1,3,5-Trimethylbenzene	0.125	0.106	0.106	84.8	84.8	73.0-127			0.000	20
Xylenes, Total	0.375	0.375	0.352	100	93.9	72.0-127			6.33	20
(S) Toluene-d8				108	105	75.0-131				
(S) 4-Bromofluorobenzene				109	105	67.0-138				
(S) 1,2-Dichloroethane-d4				94.6	97.3	70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3863343-3 11/21/22 00:09

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Ethylbenzene	U		0.137	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	113			80.0-120
(S) 4-Bromofluorobenzene	93.9			77.0-126
(S) 1,2-Dichloroethane-d4	103			70.0-130

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

(LCS) R3863343-1 11/20/22 23:04 • (LCSD) R3863343-2 11/20/22 23:26

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.82	4.33	96.4	86.6	70.0-123			10.7	20
Ethylbenzene	5.00	5.42	5.10	108	102	79.0-123			6.08	20
Toluene	5.00	5.25	4.96	105	99.2	79.0-120			5.68	20
Xylenes, Total	15.0	15.9	15.0	106	100	79.0-123			5.83	20
Methyl tert-butyl ether	5.00	4.28	4.08	85.6	81.6	68.0-125			4.78	20
Naphthalene	5.00	3.46	3.53	69.2	70.6	54.0-135			2.00	20
1,2-Dibromoethane	5.00	4.48	4.10	89.6	82.0	80.0-122			8.86	20
1,2-Dichloroethane	5.00	4.45	3.89	89.0	77.8	70.0-128			13.4	20
Isopropylbenzene	5.00	5.26	4.90	105	98.0	76.0-127			7.09	20
n-Propylbenzene	5.00	6.04	5.72	121	114	77.0-124			5.44	20
1,2,4-Trimethylbenzene	5.00	5.38	4.89	108	97.8	76.0-121			9.54	20
1,3,5-Trimethylbenzene	5.00	5.72	5.10	114	102	76.0-122			11.5	20
(S) Toluene-d8				106	107	80.0-120				
(S) 4-Bromofluorobenzene				90.1	91.7	77.0-126				
(S) 1,2-Dichloroethane-d4				103	102	70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3862995-1 11/18/22 16:52

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	100			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3862995-2 11/18/22 17:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	43.9	87.8	50.0-150	
(S) o-Terphenyl			98.8	18.0-148	

L1558011-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558011-08 11/18/22 18:08 • (MS) R3862995-3 11/18/22 18:20 • (MSD) R3862995-4 11/18/22 18:32

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)	55.3	440	432	341	0.000	0.000	1	50.0-150	E V	J3 V	23.6	20
(S) o-Terphenyl					113	97.8		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3863406-1 11/21/22 05:20

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	74.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3863406-2 11/21/22 05:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	44.5	89.0	50.0-150	
(S) o-Terphenyl			102	18.0-148	

L1558313-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1558313-01 11/21/22 07:53 • (MS) R3863406-3 11/21/22 08:07 • (MSD) R3863406-4 11/21/22 08:21

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 %
Diesel Range Organics (DRO)	52.9	ND	41.3	42.4	74.2	76.0	1	50.0-150			2.58	20
(S) o-Terphenyl					77.2	84.8		18.0-148				

Sample Narrative:

OS: Sample resembles laboratory standard for Fuel Oil #6.

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

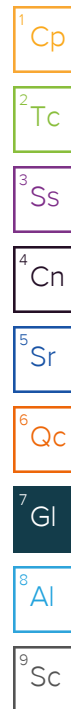
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
C5	The reported concentration is an estimate. The continuing calibration standard associated with this data responded high. Data is likely to show a high bias concerning the result.
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.



GLOSSARY OF TERMS

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

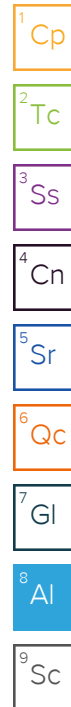
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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	LA000356
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:

PBS Engineering & Env. - POR

4412 S Corbett Ave
Portland, OR 97239Report to:
David Rukki Nick ThorntonProject Description:
Baker Trace CanalCity/State
Collected:Please Circle:
PT MT CT ET

Phone: 503-248-1939

Client Project #
24349.000Lab Project #
PBOSENGPOR-24349000Collected by (print):
NT

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

☐ Same Day ☐ Five Day
☐ Next Day ☐ 5 Day (Rad Only)
☐ Two Day ☐ 10 Day (Rad Only)
☐ Three Day

Quote #

Date Results Needed

No.
of
CntsImmediately
Packed on Ice N ☐ Y ☒

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

NWT PHDX w/ silica 8ozClr-NoPres

NWT PHGX 40mlAmb/MeOH10ml/Syr

PAHs 8270ESIM 8ozClr-NoPres

RCRA8 Metals 6020 8ozClr-NoPres

VOCs 8260D 40mlAmb/MeOH10ml/Syr

Total Pb

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



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/hubs/pas-standard-terms.pdf>

SDG #

Table #

Acctnum: PBOSENGPOR

Template: T219243

Prelogin: P961098

PM: 110 - Brian Ford

PB:

Shipped Via:

Remarks

Sample # (lab only)

MW2-2.5

MW2-5.0 SWI

MW4-2.5

MW4-5.0 SWI

MW4-15

MW5-2.5

MW5-7.0 SWI

MW1-2.5

MW1-5.0 SWI

MW1-13.0

SS

SS

SS

SS

SS

SS

SS

SS

SS

11/9/22 1445

11/9/22 1500

11/9/22 1515

11/10/22 1100

11/10/22 1145

11/10/22 1600

11/11/22 0815

11/11/22 0845

11/11/22 0930

11/11/22 1000

2

3

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2

2

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3

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X

pH _____ Temp _____

Flow _____ Other _____

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

Remarks:

RBDM VOCs not full list

Samples returned via:

☐ UPS ☒ FedEx ☐ Courier

Tracking # 5882 7553 8334, 5882 7553 8610

Relinquished by: (Signature)

Date:

11/14/22

Time:

0800

Received by: (Signature)

Trip Blank Received: Yes ☒ No ☐HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 11.70 °C

Bottles Received: 43

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 11/15/22

Time: 09:00

Hold:

Condition:

NCF ☒ OK

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ NCOC Signed/Accurate: ☒ Y ☐ NBottles arrive intact: ☒ Y ☐ NCorrect bottles used: ☒ Y ☐ NSufficient volume sent: ☒ Y ☐ N

If Applicable

VOA Zero Headspace: ☒ Y ☐ NPreservation Correct/Checked: ☒ Y ☐ NRAD Screen <0.5 mR/hr: ☒ Y ☐ N

Company Name/Address: PBS Engineering & Env.- POR 4412 S Corbett Ave Portland, OR 97239		Billing Information: Accounts Payable 4412 S Corbett Ave Portland, OR 97239		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page 2 of 2			
Report to: David Rukki Nick Thornton		Email To: David.Rukki@pbsusa.com; Nick.Thornton@pbsu												 PEOPLE ADVANCING SCIENCE 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					
Project Description:		City/State Collected: CR		Please Circle: PT MT CT ET												SDG # W558011			
Phone: 503-248-1939		Client Project # 24349.000		Lab Project # PBSENGPOR-24349000												Table #			
Collected by (print): NT		Site/Facility ID #		P.O. #												Acctnum: PBSENGPOR			
Collected by (signature):		Rush? (Lab MUST Be Notified) Same Day Five Day Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		Quote #												Template: T219243			
Immediately Packed on Ice N Y X				Date Results Needed		No. of Cntrs												Prelogin: P961098 PM: 110 - Brian Ford PB:	
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time		NWTPHDX w/ silica 8ozClr-NoPres	NWTPHGX 40mlAmb/MeOH10ml/Syr	PAHs 8270ESIM 8ozClr-NoPres	RCRA8 Metals 6020 8ozClr-NoPres	VOCs 8260D 40mlAmb/MeOH10ml/Syr	Total Pb		Shipped Via:				
MW7-2.5			SS		11/11/22	1230	2	X	X			X	X		Remarks				
MW7-7.5SWI			SS		11/11/22	1245	2	X	X			X	X		Sample # (lab only)				
MW3-2.5			SS		11/11/22	1000	2	X	X			X	X		-11				
MW3-13.0SWI			SS		11/11/22	1615	2	X	X			X	X		-12				
MW15-2.5			SS		11/12/22	0800	2	X	X			X	X		-13				
MW15-13.0SWI			SS		11/12/22	0815	3	X	X			X	X		-14				
MW9-2.5			SS		11/12/22	1100	2	X	X			X	X		-15				
MW9-7.0SWI			SS		11/12/22	1115	3	X	X			X	X		-16				
TB			SS				4					X			-17				
			SS												-18				
															-19				
															-20				
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other		Remarks: RBDM VOCs not full list please		pH _____ Temp _____ Flow _____ Other _____		Sample Receipt Checklist COC Seal Present/Intact: ☒ N COC Signed/Accurate: ☒ N Bottles arrive intact: ☒ N Correct bottles used: ☒ N Sufficient volume sent: ☒ N If Applicable VOA Zero Headspace: ☒ N Preservation Correct/Checked: ☒ N RAD Screen <0.5 mR/hr: ☒ N													
Samples returned via: UPS ☒ FedEx ☒ Courier ☐		Tracking # 5882 7553 8334, 5882 7553 8610																	
Relinquished by: (Signature) [Signature]		Date: 11/14/22	Time: 0800	Received by: (Signature) [Signature]		Trip Blank Received: Yes/No HCL / MeOH TBR													
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp: °C 11/10=11		Bottles Received: 43		If preservation required by Login: Date/Time									
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature) Hana Nimechima		Date: 11/15/22		Time: 09:00		Hold:		Condition: NCF OK							

11/15 L1558o11 PBSENGPOR

R5

Time estimate: oh

Time spent: oh

Members

 NS Nicole Scott (responsible)

 Brian Ford

Labels:

- ☒ Login Clarification needed
- ☐ Chain of custody is incomplete
- ☐ Please specify Metals requested
- ☐ Please specify TCLP requested
- ☐ Received additional samples not listed on COC
- ☐ Sample IDs on containers do not match IDs on COC
- ☐ Client did not "X" analysis
- ☐ Chain of Custody is missing
- ☐ If no COC: Received by: _____
- ☐ If no COC: Date/Time: _____
- ☐ If no COC: Temp./Cont.Rec./pH: _____
- ☐ If no COC: Carrier: _____
- ☐ If no COC: Tracking #: _____
- ☐ Client informed by call
- ☐ Client informed by Email
- ☐ Client informed by Voicemail
- ☐ Date/Time: _____
- ☒ PM initials: _____bjf_____
- ☐ Client Contact: _____

Comments

Nicolle Scott

15 November 2022 4:20 PM

received an extra ID: Mw2-15.O. added as -20

Brian Ford

16 November 2022 10:07 AM

please place Mw2-15.o on hold

Nicolle Scott

16 November 2022 11:20 AM

done.

Brian Ford

16 November 2022 11:20 AM

UPDATE: log Mw2-15.o for NWTPHDX and TS.

Nicolle Scott
updated. done

16 November 2022 11:23 AM

PBS Engineering & Env.- POR

Sample Delivery Group: L1562670
Samples Received: 11/15/2022
Project Number: 24349.000
Description: Baker Truck Corral

Report To: David Rukki
4412 S Corbett Ave
Portland, OR 97239

Entire Report Reviewed By:



Brian Ford
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 National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW5-7.0SWI L1562670-01	5
MW1-2.5 L1562670-02	6
Qc: Quality Control Summary	7
Total Solids by Method 2540 G-2011	7
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	8
Gl: Glossary of Terms	11
Al: Accreditations & Locations	12
Sc: Sample Chain of Custody	13

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

SAMPLE SUMMARY

MW5-7.0SWI L1562670-01 Solid

Collected by
NT

Collected date/time
11/10/22 10:15

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	JAV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1967771	1	12/01/22 21:23	12/02/22 11:24	DSH	Mt. Juliet, TN

MW1-2.5 L1562670-02 Solid

Collected by
NT

Collected date/time
11/11/22 08:45

Received date/time
11/15/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1960384	1	11/16/22 15:59	11/16/22 16:18	JAV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1967771	1	12/01/22 21:23	12/02/22 11:43	DSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1967771	5	12/01/22 21:23	12/05/22 19:11	DSH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

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⁹Sc

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.



Brian Ford
Project Manager

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

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.3		1	11/16/2022 16:18	WG1960384

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	T8	0.00657	1	12/02/2022 11:24	WG1967771
Acenaphthene	0.161	T8	0.00657	1	12/02/2022 11:24	WG1967771
Acenaphthylene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Benzo(a)anthracene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Benzo(a)pyrene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Benzo(b)fluoranthene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Benzo(g,h,i)perylene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Benzo(k)fluoranthene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Chrysene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Dibenz(a,h)anthracene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Fluoranthene	0.0142	T8	0.00657	1	12/02/2022 11:24	WG1967771
Fluorene	0.513	T8	0.00657	1	12/02/2022 11:24	WG1967771
Indeno(1,2,3-cd)pyrene	ND	T8	0.00657	1	12/02/2022 11:24	WG1967771
Naphthalene	ND	T8	0.0219	1	12/02/2022 11:24	WG1967771
Phenanthrene	0.504	T8	0.00657	1	12/02/2022 11:24	WG1967771
Pyrene	0.105	T8	0.00657	1	12/02/2022 11:24	WG1967771
1-Methylnaphthalene	0.775	T8	0.0219	1	12/02/2022 11:24	WG1967771
2-Methylnaphthalene	0.289	T8	0.0219	1	12/02/2022 11:24	WG1967771
2-Chloronaphthalene	ND	T8	0.0219	1	12/02/2022 11:24	WG1967771
(S) Nitrobenzene-d5	291	J1	14.0-149		12/02/2022 11:24	WG1967771
(S) 2-Fluorobiphenyl	74.2		34.0-125		12/02/2022 11:24	WG1967771
(S) p-Terphenyl-d14	79.0		23.0-120		12/02/2022 11:24	WG1967771

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.6		1	11/16/2022 16:18	WG1960384

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	0.0117	T8	0.00677	1	12/02/2022 11:43	WG1967771
Acenaphthene	0.0604	T8	0.00677	1	12/02/2022 11:43	WG1967771
Acenaphthylene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Benzo(a)anthracene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Benzo(a)pyrene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Benzo(b)fluoranthene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Benzo(g,h,i)perylene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Benzo(k)fluoranthene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Chrysene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Dibenz(a,h)anthracene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Fluoranthene	0.0111	T8	0.00677	1	12/02/2022 11:43	WG1967771
Fluorene	0.108	T8	0.00677	1	12/02/2022 11:43	WG1967771
Indeno(1,2,3-cd)pyrene	ND	T8	0.00677	1	12/02/2022 11:43	WG1967771
Naphthalene	3.00	T8	0.0226	1	12/02/2022 11:43	WG1967771
Phenanthrene	0.249	T8	0.00677	1	12/02/2022 11:43	WG1967771
Pyrene	0.0221	T8	0.00677	1	12/02/2022 11:43	WG1967771
1-Methylnaphthalene	2.52	T8	0.0226	1	12/02/2022 11:43	WG1967771
2-Methylnaphthalene	6.45	T8	0.113	5	12/05/2022 19:11	WG1967771
2-Chloronaphthalene	ND	T8	0.0226	1	12/02/2022 11:43	WG1967771
(S) Nitrobenzene-d5	9.36	J2	14.0-149		12/02/2022 11:43	WG1967771
(S) Nitrobenzene-d5	15.1		14.0-149		12/05/2022 19:11	WG1967771
(S) 2-Fluorobiphenyl	61.7		34.0-125		12/02/2022 11:43	WG1967771
(S) 2-Fluorobiphenyl	76.8		34.0-125		12/05/2022 19:11	WG1967771
(S) p-Terphenyl-d14	69.5		23.0-120		12/02/2022 11:43	WG1967771
(S) p-Terphenyl-d14	93.3		23.0-120		12/05/2022 19:11	WG1967771

Sample Narrative:

L1562670-02 WG1967771: Surrogate failure due to matrix interference

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3862160-1 11/16/22 16:18

Analyte	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Total Solids	0.00300			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1558011-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1558011-08 11/16/22 16:18 • (DUP) R3862160-3 11/16/22 16:18

Analyte	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Total Solids	88.6	88.2	1	0.458		10

⁷Gl

⁸Al

Laboratory Control Sample (LCS)

(LCS) R3862160-2 11/16/22 16:18

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Total Solids	50.0	50.0	100	85.0-115	

⁹Sc

Method Blank (MB)

(MB) R3868138-2 12/02/22 09:26

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	51.0			14.0-149
(S) 2-Fluorobiphenyl	62.4			34.0-125
(S) p-Terphenyl-d14	65.7			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3868138-1 12/02/22 09:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0671	83.9	50.0-126	
Acenaphthene	0.0800	0.0629	78.6	50.0-120	
Acenaphthylene	0.0800	0.0678	84.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0723	90.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0631	78.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0606	75.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0614	76.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0651	81.4	49.0-125	
Chrysene	0.0800	0.0709	88.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0623	77.9	47.0-125	
Fluoranthene	0.0800	0.0728	91.0	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3868138-1 12/02/22 09:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0670	83.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0643	80.4	46.0-125	
Naphthalene	0.0800	0.0631	78.9	50.0-120	
Phenanthrene	0.0800	0.0646	80.7	47.0-120	
Pyrene	0.0800	0.0656	82.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0622	77.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0630	78.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0632	79.0	50.0-120	
(S) Nitrobenzene-d5			71.3	14.0-149	
(S) 2-Fluorobiphenyl			83.6	34.0-125	
(S) p-Terphenyl-d14			82.9	23.0-120	

L1562624-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1562624-05 12/02/22 13:21 • (MS) R3868138-3 12/02/22 13:41 • (MSD) R3868138-4 12/02/22 14:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0768	ND	0.0454	0.0722	59.1	92.1	1	10.0-145		J3	45.6	30
Acenaphthene	0.0768	0.432	0.159	0.162	0.000	0.000	1	14.0-127	V	V	1.87	27
Acenaphthylene	0.0768	ND	0.0506	0.0507	65.9	64.7	1	21.0-124			0.197	25
Benzo(a)anthracene	0.0768	0.00759	0.0684	0.0789	79.2	91.0	1	10.0-139			14.3	30
Benzo(a)pyrene	0.0768	0.0115	0.0655	0.0718	70.3	76.9	1	10.0-141			9.18	31
Benzo(b)fluoranthene	0.0768	0.0224	0.0707	0.0778	62.9	70.7	1	10.0-140			9.56	36
Benzo(g,h,i)perylene	0.0768	0.0130	0.0638	0.0684	66.1	70.7	1	10.0-140			6.96	33
Benzo(k)fluoranthene	0.0768	0.00740	0.0592	0.0652	67.4	73.7	1	10.0-137			9.65	31
Chrysene	0.0768	0.0157	0.0751	0.0830	77.3	85.8	1	10.0-145			9.99	30
Dibenz(a,h)anthracene	0.0768	ND	0.0520	0.0578	64.9	71.0	1	10.0-132			10.6	31
Fluoranthene	0.0768	0.0311	0.0766	0.0962	59.2	83.0	1	10.0-153			22.7	33
Fluorene	0.0768	0.547	0.195	0.187	0.000	0.000	1	11.0-130	V	V	4.19	29
Indeno(1,2,3-cd)pyrene	0.0768	0.0130	0.0659	0.0709	68.9	73.9	1	10.0-137			7.31	32
Naphthalene	0.0768	3.05	3.25	3.35	260	383	1	10.0-135	V	V	3.03	27
Phenanthrene	0.0768	0.599	0.710	1.01	145	524	1	10.0-144	V	J3 V	34.9	31
Pyrene	0.0768	0.276	0.316	0.379	52.1	131	1	10.0-148			18.1	35
1-Methylnaphthalene	0.0768	4.58	4.64	5.02	78.1	561	1	10.0-142	E	E V	7.87	28
2-Methylnaphthalene	0.0768	7.89	8.05	8.60	208	906	1	10.0-137	E V	E V	6.61	28
2-Chloronaphthalene	0.0768	ND	0.0366	ND	47.7	21.2	1	29.0-120		J3 J6	75.2	24
(S) Nitrobenzene-d5					1150	1210		14.0-149	J1	J1		
(S) 2-Fluorobiphenyl					18.5	18.6		34.0-125	J2	J2		
(S) p-Terphenyl-d14					66.3	77.2		23.0-120				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

L1562624-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1562624-05 12/02/22 13:21 • (MS) R3868138-3 12/02/22 13:41 • (MSD) R3868138-4 12/02/22 14:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%

Sample Narrative:
OS: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

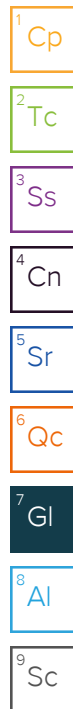
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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).
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.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

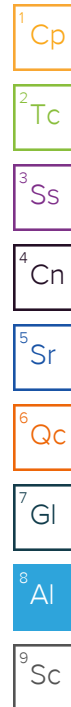
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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	LA000356
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.



R5

L1558011 PBSENGPOR re-log

Pleaes re-log the following for SV8270PAHSIMD,TS as R5 due 12/08.

- L1558011-07 MW5-7.oSWI
- L1558011-08 MW1-2.5

will be analyzed out of hold.

Time estimate: ohTime spent: oh

Members

 Brian Ford

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 30, 2022

Nick Thornton, Project Manager
PBS Engineering and Environmental, Inc.
4412 SW Corbett Ave
Portland, OR 97239

Dear Mr Thornton:

Included are the results from the testing of material submitted on November 15, 2022 from the Baker Truck Corral 24349.000, F&BI 211202 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
PBP1130R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 15, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Baker Truck Corral 24349.000, F&BI 211202 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>PBS Engineering and Environmental</u>
211202 -01	SSV-1
211202 -02	SSV-2
211202 -03	SSV-3
211202 -04	SSV-4

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-17

Client Sample ID:	SSV-1	Client:	PBS Engineering and Environmental
Date Received:	11/15/22	Project:	Baker Truck Corral 24349.000
Date Collected:	11/09/22	Lab ID:	211202-01
Date Analyzed:	11/24/22	Data File:	112322.D
Matrix:	Air	Instrument:	GCMS10
Units:	ug/m3	Operator:	bat

Compounds:	Concentration ug/m3
------------	------------------------

Diesel Fuel Range	<2,000
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-17

Client Sample ID:	SSV-2	Client:	PBS Engineering and Environmental
Date Received:	11/15/22	Project:	Baker Truck Corral 24349.000
Date Collected:	11/09/22	Lab ID:	211202-02
Date Analyzed:	11/24/22	Data File:	112323.D
Matrix:	Air	Instrument:	GCMS10
Units:	ug/m3	Operator:	bat

Compounds:	Concentration ug/m3
------------	------------------------

Diesel Fuel Range	<2,000
-------------------	--------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-17

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Baker Truck Corral 24349.000
Date Collected:	Not Applicable	Lab ID:	02-2821 mb
Date Analyzed:	11/23/22	Data File:	112306.D
Matrix:	Air	Instrument:	GCMS10
Units:	ug/m3	Operator:	bat

	Concentration
Compounds:	ug/m3

Diesel Fuel Range	<2,000
-------------------	--------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/30/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211202

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-17**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Fuel Range	ng/tube	2,500	107	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 7, 2022

Nick Thornton, Project Manager
PBS Engineering and Environmental, Inc.
4412 SW Corbett Ave
Portland, OR 97239

Dear Mr Thornton:

Included are the results from the testing of material submitted on November 15, 2022 from the Baker Truck Corral 24349.000, F&BI 211203 project. There are 11 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
PBP1202R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 15, 2022 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Baker Truck Corral 24349.000, F&BI 211203 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>PBS Engineering and Environmental</u>
211203 -01	SSV-1
211203 -02	SSV-2

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv. The gasoline calibration standard was not analyzed on the day of analysis, therefore the data were flagged.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SSV-1	Client:	PBS Engineering and Environmental
Date Received:	11/15/22	Project:	Baker Truck Corral 24349.000
Date Collected:	11/09/22	Lab ID:	211203-01 1/6.4
Date Analyzed:	11/19/22	Data File:	111820.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	% Recovery:	Lower Limit:	Upper Limit:
Surrogates:			
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<7.7	<4.5	1,2-Dichloropropane	<1.5	<0.32
Dichlorodifluoromethane	<6.3	<1.3	1,4-Dioxane	<2.3	<0.64
Chloromethane	<24	<12	2,2,4-Trimethylpentane	<30	<6.4
F-114	<13	<1.9	Methyl methacrylate	<26	<6.4
Vinyl chloride	<1.6	<0.64	Heptane	<26	<6.4
1,3-Butadiene	<0.28	<0.13	Bromodichloromethane	<0.43	<0.064
Butane	<30	<13	Trichloroethene	<0.69	<0.13
Bromomethane	<25	<6.4	cis-1,3-Dichloropropene	<5.8	<1.3
Chloroethane	<17	<6.4	4-Methyl-2-pentanone	<26	<6.4
Vinyl bromide	<2.8	<0.64	trans-1,3-Dichloropropene	<2.9	<0.64
Ethanol	<48	<26	Toluene	<120	<32
Acrolein	<0.73	<0.32	1,1,2-Trichloroethane	<0.35	<0.064
Pentane	<38	<13	2-Hexanone	<26	<6.4
Trichlorofluoromethane	<14	<2.6	Tetrachloroethene	<43	<6.4
Acetone	<30	<13	Dibromochloromethane	<0.55	<0.064
2-Propanol	<55	<22	1,2-Dibromoethane (EDB)	<0.49	<0.064
1,1-Dichloroethene	<2.5	<0.64	Chlorobenzene	<2.9	<0.64
trans-1,2-Dichloroethene	<2.5	<0.64	Ethylbenzene	<2.8	<0.64
Methylene chloride	<220	<64	1,1,2,2-Tetrachloroethane	<0.88	<0.13
t-Butyl alcohol (TBA)	<78	<26	Nonane	<34	<6.4
3-Chloropropene	<20	<6.4	Isopropylbenzene	<63	<13
CFC-113	<4.9	<0.64	2-Chlorotoluene	<33	<6.4
Carbon disulfide	<40	<13	Propylbenzene	<31	<6.4
Methyl t-butyl ether (MTBE)	<46	<13	4-Ethyltoluene	<31	<6.4
Vinyl acetate	<45	<13	m,p-Xylene	<5.6	<1.3
1,1-Dichloroethane	<2.6	<0.64	o-Xylene	<2.8	<0.64
cis-1,2-Dichloroethene	<2.5	<0.64	Styrene	<5.5	<1.3
Hexane	<23	<6.4	Bromoform	<13	<1.3
Chloroform	<0.31	<0.064	Benzyl chloride	<0.33	<0.064
Ethyl acetate	<46	<13	1,3,5-Trimethylbenzene	<31	<6.4
Tetrahydrofuran	<3.8	<1.3	1,2,4-Trimethylbenzene	<31	<6.4
2-Butanone (MEK)	<38	<13	1,3-Dichlorobenzene	<3.8	<0.64
1,2-Dichloroethane (EDC)	<0.26	<0.064	1,4-Dichlorobenzene	<1.5	<0.24
1,1,1-Trichloroethane	<3.5	<0.64	1,2-Dichlorobenzene	<3.8	<0.64
Carbon tetrachloride	<2	<0.32	1,2,4-Trichlorobenzene	<4.7	<0.64
Benzene	<2	<0.64	Naphthalene	<1.7	<0.32
Cyclohexane	<44	<13	Hexachlorobutadiene	<1.4	<0.13
Gasoline Range Organics	<2,100 ca	<510 ca			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SSV-2	Client:	PBS Engineering and Environmental
Date Received:	11/15/22	Project:	Baker Truck Corral 24349.000
Date Collected:	11/09/22	Lab ID:	211203-02 1/6.3
Date Analyzed:	11/19/22	Data File:	111821.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	% Recovery:	Lower Limit:	Upper Limit:
Surrogates:			
4-Bromofluorobenzene	103	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<7.6	<4.4	1,2-Dichloropropane	<1.5	<0.31
Dichlorodifluoromethane	<6.2	<1.3	1,4-Dioxane	<2.3	<0.63
Chloromethane	<23	<11	2,2,4-Trimethylpentane	<29	<6.3
F-114	<13	<1.9	Methyl methacrylate	<26	<6.3
Vinyl chloride	<1.6	<0.63	Heptane	<26	<6.3
1,3-Butadiene	<0.28	<0.13	Bromodichloromethane	<0.42	<0.063
Butane	<30	<13	Trichloroethene	<0.68	<0.13
Bromomethane	<24	<6.3	cis-1,3-Dichloropropene	<5.7	<1.3
Chloroethane	<17	<6.3	4-Methyl-2-pentanone	<26	<6.3
Vinyl bromide	<2.8	<0.63	trans-1,3-Dichloropropene	<2.9	<0.63
Ethanol	<47	<25	Toluene	<120	<31
Acrolein	<0.72	<0.31	1,1,2-Trichloroethane	<0.34	<0.063
Pentane	<37	<13	2-Hexanone	<26	<6.3
Trichlorofluoromethane	<14	<2.5	Tetrachloroethene	<43	<6.3
Acetone	<30	<13	Dibromochloromethane	<0.54	<0.063
2-Propanol	<54	<22	1,2-Dibromoethane (EDB)	<0.48	<0.063
1,1-Dichloroethene	<2.5	<0.63	Chlorobenzene	<2.9	<0.63
trans-1,2-Dichloroethene	<2.5	<0.63	Ethylbenzene	<2.7	<0.63
Methylene chloride	<220	<63	1,1,2,2-Tetrachloroethane	<0.86	<0.13
t-Butyl alcohol (TBA)	<76	<25	Nonane	<33	<6.3
3-Chloropropene	<20	<6.3	Isopropylbenzene	<62	<13
CFC-113	<4.8	<0.63	2-Chlorotoluene	<33	<6.3
Carbon disulfide	<39	<13	Propylbenzene	<31	<6.3
Methyl t-butyl ether (MTBE)	<45	<13	4-Ethyltoluene	<31	<6.3
Vinyl acetate	<44	<13	m,p-Xylene	<5.5	<1.3
1,1-Dichloroethane	<2.5	<0.63	o-Xylene	<2.7	<0.63
cis-1,2-Dichloroethene	<2.5	<0.63	Styrene	<5.4	<1.3
Hexane	<22	<6.3	Bromoform	<13	<1.3
Chloroform	<0.31	<0.063	Benzyl chloride	<0.33	<0.063
Ethyl acetate	<45	<13	1,3,5-Trimethylbenzene	<31	<6.3
Tetrahydrofuran	<3.7	<1.3	1,2,4-Trimethylbenzene	<31	<6.3
2-Butanone (MEK)	<37	<13	1,3-Dichlorobenzene	<3.8	<0.63
1,2-Dichloroethane (EDC)	<0.25	<0.063	1,4-Dichlorobenzene	<1.4	<0.24
1,1,1-Trichloroethane	<3.4	<0.63	1,2-Dichlorobenzene	<3.8	<0.63
Carbon tetrachloride	<2	<0.31	1,2,4-Trichlorobenzene	<4.7	<0.63
Benzene	<2	<0.63	Naphthalene	<1.7	<0.31
Cyclohexane	<43	<13	Hexachlorobutadiene	<1.3	<0.13
Gasoline Range Organics	<2,100 ca	<500 ca			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Baker Truck Corral 24349.000
Date Collected:	Not Applicable	Lab ID:	02-2632 mb
Date Analyzed:	11/19/22	Data File:	111812.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	98	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<4.1	<1
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<19	<5
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<0.77	<0.1	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	0.56	0.11
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02
Gasoline Range Organics	<330	<80			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

Date Extracted: 11/29/22

Date Analyzed: 11/29/22

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES
FOR HELIUM USING METHOD ASTM D1946**

Results Reported as % Helium

Sample ID

Laboratory ID

Helium

SSV-1

211203-01

<0.6

SSV-2

211203-02

<0.6

Method Blank

02-2885 MB

<0.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: 211226-03 1/4.9 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	<5.9	<5.9	nm
Dichlorodifluoromethane	ug/m3	<4.8	<4.8	nm
Chloromethane	ug/m3	<18	<18	nm
F-114	ug/m3	<10	<10	nm
Vinyl chloride	ug/m3	<1.3	<1.3	nm
1,3-Butadiene	ug/m3	<0.22	<0.22	nm
Butane	ug/m3	<23	<23	nm
Bromomethane	ug/m3	<19	<19	nm
Chloroethane	ug/m3	<13	<13	nm
Vinyl bromide	ug/m3	<2.1	<2.1	nm
Ethanol	ug/m3	210	270	25
Acrolein	ug/m3	<0.56	<0.56	nm
Pentane	ug/m3	<29	<29	nm
Trichlorofluoromethane	ug/m3	<11	<11	nm
Acetone	ug/m3	37	36	3
2-Propanol	ug/m3	<42	<42	nm
1,1-Dichloroethene	ug/m3	<1.9	<1.9	nm
trans-1,2-Dichloroethene	ug/m3	<1.9	<1.9	nm
Methylene chloride	ug/m3	<170	<170	nm
t-Butyl alcohol (TBA)	ug/m3	<59	<59	nm
3-Chloropropene	ug/m3	<15	<15	nm
CFC-113	ug/m3	<3.8	<3.8	nm
Carbon disulfide	ug/m3	<31	<31	nm
Methyl t-butyl ether (MTBE)	ug/m3	<35	<35	nm
Vinyl acetate	ug/m3	<35	<35	nm
1,1-Dichloroethane	ug/m3	<2	<2	nm
cis-1,2-Dichloroethene	ug/m3	<1.9	<1.9	nm
Hexane	ug/m3	<17	<17	nm
Chloroform	ug/m3	0.65	0.67	3
Ethyl acetate	ug/m3	<35	<35	nm
Tetrahydrofuran	ug/m3	<2.9	<2.9	nm
2-Butanone (MEK)	ug/m3	<29	<29	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.2	<0.2	nm
1,1,1-Trichloroethane	ug/m3	<2.7	<2.7	nm
Carbon tetrachloride	ug/m3	<1.5	<1.5	nm
Benzene	ug/m3	<1.6	<1.6	nm
Cyclohexane	ug/m3	<34	<34	nm
1,2-Dichloropropane	ug/m3	<1.1	<1.1	nm
1,4-Dioxane	ug/m3	<1.8	<1.8	nm
2,2,4-Trimethylpentane	ug/m3	<23	<23	nm

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: 211226-03 1/4.9 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<20	<20	nm
Heptane	ug/m3	<20	<20	nm
Bromodichloromethane	ug/m3	<0.33	<0.33	nm
Trichloroethene	ug/m3	<0.53	<0.53	nm
cis-1,3-Dichloropropene	ug/m3	<4.4	<4.4	nm
4-Methyl-2-pentanone	ug/m3	<20	<20	nm
trans-1,3-Dichloropropene	ug/m3	<2.2	<2.2	nm
Toluene	ug/m3	<92	<92	nm
1,1,2-Trichloroethane	ug/m3	<0.27	<0.27	nm
2-Hexanone	ug/m3	<20	<20	nm
Tetrachloroethene	ug/m3	<33	<33	nm
Dibromochloromethane	ug/m3	<0.42	<0.42	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.38	<0.38	nm
Chlorobenzene	ug/m3	<2.3	<2.3	nm
Ethylbenzene	ug/m3	<2.1	<2.1	nm
1,1,2,2-Tetrachloroethane	ug/m3	<0.67	<0.67	nm
Nonane	ug/m3	<26	<26	nm
Isopropylbenzene	ug/m3	<48	<48	nm
2-Chlorotoluene	ug/m3	<25	<25	nm
Propylbenzene	ug/m3	<24	<24	nm
4-Ethyltoluene	ug/m3	<24	<24	nm
m,p-Xylene	ug/m3	<4.3	<4.3	nm
o-Xylene	ug/m3	<2.1	<2.1	nm
Styrene	ug/m3	<4.2	<4.2	nm
Bromoform	ug/m3	<10	<10	nm
Benzyl chloride	ug/m3	<0.25	<0.25	nm
1,3,5-Trimethylbenzene	ug/m3	<24	<24	nm
1,2,4-Trimethylbenzene	ug/m3	<24	<24	nm
1,3-Dichlorobenzene	ug/m3	<2.9	<2.9	nm
1,4-Dichlorobenzene	ug/m3	<1.1	<1.1	nm
1,2-Dichlorobenzene	ug/m3	<2.9	<2.9	nm
1,2,4-Trichlorobenzene	ug/m3	<3.6	<3.6	nm
Naphthalene	ug/m3	<1.3	<1.3	nm
Hexachlorobutadiene	ug/m3	<1	<1	nm

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	103	70-130
Dichlorodifluoromethane	ug/m3	67	89	70-130
Chloromethane	ug/m3	28	107	70-130
F-114	ug/m3	94	108	70-130
Vinyl chloride	ug/m3	35	100	70-130
1,3-Butadiene	ug/m3	30	98	70-130
Butane	ug/m3	32	97	70-130
Bromomethane	ug/m3	52	100	70-130
Chloroethane	ug/m3	36	97	70-130
Vinyl bromide	ug/m3	59	99	70-130
Ethanol	ug/m3	25	100	70-130
Acrolein	ug/m3	31	101	70-130
Pentane	ug/m3	40	110	70-130
Trichlorofluoromethane	ug/m3	76	102	70-130
Acetone	ug/m3	32	101	70-130
2-Propanol	ug/m3	33	101	70-130
1,1-Dichloroethene	ug/m3	54	99	70-130
trans-1,2-Dichloroethene	ug/m3	54	97	70-130
Methylene chloride	ug/m3	94	97	70-130
t-Butyl alcohol (TBA)	ug/m3	41	94	70-130
3-Chloropropene	ug/m3	42	101	70-130
CFC-113	ug/m3	100	101	70-130
Carbon disulfide	ug/m3	42	113	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	88	70-130
Vinyl acetate	ug/m3	48	97	70-130
1,1-Dichloroethane	ug/m3	55	102	70-130
cis-1,2-Dichloroethene	ug/m3	54	97	70-130
Hexane	ug/m3	48	97	70-130
Chloroform	ug/m3	66	103	70-130
Ethyl acetate	ug/m3	49	114	70-130
Tetrahydrofuran	ug/m3	40	109	70-130
2-Butanone (MEK)	ug/m3	40	112	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	106	70-130
1,1,1-Trichloroethane	ug/m3	74	98	70-130
Carbon tetrachloride	ug/m3	85	101	70-130
Benzene	ug/m3	43	99	70-130
Cyclohexane	ug/m3	46	93	70-130
1,2-Dichloropropane	ug/m3	62	95	70-130
1,4-Dioxane	ug/m3	49	99	70-130
2,2,4-Trimethylpentane	ug/m3	63	96	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	93	70-130
Heptane	ug/m3	55	99	70-130
Bromodichloromethane	ug/m3	90	98	70-130
Trichloroethene	ug/m3	73	98	70-130
cis-1,3-Dichloropropene	ug/m3	61	94	70-130
4-Methyl-2-pentanone	ug/m3	55	110	70-130
trans-1,3-Dichloropropene	ug/m3	61	98	70-130
Toluene	ug/m3	51	94	70-130
1,1,2-Trichloroethane	ug/m3	74	103	70-130
2-Hexanone	ug/m3	55	103	70-130
Tetrachloroethene	ug/m3	92	92	70-130
Dibromochloromethane	ug/m3	120	99	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	96	70-130
Chlorobenzene	ug/m3	62	105	70-130
Ethylbenzene	ug/m3	59	98	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	103	70-130
Nonane	ug/m3	71	97	70-130
Isopropylbenzene	ug/m3	66	99	70-130
2-Chlorotoluene	ug/m3	70	105	70-130
Propylbenzene	ug/m3	66	108	70-130
4-Ethyltoluene	ug/m3	66	105	70-130
m,p-Xylene	ug/m3	120	97	70-130
o-Xylene	ug/m3	59	101	70-130
Styrene	ug/m3	58	99	70-130
Bromoform	ug/m3	140	108	70-130
Benzyl chloride	ug/m3	70	106	70-130
1,3,5-Trimethylbenzene	ug/m3	66	110	70-130
1,2,4-Trimethylbenzene	ug/m3	66	103	70-130
1,3-Dichlorobenzene	ug/m3	81	108	70-130
1,4-Dichlorobenzene	ug/m3	81	109	70-130
1,2-Dichlorobenzene	ug/m3	81	108	70-130
1,2,4-Trichlorobenzene	ug/m3	100	105	70-130
Naphthalene	ug/m3	71	101	70-130
Hexachlorobutadiene	ug/m3	140	104	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/07/22

Date Received: 11/15/22

Project: Baker Truck Corral 24349.000, F&BI 211203

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR HELIUM
USING METHOD ASTM D1946**

Laboratory Code: 211069-01 (Duplicate)

Analyte	Sample Result (%)	Duplicate Result (%)	Relative Percent Difference	Acceptance Criteria
Helium	<0.6	<0.6	nm	0-20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

11/15/22

[Signature]

Doc 4

Od

24349 0000

INVOICE TO

SAMPLE DISPOSAL
Default: Clean following
final report delivery

ANALYSIS REQUESTED

											ANALYSIS REQUESTED					
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	Notes	
SSV-1	01	4184	244	IA / (SG)	11-9-22	-26	22:33	-6	22:39	X						
SSV-2	02	4178	50	IA / (SG)	11-10-22	-27	9:45	-6	9:50	X			X			
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
											Samples received at	19 °C				

TABLE

David Rukki

AMHPHAM

F8b

11/15/22

09:15

Received by:

10

PBS Engineering & Env.- POR

Sample Delivery Group: L1573726

Samples Received: 01/07/2023

Project Number: 24349.000

Description:

Report To: Nick.Thornton
4412 S Corbett Ave
Portland, OR 97239

Entire Report Reviewed By:



Brian Ford
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

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
23Q1 MW-1 L1573726-01	7
23Q1 MW-2 L1573726-02	9
23Q1 MW-3 L1573726-03	10
23Q1 MW-4 L1573726-04	11
23Q1 MW-5 L1573726-05	12
23Q1 MW-7 L1573726-06	14
23Q1 MW-8 L1573726-07	15
23Q1 MW-9 L1573726-08	16
23Q1 MW-10 L1573726-09	17
23Q1 MW-13 L1573726-10	18
23Q1 MW-14 L1573726-11	19
23Q1 MW-15 L1573726-12	20
23Q1 MW-DUP L1573726-13	21
TB 01042023 L1573726-14	22
TB 01052023 L1573726-15	23
Qc: Quality Control Summary	24
Metals (ICPMS) by Method 6020B	24
Volatile Organic Compounds (GC) by Method NWTPHGX	26
Volatile Organic Compounds (GC/MS) by Method 8260D	32
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	34
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	35
Gl: Glossary of Terms	37
Al: Accreditations & Locations	38
Sc: Sample Chain of Custody	39

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

SAMPLE SUMMARY

23Q1 MW-1 L1573726-01 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 15:01	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1984840	1	01/10/23 15:17	01/10/23 18:03	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1984704	1	01/09/23 04:41	01/09/23 04:41	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 01:26	01/09/23 01:26	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 15:32	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1985190	1	01/09/23 19:18	01/10/23 13:32	JDJ	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

23Q1 MW-2 L1573726-02 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 10:51	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1984840	1	01/10/23 15:17	01/10/23 18:06	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1987452	1	01/13/23 02:10	01/13/23 02:10	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 01:47	01/09/23 01:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 15:52	DMG	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

23Q1 MW-3 L1573726-03 GW

				Collected by Wesley Garcia	Collected date/time 01/04/23 17:00	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1984840	1	01/10/23 15:17	01/10/23 18:10	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986307	1	01/10/23 19:15	01/10/23 19:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 02:07	01/09/23 02:07	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 16:13	DMG	Mt. Juliet, TN

⁹ Sc

23Q1 MW-4 L1573726-04 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 10:02	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1984840	1	01/10/23 15:17	01/10/23 18:13	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986307	25	01/10/23 19:37	01/10/23 19:37	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 02:28	01/09/23 02:28	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 16:33	DMG	Mt. Juliet, TN

23Q1 MW-5 L1573726-05 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 14:02	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 22:46	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986781	1	01/12/23 00:21	01/12/23 00:21	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1986659	5	01/11/23 14:23	01/11/23 14:23	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 16:53	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG1985190	1	01/09/23 19:18	01/10/23 10:56	JDJ	Mt. Juliet, TN

23Q1 MW-7 L1573726-06 GW

				Collected by Wesley Garcia	Collected date/time 01/04/23 16:06	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986781	1	01/12/23 00:43	01/12/23 00:43	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 08:00	01/09/23 08:00	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 17:14	DMG	Mt. Juliet, TN

SAMPLE SUMMARY

23Q1 MW-8 L1573726-07 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 11:42	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986781	1	01/12/23 01:05	01/12/23 01:05	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 08:20	01/09/23 08:20	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 17:34	DMG	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

23Q1 MW-9 L1573726-08 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 12:20	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:36	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986781	1	01/12/23 01:27	01/12/23 01:27	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 08:39	01/09/23 08:39	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 17:54	DMG	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

23Q1 MW-10 L1573726-09 GW

				Collected by Wesley Garcia	Collected date/time 01/04/23 11:56	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:39	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986307	1	01/10/23 20:43	01/10/23 20:43	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 09:00	01/09/23 09:00	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 18:15	DMG	Mt. Juliet, TN

⁹ Sc

23Q1 MW-13 L1573726-10 GW

				Collected by Wesley Garcia	Collected date/time 01/04/23 15:10	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986307	1	01/10/23 21:04	01/10/23 21:04	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 09:21	01/09/23 09:21	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 18:35	DMG	Mt. Juliet, TN

23Q1 MW-14 L1573726-11 GW

				Collected by Wesley Garcia	Collected date/time 01/04/23 13:33	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:46	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1987019	1	01/11/23 23:37	01/11/23 23:37	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 09:42	01/09/23 09:42	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 18:55	DMG	Mt. Juliet, TN

23Q1 MW-15 L1573726-12 GW

				Collected by Wesley Garcia	Collected date/time 01/05/23 12:57	Received date/time 01/07/23 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/09/23 23:49	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1987019	1	01/11/23 23:59	01/11/23 23:59	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 10:02	01/09/23 10:02	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/11/23 19:15	DMG	Mt. Juliet, TN

SAMPLE SUMMARY

23Q1 MW-DUP L1573726-13 GW

Collected by Wesley Garcia
Collected date/time 01/05/23 12:00
Received date/time 01/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1985268	1	01/09/23 16:24	01/10/23 00:17	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1986300	1	01/11/23 07:35	01/11/23 07:35	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 10:23	01/09/23 10:23	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1985187	1	01/11/23 09:30	01/12/23 06:31	DMG	Mt. Juliet, TN

TB 01042023 L1573726-14 GW

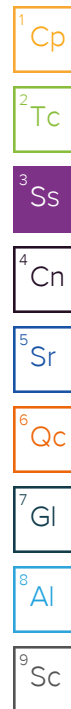
Collected by Wesley Garcia
Collected date/time 01/04/23 06:00
Received date/time 01/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 00:45	01/09/23 00:45	ACG	Mt. Juliet, TN

TB 01052023 L1573726-15 GW

Collected by Wesley Garcia
Collected date/time 01/05/23 06:00
Received date/time 01/07/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260D	WG1985128	1	01/09/23 01:05	01/09/23 01:05	ACG	Mt. Juliet, TN

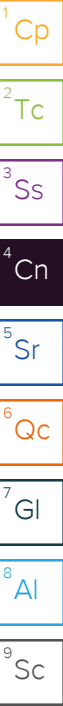


CASE NARRATIVE

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.



Brian Ford
Project Manager



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/10/2023 18:03	WG1984840

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	373	B	100	1	01/09/2023 04:41	WG1984704
(S) a,a,a-Trifluorotoluene(FID)	94.9		78.0-120		01/09/2023 04:41	WG1984704

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

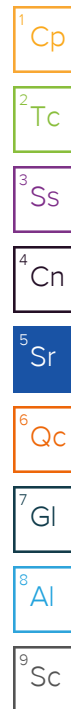
Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	6.30		1.00	1	01/09/2023 01:26	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 01:26	WG1985128
Toluene	ND		1.00	1	01/09/2023 01:26	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 01:26	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 01:26	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 01:26	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 01:26	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 01:26	WG1985128
Isopropylbenzene	6.96		1.00	1	01/09/2023 01:26	WG1985128
n-Propylbenzene	7.28		1.00	1	01/09/2023 01:26	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 01:26	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 01:26	WG1985128
(S) Toluene-d8	87.8		80.0-120		01/09/2023 01:26	WG1985128
(S) 4-Bromofluorobenzene	83.1		77.0-126		01/09/2023 01:26	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 01:26	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	445		100	1	01/11/2023 15:32	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 15:32	WG1985187
(S) o-Terphenyl	50.0		31.0-160		01/11/2023 15:32	WG1985187

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

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Anthracene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Acenaphthene	0.605		0.0500	1	01/10/2023 13:32	WG1985190
Acenaphthylene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Benzo(a)anthracene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Benzo(a)pyrene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Benzo(b)fluoranthene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Benzo(g,h,i)perylene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Benzo(k)fluoranthene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Chrysene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Dibenz(a,h)anthracene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Fluoranthene	ND		0.100	1	01/10/2023 13:32	WG1985190
Fluorene	0.661		0.0500	1	01/10/2023 13:32	WG1985190
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Naphthalene	ND		0.250	1	01/10/2023 13:32	WG1985190
Phenanthrene	ND		0.0500	1	01/10/2023 13:32	WG1985190
Pyrene	ND		0.0500	1	01/10/2023 13:32	WG1985190
1-Methylnaphthalene	1.04		0.250	1	01/10/2023 13:32	WG1985190



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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	ND		0.250	1	01/10/2023 13:32	WG1985190
2-Chloronaphthalene	ND		0.250	1	01/10/2023 13:32	WG1985190
(S) Nitrobenzene-d5	80.0		31.0-160		01/10/2023 13:32	WG1985190
(S) 2-Fluorobiphenyl	59.5		48.0-148		01/10/2023 13:32	WG1985190
(S) p-Terphenyl-d14	88.0		37.0-146		01/10/2023 13:32	WG1985190

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/10/2023 18:06	WG1984840

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	638		100	1	01/13/2023 02:10	WG1987452
(S) a,a,a-Trifluorotoluene(FID)	92.4		78.0-120		01/13/2023 02:10	WG1987452

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	12.1		1.00	1	01/09/2023 01:47	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 01:47	WG1985128
Toluene	ND		1.00	1	01/09/2023 01:47	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 01:47	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 01:47	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 01:47	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 01:47	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 01:47	WG1985128
Isopropylbenzene	2.50		1.00	1	01/09/2023 01:47	WG1985128
n-Propylbenzene	12.2		1.00	1	01/09/2023 01:47	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 01:47	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 01:47	WG1985128
(S) Toluene-d8	85.8		80.0-120		01/09/2023 01:47	WG1985128
(S) 4-Bromofluorobenzene	82.7		77.0-126		01/09/2023 01:47	WG1985128
(S) 1,2-Dichloroethane-d4	113		70.0-130		01/09/2023 01:47	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	147	B	100	1	01/11/2023 15:52	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 15:52	WG1985187
(S) o-Terphenyl	83.0		31.0-160		01/11/2023 15:52	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/10/2023 18:10	WG1984840

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	01/10/2023 19:15	WG1986307
(S) a,a,a-Trifluorotoluene(FID)	97.5		78.0-120		01/10/2023 19:15	WG1986307

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	01/09/2023 02:07	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 02:07	WG1985128
Toluene	ND		1.00	1	01/09/2023 02:07	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 02:07	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 02:07	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 02:07	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 02:07	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 02:07	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 02:07	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 02:07	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 02:07	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 02:07	WG1985128
(S) Toluene-d8	87.6		80.0-120		01/09/2023 02:07	WG1985128
(S) 4-Bromofluorobenzene	82.6		77.0-126		01/09/2023 02:07	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 02:07	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 16:13	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 16:13	WG1985187
(S) o-Terphenyl	90.0		31.0-160		01/11/2023 16:13	WG1985187

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/10/2023 18:13	WG1984840

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		2500	25	01/10/2023 19:37	WG1986307
(S) a,a,a-Trifluorotoluene(FID)	97.1		78.0-120		01/10/2023 19:37	WG1986307

Sample Narrative:

L1573726-04 WG1986307: Lowest possible dilution due to sample foaming.

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	01/09/2023 02:28	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 02:28	WG1985128
Toluene	ND		1.00	1	01/09/2023 02:28	WG1985128
Xylenes, Total	9.58		3.00	1	01/09/2023 02:28	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 02:28	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 02:28	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 02:28	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 02:28	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 02:28	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 02:28	WG1985128
1,2,4-Trimethylbenzene	3.54		1.00	1	01/09/2023 02:28	WG1985128
1,3,5-Trimethylbenzene	1.15		1.00	1	01/09/2023 02:28	WG1985128
(S) Toluene-d8	86.9		80.0-120		01/09/2023 02:28	WG1985128
(S) 4-Bromofluorobenzene	84.3		77.0-126		01/09/2023 02:28	WG1985128
(S) 1,2-Dichloroethane-d4	117		70.0-130		01/09/2023 02:28	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 16:33	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 16:33	WG1985187
(S) o-Terphenyl	63.5		31.0-160		01/11/2023 16:33	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/09/2023 22:46	WG1985268

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	684		100	1	01/12/2023 00:21	WG1986781
(S) a,a,a-Trifluorotoluene(FID)	96.6		78.0-120		01/12/2023 00:21	WG1986781

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

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	27.9		5.00	5	01/11/2023 14:23	WG1986659
Ethylbenzene	ND		5.00	5	01/11/2023 14:23	WG1986659
Toluene	13.6		5.00	5	01/11/2023 14:23	WG1986659
Xylenes, Total	ND		15.0	5	01/11/2023 14:23	WG1986659
Methyl tert-butyl ether	ND		5.00	5	01/11/2023 14:23	WG1986659
Naphthalene	ND	J3	25.0	5	01/11/2023 14:23	WG1986659
1,2-Dibromoethane	ND		5.00	5	01/11/2023 14:23	WG1986659
1,2-Dichloroethane	ND		5.00	5	01/11/2023 14:23	WG1986659
Isopropylbenzene	ND		5.00	5	01/11/2023 14:23	WG1986659
n-Propylbenzene	9.59		5.00	5	01/11/2023 14:23	WG1986659
1,2,4-Trimethylbenzene	ND		5.00	5	01/11/2023 14:23	WG1986659
1,3,5-Trimethylbenzene	ND		5.00	5	01/11/2023 14:23	WG1986659
(S) Toluene-d8	92.9		80.0-120		01/11/2023 14:23	WG1986659
(S) 4-Bromofluorobenzene	97.9		77.0-126		01/11/2023 14:23	WG1986659
(S) 1,2-Dichloroethane-d4	89.7		70.0-130		01/11/2023 14:23	WG1986659

Sample Narrative:

L1573726-05 WG1986659: Lowest possible dilution due to sample foaming.

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	5180		100	1	01/11/2023 16:53	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 16:53	WG1985187
(S) o-Terphenyl	82.0		31.0-160		01/11/2023 16:53	WG1985187

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

Analyte	Result	Qualifier	RD L	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Anthracene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Acenaphthene	1.40		0.0500	1	01/10/2023 10:56	WG1985190
Acenaphthylene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Benzo(a)anthracene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Benzo(a)pyrene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Benzo(b)fluoranthene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Benzo(g,h,i)perylene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Benzo(k)fluoranthene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Chrysene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Dibenz(a,h)anthracene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Fluoranthene	ND		0.100	1	01/10/2023 10:56	WG1985190
Fluorene	3.60		0.0500	1	01/10/2023 10:56	WG1985190
Indeno(1,2,3-cd)pyrene	ND		0.0500	1	01/10/2023 10:56	WG1985190
Naphthalene	ND		0.250	1	01/10/2023 10:56	WG1985190

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Phenanthrene	1.17		0.0500	1	01/10/2023 10:56	WG1985190
Pyrene	0.207		0.0500	1	01/10/2023 10:56	WG1985190
1-Methylnaphthalene	12.3		0.250	1	01/10/2023 10:56	WG1985190
2-Methylnaphthalene	4.15		0.250	1	01/10/2023 10:56	WG1985190
2-Chloronaphthalene	ND		0.250	1	01/10/2023 10:56	WG1985190
(S) Nitrobenzene-d5	85.5		31.0-160		01/10/2023 10:56	WG1985190
(S) 2-Fluorobiphenyl	75.5		48.0-148		01/10/2023 10:56	WG1985190
(S) p-Terphenyl-d14	99.0		37.0-146		01/10/2023 10:56	WG1985190

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	01/09/2023 23:30	WG1985268

1
Cp2
Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	01/12/2023 00:43	WG1986781
(S) a,a,a-Trifluorotoluene(FID)	103		78.0-120		01/12/2023 00:43	WG1986781

3
Ss4
Cn5
Sr

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	01/09/2023 08:00	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 08:00	WG1985128
Toluene	ND		1.00	1	01/09/2023 08:00	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 08:00	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 08:00	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 08:00	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 08:00	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 08:00	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 08:00	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 08:00	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 08:00	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 08:00	WG1985128
(S) Toluene-d8	87.7		80.0-120		01/09/2023 08:00	WG1985128
(S) 4-Bromofluorobenzene	84.3		77.0-126		01/09/2023 08:00	WG1985128
(S) 1,2-Dichloroethane-d4	118		70.0-130		01/09/2023 08:00	WG1985128

6
Qc7
Gl8
Al9
Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 17:14	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 17:14	WG1985187
(S) o-Terphenyl	68.5		31.0-160		01/11/2023 17:14	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/09/2023 23:33	WG1985268

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	181	B	100	1	01/12/2023 01:05	WG1986781
(S) a,a,a-Trifluorotoluene(FID)	98.6		78.0-120		01/12/2023 01:05	WG1986781

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	1.67		1.00	1	01/09/2023 08:20	WG1985128
Ethylbenzene	5.19		1.00	1	01/09/2023 08:20	WG1985128
Toluene	ND		1.00	1	01/09/2023 08:20	WG1985128
Xylenes, Total	11.8		3.00	1	01/09/2023 08:20	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 08:20	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 08:20	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 08:20	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 08:20	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 08:20	WG1985128
n-Propylbenzene	1.20		1.00	1	01/09/2023 08:20	WG1985128
1,2,4-Trimethylbenzene	6.05		1.00	1	01/09/2023 08:20	WG1985128
1,3,5-Trimethylbenzene	1.54		1.00	1	01/09/2023 08:20	WG1985128
(S) Toluene-d8	87.6		80.0-120		01/09/2023 08:20	WG1985128
(S) 4-Bromofluorobenzene	83.8		77.0-126		01/09/2023 08:20	WG1985128
(S) 1,2-Dichloroethane-d4	114		70.0-130		01/09/2023 08:20	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 17:34	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 17:34	WG1985187
(S) o-Terphenyl	56.5		31.0-160		01/11/2023 17:34	WG1985187

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/09/2023 23:36	WG1985268

1
Cp2
Tc3
Ss4
Cn5
Sr

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	01/12/2023 01:27	WG1986781
(S) a,a,a-Trifluorotoluene(FID)	98.6		78.0-120		01/12/2023 01:27	WG1986781

6
Qc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	1.49		1.00	1	01/09/2023 08:39	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 08:39	WG1985128
Toluene	ND		1.00	1	01/09/2023 08:39	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 08:39	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 08:39	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 08:39	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 08:39	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 08:39	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 08:39	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 08:39	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 08:39	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 08:39	WG1985128
(S) Toluene-d8	88.5		80.0-120		01/09/2023 08:39	WG1985128
(S) 4-Bromofluorobenzene	83.9		77.0-126		01/09/2023 08:39	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 08:39	WG1985128

7
Gl8
Al9
Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 17:54	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 17:54	WG1985187
(S) o-Terphenyl	68.0		31.0-160		01/11/2023 17:54	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/09/2023 23:39	WG1985268

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	151	B	100	1	01/10/2023 20:43	WG1986307
(S) a,a,a-Trifluorotoluene(FID)	95.9		78.0-120		01/10/2023 20:43	WG1986307

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	2.07		1.00	1	01/09/2023 09:00	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 09:00	WG1985128
Toluene	ND		1.00	1	01/09/2023 09:00	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 09:00	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 09:00	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 09:00	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 09:00	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 09:00	WG1985128
Isopropylbenzene	2.13		1.00	1	01/09/2023 09:00	WG1985128
n-Propylbenzene	1.19		1.00	1	01/09/2023 09:00	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 09:00	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 09:00	WG1985128
(S) Toluene-d8	87.6		80.0-120		01/09/2023 09:00	WG1985128
(S) 4-Bromofluorobenzene	83.1		77.0-126		01/09/2023 09:00	WG1985128
(S) 1,2-Dichloroethane-d4	117		70.0-130		01/09/2023 09:00	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	186	B	100	1	01/11/2023 18:15	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 18:15	WG1985187
(S) o-Terphenyl	56.5		31.0-160		01/11/2023 18:15	WG1985187

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	01/09/2023 23:43	WG1985268

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	01/10/2023 21:04	WG1986307
(S) a,a,a-Trifluorotoluene(FID)	98.1		78.0-120		01/10/2023 21:04	WG1986307

3 Ss

4 Cn

5 Sr

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	01/09/2023 09:21	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 09:21	WG1985128
Toluene	ND		1.00	1	01/09/2023 09:21	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 09:21	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 09:21	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 09:21	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 09:21	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 09:21	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 09:21	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 09:21	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 09:21	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 09:21	WG1985128
(S) Toluene-d8	87.3		80.0-120		01/09/2023 09:21	WG1985128
(S) 4-Bromofluorobenzene	81.9		77.0-126		01/09/2023 09:21	WG1985128
(S) 1,2-Dichloroethane-d4	115		70.0-130		01/09/2023 09:21	WG1985128

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 18:35	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 18:35	WG1985187
(S) o-Terphenyl	57.0		31.0-160		01/11/2023 18:35	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	01/09/2023 23:46	WG1985268

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	01/11/2023 23:37	WG1987019
(S) a,a,a-Trifluorotoluene(FID)	98.6		78.0-120		01/11/2023 23:37	WG1987019

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	01/09/2023 09:42	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 09:42	WG1985128
Toluene	ND		1.00	1	01/09/2023 09:42	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 09:42	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 09:42	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 09:42	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 09:42	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 09:42	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 09:42	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 09:42	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 09:42	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 09:42	WG1985128
(S) Toluene-d8	88.2		80.0-120		01/09/2023 09:42	WG1985128
(S) 4-Bromofluorobenzene	82.6		77.0-126		01/09/2023 09:42	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 09:42	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 18:55	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 18:55	WG1985187
(S) o-Terphenyl	58.0		31.0-160		01/11/2023 18:55	WG1985187

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	01/09/2023 23:49	WG1985268

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	01/11/2023 23:59	WG1987019
(S) a,a,a-Trifluorotoluene(FID)	98.2		78.0-120		01/11/2023 23:59	WG1987019

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	01/09/2023 10:02	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 10:02	WG1985128
Toluene	ND		1.00	1	01/09/2023 10:02	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 10:02	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 10:02	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 10:02	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 10:02	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 10:02	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 10:02	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 10:02	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 10:02	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 10:02	WG1985128
(S) Toluene-d8	88.9		80.0-120		01/09/2023 10:02	WG1985128
(S) 4-Bromofluorobenzene	81.7		77.0-126		01/09/2023 10:02	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 10:02	WG1985128

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		100	1	01/11/2023 19:15	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/11/2023 19:15	WG1985187
(S) o-Terphenyl	53.0		31.0-160		01/11/2023 19:15	WG1985187

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	01/10/2023 00:17	WG1985268

1
Cp2
Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	506	B	100	1	01/11/2023 07:35	WG1986300
(S) a,a,a-Trifluorotoluene(FID)	99.2		78.0-120		01/11/2023 07:35	WG1986300

3
Ss4
Cn5
Sr

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	6.32		1.00	1	01/09/2023 10:23	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 10:23	WG1985128
Toluene	ND		1.00	1	01/09/2023 10:23	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 10:23	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 10:23	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 10:23	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 10:23	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 10:23	WG1985128
Isopropylbenzene	6.96		1.00	1	01/09/2023 10:23	WG1985128
n-Propylbenzene	7.25		1.00	1	01/09/2023 10:23	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 10:23	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 10:23	WG1985128
(S) Toluene-d8	87.1		80.0-120		01/09/2023 10:23	WG1985128
(S) 4-Bromofluorobenzene	85.0		77.0-126		01/09/2023 10:23	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 10:23	WG1985128

6
Qc7
Gl8
Al9
Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	464		100	1	01/12/2023 06:31	WG1985187
Residual Range Organics (RRO)	ND		250	1	01/12/2023 06:31	WG1985187
(S) o-Terphenyl	59.0		31.0-160		01/12/2023 06:31	WG1985187

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	01/09/2023 00:45	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 00:45	WG1985128
Toluene	ND		1.00	1	01/09/2023 00:45	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 00:45	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 00:45	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 00:45	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 00:45	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 00:45	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 00:45	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 00:45	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 00:45	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 00:45	WG1985128
(S) Toluene-d8	88.6		80.0-120		01/09/2023 00:45	WG1985128
(S) 4-Bromofluorobenzene	80.7		77.0-126		01/09/2023 00:45	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 00:45	WG1985128

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	01/09/2023 01:05	WG1985128
Ethylbenzene	ND		1.00	1	01/09/2023 01:05	WG1985128
Toluene	ND		1.00	1	01/09/2023 01:05	WG1985128
Xylenes, Total	ND		3.00	1	01/09/2023 01:05	WG1985128
Methyl tert-butyl ether	ND		1.00	1	01/09/2023 01:05	WG1985128
Naphthalene	ND		5.00	1	01/09/2023 01:05	WG1985128
1,2-Dibromoethane	ND		1.00	1	01/09/2023 01:05	WG1985128
1,2-Dichloroethane	ND		1.00	1	01/09/2023 01:05	WG1985128
Isopropylbenzene	ND		1.00	1	01/09/2023 01:05	WG1985128
n-Propylbenzene	ND		1.00	1	01/09/2023 01:05	WG1985128
1,2,4-Trimethylbenzene	ND		1.00	1	01/09/2023 01:05	WG1985128
1,3,5-Trimethylbenzene	ND		1.00	1	01/09/2023 01:05	WG1985128
(S) Toluene-d8	89.3		80.0-120		01/09/2023 01:05	WG1985128
(S) 4-Bromofluorobenzene	81.9		77.0-126		01/09/2023 01:05	WG1985128
(S) 1,2-Dichloroethane-d4	116		70.0-130		01/09/2023 01:05	WG1985128

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Method Blank (MB)

(MB) R3879697-1 01/10/23 17:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead	U		0.849	2.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3879697-2 01/10/23 17:16

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	50.0	49.3	98.5	80.0-120	

⁷Gl

⁸Al

⁹Sc

L1572762-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1572762-01 01/10/23 17:20 • (MS) R3879697-4 01/10/23 17:26 • (MSD) R3879697-5 01/10/23 17:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	ND	48.0	50.2	96.0	100	1	75.0-125			4.57	20

Method Blank (MB)

(MB) R3879342-1 01/09/23 22:39

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead	U		0.849	2.00

Laboratory Control Sample (LCS)

(LCS) R3879342-2 01/09/23 22:42

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	50.0	47.8	95.6	80.0-120	

L1573726-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1573726-05 01/09/23 22:46 • (MS) R3879342-4 01/09/23 22:52 • (MSD) R3879342-5 01/09/23 22:56

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	ND	49.5	48.1	99.0	96.3	1	75.0-125			2.81	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3879698-2 01/08/23 21:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	45.2	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	96.9			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3879698-1 01/08/23 20:25

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5150	93.6	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			102	78.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3880022-2 01/10/23 17:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	59.2	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	98.9			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3880022-1 01/10/23 16:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5870	107	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			106	78.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3879860-3 01/10/23 11:14

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	53.2	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	96.5			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3879860-2 01/10/23 10:30

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	4830	87.8	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			101	78.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3880326-2 01/11/23 22:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	45.9	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	98.5			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3880326-1 01/11/23 21:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5360	97.5	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			104	78.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3880328-2 01/11/23 22:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	45.9	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	98.5			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3880328-1 01/11/23 21:27

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5360	97.5	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			104	78.0-120	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3880648-2 01/13/23 01:04

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	31.6	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	109			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3880648-1 01/13/23 00:10

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5020	91.3	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			86.6	78.0-120	

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Gl

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Method Blank (MB)

(MB) R3880068-2 01/08/23 23:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Ethylbenzene	U		0.137	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	88.3			80.0-120
(S) 4-Bromofluorobenzene	80.4			77.0-126
(S) 1,2-Dichloroethane-d4	115			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3880068-1 01/08/23 23:09

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	5.00	5.32	106	70.0-123	
Ethylbenzene	5.00	4.20	84.0	79.0-123	
Toluene	5.00	4.53	90.6	79.0-120	
Xylenes, Total	15.0	12.5	83.3	79.0-123	
Methyl tert-butyl ether	5.00	5.74	115	68.0-125	
Naphthalene	5.00	4.30	86.0	54.0-135	
1,2-Dibromoethane	5.00	4.64	92.8	80.0-122	
1,2-Dichloroethane	5.00	5.71	114	70.0-128	
Isopropylbenzene	5.00	4.21	84.2	76.0-127	
n-Propylbenzene	5.00	5.37	107	77.0-124	
1,2,4-Trimethylbenzene	5.00	5.14	103	76.0-121	
1,3,5-Trimethylbenzene	5.00	5.19	104	76.0-122	
(S) Toluene-d8			87.4	80.0-120	
(S) 4-Bromofluorobenzene			83.3	77.0-126	
(S) 1,2-Dichloroethane-d4			117	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3880234-2 01/11/23 09:20

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0941	1.00
Ethylbenzene	U		0.137	1.00
Toluene	U		0.278	1.00
Xylenes, Total	U		0.174	3.00
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
1,2-Dibromoethane	U		0.126	1.00
1,2-Dichloroethane	U		0.0819	1.00
Isopropylbenzene	U		0.105	1.00
n-Propylbenzene	U		0.0993	1.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
(S) Toluene-d8	92.4			80.0-120
(S) 4-Bromofluorobenzene	84.1			77.0-126
(S) 1,2-Dichloroethane-d4	90.4			70.0-130

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

(LCS) R3880234-1 01/11/23 08:38 • (LCSD) R3880234-3 01/11/23 12:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	5.00	4.92	4.65	98.4	93.0	70.0-123			5.64	20
Ethylbenzene	5.00	4.94	4.57	98.8	91.4	79.0-123			7.78	20
Toluene	5.00	5.43	4.72	109	94.4	79.0-120			14.0	20
Xylenes, Total	15.0	14.7	13.6	98.0	90.7	79.0-123			7.77	20
Methyl tert-butyl ether	5.00	4.85	4.30	97.0	86.0	68.0-125			12.0	20
Naphthalene	5.00	4.52	3.47	90.4	69.4	54.0-135		J3	26.3	20
1,2-Dibromoethane	5.00	5.19	4.35	104	87.0	80.0-122			17.6	20
1,2-Dichloroethane	5.00	5.18	4.60	104	92.0	70.0-128			11.9	20
Isopropylbenzene	5.00	5.22	4.51	104	90.2	76.0-127			14.6	20
n-Propylbenzene	5.00	5.15	4.53	103	90.6	77.0-124			12.8	20
1,2,4-Trimethylbenzene	5.00	5.19	4.42	104	88.4	76.0-121			16.0	20
1,3,5-Trimethylbenzene	5.00	5.18	4.45	104	89.0	76.0-122			15.2	20
(S) Toluene-d8				95.9	91.6	80.0-120				
(S) 4-Bromofluorobenzene				91.9	90.4	77.0-126				
(S) 1,2-Dichloroethane-d4				93.4	95.1	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3880237-1 01/11/23 14:31

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	35.9	⬇	33.3	100
Residual Range Organics (RRO)	U		83.3	250
(S) o-Terphenyl	55.5			31.0-160

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

(LCS) R3880237-2 01/11/23 14:52 • (LCSD) R3880237-3 01/11/23 15:12

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1450	1410	96.7	94.0	50.0-150			2.80	20
(S) o-Terphenyl				71.0	71.0	31.0-160				

¹Cp

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⁶Qc

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⁹Sc

Method Blank (MB)

(MB) R3879616-3 01/10/23 09:29

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Anthracene	U		0.0190	0.0500
Acenaphthene	U		0.0190	0.0500
Acenaphthylene	U		0.0171	0.0500
Benzo(a)anthracene	U		0.0203	0.0500
Benzo(a)pyrene	U		0.0184	0.0500
Benzo(b)fluoranthene	U		0.0168	0.0500
Benzo(g,h,i)perylene	U		0.0184	0.0500
Benzo(k)fluoranthene	U		0.0202	0.0500
Chrysene	U		0.0179	0.0500
Dibenz(a,h)anthracene	U		0.0160	0.0500
Fluoranthene	U		0.0270	0.100
Fluorene	U		0.0169	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0158	0.0500
Naphthalene	U		0.0917	0.250
Phenanthrene	U		0.0180	0.0500
Pyrene	U		0.0169	0.0500
1-Methylnaphthalene	U		0.0687	0.250
2-Methylnaphthalene	U		0.0674	0.250
2-Chloronaphthalene	U		0.0682	0.250
(S) Nitrobenzene-d5	90.0			31.0-160
(S) 2-Fluorobiphenyl	66.5			48.0-148
(S) p-Terphenyl-d14	96.5			37.0-146

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

(LCS) R3879616-1 01/10/23 08:54 • (LCSD) R3879616-2 01/10/23 09:11

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	2.00	1.78	1.80	89.0	90.0	67.0-150			1.12	20
Acenaphthene	2.00	1.73	1.77	86.5	88.5	65.0-138			2.29	20
Acenaphthylene	2.00	1.69	1.72	84.5	86.0	66.0-140			1.76	20
Benzo(a)anthracene	2.00	1.88	1.91	94.0	95.5	61.0-140			1.58	20
Benzo(a)pyrene	2.00	1.94	1.99	97.0	99.5	60.0-143			2.54	20
Benzo(b)fluoranthene	2.00	1.86	1.90	93.0	95.0	58.0-141			2.13	20
Benzo(g,h,i)perylene	2.00	1.85	1.90	92.5	95.0	52.0-153			2.67	20
Benzo(k)fluoranthene	2.00	1.76	1.84	88.0	92.0	58.0-148			4.44	20
Chrysene	2.00	1.90	1.97	95.0	98.5	64.0-144			3.62	20
Dibenz(a,h)anthracene	2.00	1.66	1.71	83.0	85.5	52.0-155			2.97	20
Fluoranthene	2.00	2.05	2.12	103	106	69.0-153			3.36	20

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

(LCS) R3879616-1 01/10/23 08:54 • (LCSD) R3879616-2 01/10/23 09:11

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	2.00	1.86	1.88	93.0	94.0	64.0-136			1.07	20
Indeno(1,2,3-cd)pyrene	2.00	1.87	1.90	93.5	95.0	54.0-153			1.59	20
Naphthalene	2.00	1.51	1.54	75.5	77.0	61.0-137			1.97	20
Phenanthrene	2.00	1.84	1.91	92.0	95.5	62.0-137			3.73	20
Pyrene	2.00	2.00	2.07	100	104	60.0-142			3.44	20
1-Methylnaphthalene	2.00	1.56	1.60	78.0	80.0	66.0-142			2.53	20
2-Methylnaphthalene	2.00	1.55	1.58	77.5	79.0	62.0-136			1.92	20
2-Chloronaphthalene	2.00	1.53	1.58	76.5	79.0	64.0-140			3.22	20
(S) Nitrobenzene-d5				92.5	94.5	31.0-160				
(S) 2-Fluorobiphenyl				67.0	71.0	48.0-148				
(S) p-Terphenyl-d14				98.5	100	37.0-146				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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.

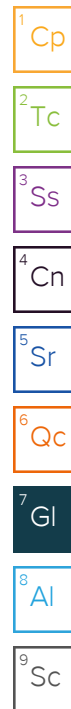
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	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

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.



ACCREDITATIONS & LOCATIONS

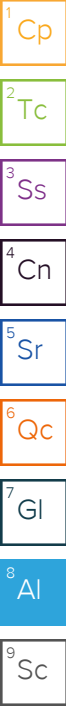
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

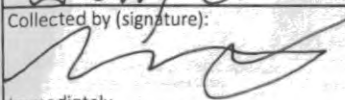
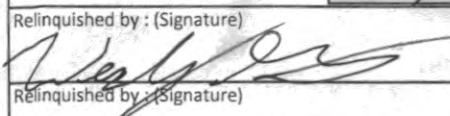
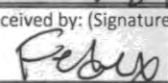
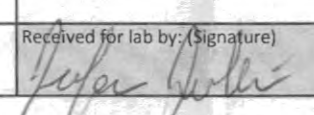
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Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina 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	LA000356
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: PBS Engineering & Env.- POR 4412 S Corbett Ave Portland, OR 97239			Billing Information: Accounts Payable 4412 S Corbett Ave Portland, OR 97239			Analysis / Container / Preservative			Chain of Custody Page <u>1</u> of <u>2</u>	
						Pres Chk				
Report to: Nick Thornton			Email To: David.Rukki@pbsusa.com; Nick.Thornton@pbsu			extract and hold the MW-2, MW-7, MW-9 and MW-15 for PAHs per request of Nick Thornton -bjf 01/09/23			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	
Project Description:		City/State Collected: <u>Bethel City OR</u>		Please Circle: PT MT CT ET					SDG # <u>L1573726</u> A138	
Phone: 503-248-1939		Client Project # 24349.000		Lab Project # PBSENGPOR-24349000		Acctnum: PBSENGPOR		Template: T221702		
Collected by (print): <u>Wathy Garcia</u>		Site/Facility ID #		P.O. #		Prelogin: P970461		PM: 110 - Brian Ford		
Collected by (signature): 		Rush? (Lab MUST Be Notified) ☐ Same Day ☐ Five Day ☐ Next Day ☐ 5 Day (Rad Only) ☐ Two Day ☐ 10 Day (Rad Only) ☐ Three Day		Quote #		Date Results Needed		Shipped Via:		
Immediately Packed on Ice N ☐ Y ☒		No. of Cntrs		NTWPHDX w/ silica 100ml Amb-HCI		NTWPHGX 40ml Amb HCl		PAHs 8270ESIM 40ml Amb-NoPres-WT		
				RBDM VOCs 8260D 40ml Amb-HCI		Total Lead 6020 250ml HDPE-HNO3				
Sample ID		Comp/Grab		Matrix *		Depth		Date		
								Time		
• 23Q1 MW-1		G		GW				1/5/23 1501 11		
• 23Q1 MU-2				GW				1/5/23 1051 1		
• 23Q1 MW-3				GW				1/4/23 1700 1		
• 23Q1 MW-4				GW				1/5/23 1002 1		
• 23Q1 MW-5				GW				1/5/23 1402 1		
• 23Q1 MW-7				GW				1/4/23 1606 1		
• 23Q1 MW-8				GW				1/5/23 1147 1		
• 23Q1 MW-9				GW				1/5/23 1220 1		
• 23Q1 MW-10				GW				1/4/23 1156 1		
• 23Q1 MW-13				GW				1/4/23 1510 1		
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other		Remarks: Hold PAH for all but 23Q1 MW-1 + 23Q1 MW-5		pH _____ Temp _____ Flow _____ Other _____		Sample Receipt Checklist COC Seal Present/Intact: ☒ NP ☐ Y ☐ N COC Signed/Accurate: ☒ N ☐ Y ☐ N Bottles arrive intact: ☒ N ☐ Y ☐ N Correct bottles used: ☒ N ☐ Y ☐ N Sufficient volume sent: ☒ N ☐ Y ☐ N If Applicable VOA Zero Headspace: ☒ N ☐ Y ☐ N Preservation Correct/Checked: ☒ N ☐ Y ☐ N RAD Screen <0.5 mR/hr: ☒ N ☐ Y ☐ N				
Relinquished by: (Signature) 		Date: 1/6/23		Time: 1200		Received by: (Signature) 		Trip Blank Received: Yes/No ☒ HCL/ MeOH ☐ TBR		
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Temp: 4.1 ± 0.4 °C Bottles Received: 143		
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature) 		Date: 1-7-23 Time: 0900		
								Hold: Condition: NCF ☒ OK		

Appendix F

Beneficial Water Use Determination and Vicinity Well Logs

BWUD Wells of Potential Beneficial Uses

Comment	wl_nbr	name_company	street	city	state	type	depth_fir	depth_dril	completed	post_stati	received_date	use_dom	use_irrigat	use_indust	townshi	townshi	range	range	sctn	qtr160	qtr40	tax_lot	street_of_well	longitude	latitude
Located within 1/4 mile	1091			BAKER CITY	OR	W				0	12/31/1990				9	S	40	E	16				2001' W 58' N OF E .25 COR SEC 16	-117.817271	44.7818859
Greater than 1/4 mile	1094	L.D.S.		BAKER CITY	OR	W	80		100	25		X			9	S	40	E	16	NW	SW				
Greater than 1/4 mile	1085		2410 OAK	BAKER CITY	OR	W			30	12	4/4/1960		X		9	S	40	E	16						
Greater than 1/4 mile	1082		915 D ST.	BAKER CITY	OR	W		26	26	7.5	9/19/1963		X		9	S	40	E	16				915 D ST., BAKER, ORE.		
Greater than 1/4 mile	1087		1655 ASH	BAKER CITY	OR	W		14	14	8	7/7/1961		X		9	S	40	E	16				1655 ASH ST.		
Located within 1/4 mile	1083		2101 BALM ST.	BAKER CITY	OR	W		16	16	0	5/23/1961		X		9	S	40	E	16						
Located within 1/4 mile	1092	BAKER PACKING CO.			OR	W		600		0					9	S	40	E	16	NE	SE			-117.80861	44.7824264
Location unknown	1097				OR	W		6.9		4.3		X			9	S	40	E	16	SW	NE				
Location unknown	1093	BAKER PACKING CO.			OR	W		23.71		3.3					9	S	40	E	16	NE	SE				
Location unknown	1089				OR	W		11.5		7.5		X			9	S	40	E	16	NE	NE				
Greater than 1/4 mile	1086		780 H ST.	BAKER CITY	OR	W			18	10			X		9	S	40	E	16						
Greater than 1/4 mile	1084		1550 CAMPBELL ST.	BAKER CITY	OR	W			19	12		X			9	S	40	E	16				1550 CAMPBELL ST.,BAKER		
Location unknown	1088	BAKER READY MIX		BAKER CITY	OR	W			60	20				X	9	S	40	E	16	NE	NE				
Greater than 1/4 mile	1081		1290 D STREET	BAKER CITY	OR	W	65	110	110	14			X		9	S	40	E	16	NW	SE				
Greater than 1/4 mile	1090		3333 BIRCH ST.	BAKER CITY	OR	W	120	122	122	28			X		9	S	40	E	16	NE	SW		3333 BIRCH ST.		
Greater than 1/4 mile	1096	FRANKO OIL CO.	MAIN ST. & CAMPBELL S	PORTLAND	OR	W	13	31	31	13				X	9	S	40	E	16	NW	SW		MAIN & CAMPBELL ST,BAKER		
Greater than 1/4 mile	1095	FRANKO OIL CO.	MAIN & CAMPBELL ST.	PORTLAND	OR	W	13	30	30	13					9	S	40	E	16	NW	SW				
Location unknown	1807		PO BOX 88	BAKER CITY	OR	W	22	70	65	16	6/20/1991		X		9	S	40	E	16	SE	SE				
Greater than 1/4 mile	1858		PO BOX 88	BAKER CITY	OR	W	16	164	164	16	2/13/1992		X		9	S	40	E	16	SE	SE	3900	525 VALLEY		
Greater than 1/4 mile	1857		745 H ST	BAKER CITY	OR	W	21	144	135	16	2/12/1992		X		9	S	40	E	16	NE	NE	502	745 H ST		
Greater than 1/4 mile	2027		3235 GROVE ST	BAKER CITY	OR	W	26	180	170	26	5/10/1994		X		9	S	40	E	16	NW	NE	902			
Greater than 1/4 mile	50324		3040 WALNUT	BAKER CITY	OR	W					1/26/1996				9	S	40	E	16	NW	NW	3300			
Greater than 1/4 mile	50338		1370 BAKER ST	BAKER CITY	OR	W									9	S	40	E	16			6300			
Greater than 1/4 mile	50340		1890 ASH ST	BAKER CITY	OR	W									9	S	40	E	16	SE	SW	8600			
Greater than 1/4 mile	50353		PO BOX 762	BAKER CITY	OR	W									9	S	40	E	16	NE	SE	1100	1470 BROADWAY		
Located within 1/4 mile	50388	POLLEY, SUZETTE; NELSON R	PO BOX 762	BAKER CITY	OR	W					8/18/1997				9	S	40	E	16	SE	SW	1200	990 WASHINGTON AVE		
Greater than 1/4 mile	50392	CHANDLER, CAROLYN	598 W FRANKLIN	MERIDIAN	ID	W	10	140	139	9	10/29/1997	X			9	S	40	E	16	NW	NE	1400	2960 EAST ST		
Greater than 1/4 mile	50415	CHANDLER, CAROLYN	598 W FRANKLIN	MERIDIAN	ID	W	10	180	179	9	2/9/1998	X			9	S	40	E	16	NW	NE	1400	2960 EAST ST		
Greater than 1/4 mile	50419	NELSON REAL ESTATE (C/O)	PO BOX 762	BAKER CITY	OR	W					2/19/1998				9	S	40	E	16	NW	SW	5700	2630 RESORT STREET		
Greater than 1/4 mile	50460		1250 COURT AVE	BAKER CITY	OR	W					7/17/1998				9	S	40	E	16	SW	SE	9600			
Located within 1/4 mile	50474	FREE, CAROL; NELSON REAL E	PO BOX 762	BAKER CITY	OR	W					8/14/1998				9	S	40	E	16	SW	NE	7100	1218 BAKER ST		
Located within 1/4 mile	50485	MADIN, IAN POWELL	PO BOX 762	BAKER CITY	OR	W					9/21/1998				9	S	40	E	16				935 D ST. NELSON REAL ESTATE, INC.		
Located within 1/4 mile	50508		PO BOX 762	BAKER CITY	OR	W					11/2/1998				9	S	40	E	16			2000	2425 BALM STRET, BAKER CITY, OR		
Greater than 1/4 mile	1700		1713 VALLEY AVE	BAKER CITY	OR	W	12	55	47	9	4/18/1990		X		9	S	40	E	16	SW	SW	12500	1713 VALLEY AVE		
Greater than 1/4 mile	50589	WIMP, CINDY	1105 COURT ST.	BAKER CITY	OR	W					2/8/1999				9	S	40	E	16			10700			
Greater than 1/4 mile	50617	STEELE, EVELYN	2975 N 3RD	BAKER CITY	OR	W	10	180	179	9	6/7/1999	X			9	S	40	E	16	NW	NE	2101	2980 EAST ST		
Greater than 1/4 mile	50731	MESPELT,KIMBERLY	2495 RESORT STREET	BAKER CITY	OR	W					5/8/2000				9	S	40	E	16			9100	1855 PLUM STREET BAKER CITY OR		
Greater than 1/4 mile	50742		2375 CLARK ST	BAKER CITY	OR	W					7/10/2000				9	S	40	E	16			4800	2375 CLARK ST BAKER CITY OR 97814		
Greater than 1/4 mile	50808	HEATON, RUTH	845 H STREET	BAKER CITY	OR	W					3/26/2001				9	S	40	E	16	NE	NW	500	845 H ST-BAKER CITY		
Greater than 1/4 mile	50809	COE, LAURA	PO BOX 161	COVE	OR	W					3/26/2001				9	S	40	E	16	NW	NW	1301	3110 WALNUT ST, BAKER CITY		
Greater than 1/4 mile	50907	AVELINE, LAURA	1705 VALLEY AVE	BAKER CITY	OR	W					2/27/2002				9	S	40	E	16			12600	1705 VALLEY AVE		
Located within 1/4 mile	50909		1002 BROADWAY	BAKER CITY	OR	W					3/15/2002				9	S	40	E	16			7500	1002 BROADWAY		
Greater than 1/4 mile	50957		3180 BIRCH ST	BAKER CITY	OR	W					9/3/2002				9	S	40	E	16			602	3180 BIRCH ST		
Located within 1/4 mile	51265	POINTER, KATHY	2105 BIRCH	BAKER CITY	OR	W					8/17/2004				9	S	40	E	16			8800	2105 BIRCH ST, BAKER CITY		
Located within 1/4 mile	51306	STOUT, JULIE	2080 BALM ST	BAKER CITY	OR	W					1/10/2005				9	S	40	E	16	C	D	1500	2080 BALM ST, BAKER CITY		
Greater than 1/4 mile	52057		3155 GROVE ST	BAKER CITY	OR	W	20	200	200	20	9/13/2010	X			9	S	40	E	16	NW	NW	1400	3155 GROVE ST	-117.826959	44.787789
Greater than 1/4 mile	52245	KERRI NIELSON	2590 RESORT	BAKER CITY	OR	W					8/1/2008				9	S	40	E	16			4700	2590 RESORT, BAKER CITY		

Legend

Well is located greater than a quarter mile from site

Well is located within a quarter mile of site

Not enough information to geolocate well

(USE ADDITIONAL SHEETS IF NECESSARY)

STATE ENGINEER
Salem, Oregon

Well Record

STATE WELL NO. 9/40-16G(1)
COUNTY Baker
APPLICATION NO. U-14

OWNER: William Wendt

MAILING
ADDRESS: _____

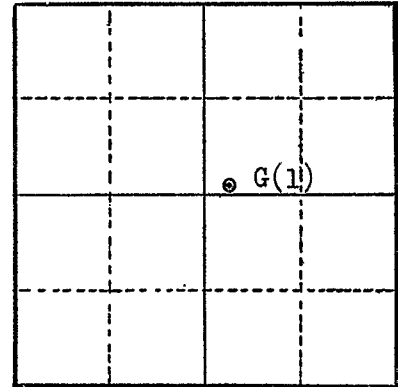
LOCATION OF WELL: Owner's No. _____

CITY AND
STATE: _____

Baker, Oregon

..... $\frac{1}{4}$ $\frac{1}{4}$ Sec. T. N. E.
..... S., R. W., W.M.

Bearing and distance from section or subdivision
corner 2001' west & 58' north of E $\frac{1}{4}$ corner
Section 16.



Section 16

Altitude at well _____

TYPE OF WELL: _____ Date Constructed _____

Depth drilled 558 Depth cased _____

CASING RECORD:

18", 4"
18-inch to 40', 10-inch 10" 40' to 145', and 4" below 145'

FINISH:

Perforated casing to 145 feet uncased below that depth.

AQUIFERS:

WATER LEVEL:

PUMPING EQUIPMENT: Type Turbine H.P. 15
Capacity 1150 G.P.M.

WELL TESTS: (Test at depth of 145')
Drawdown 45 ft. after _____ hours 200 G.P.M.
Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER _____ Temp. _____ °F. _____, 19.

SOURCE OF INFORMATION _____

DRILLER or DIGGER _____

ADDITIONAL DATA:

Log X Water Level Measurements _____ Chemical Analysis _____ Aquifer Test _____

REMARKS:

At 530', flow of 806 gpm of 1½ foot above L.S.D.

STATE ENGINEER
Salem, Oregon

State Well No. 9/40-16G(1)
County Baker
Application No. U-14

Well Log

Owner: William Wendt Owner's No. _____

Driller: _____ Date Drilled _____

CHARACTER OF MATERIAL	(Feet below land surface)		Thickness (feet)
	From	To	
<u>Loam, fine, sandy</u>	<u>0</u>	<u>2</u>	<u>2</u>
<u>Sand, with fine gravel</u>	<u>2</u>	<u>7</u>	<u>5</u>
<u>Gravel, water bearing</u>	<u>7</u>	<u>15</u>	<u>8</u>
<u>Sand, clayey</u>	<u>15</u>	<u>21</u>	<u>6</u>
<u>Gravel, fine, with some clay, (little water)</u>	<u>21</u>	<u>32</u>	<u>11</u>
<u>Clay, blue</u>	<u>32</u>	<u>36</u>	<u>4</u>
<u>Sand, medium, with some clay, (little water)</u>	<u>36</u>	<u>47</u>	<u>11</u>
<u>Silt, fine, blue, firm</u>	<u>47</u>	<u>79</u>	<u>32</u>
<u>Shale, black</u>	<u>79</u>	<u>85</u>	<u>6</u>
<u>Sand and gravel, water bearing</u>	<u>85</u>	<u>110</u>	<u>25</u>
<u>Sand, firm</u>	<u>110</u>	<u>116</u>	<u>6</u>
<u>Shale</u>	<u>116</u>	<u>124</u>	<u>8</u>
<u>Sand & shale layers, water bearing</u>	<u>124</u>	<u>140</u>	<u>16</u>
<u>Clay</u>	<u>140</u>	<u>170</u>	<u>30</u>
<u>Gravel, cemented ?</u>	<u>170</u>	<u>172</u>	<u>2</u>
<u>Clay, sandy</u>	<u>172</u>	<u>270</u>	<u>98</u>
<u>Gravel, peat, and sand, water bearing</u>	<u>270</u>	<u>290</u>	<u>20</u>
<u>Clay, sandy, and clay layers</u>	<u>290</u>	<u>345</u>	<u>55</u>
<u>Sand, water bearing</u>	<u>345</u>	<u>348</u>	<u>3</u>
<u>Clay sandy and clay layers</u>	<u>348</u>	<u>530</u>	<u>182</u>
<u>Loose material with fine gravel, water bearing</u>	<u>530</u>	<u>550</u>	<u>20</u>

STATE ENGINEER
Salem, Oregon

Baker
1092

Well Record

STATE WELL NO. 9/40-16H(1)
COUNTY Baker
APPLICATION NO. _____

OWNER: Baker Packing Co.

MAILING
ADDRESS: _____

LOCATION OF WELL: Owner's No. _____

CITY AND
STATE: _____

SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 16 T. 9 S., R. 40 W. W.M.

Bearing and distance from section or subdivision

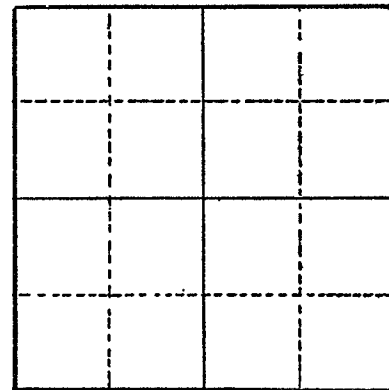
corner _____

Altitude at well 3.421

TYPE OF WELL: drilled Date Constructed _____

Depth drilled 600 Depth cased _____

CASING RECORD: 8 inches



Section _____

FINISH: _____

AQUIFERS: _____

WATER LEVEL: Flowing, April 13, 1949

PUMPING EQUIPMENT: Type _____ H.P. _____
Capacity _____ G.P.M.

WELL TESTS:

Drawdown _____ ft. after _____ hours _____ G.P.M.

Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER stock Temp. _____ °F., 19____

SOURCE OF INFORMATION USGS

DRILLER or DIGGER _____

ADDITIONAL DATA:

Log _____ Water Level Measurements _____ Chemical Analysis x Aquifer Test _____

REMARKS: Hardness 40 ppm, chloride 11 ppm. Flow estimated at 2 gallons per min.
water has slight odor of hydrogen sulfide gas; temp. of 79°F.

BAKE 50388

WELL IDENTIFICATION FORM

Owner's Well Number: _____

Phone _____

CURRENT WELL OWNER:

Name: King & Suzette Polley

Mailing Address: c/o Nelson Real Estate, Inc., PO Box 762

City: Baker City State: OR Zip: 97814

WELL LOCATION:

County: Baker Latitude: _____ Longitude: _____

Township: 9 N or S, Range: 40 E or W Section: 16DC 1/4 1/4

Tax Lot Number: 1200

Street Address of Well (if different from above): 990 Washington Avenue

If a well report is available for this well, please attach a copy of it to this form and return. It is not necessary for you to complete the remainder of the form if the well report is attached. If a well report is not available, please complete the remainder of the form to the best of your ability.

WELL INFORMATION:

Start Card Number: _____ Approx. Construction Date: _____

Well Constructor: _____

Name of Owner at Time of Construction: _____

Well Depth (in feet): _____ Static Water Level (in feet): _____

Diameter of Exposed Well Casing (in inches): _____

Does this well have a formal water right associated with it? Yes: _____ No: _____ If yes:

Application #: _____ Permit #: _____ Certificate #: _____

Please Return Completed Form to:

Oregon Water Resources Department
158 12th Street NE
Salem, OR 97310

(Office use only)

Well Identification Number: 19160

RECEIVED

AUG 18 1997

WATER RESOURCES DEPT.
SALEM, OREGON

WELL IDENTIFICATION FORM**CURRENT WELL OWNER: Al & Carol Free Owners Well Number:** _____Name: C/O Nelson Real Estate, IncMailing Address: P.O. Box 762City: Baker CityState: ORZip: 97814

If a well report is available for this well, please attach a copy of it to this form and return. It is not necessary for you to complete the remainder of the form if the well report is attached. If a well report is not available, please complete the remainder of the form to the best of your ability.

WELL LOCATION:"Bake 50474"County: Baker

Latitude: _____

Longitude _____

Township: 9 SRange: 40 ESection: 16NE 1/4SW 1/4Tax Lot Number: 7100Street Address of Well (if different from above): 1218 Baker Street**WELL INFORMATION: No Well Log - Well has been abandoned**

Start Card Number: _____

Approx. Construction Date _____

Well Constructor: _____

Name of Owner at Time of Construction _____

Well Depth (in feet): _____

Static Water Level (in feet): _____

Diameter of Exposed Well Casing (in inches): _____

Does this well have a formal water right associated with it? Yes: _____ No: _____ If yes: _____

Application #: _____

Permit #: _____

Certificate #: _____

Please Return Completed form to:**Oregon Water Resources Department****158 12th Street NE****Salem, OR 97310****fax 503-378-8130***(Office use only)***Well Identification Number:** _____L 26999*per Lorie
Harvey
8-21-98
#**pulled
pump
& capped*

WELL IDENTIFICATION FORM

Owner's Well Number: _____

CURRENT WELL OWNER:

Phone _____

Name: Hilary J. Johnson and Ian Powell Madin

Mailing Address: c/o Nelson Real Estate, Inc., PO Box 762

City: Baker City State: OR Zip: 97814

WELL LOCATION: **"BAKE 50485"**

County: Baker Latitude: _____ Longitude: _____

Township: 9 N or (S) Range: 40 (E) or W Section: 16AC 1/4 1/4

Tax Lot Number: 112

Street Address of Well (if different from above): 935 "D" Street

If a well report is available for this well, please attach a copy of it to this form and return. It is not necessary for you to complete the remainder of the form if the well report is attached. If a well report is not available, please complete the remainder of the form to the best of your ability.

WELL INFORMATION:

Start Card Number: _____ Approx. Construction Date: _____

Well Constructor: _____

Name of Owner at Time of Construction: _____

Well Depth (in feet): _____ Static Water Level (in feet): _____

Diameter of Exposed Well Casing (in inches): _____

Does this well have a formal water right associated with it? Yes: _____ No: _____ If yes:

Application #: _____ Permit #: _____ Certificate #: _____

Please Return Completed Form to:

Oregon Water Resources Department
158 12th Street NE
Salem, OR 97310

(Office use only)

Well Identification Number: **"28093"**

RECEIVED

SEP 21 1998

**WATER RESOURCES DEPT.
SALEM, OREGON**

Mailing Address:

JB 8:59AM FROM

P. 2

Deed Recorder

Well Identifier

Rights and
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f

WELL IDENTIFICATION FORM

CURRENT WELL OWNER:

Owners Well Number: _____

Name: James Russell Rose

Mailing Address: P.O. 762

City: Baker City

State: OR

Zip: 97814

If a well report is available for this well, please attach a copy of it to this form and return. It is not necessary for you to complete the remainder of the form if the well report is attached. If a well report is not available, please complete the remainder of the form to the best of your ability.

WELL LOCATION:

"BAKE 50508"

County: Baker

Latitude: _____

Longitude _____

Township: 9S

Range: 40E

Section: 16

1/4

1/4

Tax Lot Number: 2000

Street Address of Well (if different from above): 2425 Balm Street, Baker City, OR

WELL INFORMATION: No Well tag available (abandoned well)

Start Card Number: _____ Approx. Construction Date _____

Well Constructor: _____

Name of Owner at Time of Construction _____

Well Depth (in feet): _____ Static Water Level (in feet): _____

Diameter of Exposed Well Casing (in inches): _____

Does this well have a formal water right associated with it? Yes: _____ No: _____ if yes: _____

Application #: _____ Permit #: _____ Certificate #: _____

Please Return Completed form to:

Oregon Water Resources Department
158 12th Street NE
Salem, OR 97310
fax 503-378-8130

(Office use only)

Well Identification Number: 28820

Received Date: _____

County Well Log ID #

Well Identification Tag #

"Bake 50909"

2-57515

WELL IDENTIFICATION APPLICATION FORM

BUYER/CURRENT WELL OWNER:

Name: Alan Crossmiller

Mailing Address: % Doug Smith, 807 4th St.

City: Baker City State: Or. Zip: 97814 Phone: (541) 523-7171

NOTE: Well Identification Tag will be sent to the above address unless otherwise specified above.

WELL LOCATION:

County: Baker Owner's Well Number (1st or 2nd well on property, etc) only well

Township: 9 N or (S) Range: 40 (E) or W, Section: 16 DB, 1/4 1/4

Tax Lot Number: 2500 (old 6600) Type of Well: water supply ☒ monitoring ☐

Address of Well (if different from above): 1002 Broadway Baker City
(Number) (Street) (City)

Does this well have a formal water right associated with it? Yes: ☐ No: ☒

If Yes: Application #: _____ Permit #: _____ Certificate #: _____

(Optional): Latitude _____ Longitude _____ (May sometimes be obtained from Well Log Report)

WELL INFORMATION: (do not complete remainder of application if drillers well report is attached)

See "Dear Landowner" letter for instructions in completing this portion of the application, or contact Janet at the Well ID Program (503) 378-8455, extension 260, or e-mail: Janet.L.Halladay@wrd.state.or.us.

Start Card Number: unknown Approx. Well Construction Date: unknown

Well Constructor: unknown

Name of Land Owner at Time of Construction: unknown See attached

Well Depth (in feet): unknown Static Water Level (in feet): unknown

Diameter of Exposed Well Casing (in inches): 2

Please Return Completed Form to: Well ID Program @ Oregon Water Resources Department
158 12th Street NE - Salem, OR 97301-4172, or fax to 503-378-8130

PREVIOUS WELL ID APPLICATION VERSIONS SHOULD NOT BE USED

REVISED: 3/5/02

RECEIVED
MAR 15 2002
WATER RESOURCES DEPT.
SALEM, OREGON

For Official Use Only:

Received Date:

County Well Log ID #

Well Identification Tag #

"Bake 51265"

73749

RECEIVED

AUG 17 2004

WELL IDENTIFICATION APPLICATION FORMWATER RESOURCES DEPT
SALEM, OREGON

(please see attached instructions)

DO NOT COMPLETE THIS FORM IF YOU ARE SHARING THE WELL ON ANOTHER'S PROPERTY.

BUYER/CURRENT LANDOWNER (FOR PROPERTY WELL IS LOCATED ON):Name: Greg AND Kathy PointerMailing Address: 2105 BirchCity: Baker City State: OR Zip: 97814 Phone: (541) 523-6008*NOTE: Well Identification Tag will be sent to the above address unless otherwise specified above.***WELL LOCATION:**County: Baker Well # (designation owner has given to well if multiple wells exist on same property): _____Township: 09 North or South Range: 40 East or West, Section: 16 DB 1/4 _____ 1/4 _____
(circle one) (circle one)Tax Lot #: 8800 (not the "tax acct.#") Type of Well: water supply X monitoring _____Address of Well: 2105 Birch St. Baker City, OR 97814
(Number) (Street) (City)Does this well have a formal water right associated with it? Yes: _____ No: X
(If unknown you may contact the Water Rights Information Group at 503-378-3739 extension 201 for research)

If Yes: Application #: _____ Permit #: _____ Certificate #: _____

(Optional): Latitude _____ Longitude _____ (May sometimes be obtained from Well Log Report)

WELL INFORMATION: (If available, attach copy of driller's well report. If report is not available please complete the following, at a minimum the prior landowner names going back until around the time the well would have been drilled. Prior landowners can be obtained from the County Assessor.)

Start Card #: _____ Approx. Well Construction Date: _____

Well Constructor: _____

Name of Land Owner at Time of Construction (or list of prior landowners) _____

Well Depth (in feet): _____ Static Water Level (in feet): _____

Diameter of Exposed Well Casing (in inches): _____

Please Return Completed Form to: ~~Well ID Program @ Oregon Water Resources Department~~
~~158 12th Street NE - Salem, OR 97301-4172, or fax to 503-378-8130~~

PREVIOUS WELL ID APPLICATION VERSIONS SHOULD NOT BE USED

REVISED: 8-5-02

RECEIVED

Received Date:

JAN 10 2005

WATER RESOURCES DEPT.
SALEM, OREGON

For Official Use Only:

County Well Log ID #

"Bake 51306"

Well Identification Tag #

L-75963

WELL IDENTIFICATION APPLICATION FORM

BUYER/CURRENT WELL OWNER:

Name: Richard & Julie StoutMailing Address: 910 Nelson Real Estate / Trish 845 Campbell St.
Nelson Real EstateCity: Baker City State: OR Zip: 97814 Phone: (541) 523-6485

NOTE: Well Identification Tag will be sent to the above address unless otherwise specified.

WELL LOCATION: please see map & warranty deed.

County: Baker Owner's Well Number (1st or 2nd well on property, etc) #1Township: 9 N or (S) Range: 40 E or W, Section: 16 1/4 C 1/4Tax Lot Number: 1500 Type of Well: water supply _____ monitoring _____Address of Well (if different from above): 2080 Palm St. Baker City, OR 97814
(Number) (Street) (City)Does this well have a formal water right associated with it? Yes: _____ No: Surface water

If Yes: Application #: _____ Permit #: _____ Certificate #: _____

(Optional): Latitude _____ Longitude _____ (May sometimes be obtained from Well Log Report)

WELL INFORMATION: (do not complete remainder of application if drillers well report is attached)

See "Dear Landowner" letter for instructions in completing this portion of the application, or contact
the Well Identification Program at (503) 378-8455, extension 260.Start Card Number: _____ Approx. Well Construction Date: before 1965

Well Constructor: _____

Name of Land Owner at Time of Construction: Marcus & Barbara Sachos / J.E. + ErnaWell Depth (in feet): about 20-22 ft. Static Water Level (in feet): about 12 ft.
SinclairDiameter of Exposed Well Casing (in inches): about 12"Please Return Completed Form to: Well ID Program @ Oregon Water Resources Department
138 12th Street NE - Salem, OR 97301-4172

PREVIOUS WELL ID APPLICATION VERSIONS SHOULD NOT BE USED

REVISED: 10/9/2001

BAKE 51306

Amenitie

SEE MAP 9 40 16DB

THIS SKETCH IS MADE SOLELY FOR THE
PURPOSE OF ASSISTING IN LOCATING
CERTAIN PREMISES AND NO LIABILITY IS
ASSUMED FOR VARIATIONS IF ANY, IN
DIMENSIONS AND LOCATIONS ASCERTAINED
BY ACTUAL SURVEY



(CENTRE)

hampton

ST.

12 2400	1600	13
11		14
10 2300		15
9	1700	16
8 2200	3	17
7		18
6 2100	1800	19
5		20
4 2000	SEE CS	21
3	9-40-203BC	22
2 1900		23
1		24

12 1500	900	13
11		14
10		15
9 1400		16
8		17
7		18
6 1300	1000	19
5		20
4	1100	21
3 1200		22
2		23
1		24

12 800	6
11	
10 700	5
9	SEE CS
8 600	4
7	5
6	SEE CS
5	9-40-125BC
4 500	2
3 400	2
2	
1	

AVE.

10 6000	6100	11
9		12
8		13
7 5900		14
6	6200	15
5		16
4		17
3		18
2 5800	6300	19
1		20

ST.

10 6600	6700	11
9		12
8	6800	13
7		14
6		15
5 6500	11	16
4	17 900	17
3 6400	18 600	18
2	19 700	19
1	20 700	20

ST.

10 7600	11
9	
8 7500	
7	SEE CS
6	9-40-125BC
5	
4 7400	
3	
2 7300	
1	

SEE CS

9-40-25BC

AVE.

Appendix G

Site Photos



Photo 1. Looking north near the eastern extent of the restaurant.



Photo 2. View of the truck scale, situated along the western property boundary. Pacific Geophysics is visible in the background scanning for and marking subsurface utilities that could act as preferential pathways. The oil/water separator is visible in the foreground.



Photo 3. Looking south toward the semi-truck diesel pumps. The entrance to the convenience store, trucker lounge, and store offices is visible to the east of the pumps.



Photo 4. The primary entrance from Campbell Street and the passenger car fueling station are visible to the east.



Photo 5. The abandoned fuel lines associated with the decommissioned underground storage tanks (USTs) are visible in pink paint. A large concrete patch associated with Broadbent and Associates' (Broadbent) SB-4 boring is visible a few feet to the north of the abandoned lines.



Photo 6. The decommissioned USTs marked out in pink paint from the geophysical survey are visible immediately south of the restaurant and east of the trucker lounge and employee offices.



Photo 7. Looking north toward the three active USTs, with the semi-truck fueling station in the background.



Photo 8. Looking west toward the former tire shop garage, which is now only utilized for storage.

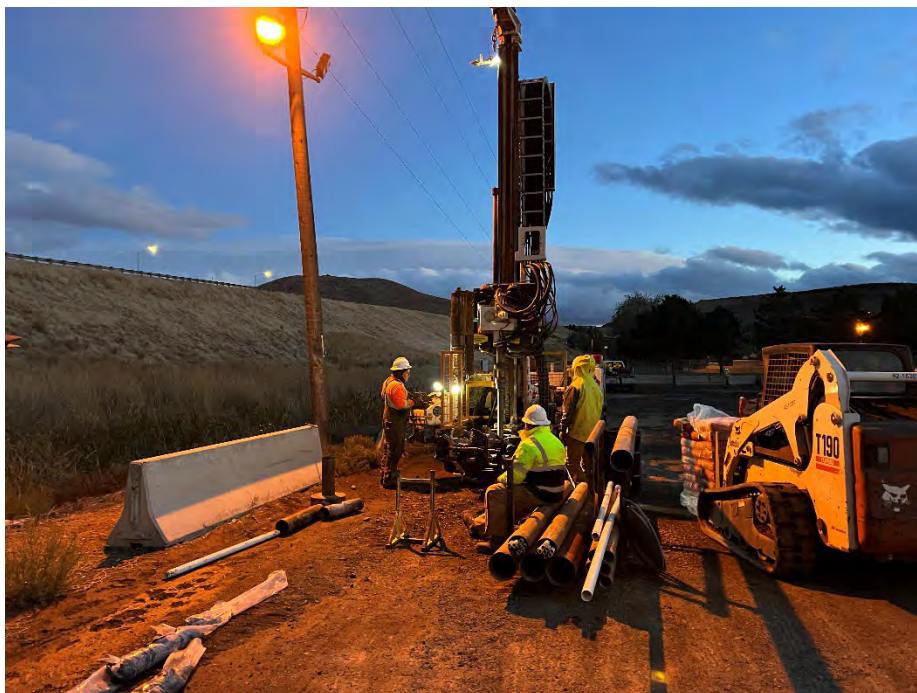


Photo 9. Monitoring well MW-13 being installed by Cascade Drilling (Cascade) in November 2022.



Photo 10. Monitoring well MW-10 being installed near the northern property boundary.



Photo 11. Monitoring wells were finished with heavy duty rated flush mount monuments.



Photo 12. A sub-slab vapor sample being collected from the restaurant portion of the building.



Photo 13. Monitoring wells were developed using a whale pump and steel bailer.



Photo 14. PBS was unable to locate MW-16 during the Q1 monitoring event due to extensive snow and ice coverage.