Chevron Environmental Management Company

Monitoring Well Repair and Decommissioning Report - 2023

Former Chevron Service Station No. 91518

2927 Seward Highway

Anchorage, Alaska

ADEC File Number: 2100.26.001

ADEC Site Name: Chevron - #1518 (Former) - Wendy's

Hazard ID: 23595

August 25, 2023

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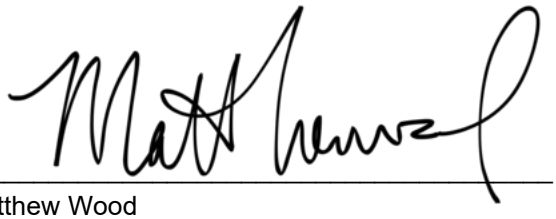

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Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
Arcadis	Arcadis U.S., Inc.
bgs	below ground surface
CL	cleanup level
COC	contaminant of concern
COPC	contaminant of potential concern
DRO	diesel range organics
DQOs	data quality objectives
EDB	ethylene dibromide, 1,2-dibromomethane
EDC	ethylene dichloride, 1,2-dichloroethane
FD	field duplicate
ft	foot or feet
GCL	groundwater cleanup level
GRO	gasoline range organics
IDW	investigative derived waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicates
MWG	Monitoring Well Guidance
Pace	Pace Analytical
QC	quality control
QEP	qualified environmental professional
QS	qualified sampler
RCRA	resource conservation and recovery act
report	Monitoring Well Abandonment Report
RRO	residual range organics
RPD	relative percent difference
RZA	Rittenhouse-Zeman & Associates, Inc.
SECOR	SECOR International Incorporated
TCLP	Toxicity characteristic leaching procedure
TMB	trimethylbenzene

the Site	2927 Seward Highway, Anchorage, Alaska
USEPA	United States Environmental Protection Agency
UST	underground storage tank
work plan	Monitoring Well Abandonment and Installation Work Plan

1 Introduction

On behalf of Chevron Environmental Management Company (CEMC), Arcadis U.S., Inc. (Arcadis) has prepared this Monitoring Well Repair and Decommissioning Report (report) for the Former Chevron Facility 91518, located at 2927 Seward Highway in anchorage, Alaska (herein referred to as "the Site", **Figures 1** and **2).** This report summarizes the monitoring well decommissioning efforts completed at the site. The work was completed in general accordance with the July 27, 2022, *Monitoring Well Abandonment and Installation Work Plan – Revision 1* (Revised Work Plan, Arcadis 2022). The Revised Work Plan was prepared to address and provide responses to comments provided by Alaska Department of Environmental Conservation (ADEC) in a letter dated September 16, 2022, for the previously submitted *Monitoring Well Abandonment and Installation Work Plan* dated June 3, 2022 (Arcadis 2022). The Work Plan was approved by ADEC in a letter dated December 2, 2022. A conceptual site model worksheet was prepared for the Site and is included in **Appendix A.**

2 Background

2.1 Site Description

The Site is located at 2927 Seward Highway in Anchorage, Alaska (**Figure 1**); the latitude and longitude are 61.193876 and 149.867321, respectively. Presently, the Site is situated on the northeast corner of the intersection with Benson Boulevard and is currently occupied by a Wendy's® fast-food restaurant. The restaurant and drive-through occupy the northern third of the property and an asphalt parking lot and landscaping areas cover the remaining area.

The Site is bounded by a Fred Meyer Fuel Center to the north, East Benson Boulevard to the south, Seward Highway to the west, and a Fred Meyer grocery store to the east. A Speedway service station is located further north of the Site at the Seward Highway and East Northern Lights Boulevard intersection. A shopping mall known as the Midtown Mall is located to the west of the Site across Seward Highway. The Site is in a mixed commercial and residential area of north-central Anchorage (Arcadis 2012).

The Site was used as a Chevron service station until 1987 (Rittenhouse-Zeman & Associates, Inc. [RZA] 1988a). Due to limitations of historic documentation, the date that Chevron began operations at the Site is unknown. Historically, the Site contained one building, two cesspool tanks, two pump islands, and four underground storage tanks (USTs; SECOR International Incorporated [SECOR] 2001; **Figure 2**). Property records from 1988 indicate there were four USTs onsite: three gasoline and one diesel (Arcadis 2010). Construction of the Wendy's® building began in December 1987, and the restaurant was in full operation by November 1988. The station building, cesspool tanks, pump islands, USTs, and all other known station facilities were removed prior to September 1987 (SECOR 2001).

2.2 Geology and Hydrogeology

Anchorage, Alaska is situated in a wide valley bordered by the Chugach Mountains to the south and east (Cederstrom et al. 1964). The Anchorage lowland is underlain by unconsolidated glacial deposits from several episodes of glacial advance and recession. Anchorage area bedrock consists of Mesozoic metamorphic and igneous rocks overlain by densely consolidated sediments. Fluvial and deltaic deposits of sand and gravel associated with meltwater runoff from the last major glacial episode that affected the Anchorage area are present at the Site (RZA 1988a). Loose to medium dense, moist, black, fine to medium sand with some coarse sand, silt, and gravel is present from about 2 to 3.5 feet (ft) onsite. Medium dense, moist, brown, fine to medium sand with some coarse sand, silt and gravel is found from about 3.5 to 7.5 ft. From 7.5 to 10 ft, dense, moist, brown/gray, silty, fine to medium sand with some coarse sand and gravel exists. From 10 to 21.5 ft, dense to very dense, moist to saturated, gray, fine to coarse sand with trace silt and gravel is present.

Anchorage, Alaska is located directly north of the Knik Arm waterway that empties into the Gulf of Alaska. Most of the groundwater within the Anchorage area is held within confined aquifers of sand and gravel confined by till, clay, and silt (Cederstrom et al. 1964). Unconfined aquifers are found throughout most of the Anchorage area. Precipitation recharges groundwater by directly infiltrating the ground surface or streambeds. Groundwater generally flows westward from the mountains. Unconfined groundwater is found from 9 to 12 ft below ground surface (bgs) and is estimated to flow in a north-northwest direction at an approximate gradient of 0.002 to 0.003 ft per ft (see rose diagram on **Figure 3**).

3 Objectives

The objective of this report is to outline the decommissioning of two monitoring wells (MW-9 and MW-10), the attempted decommissioning of MW-11R, and the locate, repair, redevelopment, and sampling of MW-12. The decommissioned monitoring wells were selected based on the historical data showing contaminants of potential concern (COPCs) below ADEC CLs during consecutive groundwater monitoring events, in addition to recent groundwater data indicating groundwater flow direction to the north of the Site. Monitoring well MW-11R was unable to be decommissioned because it was unable to be located; however, MW-12 was located, repaired, redeveloped, and subsequently sampled and will be re-added to the groundwater monitoring plan.

Since MW-12 was able to be located and restored, there was no need to install MW-13 as a delineation point, which was proposed in the *Monitoring Well Abandonment and Installation Work Plan* dated June 3, 2022 (Arcadis 2022).

4 Monitoring Well Locate and Repair, Decommissioning, and Sampling

The decommissioned monitoring wells (MW-9, MW-10, and MW-11R) at the Site were selected based on historical data showing COPCs below ADEC GCLs during consecutive groundwater monitoring investigations. Additionally, these wells are located to the west and northwest of the Site and recent groundwater data indicates groundwater flow direction to the north of the Site.

Monitoring well MW-9 and MW-10 were installed in October 1988 by RZA to delineate the contamination extent at the Site. Routine groundwater monitoring was discontinued in monitoring wells MW-9 and MW-10 in 2016 as their COPC concentrations were consistently near or not detected above reported detections limits. Monitoring well MW-11R was installed in September 2001 to replace MW-11, which was previously used as a plume delineation monitoring point northwest of the Site. Concentrations of COPCs in MW-11R have not been detected or remained below ADEC GCLs until routine groundwater monitoring was discontinued in 2019 when the monitoring well could no longer be located and was assumed to have been paved over. During this event, MW-11R was unable to be located and therefore was unable to be decommissioned.

Additionally, MW-12 was able to be located, redeveloped, and sampled. This allowed for Arcadis to forgo the installation of proposed MW-13 and add MW-12 into the routine sampling program again as a delineation point. Locate and sampling summary is discussed in Section 5.2.

Monitoring wells MW-9 and MW-10 were decommissioned in accordance with the approved work plan and is summarized in section 4.2. The redevelopment of MW-12 was completed in accordance with the approved work plan, following the procedures outlined for development of the proposed MW-13 which was not installed. The development procedure is outlined below in section 4.3.1.

4.1 Preliminary Field Investigation Activities

As required by the Occupational Safety and Health Administration 29 Code of Federal Regulations 1910.120 (Hazardous Waste Operations and Emergency Responses), Arcadis prepared a site-specific Environmental Health and Safety Plan addressing the health and safety issues related to field activities that were conducted at the Site. This included the development of a Traffic Control Plan and securing all necessary permits required for work performed in the public right of way along Seward Highway.

Alaska Digline, Inc. was notified 72 hours prior to the commencement of field activities to identify public utilities near the proposed wells (Digsafe Ticket #2023160259, #2023160261, #2023160262). In addition to the Alaska Digline, Inc. notification, Arcadis retained a private utility locating company, Geomarkout, to identify and mark underground utilities to be avoided during subsurface activities. Anomalies that interfere with the installation of any boreholes being advanced at the Site were documented and borehole locations were adjusted as needed.

Arcadis also reviewed historical geophysical documents, public utility maps, and site plans. Arcadis completed a Utilities and Structures Checklist prior to commencing monitoring well decommissioning activities. Work was conducted under the direction of a “Qualified Environmental Professional” (QEP) and “Qualified Sampler” (QS) as defined in 18 Alaska Administrative Code 75.333.

4.2 MW-9 and MW-10 Decommissioning

Monitoring well decommissioning activities were performed in accordance with the Monitoring Well Decommissioning Section of ADEC's September 2013 Monitoring Well Guidance (MWG; ADEC 2013) and the approved work plan (Arcadis 2022).

Well decommissioning began on June 8, 2023, by Discovery Drilling. Traffic control by Northern Dame, was used to provide safety for Arcadis and subcontractors during decommissioning process. During the decommissioning of MW-10, the well casing was unable to be pulled because the case bottoms burst open. The well was backfilled with bentonite chips. No problems occurred with MW-9 and the well was grouted with bentonite chips, and the surface was repaired.

4.3 MW-12 Locate and Sampling

On April 27, 2023, MW-12 was located and a depth to water of 11.03 ft bgs and a depth to bottom of 12.4 ft bgs was found. Repair of the PVC casing and vault was completed, backfilled with native material, and the surface was repaired with a coal patch to match the surrounding asphalt. An air compressor was used to remove large gravel from the bottom of the well, and depth to bottom of 15.92 ft bgs was found.

4.3.1 Monitoring Well Development

The monitoring well was developed following the procedures for the installation of the proposed new well in the approved work plan (Arcadis 2022), which follow the ADEC MWG (ADEC 2013). Well development was performed by surging the wells over the length of the screen interval using a surge block, bailing out sediment that accumulated in the bottom of the wells, and then purging the well until the water was relatively free of suspended sediments and/or until approximately 10 well volumes were removed. Purging was completed using down-hole pumps and purge water was containerized in U.S. Department of Transportation-approved 55-gallon steel drums and sampled for disposal.

4.3.2 Groundwater Sampling

Following well development, groundwater samples were collected and preserved in accordance with Section 6 of the ADEC's January 2022 Field Sampling Guidance (FSG, ADEC 2022). Low-flow sampling was conducted using a bladder pump or submersible pump, oil-less air compressor, Teflon lined tubing, and flow-through cell. The depth to groundwater was measured during the low flow purging to ensure minimal drawdown (less than 0.3 ft) during purging. Flow rates, groundwater parameters (temperature, pH, conductivity, redox potential, dissolve oxygen, and turbidity) were monitored during purging as well. Measurements were recorded every 3 to 5 minutes during the purging process and groundwater sampling was not initiated until guidance recommended stabilization was observed. Sample MW-12-W-20230427 and a duplicate (BD-1-W-20230427) was taken from MW-12.

Groundwater data and samples for analysis (in the appropriate laboratory-provided containers) were collected for the following:

- Lead by USEPA Method 6010D
- GRO by Alaska Method AK 101

- VOCs, including 1,2-dibromomethane (EDB) and 1,2-dichloroethane (EDC), by USEPA Method 8260D
- EDB by USEPA Method 8011
- DRO an RRO by Alaska Method 102/103
- SVOCs by USEPA Method 8270E-SIM

Low-flow sample notes were integrated into the well development logs and completed during the sampling of each well. Well development and groundwater sampling logs are attached in **Appendix B**.

Groundwater samples from MW-12 were placed in laboratory-supplied bottles and labeled with the sample identification (ID); sealed in a resealable bag; and placed in a laboratory-provided, ice-chilled cooler. The samples were then transported under chain-of-custody protocol to Pace via FedEx. Samples were analyzed with a standard turnaround time of 10 business days.

After each use of the well development tools, sampling pump, and depth to water gauging tools, equipment decontamination was conducted in accordance with the quality control (QC) measures presented in Section 12.8 of the ADEC FSG (ADEC 2022).

5 Analytical Results

Analytical results for groundwater samples collected during the investigation are summarized below.

5.1 Groundwater Sampling Results

Analytes GRO, DRO, BTEX, 1,2,4-trimethylbenzene (TMB), 1,2,3-TMB, 1,3,5-TMB, and some PAHs were detected in MW-12. The analytical results for the groundwater samples collected from MW-12 were compared to ADEC Method Groundwater Cleanup Levels (ADEC GCLs), Tables C from 18 AAC 75.341 (ADEC 2023). There were no detections of contaminants of concern (COCs) above the ADEC GCLs, which is presented in **Table 1**. The full laboratory analytical report and chain-of-custody documentation for the groundwater samples are provided in **Appendix C**.

6 Investigation-Derived Waste Disposal

Investigation-derived waste (IDW) generated during investigation activities included soil cuttings, decontamination water, and development and groundwater sampling purge water. All IDW derived from drilling and monitoring well installation was placed in new DOT-approved 55-gallon steel drums, appropriately labeled, and temporarily stored at the Site while characterization samples were collected and analyzed.

Soil cuttings were characterized by submitting waste samples to the Pace Analytical (Pace) in Mount Juliet, Tennessee and analyzed for the following:

- GRO (Alaska Method AK 101), DRO (Alaska Method AK 102), and RRO (Alaska Method AK 103)
- Toxicity characteristic leaching procedure (TCLP) Resource Conservation and Recovery Act (RCRA) eight metals (i.e., arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver; USEPA Method 1311/6010D, 7000 series)
- TCLP VOCs (USEPA Methods 1311 and 8260D) and TCLP semi-VOCs (USEPA Methods 1311 and 8270E)
- TCLP mercury (USEPA Method 7470A)
- Total solids

Additionally, decontamination and purge water samples were submitted to Pace for the following analysis:

- GRO (Alaska Method AK 101), DRO (Alaska Method AK 102), and RRO (Alaska Method AK 103)
- TCLP VOCs (USEPA Methods 1311 and 8260C)
- TLCP semi-VOCs (USEPA Methods 1311 and 8270E)
- TCLP RCRA eight metals (USEPA Methods 1311 and 6010C, 7000 series)
- TCLP mercury (USEPA Method 7470A)
- Ignitability
- pH (USEPA Method 9040 or USEPA Method 1110)

Following receipt of the laboratory analytical results, the ADEC Transport, Treatment, and Disposal Approval Form for Contaminated Media will be submitted to ADEC for approval. Upon receipt of ADEC approval, all IDW will be transported offsite by U.S. Ecology for treatment and/or disposal. The IDW laboratory reports are provided in **Appendix D**. The approved ADEC Transport, Treatment, and Disposal Approval Forms for Contaminated Media and copies of the Non-Hazardous Waste Manifests are pending approval and will be provided in the following groundwater monitoring report.

7 Quality Control

Field instruments were calibrated onsite daily per manufacturer's specifications. Field duplicate samples were collected for groundwater Section 12.6 of ADEC's 2022 FSG. Decontamination and equipment blank samples were collected during sampling where equipment was decontaminated between sample collection. Trip blanks were supplied by Pace and submitted by Arcadis for laboratory analysis. The QC activities were documented in daily field notes included in **Appendix B**.

7.1 Laboratory Data Quality Assurance Summary

As required by ADEC's Technical Memorandum: Minimum QA Requirements for Sample Handling, Reports and Laboratory Data (ADEC 2019), Arcadis completed a laboratory data review checklist for each of the laboratory reports generated for the groundwater investigation. The full laboratory analytical reports and chain-of-custody documentation are provided in **Appendix C** and the ADEC data review checklists are included as **Appendix E**. The following QA summary describes six parameters, related to the quality and usability of the data presented in this report.

7.1.1 Precision

Overall, the relative percent difference (RPD) laboratory control samples (LCS)/laboratory control sample duplicates (LCSD), and field duplicates (FD) for groundwater were within control limits, as documented in **Appendix E.** The precision of the data, as measured by the laboratory QC indicators, suggest that the data quality objectives (DQOs) were met.

7.1.2 Accuracy

The percent recoveries for the LCS/LCSD were within the control limits. The percent recovery for the MS/MSD samples were not within the control limits for sample EQB-1-W-20230427, method 8260D, for the analyte toluene.

7.1.3 Representativeness

The data appears to be representative of site conditions and are generally consistent with historical groundwater monitoring results and expected impacts to groundwater.

7.1.4 Comparability

The laboratory results are presented in the same units as previous reports to allow comparison.
Per the USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-20-005, (USEPA 2020), with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P (USEPA 1999), equipment blank, trip blank, and method blank detections below the reporting limit require a blank action level established at five times the reported blank concentration observed. As a result, samples that had detections in select compounds within this established blank action level were qualified as non-detect at the reporting limit. Samples that were positively identified but be qualified as estimated are identified with a "J" in **Table 2.**

The target compounds were not detected in trip blanks and method blanks, but the equipment blank had detections of DRO and chloroform with the J qualifier indicating they were estimates.

7.1.5 Completeness

The results appear to be valid and usable, and thus, the laboratory results have 100 percent completeness.

7.1.6 Sensitivity

The laboratory reporting limits for select compounds (i.e., naphthalene, chloroform, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, and vinyl chloride) were greater than the ADEC GCLs; however, the laboratory method detection limits were below the ADEC GCLs. All samples were non-detect for the respective constituents as shown in **Tables 1** and **2**.

The sensitivity of the analyses was adequate for the samples as detection limits were less than the ADEC GCLs, with the exceptions noted above.

8 Work Plan Deviations

On April 27, 2023, MW-11R was planned to decommissioned. On site, Arcadis personnel were unable to locate the well. It is believed that the well was geo-located incorrectly and is now hidden under stationary objects. After discussion with project manager, MW-11R was unable to be decommissioned.

MW-13 was planned to be installed north/northwest of MW-6 on the parcel north of the Site. Sampling was discontinued at MW-12, north of the proposed location of MW-13, in 2009 and later determined to be damaged. During onsite work on April 27, 2023, MW-12 was identified and successfully repaired, therefore, MW-13 was not installed.

9 Conclusions and Recommendations

Arcadis was able to locate, repair, and redevelop MW-12, which was sampled and will be added to the groundwater monitoring program for semi-annual sampling. Repair and redevelopment of MW-12 allowed Arcadis to forgo the proposed installation of MW-13 for delineation. There were no detections of COCs above the ADEC GCLs from groundwater samples collected at MW-12, therefore, Arcadis does not recommend additional delineation north of the Site.

Monitoring wells MW-9, MW-10, and MW-11R were scheduled to be decommissioned; however, MW-11R was unable to be located and decommissioned. MW-9 and MW-10 were decommissioned in accordance with the approved monitoring well abandonment work plan (Arcadis 2022).

Arcadis recommends continuing semi-annual sampling at the site, with the addition of MW-12 in the program.

10 References

ADEC. 2013. Monitoring Well Guidance. ADEC Division of Spill Prevention and Response Contaminated Sites Program. September.

ADEC. 2022. Field Sampling Guidance. ADEC Division of Spill Prevention and Response Contaminated Sites Program. January.

Arcadis. 2010. Vapor Intrusion Pathway Initial Assessment. June 29.

Arcadis. 2012. 2012 Soil Vapor Investigation Report. May 30.

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Cederstrom et al. 1964. Geology and Ground-water Resources of the Anchorage Area, Alaska.

RZA. 1988a. Continued Subsurface Petroleum Hydrocarbon Evaluation. January 29.

RZA. 1988b. Continued Subsurface Petroleum Hydrocarbon Evaluation. November 14.

SECOR. 2001. Work Plan for Site Assessment. March 27.

SECOR. 2002. Offsite Monitoring Well Installation Report. September 26.

Tables

Table 1
Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	TOC (feet bTOC)	DTW (feet bTOC)	GW Elev. (feet)	DRO (µg/L)	GRO (µg/L)	RRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDB (µg/L)	EDC (µg/L)	Naphthalene (µg/L)	Lead (µg/L)	Comments
ADEC Groundwater Cleanup Levels					1,500	2,200	1,100	4.6	1,100	15	190	140	0.075	1.7	1.7	15	
MW-12	04/27/23	15.9	10.85	5.05	**336 J [334 J]**	**173 [168]**	<800 [<800]	**0.561 J [0.515 J]**	**0.397 J [0.395 J]**	**3.66 [3.43]**	**3.83 [3.55]**	<1.00 [<1.00]	<0.0200 [<0.0200]	<1.00 **[0.450 J]**	**0.649* [0.655]***	<6.00 [<6.00]	
Trip Blank	04/27/23	--	--	--	--	<100	--	<1.00	<1.00	<1.00	<3.00	<1.00	--	<1.00	***<5.00***	--	
EQB	04/27/23	--	--	--	**215 J**	<100	<888	<1.00	<1.00	<1.00	<3.00	<1.00	--	<1.00	***<5.00***	<6.00	

Table 2
Additional Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	TOC (ft bTOC)	DTW (feet bTOC)	GW Elev. (feet)	PAHs by USEPA Method 8270E-SIM															
					1-Methylnaphthalene (µg/L)	2-Chloronaphthalene (µg/L)	2-Methylnaphthalene (µg/L)	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(g,h,i)perylene (µg/L)	Benzo(k)fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Indeno(1,2,3-cd)Pyrene (µg/L)
ADEC Groundwater Cleanup Levels					**11**	**750**	**36**	**530**	**260**	**1,800**	**0.3**	**0.25**	**2.5**	**600**	**25**	**250**	**0.25**	**800**	**290**	**2.5**
MW-12	04/27/23	15.9	10.85	5.05	< 0.500 U **[0.112 J]**	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	**0.0198 J [0.0229 J]**	**0.0189 J [0.0214 J]**	< 0.250 U [<0.250 U]	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]	**0.0310 J [0.0391 J]**	< 0.500 U [< 0.500 U]	< 0.500 U [< 0.500 U]
Trip Blank	04/27/23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EQB	04/27/23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Additional Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	PAHs by USEPA Method 8270E-SIM			Additional VOCs by USEPA Method 8260D																	
		Naphthalene (µg/L)	Phenanthrene (µg/L)	Pyrene (µg/L)	Acetone (µg/L)	Acrolein (µg/L)	Acrylonitrile (µg/L)	Bromobenzene (µg/L)	Bromochloromethane (µg/L)	Bromodichloromethane (µg/L)	Bromoform (µg/L)	Bromomethane (µg/L)	n-Butylbenzene (µg/L)	sec-Butylbenzene (µg/L)	tert-Butylbenzene (µg/L)	Carbon Disulfide (µg/L)	Carbon Tetrachloride (µg/L)	Chlorobenzene (µg/L)	Chlorodibromo-methane (Dibromochloro-methane) (µg/L)	Chloroethane (Ethyl Chloride) (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)
ADEC Groundwater Cl		**1.7**	**170**	**120**	**14,000**	**--**	**--**	**62**	**--**	**1.3**	**33**	**7.5**	**1,000**	**2,000**	**690**	**810**	**4.6**	**78**	**8.7**	**21,000**	**2.2**	**190**
MW-12	04/27/23	**0.649 [0.655]**	**0.0275 J [0.0408 J]**	**0.0361 J [0.0471 J]**	<50.0 [<50.0]	--	<10.0 [<10.0]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	--	<1.00 [<1.00]	**0.940 J [0.894 J]**	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<5.00 [<5.00]	***<5.00 [<5.00]***	<2.50 [<2.50]
Trip Blank	04/27/23	--	--	--	<50.0	--	<10.0	<1.00	<1.00	<1.00	<1.00	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<5.00	***<5.00***	<2.50
EQB	04/27/23	--	--	--	<50.0	--	<10.0	<1.00	<1.00	<1.00	<1.00	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<5.00	**1.63 J**	<2.50

Table 2
Additional Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	Additional VOCs by USEPA Method 8260D																
		2-Chlorotoluene (o-Chlorotoluene) (µg/L)	4-Chlorotoluene (p-Chlorotoluene) (µg/L)	1,2-Dibromo-3-chloropropane (µg/L)	Dibromomethane (Methylene bromide) (µg/L)	1,2-Dichlorobenzene (µg/L)	1,3-Dichlorobenzene (µg/L)	1,4-Dichlorobenzene (µg/L)	Dichlorodifluoromethane (Freon 12) (µg/L)	1,1-Dichloroethane (µg/L)	1,1-Dichloroethene (µg/L)	cis-1,2-Dichloroethene (cis-1,2-Dichloroethylene) (µg/L)	trans-1,2-Dichloroethene (trans-1,2-Dichloroethylene) (µg/L)	1,2-Dichloropropane (µg/L)	1,3-Dichloropropane (µg/L)	2,2-Dichloropropane (µg/L)	1,1-Dichloropropene (µg/L)	cis-1,3-Dichloropropene (µg/L)
ADEC Groundwater Cl		--	--	--	8.3	300	300	4.8	200	28	280	36	360	8.2	--	--	--	--
MW-12	04/27/23	<1.00 [<1.00]	<1.00 [<1.00]	<5.00 [<5.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	--	<1.00 [<1.00]	<1.00 [<1.00]	--	--	<1.00 [<1.00]	<1.00 [<1.00]	--	<1.00 [<1.00]	<1.00 [<1.00]
Trip Blank	04/27/23	<1.00	<1.00	<5.00	<1.00	<1.00	<1.00	<1.00	--	<1.00	<1.00	--	--	<1.00	<1.00	--	<1.00	<1.00
EQB	04/27/23	<1.00	<1.00	<5.00	<1.00	<1.00	<1.00	<1.00	--	<1.00	<1.00	--	--	<1.00	<1.00	--	<1.00	<1.00

Table 2
Additional Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	Additional VOCs by USEPA Method 8260D																
		trans-1,3-Dichloropropene (µg/L)	1,3-Dichloropropene (µg/L)	Di-isopropyl ether (µg/L)	Hexachloro-1,3-butadiene (Hexachlorobutadiene) (µg/L)	Isopropylbenzene (Cumeme) (µg/L)	p-Isopropyltoluene (µg/L)	2-Butanone (Methyl ethyl ketone) (µg/L)	4-Methyl-2-pentanone (Methyl Isobutyl Ketone) (µg/L)	Methylene chloride (µg/L)	n-Propylbenzene (Propylbenzene) (µg/L)	Styrene (µg/L)	1,1,1,2-Tetrachloroethane (µg/L)	1,1,2,2-Tetrachloroethane (µg/L)	Tetrachloroethene (Tetrachloroethylene) (µg/L)	1,2,3-Trichlorobenzene (µg/L)	1,2,4-Trichlorobenzene (µg/L)	1,1,1-Trichloroethane (µg/L)
ADEC Groundwater Cl		--	4.7	--	1.4	450	--	5,600	6,300	110	660	1,200	5.7	0.76	41	7	4	8,000
MW-12	04/27/23	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	**7.41 [6.88]**	--	<10.0 [<10.0]	--	<5.00 [<5.00]	**6.06 [5.61]**	<1.00 [<1.00]	<1.00 [<1.00]	***<1.00 [<1.00]***	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]	<1.00 [<1.00]
Trip Blank	04/27/23	<1.00	<1.01	<1.00	<1.00	<1.00	--	<10.0	--	<5.00	<1.00	<1.00	<1.00	***<1.00***	<1.00	<1.00	<1.00	<1.00
EQB	04/27/23	<1.00	<1.01	<1.00	<1.00	<1.00	--	<10.0	--	<5.00	<1.00	<1.00	<1.00	***<1.00***	<1.00	<1.00	<1.00	<1.00

Table 2
Additional Analytical Results from MW-12
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Well ID	Sample Date	Additional VOCs by USEPA Method 8260D									Comments
		1,1,2-Trichloroethane (µg/L)	Trichloroethene (Trichloroethylene) (µg/L)	Trichlorofluoromethane (Freon 11) (µg/L)	1,2,3-Trichloropropane (µg/L)	1,1,2-Trichlorotrifluoroethane (1,1,2-Trichloro-1,2,2-trifluroethane) (Freon 113) (µg/L)	1,2,3-Trimethylbenzene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Vinyl Chloride (µg/L)	
ADEC Groundwater Cl		0.41	2.8	5,200	0.0075	10,000	--	56	60	0.19	
MW-12	04/27/23	***<1.00 [<1.00]***	<1.00 [<1.00]	<5.00 [<5.00]	<0.0500 [<0.0500]	<1.00 [<1.00]	**1.39 [1.29]**	<1.00 [<1.00]	**0.564 J [0.520 J]**	***<1.00 [<1.00]***	
Trip Blank	04/27/23	***<1.00***	<1.00	<5.00	--	<1.00	<1.00	<1.00	<1.00	***<1.00***	
EQB	04/27/23	***<1.00***	<1.00	<5.00	--	<1.00	<1.00	<1.00	<1.00	***<1.00***	

Notes
MW-12 Analytical Results
Chevron-Branded Service Station 91518
2927 New Seward Highway
Anchorage, Alaska

Acronyms and Abbreviations:

-- =	Not Available or Not Analyzed
[ ] =	Blind Duplicate Sample Result
<0.00100 =	Not detected at or above the reported detection limit (RDL)
µg/L =	Micrograms per liter
ADEC =	Alaska Department of Environmental Conservation
Bold =	Detected above laboratory method detection limit (MDL)
Bold and *Italicized* =	Constituent considered non-detect, however Laboratory RDL is greater than the ADEC Groundwater Cleanup Level
Bold and Shaded =	Value exceeds ADEC Groundwater Cleanup Level
DTW =	Depth to groundwater
EB =	Equipment Blank
feet =	Relative to NAVD88
bTOC =	Below top of casing
GW Elev =	Groundwater elevation
ID =	Identification
MW =	Groundwater monitoring well
TB =	Trip Blank
TOC =	Top of casing
GRO =	Total petroleum hydrocarbons, gasoline range organics
DRO =	Total petroleum hydrocarbons, diesel range organics
RRO=	Total petroleum hydrocarbons, residual range organics
MTBE=	Methyl tert-butyl ether
EDB =	1,2-Dibromoethane
EDC =	1,2-Dichloroethane
J =	The compound was positively identified; however, the associated numerical value is an estimated concentration only.
D =	The diluted result were reported and qualified as being reported at a dilution

Analytical Methods:

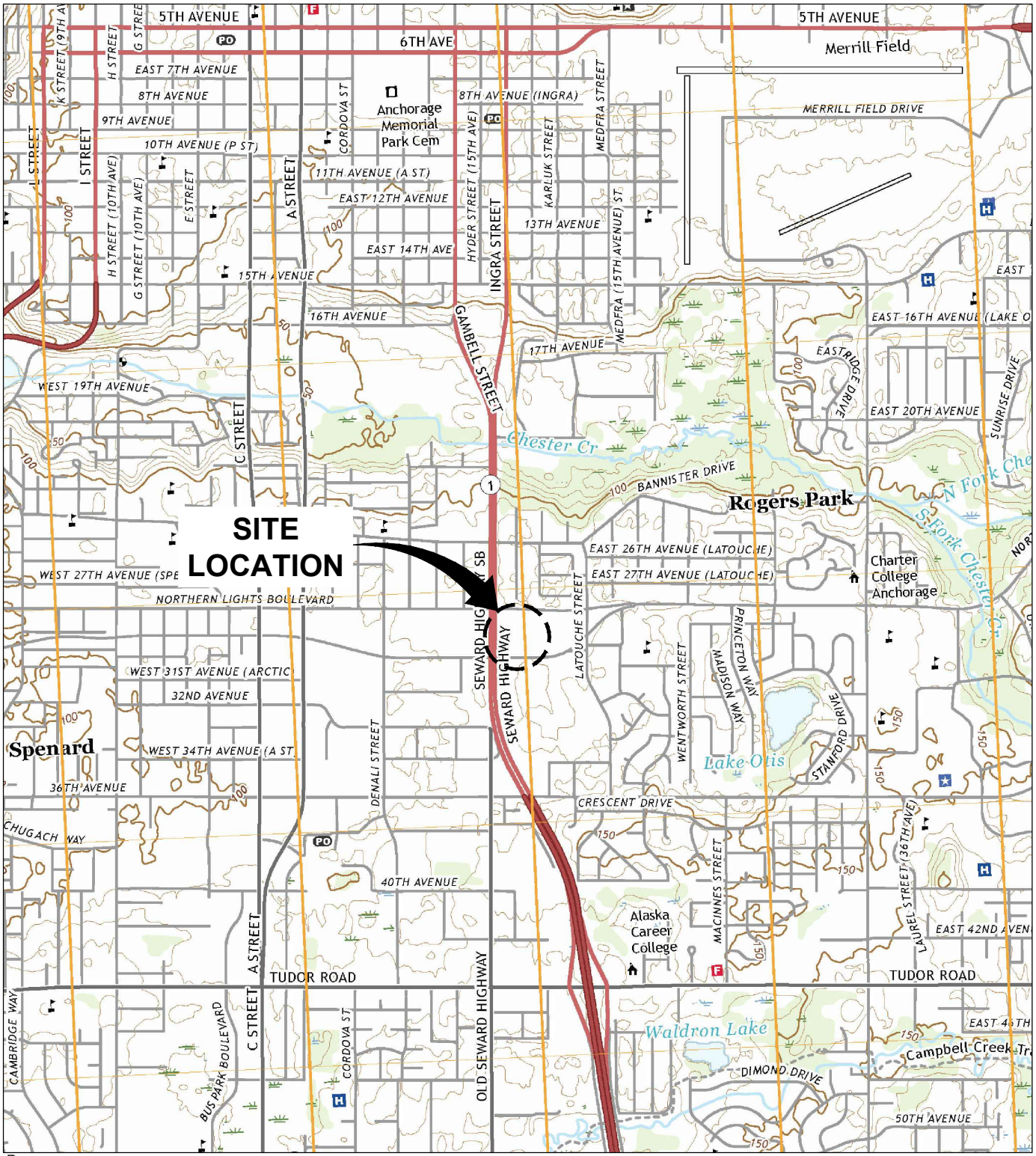
1. GRO analyzed by Alaska Method AK101, DRO analyzed by Alaska Method AK102, RRO analyzed by Alaska Method AK103
2. Lead analyzed by United States Environmental Protection Agency (USEPA) Method 6010D.
3. Naphthalene analyzed by United States Environmental Protection Agency (USEPA) Methods 8260D and 8270E-SIM.
3. Tables 2 and 3 constituents of concern analyzed by United States Environmental Protection Agency (USEPA) Method 8260 except where noted above.
4. EDB analyzed by USEPA Method 8260 and Method 8011 but results are presented with the lowest RDL by USEPA Method 8011.

* = result presented was analyzed by USEPA Method 8270E-SIM.

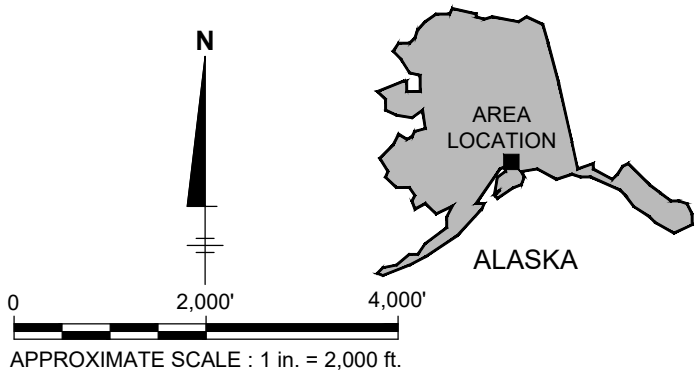
Reference:

18 AAC 70. Department of Environmental Conservation, State of Alaska, Water Quality Standards, amended as of March 5, 2020.
18 AAC 75. Department of Environmental Conservation, State of Alaska, Oil and Other Hazardous Substances Pollution Control, Table C. Groundwater Cleanup Levels, as amended through November 18, 2021.

Figures



SOURCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., ANCHORAGE A-8 NW, AK, 2019.



APPROXIMATE SCALE : 1 in. = 2,000 ft.

FORMER CHEVRON SERVICE STATION 91518
2927 NEW SEWARD HIGHWAY
ANCHORAGE, ALASKA

SITE LOCATION MAP

ARCADIS

FIGURE 1

C:\Users\sheta5114\DC\ACCDocs\Arcadis\AUS-CHEVRON-91518-ANCHORAGE Alaska\Project Files\2023\01-In Progress\01-DWG\GEN-F02-SP.dwg LAYOUT: 2 SAVED: 8/4/2023 10:27 AM ACADVER: 24.2S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 8/4/2023 10:41 AM BY: SHET, ABHISHEK

XREFS: IMAGES: PROJECTNAME: ----
X-TITLE Arcadis Logo_2021.PNG
X-BASE

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- REMEDIAL PIPING LAYOUT (INFERRED LOCATION)
- W — 2" WATER LINE
- S — 4" SANITARY SEWER
- G — GAS MAIN
- E — ELECTRICAL & TELECOM UTILITY CORRIDOR
- MW-6 — GROUNDWATER MONITORING WELL
- MW-9 — DECOMMISSIONED WELL
- AS-3 — AIR SPARGE WELL
- AS-2/VE-1 — SOIL VAPOR EXTRACTION WELL
- VP-2 — SOIL VAPOR PROBE LOCATION
- MW-11 — GROUNDWATER MONITORING WELL (PAVED OVER)
- USTs — UNDERGROUND STORAGE TANKS

N

UTILITY CORRIDOR

FRED MEYER RETAIL PETROLEUM FACILITY

MW-11

MW-11R

MW-12

MW-9

MW-6

SEARS PARKING LOT

SEWARD HIGHWAY

VP-3

MW-2

AS-3

MW-7

VP-2

AS-2/VE-1

WENDY'S RESTAURANT

MW-10

FORMER UST LOCATIONS

VP-1

MW-8

AS-4

AS-1

MW-1

LIFT STATION

FORMER PUMP ISLAND LOCATION

FORMER REMEDIATION COMPOUND

MW-4

BENSON BOULEVARD

0 40' 80'

APPROXIMATE SCALE 1 in. = 40 ft.

SOURCE:
MODIFIED FROM SEPT. 15, 2005 SITE PLAN PROVIDED BY SECOR, UPDATED FROM OCTOBER 2009 SURVEY. WELL MW-11R APPROXIMATE LOCATION IS UNSURVEYED.

FORMER CHEVRON SERVICE STATION 91518
2927 NEW SEWARD HIGHWAY
ANCHORAGE, ALASKA

SITE PLAN

ARCADIS

FIGURE 2

Appendix A

ADEC Conceptual Site Model Form

Print Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: 91518 Wendy's - 2927 Seward Highway Anchorage, Alaska
ADEC File Number: 2100.26.001

Completed By: Arcadis U.S., Inc.
Date Completed: 12/23/2021

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → check soil									
	☑ Migration to subsurface → check soil									
	☑ Migration to groundwater → check groundwater									
	☑ Volatilization → check air									
	☐ Runoff or erosion → check surface water									
	☐ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → check soil									
	☑ Migration to groundwater → check groundwater									
	☑ Volatilization → check air									
	☐ Uptake by plants or animals → check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater → check groundwater	☑ soil	☑ Incidental Soil Ingestion		C/F	C/F	C/F			
	☑ Volatilization → check air		☑ Dermal Absorption of Contaminants from Soil		C/F	C/F	C/F			
	☐ Flow to surface water body → check surface water		☑ Inhalation of Fugitive Dust		C/F	C/F	C/F			
	☐ Flow to sediment → check sediment	☑ groundwater	☑ Ingestion of Groundwater		F	F	F			
	☐ Uptake by plants or animals → check biota		☑ Dermal Absorption of Contaminants in Groundwater		F	F	F			
	☐ Other (list):		☐ Inhalation of Volatile Compounds in Tap Water							
☐ Surface Water	☐ Direct release to surface water → check surface water	☑ air	☑ Inhalation of Outdoor Air		I	I	I			
	☐ Volatilization → check air		☑ Inhalation of Indoor Air		I	I	I			
	☐ Sedimentation → check sediment		☐ Inhalation of Fugitive Dust							
	☐ Uptake by plants or animals → check biota	☐ surface water	☐ Ingestion of Surface Water							
	☐ Other (list):		☐ Dermal Absorption of Contaminants in Surface Water							
☐ Sediment	☐ Direct release to sediment → check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Resuspension, runoff, or erosion → check surface water	☐ sediment	☐ Direct Contact with Sediment							
	☐ Uptake by plants or animals → check biota	☐ biota	☐ Ingestion of Wild or Farmed Foods							
	☐ Other (list):									

Print Form

Appendix B - Human Health Conceptual Site Model
Scoping Form and Standardized Graphic

Site Name: 91518 Wendy's - 2927 Seward Highway Anchorage, Alaska

File Number: 2100.26.001

Completed by: Arcadis U.S., Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☒ USTs
- ☐ ASTs
- ☒ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: All sources have been removed

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

Potentially complete for subsurface soil. Incomplete for surface soil.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Potentially complete for subsurface soil. Incomplete for surface soil.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Complete for Future receptors only.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

N/a

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

N/a

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Pathway is considered complete and insignificant.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Pathway is considered complete and insignificant.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Due to the presence of Naphthalene in the groundwater, the dermal exposure pathway is considered complete for future commercial workers, site visitors, and construction workers.

No further evaluation, outside of the current groundwater monitoring schedule is necessary.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

N/a

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

N/a

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

N/a

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

Appendix B

Field Notes

ARCADIS Design & Consultancy for natural and built assets

Daily Log

Project Name Former Chevron Site 91518 Project Number 30064209 Page 1 of 2

Site Location 2927 Seward Hwy, Anchorage AK Date 4/27/2023

Field Personnel Grant Jeffers, Discovery Drilling, Evan Wujcik

Time	Description of Activities
0750	GJ arrives onsite. Discovery Drilling (DD) onsite. GJ prep paperwork.
0758	EW onsite.
0800	Tailgate w/ crew + go over SOW.
0830	Complete tailgate. Mob to MW-12 to set up equipment.
	MW-12 DTW 11.03
	TD 12.4
	TD based on installation records state TD should be 17'
0900	Discussion w/ PM about proceeding based on DTW and TD readings
	Proceeding w/ PVC repair and vault replacement
0905	Begin w/ cutting asphalt around the well
0930	Begin spudding out vault
0942	~ 1ft PVC broke when lifting vault out
	↳ previously damaged portion of the well
0955	GJ back onsite (mobbed to office + TTT for equipment).
1030	Discovery out w/ Generator + air pump to remove sediment as needed.
note	well was able to be screwed one. @ ~ 1' bgs.
1050	Well casing replaced. Start backfilling w/ native (soil not in contact
	w/ contamination of GW) + Add Cold patch to match surroundings
	asphalt.
1114	Cold patch + well box set. Set up air compressor to remove large
	gravel from bottom of well.
1116	Blow out well casing
1125	Complete blowing out casing small cobble removed from well. DTW = 10.82
	TD = 15.95, PID reading = 1.6

1127
10.82
15.95
1.6

Project Name Former Chevron Site 91508 Project Number 300642O9 Page 2 of 2

1133	Start redevelopment of MW-12. (Bail / Surge / Bail / Surge / Bail / Pump). See Development Log for details.
1250	Redevelopment of MW-12 complete. Well in Great shape. Prep to purge & sample.
1300	Start purge of MW-12.
1316	Collect sample @ MW-12 (MW-12-W-20230427) & Dup (BD-1-W-20230427).
1322	Stop pump. Start cleaning up site area. 2 Drums generated (1 soil: ~ 1/8 full & 1 water: ~45 gallons) staged beside Fred Meyers station building. Drums are labeled.
1340	Mob to MW-11R Location.
1345	Look for MW-11R (Evan was last person to see well before construction started).
1358	Unable to locate MW-11R. EW believes well was not where Geo-Markout marked well location & thinks it is in planter. Location of MW-11R is undetermined by field personnel & Geomarkout. Call PM to discuss.
1405	PM confirmed well cannot be located and can not be abandoned subs pack up site.
1420	Collect EB sample from pump. (EQB-1-W-20230427)
1420	EW off site.
1430	GTJ off site. Drop of equipment & samples & complete paperwork.

4/27/23

Control Number: TSM- 30064209

ARCADIS

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: Site 91518 2927 Seward Highway Anchorage, AK			**Project Location:** -?
Date: 4/27/2023	**Time:** 0800	**Conducted by:** Grantt Jeffers	**Signature/Title:** Geologist

Issues or concerns from previous day's activities: Traffic. Permit (ROW) Not in hand, Change of scope.

Task anticipated to be performed today: Removal of well Box & top 1' of casing on MW-12 & replace. Attempt to find & abandon MW-11R

The following was used to communicate H&S information in this briefing (check all that apply):

- [X] HASP (*including THA*)
- [X] JSAs (*specify JSA #s*): See all applic JSAs
- [X] Permits (*specify type or #*): - Not aquired yet -
- [X] Traffic Safety Plan
- [ ] FHSHB (*specify sections*):
- [X] H&S Standard (*specify number*):
- [X] H&S checklist (*specify type*):
- [X] Activity specific hazard analysis:

Activity: saw cutting/GW sampling/well Development

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):

Biological	L	Chemical	XL	Driving	XH	Electrical	L
Environmental	L	Gravity	H	Mechanical	H	Motion	H
Personal Safety	M	Pressure	H	Radiation	L	Sound	H

PPE Required (If not using JSA or Permit with PPE requirements):

- [X] Hard hat
- [X] Safety glasses
- [ ] Face shield
- [ ] Safety goggles
- [X] Steel/composite toe boots
- [X] Traffic vest (*specify II or III*): II
- [ ] Life Vest (*specify type*):
- [ ] Protective Suit (*specify type*):
- [X] Protective gloves (*specify type*): Leather/Kevlars/Nitrial
- [X] Other (*specify*): hearing protection

Controls required to be used: PPE, Admin/Engineering controls, spotters, Traffic control (cones)

Signature and Certification: I have read and understand the project specific HASP for this project.

Non-Life Threatening Injury or Illness
Call WorkCare 1-888-449-7787

SSE Employee*	Printed Name/Signature/Company	Sign In Time	Sign Out Time
	Grantt Jeffers / ANA	0800	1430
	Davontae Becker / DDI	8:00	1420
	Marlon Scott / DDI	8:00	1420
	Jesse Saunders / DDI	8:00	1130
	Evan Wusick / ANA	0800	1425
	Adam Saunders / DDI	10:30	1420
	4/27/23		

*Short Service Employee (SSE) working for Arcadis <1 year.

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call **WorkCare at 1.888.449-7787** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

ARCADIS Low Flow Groundwater Sampling Form

Project Name: Former Chevron Site 91518
Project Number: 30064209
Field Personnel: G. Jeffers

WELL ID#: MW-12
Date: 4/27/23
Casing Diam (in) and Material: 4" PVC

Top of Screen (TOS): 6 ft
Bottom of Screen: 16 ft
Static Water Level (SWL): 10.82
Total Measured Depth: 15.90 ft

Max. Allowable Drawdown (MAD): 0.33 ft
Pumping inlet depth (PID): ~11.5' btoc
(If screen is submerged, set pump mid screen. Otherwise, set mid-point of water column)

Stabilization Criterion

3 consecutive readings meeting the following

pH:	± 0.1 pH units
Temp:	± 3% (Min of ± 0.2° C)
Specific Conductance:	±3% of reading
ORP:	± 10 millivolts
DO:	± 0.3 milligrams/liter
Turbidity:	± 10% or less than 10 NTUs

Time	Minutes Elapsed	DTW (Purge/Refill)	Drawdown (ft)	Rate (gpm) (mL)	Volume Purged	pH	Cond. (mS/cm) (µmhos/cm)	ORP (mV)	DO (mg/l)	TEMP. (°F) (°C)	Turbidity	COMMENTS
1300	—	10.82	—	400	—	—	Start Pump		—	—	—	Clear
1305	5	10.85	0.03	400	2,000	7.16	1.93	-59	0.83	5.10	61.1	
1310	10	10.85	0.03	400	4,000	7.10	1.93	-53	0.62	5.05	52.1	
1315	15	10.86	0.04	400	6,000	7.09	1.98	-52	0.52	5.19	40.6	
1316	—	—	Collect sample MW-12-W-20230427							—	—	—
1322	—	—	Complete sampling, Stop pump							—	—	—
Final Difference From Initial:			—			—						
Stabilized? (Y/N):			Y			Y	Y	Y	N	Y	N	Good to sample

4/27/23

PURGING EQUIPMENT		Pump & Controller Make/Model
	2" BLADDER PUMP	Mega Monsoon
	CENTRIFUGAL PUMP	
X	SUBMERSIBLE PUMP	
	PERISTALTIC PUMP	
	DEDICATED PUMP	
	OTHER (SPECIFY)	

FIELD TEST KITS		
Test	Concentration (mg/L)	Time
DO		
FE 2+		
H_2S		

Final Pump Controller Settings: Medium
Final Flow Rate (ml/min): 400

REMARKS/COMMENTS: Sample collected @ 1316. DUP-1 collected.
Sample ID = MW-12-W-20230427, DUP ID = BD-1-W-20230427
EB collected @ 1420 w/ ID EQB-1-W-20230427.

PRIOR TO SAMPLING, MAKE SURE TO CHECK SAMPLE COLLECTION NEEDS. INITIAL HERE TO CONFIRM COMPLETE:

COMPLETED BY: Grantt Jeffers
SIGNATURE:

REVIEWED BY:
DATE:

WELL DEVELOPMENT RECORD

PROJECT NAME: Former Chevron site 91518 PROJECT #: 30064209

DATE: 4/27/23 WELL #: MW-12 COMPANY NAME: ANA / Discovery Drilling Grant Jeffers

WELL TOTAL DEPTH (TD) (feet)		DEPTH TO WATER: (feet)		HEIGHT OF WATER COLUMN (WC) (feet)
15.90	-	10.85	=	5.05

Well Volume Calculation:

5.05 (WC)	x	0.66 (VP)	+ 3.33 gallons	— (WC)	x	— (VA)	x 0.30)	= — gallons	33.33 gallon = 10 case volumes
							x 0.30)	= 1 Well Volume	

Initial TD = 15.95

BAIL AND SURGE RECORD

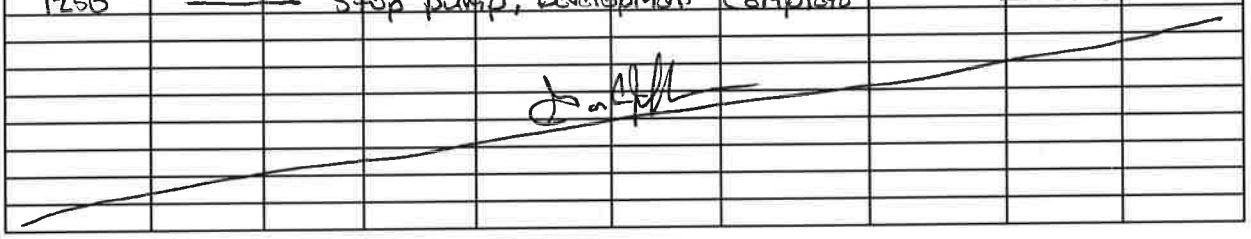
Description	Volume Bailed (gallons)	Time (start)	Time (end)	TD (ft bgs)	DTW
Initial Bail (prior to 1st surge):	0.8	1133	1136	15.95	—
1st Surge :	-	1136	1151	14.96	10.87
Second Bail (following 1st surge):	0.3	1151	1153	15.90	—
2nd Surge:	-	1153	1210	15.86	10.84
Third Bail (following 2nd surge, if necessary):	0.5	1214	1218	15.90	10.85

Total Volume Bailed : 1.6 gallons
Total Time Surged : 30 minutes

Data Collected By: _____
Checked By: _____

PURGE DATA

TIME	Volume (gal.)	Temp. (°F)C	pH	Conductivity (µS/cm)	Turbidity (NTU)	Color	Particulates	DTW	Flow Rate (gpm)
1229	0	start purge						10.83	2
1234	10	5.64	7.28	1.77	>1000	Brown	silty	11.65	2
1239	20	5.00	7.30	1.71	131	~~Brown~~ Tan	None	11.66	2
1244	30	4.65	7.24	1.74	35.8	clear	None	11.66	2
1249	40	4.43	7.31	1.79	31.4	"	"	"	2
1250	—	Stop pump, Development				Complete			



Total purged: 42 gallons + Total bailed: 1.6 gallons
TOTAL VOLUME OF WATER REMOVED FROM WELL: 43.6 **gallons**

Total time pumping: 41 minutes
Typical pumping rate: 2 gallons per minute (gpm)
Estimated recharge rate: - ft/min or gpm (circle one)
Brand/Model of pump: Mega monsoon Capacity of pump: ~2 gpm
Quantity of sediment removed: <1 cubic feet (ft^3)

Type of sediment removed: list %	Clay	Silt	Fine Sand	Medium Sand	Coarse Sand	Gravel
	—	20	40	—	—	—

Comments: Jetted out well casing to start development.
Initial TD = 12.40
Final TD = 15.90

Reference Tables

Volume of Sch. 40 PVC Pipe	
Diameter (in.)	Volume Gal/lin. ft. (VP)
1 1/4	0.08
2	0.17
3	0.38
4	0.66
6	1.5
8	2.8

Volume of Open Borehole and Annulus (between casing and hole)			
Borehole Diameter	Vol./Lin. ft of hole Gal. (VH)	Nominal Casing Diameter	Vol./Lin ft of annulus Gal. (VA)
6 1/4	1.59	2	1.36
8 1/4	2.78	2	2.55
10 1/4	4.29	2	4.06
8 1/4	2.78	4	1.95
10 1/4	4.29	4	3.46
12 1/4	6.13	4	5.30
10 1/4	4.29	6	2.49
12 1/4	6.13	6	4.33

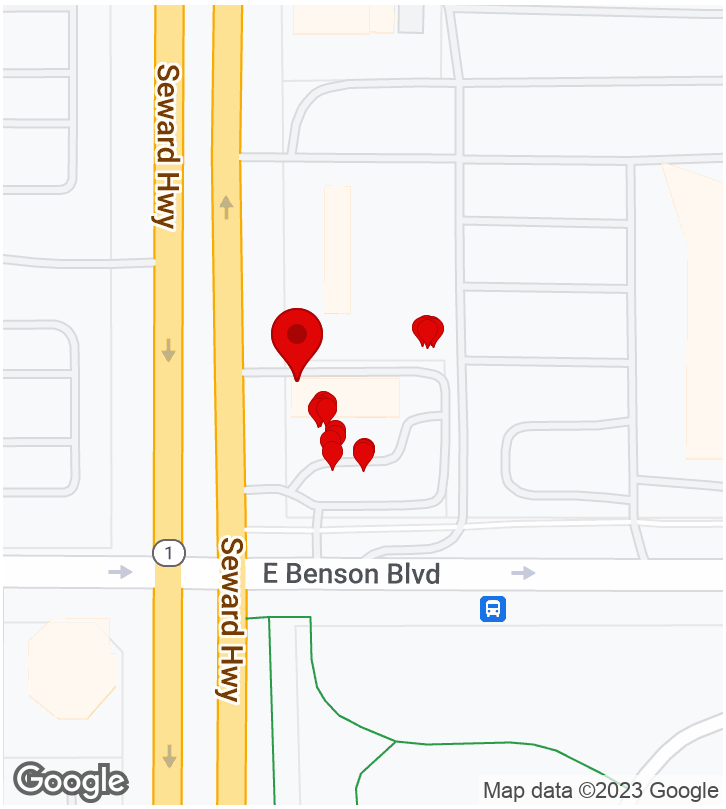
To obtain 1 Total Well Volume (WV), multiply the total height of water column (WC) in the well (in feet) by the volume of water in the well pipe (VP) + the height of water column in the well (WC) times the Volume of the annulus (VA) times 0.30

Chevron Daily Log (Version 2.0)

Contacts: Lea Milando & Brianne Zorn

June 8, 2023, 91518, Danielle Gilbert

6/8/2023, 11:00:10 PM UTC



CREATED

6/8/2023, 4:52:28 PM UTC
by Danielle Gilbert

UPDATED

6/8/2023, 11:00:10 PM UTC
by Danielle Gilbert

STATUS

Ready for QC

LOCATION

61.193909, -149.867532

Please complete one daily log entry per day per site.	
Please complete one tailgate form (as applicable). Field Lead to document waste, and subcontractor information per field event. Do not duplicate waste and subcontractor in separate logs.	
Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to your task today? If not, this document can be reviewed by clicking on "1 Reference file" at the top of this record.	Yes
Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to your task today.	
Date	June 8, 2023

Basic Information

Select Site ID	91518, Wendy's
Portfolio	COP 5.0
Subportfolio	West
Select Project Number	
Project Manager	Nick Wood
Inside Chevron Operational Control?	No
Do you have the up-to-date site access agreement with you?	Yes
Are subcontractors working on-site?	Yes

Onsite Staff

Staff List	Danielle Gilbert , Sione finau, William lee, Discovery Drilling
Did you complete a tailgate form?	Chevron General Permit to Work Completed

Subcontractor

Subcontractor Information (2 Items)

Subcontractor Information - 1. Discovery Drilling

Company Name	Discovery Drilling
Type of Services	Well abandonment

Did they participate in the H&S tailgate discussion?	Yes
Subcontractor Mitigation Plans	Review JSAs
Are all training certificates accounted for?	Yes

Subcontractor Information - 2. Northern Dame

Company Name	Northern Dame
Type of Services	Traffic control
Did they participate in the H&S tailgate discussion?	Yes
Subcontractor Mitigation Plans	Permit
Are all training certificates accounted for?	Yes

Equipment & Calibration Information

Are you using equipment today?	No
List of Equipment Used	

Field Notes

Weather	Cloudy 65F
Please caption all photos	

General Site Photos

Daily Field Notes (11 Items)

Daily Field Notes - 1. 08:45

Time	08:45
Description of Task	Arrive on site, don PPE, prepare HS documents
Photos	

Daily Field Notes - 2. 09:00

Time	09:00
Description of Task	Begin H&S tailgate
Photos	

Daily Field Notes - 3. 09:30

Time	09:30
Description of Task	H&S tailgate complete, begin moving to well abandonment area with traffic control
Photos	

Daily Field Notes - 4. 10:30

Time	10:30
Description of Task	Well abandonments complete. We’re unable to pull casings. Casing bottoms bust open, bentonite chips poured. Called PM to give status update.
Photos	

Daily Field Notes - 5. 10:50

Time	10:50
Description of Task	Traffic control picked up. Discussed tasks completed with subcontractors. Discovery Drilling and Northern Dame packed and finished. Depart site to buy waste sampling equipment.
Photos	

Daily Field Notes - 6. 12:10

Time	12:10
Description of Task	Arrive back on site. Inspect bottleware and attempted to call lab for clarification. No response. Called project team and got proper confirmation

Photos

Daily Field Notes - 7. 12:40

Time	12:40
Description of Task	Begin waste sampling
Photos	

Daily Field Notes - 8. 13:00

Time	13:00
Description of Task	Sample water drum GW-Waste-060823
Photos	

Daily Field Notes - 9. 13:10

Time	13:10
Description of Task	Soil drum sample collected S-Waste-060823
Photos	

Daily Field Notes - 10. 13:50

Time	13:50
Description of Task	Drums closed and coolers packed. Begin wrapping up
Photos	

Daily Field Notes - 11. 14:10

Time	14:10
Description of Task	Status update sent to team. ANA out
Photos	

Potential Incidents, Close Calls, Stop Works, or Public/Stakeholder Interactions (1 Item)

Potential Incidents, Close Calls, Stop Works, or Public/Stakeholder Interactions - 1. One of the drillers noticed the other leaning a bit to the side to pour bentonite chips on the narrow median. He instructed his coworker to stop, wait for traffic to die down and readjust to not have his shoulder near the road.

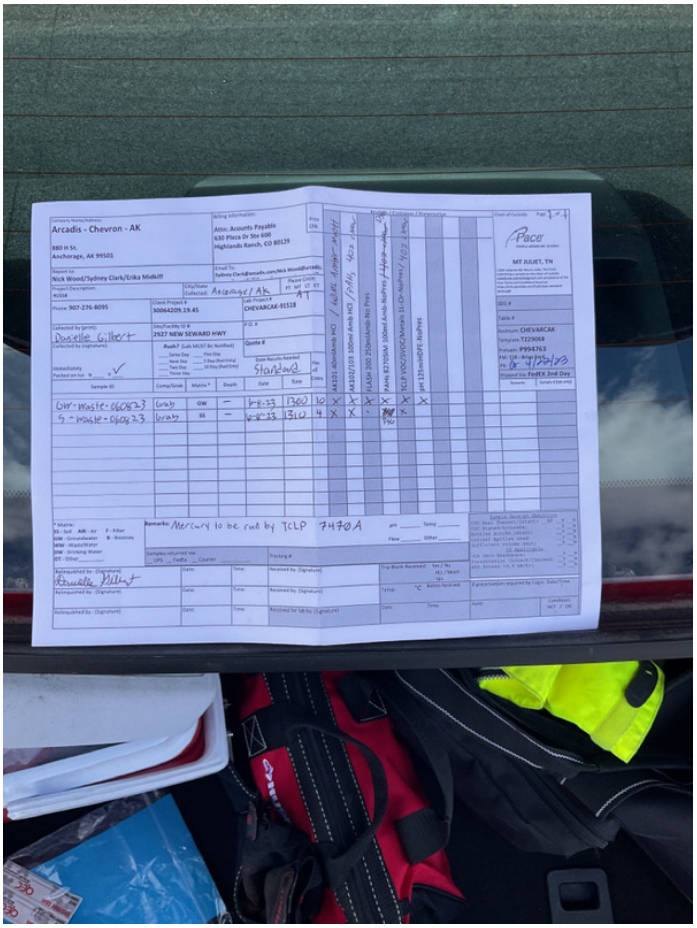
Event type	Stop Work
What happened?	One of the drillers noticed the other leaning a bit to the side to pour bentonite chips on the narrow median. He instructed his coworker to stop, wait for traffic to die down and readjust to not have his shoulder near the road.

Photos

Samples

Were samples collected?	Yes
Is the person signing the COC IATA trained?	Yes

COC Photos



CHMM - Staff Hours

This information will be reported to Chevron. If the calculated totals are incorrect, please update the hours in the staff section at the top of the form.	
Total Arcadis Travel Hours	0.75
Total Arcadis Site Hours	5.91666666666667
Total Subcontractor Hours	7.5

CHMM - Vehicle Mileage

The information in this section will be reported to Chevron. Please fill out mileage once per vehicle.	

Vehicles (2 Items)

Vehicles - 1. Vehicle 1

Vehicle Number	Vehicle 1
Arcadis or subcontractor vehicle?	Arcadis
Mileage to and from site	10
Mileage driven on site	0

Vehicles - 2. Vehicle 2

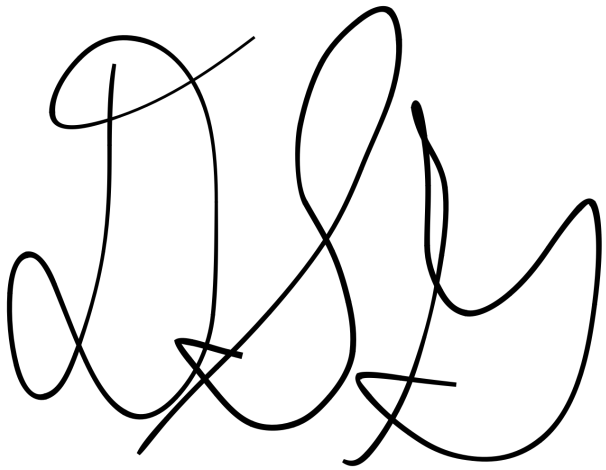
Vehicle Number	Vehicle 2
Arcadis or subcontractor vehicle?	Subcontractor
Mileage	10
Total Arcadis Site Mileage	
Total Arcadis Travel Mileage	10
Total Subcontractor Mileage	10

Review

Are field notes considered complete?	Yes

End of Day Questions

Was waste generated?	No

Have you performed work in accordance with the applicable QP/TGI?	Yes
Do any of the following Communication Triggers apply?	
Change in plans (project delays)?	No
Discovery of significant new site characteristics?	No
Upcoming regulatory, community, or other stakeholder views change?	No
Incident at the site?	No
Is there a potential dispute?	No
Identification of strategic opportunity?	No
New application, renewal, or permit modifcation?	No
Signature	 Signed 6/8/2023, 10:07:54 PM UTC

Chevron 91519, MW-9, 2023-06-08

Created	2023-06-08 17:29:05 UTC by Danielle Gilbert
Updated	2023-06-08 18:15:37 UTC by Danielle Gilbert
Location	61.19385470816336, -149.86797181800142
Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes

Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.

General Section

Select Project Number	30007248, Chevron Environmental Management Company, ASRTM0EH.1518-AK_91518_Anchorage
Client	Chevron Environmental Management Company
Project Number	30007248
Site Name	Chevron 91519
Date	2023-06-08

Well Information

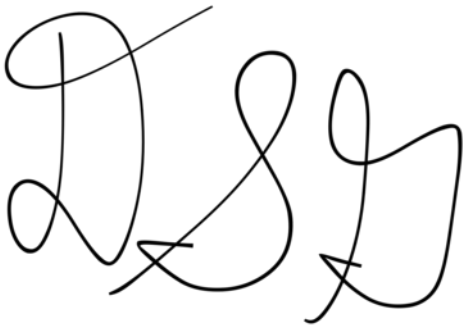
Well ID	MW-9
Date Abandoned	2023-06-08
Photo of Well Before Abandonment	
Abandon Drilling Firm	Discovery Drilling
Screen depth measured from TOC or Ground Surface	TOC
Inside Diameter	2 inch
Grouted	Yes

Annulus Grouted To (ft)	1
Grout Type	Bentonite
Grout Mixture	Chips
Grout Method	Poured
Crew	Sione, AJ
Photo of Area After Abandonment	

Additional Photos

Please remember to attach a site map to the well decommission log after printing.

Signature of Consultant/Engineer



Signed 2023-06-08 18:13:56 UTC

Company/Position	Arcadis/Geological Specialist 2
Have you performed work in accordance with the applicable QP/TGI?	Yes

Chevron 91519, MW-10, 2023-06-08

Created	2023-06-08 17:24:55 UTC by Danielle Gilbert
Updated	2023-06-08 18:15:15 UTC by Danielle Gilbert
Location	61.19385470816336, -149.86797181800142
Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes

Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.

General Section

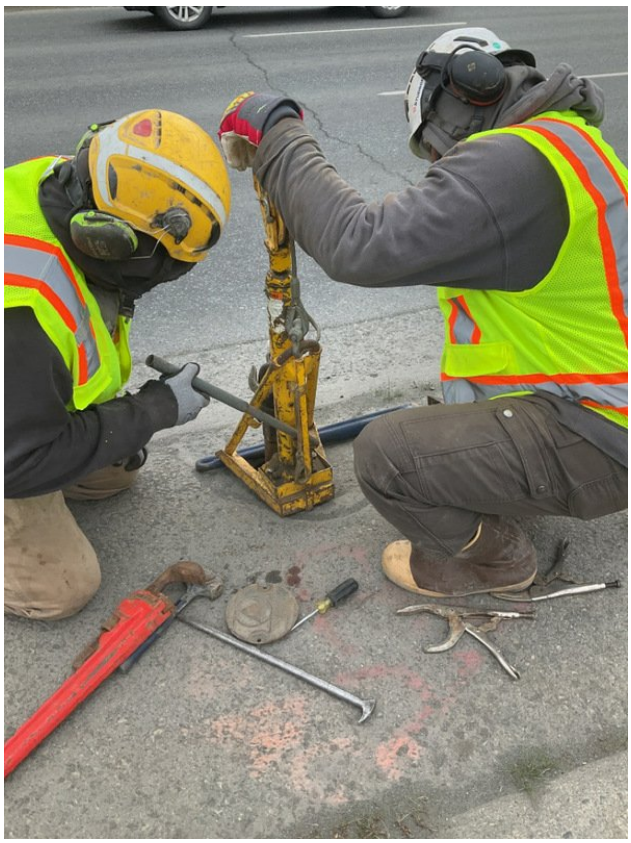
Select Project Number	30007248, Chevron Environmental Management Company, ASRTM0EH.1518-AK_91518_Anchorage
Client	Chevron Environmental Management Company
Project Number	30007248
Site Name	Chevron 91519
Date	2023-06-08

Well Information

Well ID	MW-10
Date Abandoned	2023-06-08
Photo of Well Before Abandonment	
Abandon Drilling Firm	Discovery Drilling
Screen depth measured from TOC or Ground Surface	TOC
Casing Type	PVC
Screen Type	PVC

Inside Diameter	2 inch
Grouted	Yes
Annulus Grouted To (ft)	1
Grout Type	Bentonite
Grout Mixture	Chips
Grout Method	Poured
Crew	Sione, AJ
Photo of Area After Abandonment	

Additional Photos



Please remember to attach a site map to the well decommission log after printing.	
Comments	Bottom of casing punched out. Was unable to pull casing. Backfilled with bentonite chips

Signature of Consultant/Engineer

Signed 2023-06-08 17:30:03 UTC

Company/Position	Arcadis/Geological Specialist 2
Date of Signature	2023-06-08
Have you performed work in accordance with the applicable QP/TGI?	Yes

Appendix C

Full Laboratory Deliverables Report

ANALYTICAL REPORT

May 12, 2023

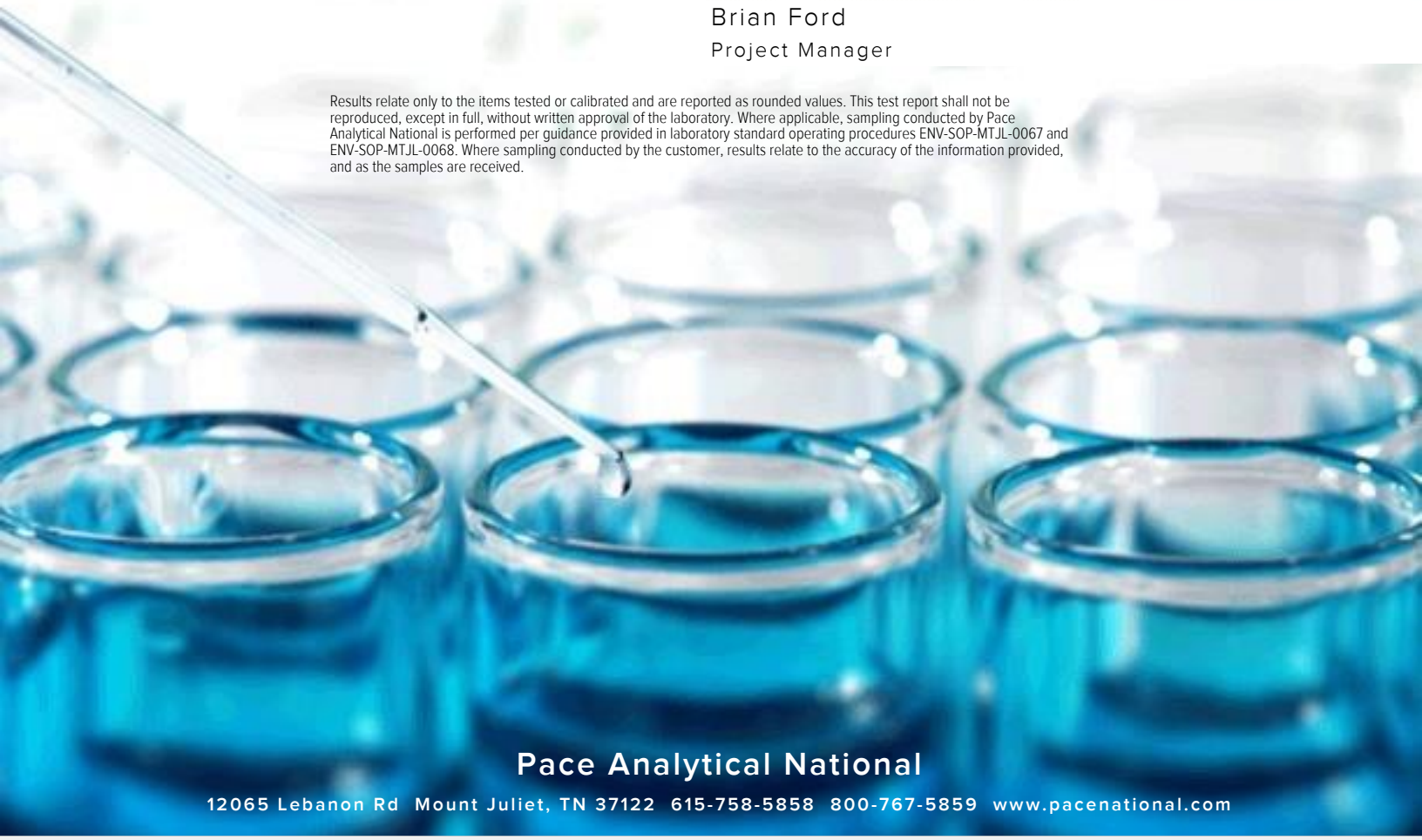
Arcadis - Chevron - AK

Sample Delivery Group:	L1610576
Samples Received:	04/29/2023
Project Number:	30064209.19.45
Description:	91518
Site:	2927 NEW SEWARD HWY ANCHORAGE
Report To:	Nick Wood/Sydney Clark/Erika Midkiff 880 H St. Anchorage, AK 99501

Entire Report Reviewed By:

Brian Ford

Project Manager



Pace Analytical National

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

TABLE OF CONTENTS

TB-1-20230427 L1610576-01 GW

Collected by: G. Jeffers | Collected date/time: 04/27/23 00:00 | Received date/time: 04/29/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2053572	1	05/03/23 23:52	05/03/23 23:52	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2054080	1	05/04/23 14:13	05/04/23 14:13	DWR	Mt. Juliet, TN

MW-12-W-20230427 L1610576-02 GW

Collected by: G. Jeffers | Collected date/time: 04/27/23 13:16 | Received date/time: 04/29/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2052080	1	05/04/23 11:13	05/06/23 01:29	SPL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2053572	1	05/04/23 05:21	05/04/23 05:21	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2054080	1	05/04/23 15:16	05/04/23 15:16	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2058419	10	05/11/23 18:08	05/11/23 18:08	BRA	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2054251	1	05/05/23 02:55	05/05/23 13:10	DLH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102/103	WG2055485	1	05/09/23 16:20	05/10/23 09:11	MWS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102SGT	WG2055486	1	05/09/23 16:22	05/10/23 09:11	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG2051351	1	05/01/23 06:57	05/03/23 14:03	AMG	Mt. Juliet, TN

BD-1-W-20230427 L1610576-03 GW

Collected by: G. Jeffers | Collected date/time: 04/27/23 00:00 | Received date/time: 04/29/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2052080	1	05/04/23 11:13	05/06/23 01:41	SPL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2053572	1	05/04/23 05:44	05/04/23 05:44	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2054913	1	05/05/23 23:23	05/05/23 23:23	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2058419	10	05/11/23 18:32	05/11/23 18:32	BRA	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2054251	1.03	05/05/23 02:55	05/05/23 13:21	DLH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102/103	WG2055485	1	05/09/23 16:20	05/10/23 09:31	MWS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102SGT	WG2055486	1	05/09/23 16:22	05/10/23 09:31	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG2051351	1	05/01/23 06:57	05/03/23 14:20	AMG	Mt. Juliet, TN

EQB-1-W-20230427 L1610576-04 GW

Collected by: G. Jeffers | Collected date/time: 04/27/23 14:20 | Received date/time: 04/29/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2052080	1	05/04/23 11:13	05/06/23 01:44	SPL	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2053572	1	05/04/23 00:14	05/04/23 00:14	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2054080	1	05/04/23 14:55	05/04/23 14:55	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102/103	WG2055485	1.11	05/09/23 16:20	05/10/23 09:52	MWS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102SGT	WG2055486	1.11	05/09/23 16:22	05/10/23 09:52	MWS	Mt. Juliet, TN

Unless qualified or notated within the narrative below, all sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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

Volatile Organic Compounds (GC) by Method AK101

The same analyte is found in the associated blank.

Batch	Analyte	Lab Sample ID
WG2053572	TPHGAK C6 to C10	L1610576-02, 03

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

The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.

Batch	Lab Sample ID	Analytes
WG2054913	L1610576-03	1,1-Dichloroethene, Carbon disulfide and n-Butylbenzene

Surrogate recovery limits have been exceeded; values are outside upper control limits.

Batch	Analyte	Lab Sample ID
WG2054080	Toluene-d8	L1610576-04

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Surrogate recovery limits have been exceeded; values are outside lower control limits.

Batch	Analyte	Lab Sample ID
WG2055485	n-Triacontane d62	(BLANK) R3922840-1, (LCSD) R3922840-3

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

The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Batch	Lab Sample ID	Analytes
WG2051351	(MS) R3921333-3	Benzo(g,h,i)perylene, Dibenz(a,h)anthracene and Indeno(1,2,3-cd)pyrene

The associated batch QC was outside the established quality control range for precision.

Batch	Lab Sample ID	Analytes
WG2051351	(MSD) R3921333-4	19 analytes

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	U		28.7	100	1	05/03/2023 23:52	WG2053572
(S) a,a,a-Trifluorotoluene(FID)	*72.1*			*50.0-150*		*05/03/2023 23:52*	WG2053572

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	05/04/2023 14:13	WG2054080
Acrolein	U		2.54	50.0	1	05/04/2023 14:13	WG2054080
Acrylonitrile	U		0.671	10.0	1	05/04/2023 14:13	WG2054080
Benzene	U		0.0941	1.00	1	05/04/2023 14:13	WG2054080
Bromobenzene	U		0.118	1.00	1	05/04/2023 14:13	WG2054080
Bromochloromethane	U		0.128	1.00	1	05/04/2023 14:13	WG2054080
Bromodichloromethane	U		0.136	1.00	1	05/04/2023 14:13	WG2054080
Bromoform	U		0.129	1.00	1	05/04/2023 14:13	WG2054080
Bromomethane	U		0.605	5.00	1	05/04/2023 14:13	WG2054080
n-Butylbenzene	U		0.157	1.00	1	05/04/2023 14:13	WG2054080
sec-Butylbenzene	U		0.125	1.00	1	05/04/2023 14:13	WG2054080
tert-Butylbenzene	U		0.127	1.00	1	05/04/2023 14:13	WG2054080
Carbon disulfide	U		0.0962	1.00	1	05/04/2023 14:13	WG2054080
Carbon tetrachloride	U		0.128	1.00	1	05/04/2023 14:13	WG2054080
Chlorobenzene	U		0.116	1.00	1	05/04/2023 14:13	WG2054080
Chlorodibromomethane	U		0.140	1.00	1	05/04/2023 14:13	WG2054080
Chloroethane	U		0.192	5.00	1	05/04/2023 14:13	WG2054080
Chloroform	U		0.111	5.00	1	05/04/2023 14:13	WG2054080
Chloromethane	U		0.960	2.50	1	05/04/2023 14:13	WG2054080
2-Chlorotoluene	U		0.106	1.00	1	05/04/2023 14:13	WG2054080
4-Chlorotoluene	U		0.114	1.00	1	05/04/2023 14:13	WG2054080
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	05/04/2023 14:13	WG2054080
Dibromomethane	U		0.122	1.00	1	05/04/2023 14:13	WG2054080
1,2-Dichlorobenzene	U		0.107	1.00	1	05/04/2023 14:13	WG2054080
1,3-Dichlorobenzene	U		0.110	1.00	1	05/04/2023 14:13	WG2054080
1,4-Dichlorobenzene	U		0.120	1.00	1	05/04/2023 14:13	WG2054080
Dichlorodifluoromethane	U		0.374	5.00	1	05/04/2023 14:13	WG2054080
1,1-Dichloroethane	U		0.100	1.00	1	05/04/2023 14:13	WG2054080
1,2-Dichloroethane	U		0.0819	1.00	1	05/04/2023 14:13	WG2054080
1,1-Dichloroethene	U		0.188	1.00	1	05/04/2023 14:13	WG2054080
cis-1,2-Dichloroethene	U		0.126	1.00	1	05/04/2023 14:13	WG2054080
trans-1,2-Dichloroethene	U		0.149	1.00	1	05/04/2023 14:13	WG2054080
1,2-Dichloropropane	U		0.149	1.00	1	05/04/2023 14:13	WG2054080
1,1-Dichloropropene	U		0.142	1.00	1	05/04/2023 14:13	WG2054080
1,3-Dichloropropane	U		0.110	1.00	1	05/04/2023 14:13	WG2054080
cis-1,3-Dichloropropene	U		0.111	1.00	1	05/04/2023 14:13	WG2054080
trans-1,3-Dichloropropene	U		0.118	1.00	1	05/04/2023 14:13	WG2054080
2,2-Dichloropropane	U		0.161	1.00	1	05/04/2023 14:13	WG2054080
Di-isopropyl ether	U		0.105	1.00	1	05/04/2023 14:13	WG2054080
Ethylbenzene	U		0.137	1.00	1	05/04/2023 14:13	WG2054080
Hexachloro-1,3-butadiene	U		0.337	1.00	1	05/04/2023 14:13	WG2054080
Isopropylbenzene	U		0.105	1.00	1	05/04/2023 14:13	WG2054080
p-Isopropyltoluene	U		0.120	1.00	1	05/04/2023 14:13	WG2054080
2-Butanone (MEK)	U		1.19	10.0	1	05/04/2023 14:13	WG2054080
Methylene Chloride	U		0.430	5.00	1	05/04/2023 14:13	WG2054080
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	05/04/2023 14:13	WG2054080
Methyl tert-butyl ether	U		0.101	1.00	1	05/04/2023 14:13	WG2054080
Naphthalene	U		1.00	5.00	1	05/04/2023 14:13	WG2054080
n-Propylbenzene	U		0.0993	1.00	1	05/04/2023 14:13	WG2054080

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Styrene	U		0.118	1.00	1	05/04/2023 14:13	WG2054080
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	05/04/2023 14:13	WG2054080
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	05/04/2023 14:13	WG2054080
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	05/04/2023 14:13	WG2054080
Tetrachloroethene	U		0.300	1.00	1	05/04/2023 14:13	WG2054080
Toluene	U		0.278	1.00	1	05/04/2023 14:13	WG2054080
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/04/2023 14:13	WG2054080
1,2,4-Trichlorobenzene	U		0.481	1.00	1	05/04/2023 14:13	WG2054080
1,1,1-Trichloroethane	U		0.149	1.00	1	05/04/2023 14:13	WG2054080
1,1,2-Trichloroethane	U		0.158	1.00	1	05/04/2023 14:13	WG2054080
Trichloroethene	U		0.190	1.00	1	05/04/2023 14:13	WG2054080
Trichlorofluoromethane	U		0.160	5.00	1	05/04/2023 14:13	WG2054080
1,2,4-Trimethylbenzene	U		0.322	1.00	1	05/04/2023 14:13	WG2054080
1,2,3-Trimethylbenzene	U		0.104	1.00	1	05/04/2023 14:13	WG2054080
1,3,5-Trimethylbenzene	U		0.104	1.00	1	05/04/2023 14:13	WG2054080
Vinyl chloride	U		0.234	1.00	1	05/04/2023 14:13	WG2054080
Xylenes, Total	U		0.174	3.00	1	05/04/2023 14:13	WG2054080
o-Xylene	U		0.174	1.00	1	05/04/2023 14:13	WG2054080
m&p-Xylene	U		0.430	2.00	1	05/04/2023 14:13	WG2054080
(S) Toluene-d8	*120*			*80.0-120*		*05/04/2023 14:13*	WG2054080
(S) 4-Bromofluorobenzene	*111*			*77.0-126*		*05/04/2023 14:13*	WG2054080
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*05/04/2023 14:13*	WG2054080

Metals (ICP) by Method 6010D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Lead	U		2.99	6.00	1	05/06/2023 01:29	WG2052080

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	173	B	28.7	100	1	05/04/2023 05:21	WG2053572
(S) a,a,a-Trifluorotoluene(FID)	*72.7*			*50.0-150*		*05/04/2023 05:21*	WG2053572

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		11.3	50.0	1	05/04/2023 15:16	WG2054080
1,2,3-Trichloropropane	U		0.0200	0.0500	10	05/11/2023 18:08	WG2058419
Acrolein	U		2.54	50.0	1	05/04/2023 15:16	WG2054080
1,2-Dibromoethane	U		0.0410	0.0500	10	05/11/2023 18:08	WG2058419
Acrylonitrile	U		0.671	10.0	1	05/04/2023 15:16	WG2054080
Benzene	0.561	J	0.0941	1.00	1	05/04/2023 15:16	WG2054080
Bromobenzene	U		0.118	1.00	1	05/04/2023 15:16	WG2054080
Bromochloromethane	U		0.128	1.00	1	05/04/2023 15:16	WG2054080
Bromodichloromethane	U		0.136	1.00	1	05/04/2023 15:16	WG2054080
Bromoform	U		0.129	1.00	1	05/04/2023 15:16	WG2054080
Bromomethane	U		0.605	5.00	1	05/04/2023 15:16	WG2054080
n-Butylbenzene	U		0.157	1.00	1	05/04/2023 15:16	WG2054080
sec-Butylbenzene	0.940	J	0.125	1.00	1	05/04/2023 15:16	WG2054080
tert-Butylbenzene	U		0.127	1.00	1	05/04/2023 15:16	WG2054080
Carbon disulfide	U		0.0962	1.00	1	05/04/2023 15:16	WG2054080
Carbon tetrachloride	U		0.128	1.00	1	05/04/2023 15:16	WG2054080
Chlorobenzene	U		0.116	1.00	1	05/04/2023 15:16	WG2054080
Chlorodibromomethane	U		0.140	1.00	1	05/04/2023 15:16	WG2054080
Chloroethane	U		0.192	5.00	1	05/04/2023 15:16	WG2054080
Chloroform	U		0.111	5.00	1	05/04/2023 15:16	WG2054080
Chloromethane	U		0.960	2.50	1	05/04/2023 15:16	WG2054080
2-Chlorotoluene	U		0.106	1.00	1	05/04/2023 15:16	WG2054080
4-Chlorotoluene	U		0.114	1.00	1	05/04/2023 15:16	WG2054080
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	05/04/2023 15:16	WG2054080
Dibromomethane	U		0.122	1.00	1	05/04/2023 15:16	WG2054080
1,2-Dichlorobenzene	U		0.107	1.00	1	05/04/2023 15:16	WG2054080
1,3-Dichlorobenzene	U		0.110	1.00	1	05/04/2023 15:16	WG2054080
1,4-Dichlorobenzene	U		0.120	1.00	1	05/04/2023 15:16	WG2054080
Dichlorodifluoromethane	U		0.374	5.00	1	05/04/2023 15:16	WG2054080
1,1-Dichloroethane	U		0.100	1.00	1	05/04/2023 15:16	WG2054080
1,2-Dichloroethane	U		0.0819	1.00	1	05/04/2023 15:16	WG2054080
1,1-Dichloroethene	U		0.188	1.00	1	05/04/2023 15:16	WG2054080
cis-1,2-Dichloroethene	U		0.126	1.00	1	05/04/2023 15:16	WG2054080
trans-1,2-Dichloroethene	U		0.149	1.00	1	05/04/2023 15:16	WG2054080
1,2-Dichloropropane	U		0.149	1.00	1	05/04/2023 15:16	WG2054080
1,1-Dichloropropene	U		0.142	1.00	1	05/04/2023 15:16	WG2054080
1,3-Dichloropropane	U		0.110	1.00	1	05/04/2023 15:16	WG2054080
cis-1,3-Dichloropropene	U		0.111	1.00	1	05/04/2023 15:16	WG2054080
trans-1,3-Dichloropropene	U		0.118	1.00	1	05/04/2023 15:16	WG2054080
2,2-Dichloropropane	U		0.161	1.00	1	05/04/2023 15:16	WG2054080
Di-isopropyl ether	U		0.105	1.00	1	05/04/2023 15:16	WG2054080
Ethylbenzene	3.66		0.137	1.00	1	05/04/2023 15:16	WG2054080
Hexachloro-1,3-butadiene	U		0.337	1.00	1	05/04/2023 15:16	WG2054080

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Isopropylbenzene	7.41		0.105	1.00	1	05/04/2023 15:16	WG2054080
p-Isopropyltoluene	U		0.120	1.00	1	05/04/2023 15:16	WG2054080
2-Butanone (MEK)	U		1.19	10.0	1	05/04/2023 15:16	WG2054080
Methylene Chloride	U		0.430	5.00	1	05/04/2023 15:16	WG2054080
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	05/04/2023 15:16	WG2054080
Methyl tert-butyl ether	U		0.101	1.00	1	05/04/2023 15:16	WG2054080
Naphthalene	U		1.00	5.00	1	05/04/2023 15:16	WG2054080
n-Propylbenzene	6.06		0.0993	1.00	1	05/04/2023 15:16	WG2054080
Styrene	U		0.118	1.00	1	05/04/2023 15:16	WG2054080
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	05/04/2023 15:16	WG2054080
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	05/04/2023 15:16	WG2054080
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	05/04/2023 15:16	WG2054080
Tetrachloroethene	U		0.300	1.00	1	05/04/2023 15:16	WG2054080
Toluene	0.397	J	0.278	1.00	1	05/04/2023 15:16	WG2054080
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/04/2023 15:16	WG2054080
1,2,4-Trichlorobenzene	U		0.481	1.00	1	05/04/2023 15:16	WG2054080
1,1,1-Trichloroethane	U		0.149	1.00	1	05/04/2023 15:16	WG2054080
1,1,2-Trichloroethane	U		0.158	1.00	1	05/04/2023 15:16	WG2054080
Trichloroethene	U		0.190	1.00	1	05/04/2023 15:16	WG2054080
Trichlorofluoromethane	U		0.160	5.00	1	05/04/2023 15:16	WG2054080
1,2,4-Trimethylbenzene	12.7		0.322	1.00	1	05/04/2023 15:16	WG2054080
1,2,3-Trimethylbenzene	1.39		0.104	1.00	1	05/04/2023 15:16	WG2054080
1,3,5-Trimethylbenzene	0.564	J	0.104	1.00	1	05/04/2023 15:16	WG2054080
Vinyl chloride	U		0.234	1.00	1	05/04/2023 15:16	WG2054080
Xylenes, Total	3.83		0.174	3.00	1	05/04/2023 15:16	WG2054080
o-Xylene	0.215	J	0.174	1.00	1	05/04/2023 15:16	WG2054080
m&p-Xylene	3.62		0.430	2.00	1	05/04/2023 15:16	WG2054080
(S) Toluene-d8	*118*			*80.0-120*		*05/04/2023 15:16*	WG2054080
(S) 4-Bromofluorobenzene	*110*			*77.0-126*		*05/04/2023 15:16*	WG2054080
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*05/04/2023 15:16*	WG2054080

Sample Narrative:

L1610576-02 WG2058419: Non-target compounds too high to run at a lower dilution.

EDB / DBCP by Method 8011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00536	0.0200	1	05/05/2023 13:10	WG2054251

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	336	J	170	800	1	05/10/2023 09:11	WG2055485
AK103 RRO C25-C36	U		460	800	1	05/10/2023 09:11	WG2055485
(S) o-Terphenyl	*85.8*			*50.0-150*		*05/10/2023 09:11*	WG2055485
(S) n-Triacontane d62	*67.5*			*50.0-150*		*05/10/2023 09:11*	WG2055485

Semi-Volatile Organic Compounds (GC) by Method AK102SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	336	J	170	800	1	05/10/2023 09:11	WG2055486
(S) o-Terphenyl	*85.8*			*50.0-150*		*05/10/2023 09:11*	WG2055486

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Anthracene	U		0.0190	0.0500	1	05/03/2023 14:03	WG2051351
Acenaphthene	U		0.0190	0.0500	1	05/03/2023 14:03	WG2051351
Acenaphthylene	U		0.0170	0.0500	1	05/03/2023 14:03	WG2051351
Benzo(a)anthracene	U		0.0200	0.0500	1	05/03/2023 14:03	WG2051351
Benzo(a)pyrene	U		0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Benzo(b)fluoranthene	0.0198	J	0.0170	0.0500	1	05/03/2023 14:03	WG2051351
Benzo(g,h,i)perylene	0.0189	J	0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Benzo(k)fluoranthene	U		0.0200	0.250	1	05/03/2023 14:03	WG2051351
Chrysene	U		0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Dibenz(a,h)anthracene	U		0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Fluoranthene	0.0310	J	0.0110	0.0500	1	05/03/2023 14:03	WG2051351
Fluorene	U		0.0170	0.0500	1	05/03/2023 14:03	WG2051351
Indeno(1,2,3-cd)pyrene	U		0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Naphthalene	0.649		0.128	0.500	1	05/03/2023 14:03	WG2051351
Phenanthrene	0.0275	J	0.0180	0.0500	1	05/03/2023 14:03	WG2051351
Pyrene	0.0361	J	0.0170	0.0500	1	05/03/2023 14:03	WG2051351
1-Methylnaphthalene	U		0.0200	0.500	1	05/03/2023 14:03	WG2051351
2-Methylnaphthalene	U		0.0280	0.500	1	05/03/2023 14:03	WG2051351
2-Chloronaphthalene	U		0.0120	0.500	1	05/03/2023 14:03	WG2051351
(S) Nitrobenzene-d5	*74.5*			*11.0-135*		*05/03/2023 14:03*	WG2051351
(S) 2-Fluorobiphenyl	*67.5*			*32.0-120*		*05/03/2023 14:03*	WG2051351
(S) p-Terphenyl-d14	*56.0*			*23.0-122*		*05/03/2023 14:03*	WG2051351

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Lead	U		2.99	6.00	1	05/06/2023 01:41	WG2052080

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHGAK C6 to C10	168	B	28.7	100	1	05/04/2023 05:44	WG2053572
(S) a,a,a-Trifluorotoluene(FID)	*74.1*			*50.0-150*		*05/04/2023 05:44*	WG2053572

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		11.3	50.0	1	05/05/2023 23:23	WG2054913
1,2,3-Trichloropropane	U		0.0200	0.0500	10	05/11/2023 18:32	WG2058419
Acrolein	U		2.54	50.0	1	05/05/2023 23:23	WG2054913
1,2-Dibromoethane	U		0.0410	0.0500	10	05/11/2023 18:32	WG2058419
Acrylonitrile	U		0.671	10.0	1	05/05/2023 23:23	WG2054913
Benzene	0.515	J	0.0941	1.00	1	05/05/2023 23:23	WG2054913
Bromobenzene	U		0.118	1.00	1	05/05/2023 23:23	WG2054913
Bromochloromethane	U		0.128	1.00	1	05/05/2023 23:23	WG2054913
Bromodichloromethane	U		0.136	1.00	1	05/05/2023 23:23	WG2054913
Bromoform	U		0.129	1.00	1	05/05/2023 23:23	WG2054913
Bromomethane	U		0.605	5.00	1	05/05/2023 23:23	WG2054913
n-Butylbenzene	U	C3	0.157	1.00	1	05/05/2023 23:23	WG2054913
sec-Butylbenzene	0.894	J	0.125	1.00	1	05/05/2023 23:23	WG2054913
tert-Butylbenzene	U		0.127	1.00	1	05/05/2023 23:23	WG2054913
Carbon disulfide	U	C3	0.0962	1.00	1	05/05/2023 23:23	WG2054913
Carbon tetrachloride	U		0.128	1.00	1	05/05/2023 23:23	WG2054913
Chlorobenzene	U		0.116	1.00	1	05/05/2023 23:23	WG2054913
Chlorodibromomethane	U		0.140	1.00	1	05/05/2023 23:23	WG2054913
Chloroethane	U		0.192	5.00	1	05/05/2023 23:23	WG2054913
Chloroform	U		0.111	5.00	1	05/05/2023 23:23	WG2054913
Chloromethane	U		0.960	2.50	1	05/05/2023 23:23	WG2054913
2-Chlorotoluene	U		0.106	1.00	1	05/05/2023 23:23	WG2054913
4-Chlorotoluene	U		0.114	1.00	1	05/05/2023 23:23	WG2054913
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	05/05/2023 23:23	WG2054913
Dibromomethane	U		0.122	1.00	1	05/05/2023 23:23	WG2054913
1,2-Dichlorobenzene	U		0.107	1.00	1	05/05/2023 23:23	WG2054913
1,3-Dichlorobenzene	U		0.110	1.00	1	05/05/2023 23:23	WG2054913
1,4-Dichlorobenzene	U		0.120	1.00	1	05/05/2023 23:23	WG2054913
Dichlorodifluoromethane	U		0.374	5.00	1	05/05/2023 23:23	WG2054913
1,1-Dichloroethane	U		0.100	1.00	1	05/05/2023 23:23	WG2054913
1,2-Dichloroethane	0.450	J	0.0819	1.00	1	05/05/2023 23:23	WG2054913
1,1-Dichloroethene	U	C3	0.188	1.00	1	05/05/2023 23:23	WG2054913
cis-1,2-Dichloroethene	U		0.126	1.00	1	05/05/2023 23:23	WG2054913
trans-1,2-Dichloroethene	U		0.149	1.00	1	05/05/2023 23:23	WG2054913
1,2-Dichloropropane	U		0.149	1.00	1	05/05/2023 23:23	WG2054913
1,1-Dichloropropene	U		0.142	1.00	1	05/05/2023 23:23	WG2054913
1,3-Dichloropropane	U		0.110	1.00	1	05/05/2023 23:23	WG2054913
cis-1,3-Dichloropropene	U		0.111	1.00	1	05/05/2023 23:23	WG2054913
trans-1,3-Dichloropropene	U		0.118	1.00	1	05/05/2023 23:23	WG2054913
2,2-Dichloropropane	U		0.161	1.00	1	05/05/2023 23:23	WG2054913
Di-isopropyl ether	U		0.105	1.00	1	05/05/2023 23:23	WG2054913
Ethylbenzene	3.43		0.137	1.00	1	05/05/2023 23:23	WG2054913
Hexachloro-1,3-butadiene	U		0.337	1.00	1	05/05/2023 23:23	WG2054913

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Isopropylbenzene	6.88		0.105	1.00	1	05/05/2023 23:23	WG2054913
p-Isopropyltoluene	0.242	J	0.120	1.00	1	05/05/2023 23:23	WG2054913
2-Butanone (MEK)	U		1.19	10.0	1	05/05/2023 23:23	WG2054913
Methylene Chloride	U		0.430	5.00	1	05/05/2023 23:23	WG2054913
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	05/05/2023 23:23	WG2054913
Methyl tert-butyl ether	U		0.101	1.00	1	05/05/2023 23:23	WG2054913
Naphthalene	U		1.00	5.00	1	05/05/2023 23:23	WG2054913
n-Propylbenzene	5.61		0.0993	1.00	1	05/05/2023 23:23	WG2054913
Styrene	U		0.118	1.00	1	05/05/2023 23:23	WG2054913
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	05/05/2023 23:23	WG2054913
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	05/05/2023 23:23	WG2054913
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	05/05/2023 23:23	WG2054913
Tetrachloroethene	U		0.300	1.00	1	05/05/2023 23:23	WG2054913
Toluene	0.395	J	0.278	1.00	1	05/05/2023 23:23	WG2054913
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/05/2023 23:23	WG2054913
1,2,4-Trichlorobenzene	U		0.481	1.00	1	05/05/2023 23:23	WG2054913
1,1,1-Trichloroethane	U		0.149	1.00	1	05/05/2023 23:23	WG2054913
1,1,2-Trichloroethane	U		0.158	1.00	1	05/05/2023 23:23	WG2054913
Trichloroethene	U		0.190	1.00	1	05/05/2023 23:23	WG2054913
Trichlorofluoromethane	U		0.160	5.00	1	05/05/2023 23:23	WG2054913
1,2,4-Trimethylbenzene	11.8		0.322	1.00	1	05/05/2023 23:23	WG2054913
1,2,3-Trimethylbenzene	1.29		0.104	1.00	1	05/05/2023 23:23	WG2054913
1,3,5-Trimethylbenzene	0.520	J	0.104	1.00	1	05/05/2023 23:23	WG2054913
Vinyl chloride	U		0.234	1.00	1	05/05/2023 23:23	WG2054913
Xylenes, Total	3.55		0.174	3.00	1	05/05/2023 23:23	WG2054913
o-Xylene	0.196	J	0.174	1.00	1	05/05/2023 23:23	WG2054913
m&p-Xylene	3.35		0.430	2.00	1	05/05/2023 23:23	WG2054913
(S) Toluene-d8	*120*			*80.0-120*		*05/05/2023 23:23*	WG2054913
(S) 4-Bromofluorobenzene	*109*			*77.0-126*		*05/05/2023 23:23*	WG2054913
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*05/05/2023 23:23*	WG2054913

Sample Narrative:

L1610576-03 WG2058419: Non-target compounds too high to run at a lower dilution.

EDB / DBCP by Method 8011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00552	0.0206	1.03	05/05/2023 13:21	WG2054251

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	334	J	170	800	1	05/10/2023 09:31	WG2055485
AK103 RRO C25-C36	U		460	800	1	05/10/2023 09:31	WG2055485
(S) o-Terphenyl	*85.4*			*50.0-150*		*05/10/2023 09:31*	WG2055485
(S) n-Triacontane d62	*64.0*			*50.0-150*		*05/10/2023 09:31*	WG2055485

Semi-Volatile Organic Compounds (GC) by Method AK102SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	334	J	170	800	1	05/10/2023 09:31	WG2055486
(S) o-Terphenyl	*85.4*			*50.0-150*		*05/10/2023 09:31*	WG2055486

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Anthracene	U		0.0190	0.0500	1	05/03/2023 14:20	WG2051351
Acenaphthene	U		0.0190	0.0500	1	05/03/2023 14:20	WG2051351
Acenaphthylene	U		0.0170	0.0500	1	05/03/2023 14:20	WG2051351
Benzo(a)anthracene	U		0.0200	0.0500	1	05/03/2023 14:20	WG2051351
Benzo(a)pyrene	U		0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Benzo(b)fluoranthene	0.0229	J	0.0170	0.0500	1	05/03/2023 14:20	WG2051351
Benzo(g,h,i)perylene	0.0214	J	0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Benzo(k)fluoranthene	U		0.0200	0.250	1	05/03/2023 14:20	WG2051351
Chrysene	U		0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Dibenz(a,h)anthracene	U		0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Fluoranthene	0.0391	J	0.0110	0.0500	1	05/03/2023 14:20	WG2051351
Fluorene	U		0.0170	0.0500	1	05/03/2023 14:20	WG2051351
Indeno(1,2,3-cd)pyrene	U		0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Naphthalene	0.655		0.128	0.500	1	05/03/2023 14:20	WG2051351
Phenanthrene	0.0408	J	0.0180	0.0500	1	05/03/2023 14:20	WG2051351
Pyrene	0.0471	J	0.0170	0.0500	1	05/03/2023 14:20	WG2051351
1-Methylnaphthalene	0.112	J	0.0200	0.500	1	05/03/2023 14:20	WG2051351
2-Methylnaphthalene	U		0.0280	0.500	1	05/03/2023 14:20	WG2051351
2-Chloronaphthalene	U		0.0120	0.500	1	05/03/2023 14:20	WG2051351
(S) Nitrobenzene-d5	*74.0*			*11.0-135*		*05/03/2023 14:20*	WG2051351
(S) 2-Fluorobiphenyl	*66.0*			*32.0-120*		*05/03/2023 14:20*	WG2051351
(S) p-Terphenyl-d14	*50.5*			*23.0-122*		*05/03/2023 14:20*	WG2051351

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Lead	U		2.99	6.00	1	05/06/2023 01:44	WG2052080

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHGAK C6 to C10	U		28.7	100	1	05/04/2023 00:14	WG2053572
(S) a,a,a-Trifluorotoluene(FID)	*77.5*			*50.0-150*		*05/04/2023 00:14*	WG2053572

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		11.3	50.0	1	05/04/2023 14:55	WG2054080
Acrolein	U		2.54	50.0	1	05/04/2023 14:55	WG2054080
Acrylonitrile	U		0.671	10.0	1	05/04/2023 14:55	WG2054080
Benzene	U		0.0941	1.00	1	05/04/2023 14:55	WG2054080
Bromobenzene	U		0.118	1.00	1	05/04/2023 14:55	WG2054080
Bromochloromethane	U		0.128	1.00	1	05/04/2023 14:55	WG2054080
Bromodichloromethane	U		0.136	1.00	1	05/04/2023 14:55	WG2054080
Bromoform	U		0.129	1.00	1	05/04/2023 14:55	WG2054080
Bromomethane	U		0.605	5.00	1	05/04/2023 14:55	WG2054080
n-Butylbenzene	U		0.157	1.00	1	05/04/2023 14:55	WG2054080
sec-Butylbenzene	U		0.125	1.00	1	05/04/2023 14:55	WG2054080
tert-Butylbenzene	U		0.127	1.00	1	05/04/2023 14:55	WG2054080
Carbon disulfide	U		0.0962	1.00	1	05/04/2023 14:55	WG2054080
Carbon tetrachloride	U		0.128	1.00	1	05/04/2023 14:55	WG2054080
Chlorobenzene	U		0.116	1.00	1	05/04/2023 14:55	WG2054080
Chlorodibromomethane	U		0.140	1.00	1	05/04/2023 14:55	WG2054080
Chloroethane	U		0.192	5.00	1	05/04/2023 14:55	WG2054080
Chloroform	1.63	J	0.111	5.00	1	05/04/2023 14:55	WG2054080
Chloromethane	U		0.960	2.50	1	05/04/2023 14:55	WG2054080
2-Chlorotoluene	U		0.106	1.00	1	05/04/2023 14:55	WG2054080
4-Chlorotoluene	U		0.114	1.00	1	05/04/2023 14:55	WG2054080
1,2-Dibromo-3-Chloropropane	U		0.276	5.00	1	05/04/2023 14:55	WG2054080
Dibromomethane	U		0.122	1.00	1	05/04/2023 14:55	WG2054080
1,2-Dichlorobenzene	U		0.107	1.00	1	05/04/2023 14:55	WG2054080
1,3-Dichlorobenzene	U		0.110	1.00	1	05/04/2023 14:55	WG2054080
1,4-Dichlorobenzene	U		0.120	1.00	1	05/04/2023 14:55	WG2054080
Dichlorodifluoromethane	U		0.374	5.00	1	05/04/2023 14:55	WG2054080
1,1-Dichloroethane	U		0.100	1.00	1	05/04/2023 14:55	WG2054080
1,2-Dichloroethane	U		0.0819	1.00	1	05/04/2023 14:55	WG2054080
1,1-Dichloroethene	U		0.188	1.00	1	05/04/2023 14:55	WG2054080
cis-1,2-Dichloroethene	U		0.126	1.00	1	05/04/2023 14:55	WG2054080
trans-1,2-Dichloroethene	U		0.149	1.00	1	05/04/2023 14:55	WG2054080
1,2-Dichloropropane	U		0.149	1.00	1	05/04/2023 14:55	WG2054080
1,1-Dichloropropene	U		0.142	1.00	1	05/04/2023 14:55	WG2054080
1,3-Dichloropropane	U		0.110	1.00	1	05/04/2023 14:55	WG2054080
cis-1,3-Dichloropropene	U		0.111	1.00	1	05/04/2023 14:55	WG2054080
trans-1,3-Dichloropropene	U		0.118	1.00	1	05/04/2023 14:55	WG2054080
2,2-Dichloropropane	U		0.161	1.00	1	05/04/2023 14:55	WG2054080
Di-isopropyl ether	U		0.105	1.00	1	05/04/2023 14:55	WG2054080
Ethylbenzene	U		0.137	1.00	1	05/04/2023 14:55	WG2054080
Hexachloro-1,3-butadiene	U		0.337	1.00	1	05/04/2023 14:55	WG2054080
Isopropylbenzene	U		0.105	1.00	1	05/04/2023 14:55	WG2054080
p-Isopropyltoluene	U		0.120	1.00	1	05/04/2023 14:55	WG2054080

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
2-Butanone (MEK)	U		1.19	10.0	1	05/04/2023 14:55	WG2054080
Methylene Chloride	U		0.430	5.00	1	05/04/2023 14:55	WG2054080
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0	1	05/04/2023 14:55	WG2054080
Methyl tert-butyl ether	U		0.101	1.00	1	05/04/2023 14:55	WG2054080
Naphthalene	U		1.00	5.00	1	05/04/2023 14:55	WG2054080
n-Propylbenzene	U		0.0993	1.00	1	05/04/2023 14:55	WG2054080
Styrene	U		0.118	1.00	1	05/04/2023 14:55	WG2054080
1,1,1,2-Tetrachloroethane	U		0.147	1.00	1	05/04/2023 14:55	WG2054080
1,1,2,2-Tetrachloroethane	U		0.133	1.00	1	05/04/2023 14:55	WG2054080
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00	1	05/04/2023 14:55	WG2054080
Tetrachloroethene	U		0.300	1.00	1	05/04/2023 14:55	WG2054080
Toluene	U		0.278	1.00	1	05/04/2023 14:55	WG2054080
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/04/2023 14:55	WG2054080
1,2,4-Trichlorobenzene	U		0.481	1.00	1	05/04/2023 14:55	WG2054080
1,1,1-Trichloroethane	U		0.149	1.00	1	05/04/2023 14:55	WG2054080
1,1,2-Trichloroethane	U		0.158	1.00	1	05/04/2023 14:55	WG2054080
Trichloroethene	U		0.190	1.00	1	05/04/2023 14:55	WG2054080
Trichlorofluoromethane	U		0.160	5.00	1	05/04/2023 14:55	WG2054080
1,2,4-Trimethylbenzene	U		0.322	1.00	1	05/04/2023 14:55	WG2054080
1,2,3-Trimethylbenzene	U		0.104	1.00	1	05/04/2023 14:55	WG2054080
1,3,5-Trimethylbenzene	U		0.104	1.00	1	05/04/2023 14:55	WG2054080
Vinyl chloride	U		0.234	1.00	1	05/04/2023 14:55	WG2054080
Xylenes, Total	U		0.174	3.00	1	05/04/2023 14:55	WG2054080
o-Xylene	U		0.174	1.00	1	05/04/2023 14:55	WG2054080
m&p-Xylene	U		0.430	2.00	1	05/04/2023 14:55	WG2054080
(S) Toluene-d8	*122*	J1		*80.0-120*		*05/04/2023 14:55*	WG2054080
(S) 4-Bromofluorobenzene	*112*			*77.0-126*		*05/04/2023 14:55*	WG2054080
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*05/04/2023 14:55*	WG2054080

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	215	J	189	888	1.11	05/10/2023 09:52	WG2055485
AK103 RRO C25-C36	U		511	888	1.11	05/10/2023 09:52	WG2055485
(S) o-Terphenyl	*86.5*			*50.0-150*		*05/10/2023 09:52*	WG2055485
(S) n-Triacontane d62	*56.3*			*50.0-150*		*05/10/2023 09:52*	WG2055485

Semi-Volatile Organic Compounds (GC) by Method AK102SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	215	J	189	888	1.11	05/10/2023 09:52	WG2055486
(S) o-Terphenyl	*86.5*			*50.0-150*		*05/10/2023 09:52*	WG2055486

Method Blank (MB)

(MB) R3921711-1 05/06/23 01:24

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead	U		2.99	6.00

Laboratory Control Sample (LCS)

(LCS) R3921711-2 05/06/23 01:26

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	1000	1010	101	80.0-120	

L1610576-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1610576-02 05/06/23 01:29 • (MS) R3921711-4 05/06/23 01:35 • (MSD) R3921711-5 05/06/23 01:37

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	1000	U	995	979	99.5	97.9	1	75.0-125			1.57	20

Method Blank (MB)

(MB) R3921499-3 05/03/23 22:41

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TPHGAK C6 to C10	32.3	J	28.7	100
(S) a,a,a-Trifluorotoluene(FID)	*76.1*			*60.0-120*

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

(LCS) R3921499-1 05/03/23 21:05 • (LCSD) R3921499-2 05/03/23 21:26

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 %
TPHGAK C6 to C10	5000	4400	4460	88.0	89.2	60.0-120			1.35	20
(S) a,a,a-Trifluorotoluene(FID)				*72.3*	*74.3*	*60.0-120*				

L1609808-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1609808-18 05/04/23 01:42 • (MS) R3921499-4 05/04/23 06:49 • (MSD) R3921499-5 05/04/23 07:11

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 %
TPHGAK C6 to C10	5000	438	4550	4580	82.2	82.8	1	70.0-130			0.657	20
(S) a,a,a-Trifluorotoluene(FID)					*73.6*	*71.6*		*50.0-150*				

Method Blank (MB)

(MB) R3921338-3 05/04/23 12:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		11.3	50.0
Acrolein	U		2.54	50.0
Acrylonitrile	U		0.671	10.0
Benzene	U		0.0941	1.00
Bromobenzene	U		0.118	1.00
Bromochloromethane	U		0.128	1.00
Bromodichloromethane	U		0.136	1.00
Bromoform	U		0.129	1.00
Bromomethane	U		0.605	5.00
n-Butylbenzene	U		0.157	1.00
sec-Butylbenzene	U		0.125	1.00
tert-Butylbenzene	U		0.127	1.00
Carbon disulfide	U		0.0962	1.00
Carbon tetrachloride	U		0.128	1.00
Chlorobenzene	U		0.116	1.00
Chlorodibromomethane	U		0.140	1.00
Chloroethane	U		0.192	5.00
Chloroform	U		0.111	5.00
Chloromethane	U		0.960	2.50
2-Chlorotoluene	U		0.106	1.00
4-Chlorotoluene	U		0.114	1.00
1,2-Dibromo-3-Chloropropane	U		0.276	5.00
Dibromomethane	U		0.122	1.00
1,2-Dichlorobenzene	U		0.107	1.00
1,3-Dichlorobenzene	U		0.110	1.00
1,4-Dichlorobenzene	U		0.120	1.00
Dichlorodifluoromethane	U		0.374	5.00
1,1-Dichloroethane	U		0.100	1.00
1,2-Dichloroethane	U		0.0819	1.00
1,1-Dichloroethene	U		0.188	1.00
cis-1,2-Dichloroethene	U		0.126	1.00
trans-1,2-Dichloroethene	U		0.149	1.00
1,2-Dichloropropane	U		0.149	1.00
1,1-Dichloropropene	U		0.142	1.00
1,3-Dichloropropane	U		0.110	1.00
cis-1,3-Dichloropropene	U		0.111	1.00
trans-1,3-Dichloropropene	U		0.118	1.00
2,2-Dichloropropane	U		0.161	1.00
Di-isopropyl ether	U		0.105	1.00
Ethylbenzene	U		0.137	1.00

Method Blank (MB)

(MB) R3921338-3 05/04/23 12:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.337	1.00
Isopropylbenzene	U		0.105	1.00
p-Isopropyltoluene	U		0.120	1.00
2-Butanone (MEK)	U		1.19	10.0
Methylene Chloride	U		0.430	5.00
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Styrene	U		0.118	1.00
1,1,1,2-Tetrachloroethane	U		0.147	1.00
1,1,2,2-Tetrachloroethane	U		0.133	1.00
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00
Tetrachloroethene	U		0.300	1.00
Toluene	U		0.278	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.481	1.00
1,1,1-Trichloroethane	U		0.149	1.00
1,1,2-Trichloroethane	U		0.158	1.00
Trichloroethene	U		0.190	1.00
Trichlorofluoromethane	U		0.160	5.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,2,3-Trimethylbenzene	U		0.104	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
Vinyl chloride	U		0.234	1.00
Xylenes, Total	U		0.174	3.00
o-Xylene	U		0.174	1.00
m&p-Xylenes	U		0.430	2.00
(S) Toluene-d8	*120*			*80.0-120*
(S) 4-Bromofluorobenzene	*112*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*

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

(LCS) R3921338-1 05/04/23 11:17 • (LCSD) R3921338-2 05/04/23 11:39

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 %
Acetone	25.0	25.6	25.0	102	100	19.0-160			2.37	27
Acrolein	25.0	23.8	23.5	95.2	94.0	10.0-160			1.27	26

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

(LCS) R3921338-1 05/04/23 11:17 • (LCSD) R3921338-2 05/04/23 11:39

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 %
Acrylonitrile	25.0	23.1	22.4	92.4	89.6	55.0-149			3.08	20
Benzene	5.00	4.58	4.60	91.6	92.0	70.0-123			0.436	20
Bromobenzene	5.00	4.44	4.50	88.8	90.0	73.0-121			1.34	20
Bromochloromethane	5.00	4.63	4.67	92.6	93.4	76.0-122			0.860	20
Bromodichloromethane	5.00	4.49	4.49	89.8	89.8	75.0-120			0.000	20
Bromoform	5.00	4.43	4.39	88.6	87.8	68.0-132			0.907	20
Bromomethane	5.00	4.82	4.96	96.4	99.2	10.0-160			2.86	25
n-Butylbenzene	5.00	4.08	4.27	81.6	85.4	73.0-125			4.55	20
sec-Butylbenzene	5.00	4.67	4.78	93.4	95.6	75.0-125			2.33	20
tert-Butylbenzene	5.00	4.60	4.78	92.0	95.6	76.0-124			3.84	20
Carbon disulfide	5.00	4.80	4.83	96.0	96.6	61.0-128			0.623	20
Carbon tetrachloride	5.00	4.74	4.59	94.8	91.8	68.0-126			3.22	20
Chlorobenzene	5.00	4.56	4.56	91.2	91.2	80.0-121			0.000	20
Chlorodibromomethane	5.00	4.64	4.50	92.8	90.0	77.0-125			3.06	20
Chloroethane	5.00	5.67	5.69	113	114	47.0-150			0.352	20
Chloroform	5.00	4.62	4.73	92.4	94.6	73.0-120			2.35	20
Chloromethane	5.00	6.09	6.14	122	123	41.0-142			0.818	20
2-Chlorotoluene	5.00	4.62	4.68	92.4	93.6	76.0-123			1.29	20
4-Chlorotoluene	5.00	4.74	4.63	94.8	92.6	75.0-122			2.35	20
1,2-Dibromo-3-Chloropropane	5.00	4.51	4.58	90.2	91.6	58.0-134			1.54	20
Dibromomethane	5.00	4.50	4.46	90.0	89.2	80.0-120			0.893	20
1,2-Dichlorobenzene	5.00	4.62	4.54	92.4	90.8	79.0-121			1.75	20
1,3-Dichlorobenzene	5.00	4.64	4.66	92.8	93.2	79.0-120			0.430	20
1,4-Dichlorobenzene	5.00	4.41	4.57	88.2	91.4	79.0-120			3.56	20
Dichlorodifluoromethane	5.00	7.47	7.35	149	147	51.0-149			1.62	20
1,1-Dichloroethane	5.00	4.60	4.56	92.0	91.2	70.0-126			0.873	20
1,2-Dichloroethane	5.00	4.51	4.46	90.2	89.2	70.0-128			1.11	20
1,1-Dichloroethene	5.00	4.81	4.81	96.2	96.2	71.0-124			0.000	20
cis-1,2-Dichloroethene	5.00	4.62	4.47	92.4	89.4	73.0-120			3.30	20
trans-1,2-Dichloroethene	5.00	4.70	4.61	94.0	92.2	73.0-120			1.93	20
1,2-Dichloropropane	5.00	4.53	4.50	90.6	90.0	77.0-125			0.664	20
1,1-Dichloropropene	5.00	4.75	4.90	95.0	98.0	74.0-126			3.11	20
1,3-Dichloropropane	5.00	4.66	4.69	93.2	93.8	80.0-120			0.642	20
cis-1,3-Dichloropropene	5.00	4.57	4.54	91.4	90.8	80.0-123			0.659	20
trans-1,3-Dichloropropene	5.00	4.53	4.59	90.6	91.8	78.0-124			1.32	20
2,2-Dichloropropane	5.00	4.93	4.79	98.6	95.8	58.0-130			2.88	20
Di-isopropyl ether	5.00	4.61	4.54	92.2	90.8	58.0-138			1.53	20
Ethylbenzene	5.00	4.59	4.60	91.8	92.0	79.0-123			0.218	20
Hexachloro-1,3-butadiene	5.00	5.68	5.70	114	114	54.0-138			0.351	20
Isopropylbenzene	5.00	4.61	4.58	92.2	91.6	76.0-127			0.653	20

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

(LCS) R3921338-1 05/04/23 11:17 • (LCSD) R3921338-2 05/04/23 11:39

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 %
p-Isopropyltoluene	5.00	4.62	4.73	92.4	94.6	76.0-125			2.35	20
2-Butanone (MEK)	25.0	22.8	23.0	91.2	92.0	44.0-160			0.873	20
Methylene Chloride	5.00	4.51	4.32	90.2	86.4	67.0-120			4.30	20
4-Methyl-2-pentanone (MIBK)	25.0	23.6	22.8	94.4	91.2	68.0-142			3.45	20
Methyl tert-butyl ether	5.00	4.64	4.64	92.8	92.8	68.0-125			0.000	20
Naphthalene	5.00	4.38	4.48	87.6	89.6	54.0-135			2.26	20
n-Propylbenzene	5.00	4.60	4.59	92.0	91.8	77.0-124			0.218	20
Styrene	5.00	4.67	4.62	93.4	92.4	73.0-130			1.08	20
1,1,1,2-Tetrachloroethane	5.00	4.56	4.62	91.2	92.4	75.0-125			1.31	20
1,1,2,2-Tetrachloroethane	5.00	4.97	4.73	99.4	94.6	65.0-130			4.95	20
1,1,2-Trichlorotrifluoroethane	5.00	5.37	5.34	107	107	69.0-132			0.560	20
Tetrachloroethene	5.00	4.72	4.70	94.4	94.0	72.0-132			0.425	20
Toluene	5.00	4.61	4.65	92.2	93.0	79.0-120			0.864	20
1,2,3-Trichlorobenzene	5.00	4.74	5.00	94.8	100	50.0-138			5.34	20
1,2,4-Trichlorobenzene	5.00	4.62	4.78	92.4	95.6	57.0-137			3.40	20
1,1,1-Trichloroethane	5.00	4.85	4.81	97.0	96.2	73.0-124			0.828	20
1,1,2-Trichloroethane	5.00	4.65	4.51	93.0	90.2	80.0-120			3.06	20
Trichloroethene	5.00	4.46	4.51	89.2	90.2	78.0-124			1.11	20
Trichlorofluoromethane	5.00	5.90	5.90	118	118	59.0-147			0.000	20
1,2,4-Trimethylbenzene	5.00	4.59	4.54	91.8	90.8	76.0-121			1.10	20
1,2,3-Trimethylbenzene	5.00	4.57	4.58	91.4	91.6	77.0-120			0.219	20
1,3,5-Trimethylbenzene	5.00	4.70	4.75	94.0	95.0	76.0-122			1.06	20
Vinyl chloride	5.00	5.72	5.85	114	117	67.0-131			2.25	20
Xylenes, Total	15.0	13.6	13.8	90.7	92.0	79.0-123			1.46	20
o-Xylene	5.00	4.59	4.61	91.8	92.2	80.0-122			0.435	20
m&p-Xylenes	10.0	9.03	9.17	90.3	91.7	80.0-122			1.54	20
(S) Toluene-d8				*115*	*116*	*80.0-120*				
(S) 4-Bromofluorobenzene				*109*	*109*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*109*	*70.0-130*				

Method Blank (MB)

(MB) R3921862-2 05/05/23 19:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		11.3	50.0
Acrolein	U		2.54	50.0
Acrylonitrile	U		0.671	10.0
Benzene	U		0.0941	1.00
Bromobenzene	U		0.118	1.00
Bromochloromethane	U		0.128	1.00
Bromodichloromethane	U		0.136	1.00
Bromoform	U		0.129	1.00
Bromomethane	U		0.605	5.00
n-Butylbenzene	U		0.157	1.00
sec-Butylbenzene	U		0.125	1.00
tert-Butylbenzene	U		0.127	1.00
Carbon disulfide	U		0.0962	1.00
Carbon tetrachloride	U		0.128	1.00
Chlorobenzene	U		0.116	1.00
Chlorodibromomethane	U		0.140	1.00
Chloroethane	U		0.192	5.00
Chloroform	U		0.111	5.00
Chloromethane	U		0.960	2.50
2-Chlorotoluene	U		0.106	1.00
4-Chlorotoluene	U		0.114	1.00
1,2-Dibromo-3-Chloropropane	U		0.276	5.00
Dibromomethane	U		0.122	1.00
1,2-Dichlorobenzene	U		0.107	1.00
1,3-Dichlorobenzene	U		0.110	1.00
1,4-Dichlorobenzene	U		0.120	1.00
Dichlorodifluoromethane	U		0.374	5.00
1,1-Dichloroethane	U		0.100	1.00
1,2-Dichloroethane	U		0.0819	1.00
1,1-Dichloroethene	U		0.188	1.00
cis-1,2-Dichloroethene	U		0.126	1.00
trans-1,2-Dichloroethene	U		0.149	1.00
1,2-Dichloropropane	U		0.149	1.00
1,1-Dichloropropene	U		0.142	1.00
1,3-Dichloropropane	U		0.110	1.00
cis-1,3-Dichloropropene	U		0.111	1.00
trans-1,3-Dichloropropene	U		0.118	1.00
2,2-Dichloropropane	U		0.161	1.00
Di-isopropyl ether	U		0.105	1.00
Ethylbenzene	U		0.137	1.00

Method Blank (MB)

(MB) R3921862-2 05/05/23 19:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.337	1.00
Isopropylbenzene	U		0.105	1.00
p-Isopropyltoluene	U		0.120	1.00
2-Butanone (MEK)	U		1.19	10.0
Methylene Chloride	U		0.430	5.00
4-Methyl-2-pentanone (MIBK)	U		0.478	10.0
Methyl tert-butyl ether	U		0.101	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.0993	1.00
Styrene	U		0.118	1.00
1,1,1,2-Tetrachloroethane	U		0.147	1.00
1,1,2,2-Tetrachloroethane	U		0.133	1.00
1,1,2-Trichlorotrifluoroethane	U		0.180	1.00
Tetrachloroethene	U		0.300	1.00
Toluene	U		0.278	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.481	1.00
1,1,1-Trichloroethane	U		0.149	1.00
1,1,2-Trichloroethane	U		0.158	1.00
Trichloroethene	U		0.190	1.00
Trichlorofluoromethane	U		0.160	5.00
1,2,4-Trimethylbenzene	U		0.322	1.00
1,2,3-Trimethylbenzene	U		0.104	1.00
1,3,5-Trimethylbenzene	U		0.104	1.00
Vinyl chloride	U		0.234	1.00
Xylenes, Total	U		0.174	3.00
o-Xylene	U		0.174	1.00
m&p-Xylenes	U		0.430	2.00
(S) Toluene-d8	*119*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3921862-1 05/05/23 16:42

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	25.0	21.8	87.2	19.0-160	
Acrolein	25.0	20.8	83.2	10.0-160	

Laboratory Control Sample (LCS)

(LCS) R3921862-1 05/05/23 16:42

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acrylonitrile	25.0	21.8	87.2	55.0-149	
Benzene	5.00	4.21	84.2	70.0-123	
Bromobenzene	5.00	4.15	83.0	73.0-121	
Bromochloromethane	5.00	4.34	86.8	76.0-122	
Bromodichloromethane	5.00	4.32	86.4	75.0-120	
Bromoform	5.00	4.23	84.6	68.0-132	
Bromomethane	5.00	4.38	87.6	10.0-160	
n-Butylbenzene	5.00	3.95	79.0	73.0-125	
sec-Butylbenzene	5.00	4.42	88.4	75.0-125	
tert-Butylbenzene	5.00	4.39	87.8	76.0-124	
Carbon disulfide	5.00	3.60	72.0	61.0-128	
Carbon tetrachloride	5.00	4.15	83.0	68.0-126	
Chlorobenzene	5.00	4.32	86.4	80.0-121	
Chlorodibromomethane	5.00	4.35	87.0	77.0-125	
Chloroethane	5.00	4.38	87.6	47.0-150	
Chloroform	5.00	4.28	85.6	73.0-120	
Chloromethane	5.00	4.13	82.6	41.0-142	
2-Chlorotoluene	5.00	4.45	89.0	76.0-123	
4-Chlorotoluene	5.00	4.34	86.8	75.0-122	
1,2-Dibromo-3-Chloropropane	5.00	4.23	84.6	58.0-134	
Dibromomethane	5.00	4.26	85.2	80.0-120	
1,2-Dichlorobenzene	5.00	4.38	87.6	79.0-121	
1,3-Dichlorobenzene	5.00	4.33	86.6	79.0-120	
1,4-Dichlorobenzene	5.00	4.32	86.4	79.0-120	
Dichlorodifluoromethane	5.00	4.12	82.4	51.0-149	
1,1-Dichloroethane	5.00	4.20	84.0	70.0-126	
1,2-Dichloroethane	5.00	4.28	85.6	70.0-128	
1,1-Dichloroethene	5.00	3.92	78.4	71.0-124	
cis-1,2-Dichloroethene	5.00	3.98	79.6	73.0-120	
trans-1,2-Dichloroethene	5.00	4.02	80.4	73.0-120	
1,2-Dichloropropane	5.00	4.23	84.6	77.0-125	
1,1-Dichloropropene	5.00	4.34	86.8	74.0-126	
1,3-Dichloropropane	5.00	4.46	89.2	80.0-120	
cis-1,3-Dichloropropene	5.00	4.36	87.2	80.0-123	
trans-1,3-Dichloropropene	5.00	4.18	83.6	78.0-124	
2,2-Dichloropropane	5.00	4.31	86.2	58.0-130	
Di-isopropyl ether	5.00	4.25	85.0	58.0-138	
Ethylbenzene	5.00	4.27	85.4	79.0-123	
Hexachloro-1,3-butadiene	5.00	4.58	91.6	54.0-138	
Isopropylbenzene	5.00	4.24	84.8	76.0-127	

Laboratory Control Sample (LCS)

(LCS) R3921862-1 05/05/23 16:42

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
p-Isopropyltoluene	5.00	4.31	86.2	76.0-125	
2-Butanone (MEK)	25.0	21.2	84.8	44.0-160	
Methylene Chloride	5.00	4.06	81.2	67.0-120	
4-Methyl-2-pentanone (MIBK)	25.0	22.7	90.8	68.0-142	
Methyl tert-butyl ether	5.00	4.20	84.0	68.0-125	
Naphthalene	5.00	4.21	84.2	54.0-135	
n-Propylbenzene	5.00	4.31	86.2	77.0-124	
Styrene	5.00	4.34	86.8	73.0-130	
1,1,1,2-Tetrachloroethane	5.00	4.14	82.8	75.0-125	
1,1,2,2-Tetrachloroethane	5.00	4.83	96.6	65.0-130	
1,1,2-Trichlorotrifluoroethane	5.00	4.51	90.2	69.0-132	
Tetrachloroethene	5.00	4.34	86.8	72.0-132	
Toluene	5.00	4.35	87.0	79.0-120	
1,2,3-Trichlorobenzene	5.00	4.64	92.8	50.0-138	
1,2,4-Trichlorobenzene	5.00	4.43	88.6	57.0-137	
1,1,1-Trichloroethane	5.00	4.29	85.8	73.0-124	
1,1,2-Trichloroethane	5.00	4.38	87.6	80.0-120	
Trichloroethene	5.00	4.09	81.8	78.0-124	
Trichlorofluoromethane	5.00	4.48	89.6	59.0-147	
1,2,4-Trimethylbenzene	5.00	4.24	84.8	76.0-121	
1,2,3-Trimethylbenzene	5.00	4.29	85.8	77.0-120	
1,3,5-Trimethylbenzene	5.00	4.40	88.0	76.0-122	
Vinyl chloride	5.00	4.26	85.2	67.0-131	
Xylenes, Total	15.0	12.5	83.3	79.0-123	
o-Xylene	5.00	4.16	83.2	80.0-122	
m&p-Xylenes	10.0	8.37	83.7	80.0-122	
(S) Toluene-d8			*115*	*80.0-120*	
(S) 4-Bromofluorobenzene			*106*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*107*	*70.0-130*	

Method Blank (MB)

(MB) R3923913-2 05/11/23 16:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
1,2,3-Trichloropropane	U		0.00200	0.00500
1,2-Dibromoethane	U		0.00410	0.00500

Laboratory Control Sample (LCS)

(LCS) R3923913-1 05/11/23 16:24

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,2,3-Trichloropropane	0.0500	0.0480	96.0	70.0-130	
1,2-Dibromoethane	0.0500	0.0470	94.0	70.0-130	

QUALITY CONTROL SUMMARY

L1610576-02,03

Method Blank (MB)

(MB) R3922007-1 05/05/23 12:10

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Ethylene Dibromide	U		0.00536	0.0200

L1610811-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1610811-06 05/05/23 12:58 • (DUP) R3922007-3 05/05/23 12:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Ethylene Dibromide	U	U	1.03	0.000		20

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

(LCS) R3922007-4 05/05/23 14:58 • (LCSD) R3922007-5 05/05/23 17:32

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Ethylene Dibromide	0.250	0.215	0.210	86.0	84.0	60.0-140			2.35	20

L1610801-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1610801-01 05/05/23 12:34 • (MS) R3922007-2 05/05/23 12:22

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	ug/l	ug/l	ug/l	%		%	
Ethylene Dibromide	0.101	U	0.0922	91.3	1.01	64.0-159	

Method Blank (MB)

(MB) R3922840-1 05/10/23 02:33

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
AK102 DRO C10-C25	U		170	800
AK103 RRO C25-C36	U		460	800
(S) o-Terphenyl	*62.5*			*60.0-120*
(S) n-Triacontane d62	*44.2*	J2		*60.0-120*

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

(LCS) R3922840-2 05/10/23 06:03 • (LCSD) R3922840-3 05/10/23 06:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
AK102 DRO C10-C25	6000	6400	5900	107	98.3	75.0-125			8.13	20
(S) o-Terphenyl				*88.4*	*86.8*	*60.0-120*				
(S) n-Triacontane d62				*64.0*	*56.0*	*60.0-120*		J2		

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

(LCS) R3922840-4 05/10/23 06:44 • (LCSD) R3922840-5 05/10/23 07:04

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
AK103 RRO C25-C36	6000	4880	4710	81.3	78.5	60.0-120			3.55	20
(S) o-Terphenyl				*82.8*	*78.7*	*60.0-120*				
(S) n-Triacontane d62				*66.0*	*66.5*	*60.0-120*				

Method Blank (MB)

(MB) R3923018-6 05/10/23 02:33

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
AK102 DRO C10-C25	U		170	800
(S) o-Terphenyl	*62.5*			*60.0-120*

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

(LCS) R3923018-7 05/10/23 06:03 • (LCSD) R3923018-8 05/10/23 06:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
AK102 DRO C10-C25	6000	6400	5900	107	98.3	75.0-125			8.13	20
(S) o-Terphenyl				*88.4*	*86.8*	*60.0-120*				

Method Blank (MB)

(MB) R3921333-2 05/03/23 09:42

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		0.0170	0.0500
Benzo(a)anthracene	U		0.0200	0.0500
Benzo(a)pyrene	U		0.0180	0.0500
Benzo(b)fluoranthene	U		0.0170	0.0500
Benzo(g,h,i)perylene	U		0.0180	0.0500
Benzo(k)fluoranthene	U		0.0200	0.250
Chrysene	U		0.0180	0.0500
Dibenz(a,h)anthracene	U		0.0180	0.0500
Fluoranthene	U		0.0110	0.0500
Fluorene	U		0.0170	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0180	0.0500
Naphthalene	U		0.128	0.500
Phenanthrene	U		0.0180	0.0500
Pyrene	U		0.0170	0.0500
1-Methylnaphthalene	U		0.0200	0.500
2-Methylnaphthalene	U		0.0280	0.500
2-Chloronaphthalene	U		0.0120	0.500
(S) Nitrobenzene-d5	*82.0*			*11.0-135*
(S) 2-Fluorobiphenyl	*80.5*			*32.0-120*
(S) p-Terphenyl-d14	*81.5*			*23.0-122*

Laboratory Control Sample (LCS)

(LCS) R3921333-1 05/03/23 09:25

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	2.00	1.58	79.0	43.0-127	
Acenaphthene	2.00	1.72	86.0	42.0-120	
Acenaphthylene	2.00	1.63	81.5	43.0-120	
Benzo(a)anthracene	2.00	1.72	86.0	46.0-120	
Benzo(a)pyrene	2.00	1.68	84.0	44.0-122	
Benzo(b)fluoranthene	2.00	1.79	89.5	43.0-122	
Benzo(g,h,i)perylene	2.00	1.60	80.0	25.0-137	
Benzo(k)fluoranthene	2.00	1.59	79.5	39.0-128	
Chrysene	2.00	1.80	90.0	42.0-129	
Dibenz(a,h)anthracene	2.00	1.40	70.0	25.0-139	
Fluoranthene	2.00	1.79	89.5	48.0-131	

Laboratory Control Sample (LCS)

(LCS) R3921333-1 05/03/23 09:25

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	2.00	1.74	87.0	42.0-120	
Indeno(1,2,3-cd)pyrene	2.00	1.60	80.0	37.0-133	
Naphthalene	2.00	1.69	84.5	30.0-120	
Phenanthrene	2.00	1.73	86.5	42.0-120	
Pyrene	2.00	1.86	93.0	38.0-124	
1-Methylnaphthalene	2.00	1.66	83.0	43.0-120	
2-Methylnaphthalene	2.00	1.73	86.5	40.0-120	
2-Chloronaphthalene	2.00	1.66	83.0	39.0-120	
(S) Nitrobenzene-d5			*83.0*	*11.0-135*	
(S) 2-Fluorobiphenyl			*79.5*	*32.0-120*	
(S) p-Terphenyl-d14			*80.0*	*23.0-122*	

L1609808-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1609808-18 05/03/23 09:59 • (MS) R3921333-3 05/03/23 10:17 • (MSD) R3921333-4 05/03/23 11:26

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 %
Anthracene	2.10	U	1.17	1.77	55.7	70.8	1.05	28.0-120		J3	40.8	25
Acenaphthene	2.10	0.0480	1.28	1.98	58.7	77.3	1.05	16.0-120		J3	42.9	25
Acenaphthylene	2.10	U	1.20	1.84	57.1	73.6	1.05	16.0-121		J3	42.1	26
Benzo(a)anthracene	2.10	U	1.05	1.82	50.0	72.8	1.05	19.0-125		J3	53.7	26
Benzo(a)pyrene	2.10	U	0.695	1.51	33.1	60.4	1.05	10.0-126		J3	73.9	32
Benzo(b)fluoranthene	2.10	U	0.669	1.47	31.9	58.8	1.05	10.0-125		J3	74.9	36
Benzo(g,h,i)perylene	2.10	U	0.191	0.475	9.10	19.0	1.05	10.0-128	J6	J3	85.3	37
Benzo(k)fluoranthene	2.10	U	0.684	1.51	32.6	60.4	1.05	10.0-124		J3	75.3	32
Chrysene	2.10	U	1.15	1.97	54.8	78.8	1.05	18.0-127		J3	52.6	26
Dibenz(a,h)anthracene	2.10	U	0.131	0.328	6.24	13.1	1.05	10.0-132	J6	J3	85.8	43
Fluoranthene	2.10	U	1.23	1.98	58.6	79.2	1.05	37.0-122		J3	46.7	23
Fluorene	2.10	0.142	1.38	2.08	59.0	77.5	1.05	20.0-120		J3	40.5	26
Indeno(1,2,3-cd)pyrene	2.10	U	0.199	0.488	9.48	19.5	1.05	10.0-130	J6	J3	84.1	38
Naphthalene	2.10	0.253	1.47	2.10	58.0	73.9	1.05	14.0-120		J3	35.3	20
Phenanthrene	2.10	0.0363	1.27	1.98	58.7	77.7	1.05	26.0-120		J3	43.7	24
Pyrene	2.10	U	1.30	2.10	61.9	84.0	1.05	29.0-120		J3	47.1	24
1-Methylnaphthalene	2.10	0.895	1.95	2.71	50.2	72.6	1.05	10.0-145		J3	32.6	24
2-Methylnaphthalene	2.10	1.20	2.25	3.08	50.0	75.2	1.05	10.0-143		J3	31.1	24
2-Chloronaphthalene	2.10	U	1.22	1.85	58.1	74.0	1.05	16.0-120		J3	41.0	25
(S) Nitrobenzene-d5					*65.2*	*78.8*		*11.0-135*				
(S) 2-Fluorobiphenyl					*55.7*	*72.8*		*32.0-120*				
(S) p-Terphenyl-d14					*50.5*	*71.6*		*23.0-122*				

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.
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.
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.
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.

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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

Company Name/Address:
Arcadis - Chevron - AK

880 H St.
Anchorage, AK 99501

Billing Information:
Attn: Acounts Payable
630 Plaza Dr Ste 600
Highlands Ranch, CO 80129

Report to:
Nick Wood/Sydney Clark/Erika Midkiff

Email To:
Sydney.Clark@arcadis.com;Nick.Wood@arcadis.

Project Description:
91518

City/State Collected: Anchorage AK

Please Circle: PT MT CT ET

Phone: **907-276-8095**

Client Project #
30064209.19.45

Lab Project #
CHEVARCAK-91518 Alaska

Collected by (print):
Grantt Jeffers

Site/Facility ID #
2927 NEW SEWARD HWY

P.O. #

Collected by (signature):
Immediately
Packed on Ice N ____ Y X

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

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 w/ SGT 100ml Amb HCl	AK102/103 no SGT 100ml Amb HCl	EDB 8011 40mlClr-NaThio	EDB/123TCP 524LL 40mlAmb-HCl	PAHs 8270SIM 100ml Amb-NoPres	Total Lead 6010 250mlHDPE-HNO3	VOCs 8260 40mlAmb-HCl				
TB-1	—	GW	—	—	—	4/66	X							X				-01
MW-12-W-20230427	G	GW	—	4/27/23	1316	18/66	X	X	X	X	X	X	X	X				-02
BD-1-W-20230427	↓	GW	—	↓	—	18/66	X	X	X	X	X	X	X	X				-03
EQB-1-W-20230427	↓	GW	—	↓	1420	15/66	X	X	X				X	X				-04
		~~GW~~																

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace
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

SDG # L1610570

G046

Acctnum: **CHEVARCAK**
Template: **T229070**
Prelogin: **P994765**
PM: **110 - Brian Ford**
PB: CF 4/22/23

Shipped Via: **FedEX 2nd Day**

Remarks | Sample # (lab only)

* 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 # 642685307 3652

Sample Receipt Checklist

COC Seal Present/Intact:	NP	X 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:		X Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: (Yes) / No HCL / MeoH TBR	If preservation required by Login: Date/Time
Grantt Jeffers	4/28/23	1030		4	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: ~~GBAT~~ °C Bottles Received: 5.7+0=5.7 5	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) C.F. Gallien (14)	Date: 4/29/23 Time: 9:00	Hold: Condition: NCF / (OK)

Appendix D

Investigation-Derived Waste Laboratory Results

ANALYTICAL REPORT

June 22, 2023

Arcadis - Chevron - AK

Sample Delivery Group:	L1624995
Samples Received:	06/10/2023
Project Number:	30064209.19.45
Description:	91518
Site:	2927 NEW SEWARD HWY ANCHORAGE
Report To:	Nick Wood/Sydney Clark/Erika Midkiff 880 H St. Anchorage, AK 99501

Entire Report Reviewed By:

Brian Ford

Project Manager

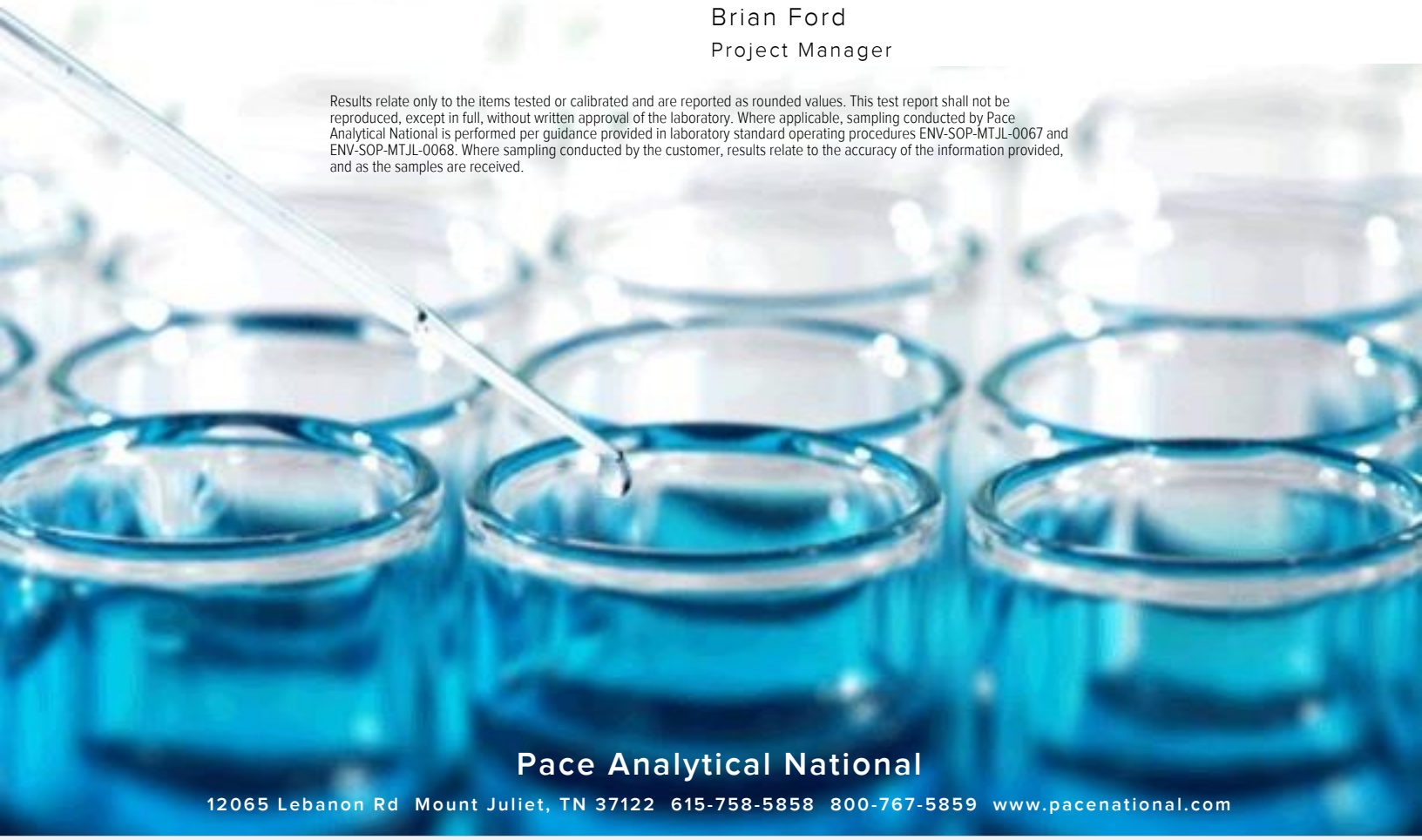


TABLE OF CONTENTS

GW-WASTE-060823 L1624995-01 GW

Collected by: Danielle Gilbert | Collected date/time: 06/08/23 13:00 | Received date/time: 06/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9040C	WG2075891	1	06/13/23 11:00	06/13/23 11:00	EPW	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG2076858	1	06/14/23 00:42	06/14/23 00:42	WOS	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2079079	1	06/17/23 01:04	06/17/23 01:04	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102/103	WG2074986	1	06/15/23 07:02	06/15/23 21:14	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG2075710	1	06/13/23 16:08	06/14/23 06:12	DSH	Mt. Juliet, TN

GW-WASTE-060823 L1624995-02 Waste

Collected by: Danielle Gilbert | Collected date/time: 06/08/23 13:00 | Received date/time: 06/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG2077952	1	06/15/23 14:35	06/15/23 14:35	WC	Mt. Juliet, TN
Preparation by Method 1311	WG2078888	1	06/17/23 13:12	06/17/23 13:12	NAH	Mt. Juliet, TN
Mercury by Method 7470A	WG2079963	1	06/19/23 20:19	06/20/23 20:04	AKB	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2079867	1	06/18/23 12:08	06/20/23 12:57	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2079077	1	06/17/23 04:09	06/17/23 04:09	JAH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E	WG2079632	1	06/19/23 04:36	06/19/23 15:39	DSH	Mt. Juliet, TN

S-WASTE-060823 L1624995-03 Solid

Collected by: Danielle Gilbert | Collected date/time: 06/08/23 13:10 | Received date/time: 06/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG2076650	1	06/13/23 16:39	06/13/23 16:49	MAS	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2080213	1.19	06/08/23 13:10	06/19/23 13:26	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102/103	WG2077119	5	06/14/23 15:37	06/15/23 01:43	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E-SIM	WG2077989	1	06/15/23 16:25	06/16/23 11:49	JRM	Mt. Juliet, TN

S-WASTE-060823 L1624995-04 Waste

Collected by: Danielle Gilbert | Collected date/time: 06/08/23 13:10 | Received date/time: 06/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Preparation by Method 1311	WG2077952	1	06/15/23 14:35	06/15/23 14:35	WC	Mt. Juliet, TN
Preparation by Method 1311	WG2078888	1	06/17/23 13:12	06/17/23 13:12	NAH	Mt. Juliet, TN
Mercury by Method 7470A	WG2079958	1	06/19/23 00:09	06/20/23 15:30	NDL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG2079899	1	06/18/23 13:43	06/21/23 21:27	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2079077	1	06/17/23 04:29	06/17/23 04:29	JAH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270E	WG2079632	1	06/19/23 04:36	06/19/23 16:01	DSH	Mt. Juliet, TN

Unless qualified or notated within the narrative below, all sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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

Sample Delivery Group (SDG) Narrative

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

Batch	Method	Lab Sample ID
WG2075891	9040C	L1624995-01

Mercury by Method 7470A

The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Batch	Lab Sample ID	Analytes
WG2079963	(MSD) R3939091-6	Mercury

The associated batch QC was outside the established quality control range for precision.

Batch	Lab Sample ID	Analytes
WG2079963	(MSD) R3939091-6	Mercury

Metals (ICP) by Method 6010D

The sample concentration is too high to evaluate accurate spike recoveries.

Batch	Lab Sample ID	Analytes
WG2079867	(MS) R3938900-6, (MSD) R3938900-7	Lead

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Surrogate recovery limits have been exceeded; values are outside lower control limits.

Batch	Analyte	Lab Sample ID
WG2074986	n-Triacontane d62	(LCS) R3937411-1, (LCSD) R3937411-2
WG2074986	o-Terphenyl	(MS) R3937411-7, (MSD) R3937411-8
WG2077119	n-Triacontane d62	(LCS) R3936937-2, (LCSD) R3936937-3, (MS) R3936937-5, (MSD) R3936937-6
WG2077119	o-Terphenyl	(LCS) R3936937-4, (LCSD) R3936937-9, (MS) R3936937-7, (MSD) R3936937-8

The same analyte is found in the associated blank.

Batch	Analyte	Lab Sample ID
WG2074986	AK102 DRO C10-C25	L1624995-01
WG2077119	AK103 RRO C25-C36	L1624995-03

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

The associated batch QC was outside the established quality control range for precision.

Batch	Lab Sample ID	Analytes
WG2079632	(MSD) R3938877-4	Pyridine

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

The associated batch QC was above the established quality control range for accuracy.

Batch	Lab Sample ID	Analytes
WG2077989	(LCS) R3937670-1, L1624995-03	Benzo(a)anthracene

The associated batch QC was below the established quality control range for accuracy.

Batch	Lab Sample ID	Analytes
WG2075710	(LCSD) R3936458-2, L1624995-01	Dibenz(a,h)anthracene

The associated batch QC was outside the established quality control range for precision.

Batch	Lab Sample ID	Analytes
WG2075710	(LCSD) R3936458-2, L1624995-01	Dibenz(a,h)anthracene

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
pH	7.77	T8	1	06/13/2023 11:00	WG2075891

Sample Narrative:

L1624995-01 WG2075891: 7.77 at 19.5C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	deg F			date / time	
Flashpoint	DNF at 200		1	06/14/2023 00:42	WG2076858

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
TPHGAK C6 to C10	U		28.7	100	1	06/17/2023 01:04	WG2079079
(S) a,a,a-Trifluorotoluene(FID)	*87.8*			*50.0-150*		*06/17/2023 01:04*	WG2079079

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
AK102 DRO C10-C25	248	B J	170	800	1	06/15/2023 21:14	WG2074986
AK103 RRO C25-C36	U		460	800	1	06/15/2023 21:14	WG2074986
(S) o-Terphenyl	*74.1*			*50.0-150*		*06/15/2023 21:14*	WG2074986
(S) n-Triacontane d62	*60.4*			*50.0-150*		*06/15/2023 21:14*	WG2074986

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Anthracene	U		0.0190	0.0500	1	06/14/2023 06:12	WG2075710
Acenaphthene	U		0.0190	0.0500	1	06/14/2023 06:12	WG2075710
Acenaphthylene	U		0.0170	0.0500	1	06/14/2023 06:12	WG2075710
Benzo(a)anthracene	U		0.0200	0.0500	1	06/14/2023 06:12	WG2075710
Benzo(a)pyrene	U		0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Benzo(b)fluoranthene	U		0.0170	0.0500	1	06/14/2023 06:12	WG2075710
Benzo(g,h,i)perylene	U		0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Benzo(k)fluoranthene	U		0.0200	0.250	1	06/14/2023 06:12	WG2075710
Chrysene	U		0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Dibenz(a,h)anthracene	U	J3 J4	0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Fluoranthene	U		0.0110	0.0500	1	06/14/2023 06:12	WG2075710
Fluorene	U		0.0170	0.0500	1	06/14/2023 06:12	WG2075710
Indeno(1,2,3-cd)pyrene	U		0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Naphthalene	U		0.128	0.500	1	06/14/2023 06:12	WG2075710
Phenanthrene	U		0.0180	0.0500	1	06/14/2023 06:12	WG2075710
Pyrene	U		0.0170	0.0500	1	06/14/2023 06:12	WG2075710
1-Methylnaphthalene	U		0.0200	0.500	1	06/14/2023 06:12	WG2075710
2-Methylnaphthalene	U		0.0280	0.500	1	06/14/2023 06:12	WG2075710
2-Chloronaphthalene	U		0.0120	0.500	1	06/14/2023 06:12	WG2075710
(S) Nitrobenzene-d5	*73.5*			*11.0-135*		*06/14/2023 06:12*	WG2075710
(S) 2-Fluorobiphenyl	*56.5*			*32.0-120*		*06/14/2023 06:12*	WG2075710
(S) p-Terphenyl-d14	*46.4*			*23.0-122*		*06/14/2023 06:12*	WG2075710

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/17/2023 1:12:56 PM	WG2078888
TCLP ZHE Extraction	-		6/15/2023 2:35:31 PM	WG2077952
Initial pH	N/A		6/17/2023 1:12:56 PM	WG2078888
Final pH	N/A		6/17/2023 1:12:56 PM	WG2078888

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	06/20/2023 20:04	WG2079963

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.100	5	1	06/20/2023 12:57	WG2079867
Barium	0.146		0.100	100	1	06/20/2023 12:57	WG2079867
Cadmium	ND		0.100	1	1	06/20/2023 12:57	WG2079867
Chromium	ND		0.100	5	1	06/20/2023 12:57	WG2079867
Lead	ND		0.100	5	1	06/20/2023 12:57	WG2079867
Selenium	ND		0.100	1	1	06/20/2023 12:57	WG2079867
Silver	ND		0.100	5	1	06/20/2023 12:57	WG2079867

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	06/17/2023 04:09	WG2079077
Carbon tetrachloride	ND		0.0500	0.50	1	06/17/2023 04:09	WG2079077
Chlorobenzene	ND		0.0500	100	1	06/17/2023 04:09	WG2079077
Chloroform	ND		0.250	6	1	06/17/2023 04:09	WG2079077
1,4-Dichlorobenzene	ND		0.0500	7.50	1	06/17/2023 04:09	WG2079077
1,2-Dichloroethane	ND		0.0500	0.50	1	06/17/2023 04:09	WG2079077
1,1-Dichloroethene	ND		0.0500	0.70	1	06/17/2023 04:09	WG2079077
2-Butanone (MEK)	ND		0.500	200	1	06/17/2023 04:09	WG2079077
Tetrachloroethene	ND		0.0500	0.70	1	06/17/2023 04:09	WG2079077
Trichloroethene	ND		0.0500	0.50	1	06/17/2023 04:09	WG2079077
Vinyl chloride	ND		0.0500	0.20	1	06/17/2023 04:09	WG2079077
(S) Toluene-d8	*119*		*80.0-120*			*06/17/2023 04:09*	WG2079077
(S) 4-Bromofluorobenzene	*93.4*		*77.0-126*			*06/17/2023 04:09*	WG2079077
(S) 1,2-Dichloroethane-d4	*119*		*70.0-130*			*06/17/2023 04:09*	WG2079077

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	06/19/2023 15:39	WG2079632
2,4-Dinitrotoluene	ND		0.100	0.13	1	06/19/2023 15:39	WG2079632
Hexachlorobenzene	ND		0.100	0.13	1	06/19/2023 15:39	WG2079632
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	06/19/2023 15:39	WG2079632
Hexachloroethane	ND		0.100	3	1	06/19/2023 15:39	WG2079632
Nitrobenzene	ND		0.100	2	1	06/19/2023 15:39	WG2079632
Pyridine	ND		0.100	5	1	06/19/2023 15:39	WG2079632
3&4-Methyl Phenol	ND		0.100	400	1	06/19/2023 15:39	WG2079632
2-Methylphenol	ND		0.100	200	1	06/19/2023 15:39	WG2079632
Pentachlorophenol	ND		0.100	100	1	06/19/2023 15:39	WG2079632
2,4,5-Trichlorophenol	ND		0.100	400	1	06/19/2023 15:39	WG2079632
2,4,6-Trichlorophenol	ND		0.100	2	1	06/19/2023 15:39	WG2079632

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	*21.1*		*10.0-120*			*06/19/2023 15:39*	WG2079632
(S) Phenol-d5	*14.9*		*10.0-120*			*06/19/2023 15:39*	WG2079632
(S) Nitrobenzene-d5	*64.1*		*10.0-127*			*06/19/2023 15:39*	WG2079632
(S) 2-Fluorobiphenyl	*66.4*		*10.0-130*			*06/19/2023 15:39*	WG2079632
(S) 2,4,6-Tribromophenol	*72.5*		*10.0-155*			*06/19/2023 15:39*	WG2079632
(S) p-Terphenyl-d14	*76.9*		*10.0-128*			*06/19/2023 15:39*	WG2079632

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.5		1	06/13/2023 16:49	WG2076650

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPHGAK C6 to C10	U		1.25	3.28	1.19	06/19/2023 13:26	WG2080213
(S) a,a,a-Trifluorotoluene(FID)	*93.5*			*50.0-150*		*06/19/2023 13:26*	WG2080213

Semi-Volatile Organic Compounds (GC) by Method AK102/103

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
AK102 DRO C10-C25	U		288	829	5	06/15/2023 01:43	WG2077119
AK103 RRO C25-C36	2320	B	296	829	5	06/15/2023 01:43	WG2077119
(S) o-Terphenyl	*81.3*			*50.0-150*		*06/15/2023 01:43*	WG2077119
(S) n-Triacontane d62	*81.5*			*50.0-150*		*06/15/2023 01:43*	WG2077119

Sample Narrative:

L1624995-03 WG2077119: Cannot run at lower dilution due to viscosity of extract

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

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	U		0.00254	0.00663	1	06/16/2023 11:49	WG2077989
Acenaphthene	0.00506	J	0.00231	0.00663	1	06/16/2023 11:49	WG2077989
Acenaphthylene	0.00397	J	0.00239	0.00663	1	06/16/2023 11:49	WG2077989
Benzo(a)anthracene	0.0443	J4	0.00191	0.00663	1	06/16/2023 11:49	WG2077989
Benzo(a)pyrene	0.0796		0.00198	0.00663	1	06/16/2023 11:49	WG2077989
Benzo(b)fluoranthene	0.114		0.00169	0.00663	1	06/16/2023 11:49	WG2077989
Benzo(g,h,i)perylene	0.113		0.00196	0.00663	1	06/16/2023 11:49	WG2077989
Benzo(k)fluoranthene	0.0243		0.00238	0.00663	1	06/16/2023 11:49	WG2077989
Chrysene	0.0616		0.00256	0.00663	1	06/16/2023 11:49	WG2077989
Dibenz(a,h)anthracene	0.0232		0.00190	0.00663	1	06/16/2023 11:49	WG2077989
Fluoranthene	0.0713		0.00251	0.00663	1	06/16/2023 11:49	WG2077989
Fluorene	0.00879		0.00227	0.00663	1	06/16/2023 11:49	WG2077989
Indeno(1,2,3-cd)pyrene	0.0773		0.00200	0.00663	1	06/16/2023 11:49	WG2077989
Naphthalene	0.0229		0.00451	0.0221	1	06/16/2023 11:49	WG2077989
Phenanthrene	0.0300		0.00255	0.00663	1	06/16/2023 11:49	WG2077989
Pyrene	0.0790		0.00221	0.00663	1	06/16/2023 11:49	WG2077989
1-Methylnaphthalene	0.00751	J	0.00496	0.0221	1	06/16/2023 11:49	WG2077989
2-Methylnaphthalene	0.0154	J	0.00472	0.0221	1	06/16/2023 11:49	WG2077989
2-Chloronaphthalene	U		0.00515	0.0221	1	06/16/2023 11:49	WG2077989
(S) p-Terphenyl-d14	*77.2*			*23.0-120*		*06/16/2023 11:49*	WG2077989
(S) Nitrobenzene-d5	*109*			*14.0-149*		*06/16/2023 11:49*	WG2077989
(S) 2-Fluorobiphenyl	*81.1*			*34.0-125*		*06/16/2023 11:49*	WG2077989

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/17/2023 1:12:58 PM	WG2078888
TCLP ZHE Extraction	-		6/15/2023 2:35:31 PM	WG2077952
Initial pH	7.56		6/17/2023 1:12:58 PM	WG2078888
Final pH	4.98		6/17/2023 1:12:58 PM	WG2078888

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.0100	0.20	1	06/20/2023 15:30	WG2079958

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Arsenic	ND		0.100	5	1	06/21/2023 21:27	WG2079899
Barium	0.153		0.100	100	1	06/21/2023 21:27	WG2079899
Cadmium	ND		0.100	1	1	06/21/2023 21:27	WG2079899
Chromium	ND		0.100	5	1	06/21/2023 21:27	WG2079899
Lead	ND		0.100	5	1	06/21/2023 21:27	WG2079899
Selenium	ND		0.100	1	1	06/21/2023 21:27	WG2079899
Silver	ND		0.100	5	1	06/21/2023 21:27	WG2079899

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	06/17/2023 04:29	WG2079077
Carbon tetrachloride	ND		0.0500	0.50	1	06/17/2023 04:29	WG2079077
Chlorobenzene	ND		0.0500	100	1	06/17/2023 04:29	WG2079077
Chloroform	ND		0.250	6	1	06/17/2023 04:29	WG2079077
1,4-Dichlorobenzene	ND		0.0500	7.50	1	06/17/2023 04:29	WG2079077
1,2-Dichloroethane	ND		0.0500	0.50	1	06/17/2023 04:29	WG2079077
1,1-Dichloroethene	ND		0.0500	0.70	1	06/17/2023 04:29	WG2079077
2-Butanone (MEK)	ND		0.500	200	1	06/17/2023 04:29	WG2079077
Tetrachloroethene	ND		0.0500	0.70	1	06/17/2023 04:29	WG2079077
Trichloroethene	ND		0.0500	0.50	1	06/17/2023 04:29	WG2079077
Vinyl chloride	ND		0.0500	0.20	1	06/17/2023 04:29	WG2079077
(S) Toluene-d8	*117*		*80.0-120*			*06/17/2023 04:29*	WG2079077
(S) 4-Bromofluorobenzene	*90.5*		*77.0-126*			*06/17/2023 04:29*	WG2079077
(S) 1,2-Dichloroethane-d4	*121*		*70.0-130*			*06/17/2023 04:29*	WG2079077

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	06/19/2023 16:01	WG2079632
2,4-Dinitrotoluene	ND		0.100	0.13	1	06/19/2023 16:01	WG2079632
Hexachlorobenzene	ND		0.100	0.13	1	06/19/2023 16:01	WG2079632
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	06/19/2023 16:01	WG2079632
Hexachloroethane	ND		0.100	3	1	06/19/2023 16:01	WG2079632
Nitrobenzene	ND		0.100	2	1	06/19/2023 16:01	WG2079632
Pyridine	ND		0.100	5	1	06/19/2023 16:01	WG2079632
3&4-Methyl Phenol	ND		0.100	400	1	06/19/2023 16:01	WG2079632
2-Methylphenol	ND		0.100	200	1	06/19/2023 16:01	WG2079632
Pentachlorophenol	ND		0.100	100	1	06/19/2023 16:01	WG2079632
2,4,5-Trichlorophenol	ND		0.100	400	1	06/19/2023 16:01	WG2079632
2,4,6-Trichlorophenol	ND		0.100	2	1	06/19/2023 16:01	WG2079632

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorophenol	*24.1*		*10.0-120*			*06/19/2023 16:01*	WG2079632
(S) Phenol-d5	*16.0*		*10.0-120*			*06/19/2023 16:01*	WG2079632
(S) Nitrobenzene-d5	*66.5*		*10.0-127*			*06/19/2023 16:01*	WG2079632
(S) 2-Fluorobiphenyl	*66.3*		*10.0-130*			*06/19/2023 16:01*	WG2079632
(S) 2,4,6-Tribromophenol	*73.5*		*10.0-155*			*06/19/2023 16:01*	WG2079632
(S) p-Terphenyl-d14	*70.4*		*10.0-128*			*06/19/2023 16:01*	WG2079632

Method Blank (MB)

(MB) R3936466-1 06/13/23 16:49

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

L1624931-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1624931-15 06/13/23 16:49 • (DUP) R3936466-3 06/13/23 16:49

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	74.4	75.3	1	1.25		10

Laboratory Control Sample (LCS)

(LCS) R3936466-2 06/13/23 16:49

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

L1624495-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1624495-01 06/13/23 11:00 • (DUP) R3936086-2 06/13/23 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.59	9.56	1	0.313		1

Sample Narrative:

OS: 9.59 at 20.1C

DUP: 9.56 at 19.8C

L1625034-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1625034-02 06/13/23 11:00 • (DUP) R3936086-3 06/13/23 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.10	8.09	1	0.124		1

Sample Narrative:

OS: 8.1 at 19.6C

DUP: 8.09 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3936086-1 06/13/23 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.03 at 20.3C

L1625428-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1625428-01 06/14/23 00:42 • (DUP) R3936373-3 06/14/23 00:42

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	deg F	deg F		%		%
Flashpoint	DNF at 200	DNF at 200	1	0.000		10

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

(LCS) R3936373-1 06/14/23 00:42 • (LCSD) R3936373-2 06/14/23 00:42

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	126	129	131	102	104	96.0-104			1.54	10

Method Blank (MB)

(MB) R3938996-1 06/20/23 15:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.00330	0.0100

Laboratory Control Sample (LCS)

(LCS) R3938996-2 06/20/23 15:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.0300	0.0280	93.3	80.0-120	

L1625099-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625099-03 06/20/23 15:22 • (MS) R3938996-3 06/20/23 15:24 • (MSD) R3938996-4 06/20/23 15:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.0300	ND	0.0271	0.0270	90.3	90.0	1	75.0-125			0.370	20

Method Blank (MB)

(MB) R3939091-1 06/20/23 20:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.00330	0.0100

Laboratory Control Sample (LCS)

(LCS) R3939091-2 06/20/23 20:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.0300	0.0246	81.9	80.0-120	

L1624995-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624995-02 06/20/23 20:04 • (MS) R3939091-3 06/20/23 20:06 • (MSD) R3939091-4 06/20/23 20:08

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.0300	ND	0.0238	0.0258	79.4	86.1	1	75.0-125			8.09	20

L1625319-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625319-01 06/20/23 20:10 • (MS) R3939091-5 06/20/23 20:12 • (MSD) R3939091-6 06/20/23 20:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.0300	ND	0.0260	0.0200	86.6	66.7	1	75.0-125		J3 J6	26.0	20

Method Blank (MB)

(MB) R3938900-1 06/20/23 12:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.0333	0.100
Barium	U		0.0333	0.100
Cadmium	U		0.0333	0.100
Chromium	U		0.0333	0.100
Lead	U		0.0333	0.100
Selenium	U		0.0333	0.100
Silver	U		0.0333	0.100

Laboratory Control Sample (LCS)

(LCS) R3938900-2 06/20/23 12:54

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	10.0	10.1	101	80.0-120	
Barium	10.0	10.0	100	80.0-120	
Cadmium	10.0	9.24	92.4	80.0-120	
Chromium	10.0	9.47	94.7	80.0-120	
Lead	10.0	9.28	92.8	80.0-120	
Selenium	10.0	10.0	100	80.0-120	
Silver	2.00	1.81	90.3	80.0-120	

L1624995-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624995-02 06/20/23 12:57 • (MS) R3938900-4 06/20/23 13:04 • (MSD) R3938900-5 06/20/23 13:07

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	10.0	ND	10.2	9.91	102	99.1	1	75.0-125			3.02	20
Barium	10.0	0.146	10.2	9.96	101	98.1	1	75.0-125			2.46	20
Cadmium	10.0	ND	9.29	9.10	92.9	91.0	1	75.0-125			2.04	20
Chromium	10.0	ND	9.47	9.25	94.7	92.5	1	75.0-125			2.30	20
Lead	10.0	ND	9.36	9.06	93.6	90.6	1	75.0-125			3.21	20
Selenium	10.0	ND	10.1	9.82	101	98.2	1	75.0-125	E		2.37	20
Silver	2.00	ND	1.82	1.78	90.8	89.0	1	75.0-125			2.01	20

L1625394-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625394-07 06/20/23 13:10 • (MS) R3938900-6 06/20/23 13:13 • (MSD) R3938900-7 06/20/23 13:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	10.0	ND	10.4	10.2	104	102	1	75.0-125			1.56	20
Barium	10.0	1.70	11.8	11.7	101	100	1	75.0-125			0.538	20
Cadmium	10.0	ND	9.54	9.53	95.4	95.3	1	75.0-125			0.158	20
Chromium	10.0	ND	9.43	9.50	94.3	95.0	1	75.0-125			0.747	20
Lead	10.0	137	161	155	244	186	1	75.0-125	V	V	3.71	20
Selenium	10.0	0.264	10.9	10.9	106	106	1	75.0-125	E	E	0.129	20
Silver	2.00	ND	1.86	1.85	92.9	92.5	1	75.0-125			0.368	20

Method Blank (MB)

(MB) R3939762-1 06/21/23 21:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.0333	0.100
Barium	U		0.0333	0.100
Cadmium	U		0.0333	0.100
Chromium	U		0.0333	0.100
Lead	U		0.0333	0.100
Selenium	U		0.0333	0.100
Silver	U		0.0333	0.100

Laboratory Control Sample (LCS)

(LCS) R3939762-2 06/21/23 21:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	10.0	10.0	100	80.0-120	
Barium	10.0	9.97	99.7	80.0-120	
Cadmium	10.0	9.80	98.0	80.0-120	
Chromium	10.0	9.69	96.9	80.0-120	
Lead	10.0	9.61	96.1	80.0-120	
Selenium	10.0	10.2	102	80.0-120	
Silver	2.00	1.93	96.4	80.0-120	

L1625421-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625421-01 06/21/23 21:16 • (MS) R3939762-4 06/21/23 21:21 • (MSD) R3939762-5 06/21/23 21:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	10.0	ND	10.1	10.1	101	101	1	75.0-125			0.190	20
Barium	10.0	1.21	11.5	11.3	103	101	1	75.0-125			1.83	20
Cadmium	10.0	ND	9.91	9.93	99.1	99.3	1	75.0-125			0.212	20
Chromium	10.0	ND	9.74	9.78	97.4	97.8	1	75.0-125			0.356	20
Lead	10.0	ND	9.69	9.67	96.9	96.7	1	75.0-125			0.289	20
Selenium	10.0	ND	10.3	10.3	103	103	1	75.0-125			0.236	20
Silver	2.00	ND	1.94	1.94	96.9	96.9	1	75.0-125			0.0424	20

Method Blank (MB)

(MB) R3939287-3 06/16/23 16:23

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TPHGAK C6 to C10	U		28.7	100
(S) a,a,a-Trifluorotoluene(FID)	*90.5*			*60.0-120*

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

(LCS) R3939287-1 06/16/23 13:09 • (LCSD) R3939287-2 06/16/23 13:35

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 %
TPHGAK C6 to C10	5000	4960	4720	99.2	94.4	60.0-120			4.96	20
(S) a,a,a-Trifluorotoluene(FID)				*95.9*	*94.7*	*60.0-120*				

L1625149-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625149-01 06/16/23 20:38 • (MS) R3939287-4 06/16/23 21:58 • (MSD) R3939287-5 06/16/23 22:25

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 %
TPHGAK C6 to C10	5000	U	4890	4820	97.8	96.4	1	70.0-130			1.44	20
(S) a,a,a-Trifluorotoluene(FID)					*99.7*	*98.9*		*50.0-150*				

Method Blank (MB)

(MB) R3939237-3 06/19/23 12:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHGAK C6 to C10	1.49	J	0.950	2.50
(S) a,a,a-Trifluorotoluene(FID)	*106*			*60.0-120*

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

(LCS) R3939237-1 06/19/23 11:24 • (LCSD) R3939237-2 06/19/23 11:46

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 %
TPHGAK C6 to C10	125	106	108	84.8	86.4	60.0-120			1.87	20
(S) a,a,a-Trifluorotoluene(FID)				*100*	*102*	*60.0-120*				

L1625139-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625139-01 06/19/23 13:48 • (MS) R3939237-4 06/19/23 21:34 • (MSD) R3939237-5 06/19/23 21:57

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 %
TPHGAK C6 to C10	138	U	97.7	95.6	71.0	69.5	1.05	60.0-120			2.16	30
(S) a,a,a-Trifluorotoluene(FID)					*101*	*99.4*		*50.0-150*				

L1626525-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1626525-03 06/19/23 18:59 • (MS) R3939237-6 06/19/23 22:18 • (MSD) R3939237-7 06/19/23 22:40

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 %
TPHGAK C6 to C10	186	U	113	128	60.9	68.9	1	60.0-120			12.3	30
(S) a,a,a-Trifluorotoluene(FID)					*85.2*	*89.0*		*50.0-150*				

Method Blank (MB)

(MB) R3938095-3 06/16/23 23:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0167	0.0500
Carbon tetrachloride	U		0.0167	0.0500
Chlorobenzene	U		0.0167	0.0500
Chloroform	U		0.0833	0.250
1,4-Dichlorobenzene	U		0.0167	0.0500
1,2-Dichloroethane	U		0.0167	0.0500
1,1-Dichloroethene	U		0.0167	0.0500
2-Butanone (MEK)	U		0.167	0.500
Tetrachloroethene	U		0.0167	0.0500
Trichloroethene	U		0.0167	0.0500
Vinyl chloride	U		0.0167	0.0500
(S) Toluene-d8	*116*			*80.0-120*
(S) 4-Bromofluorobenzene	*89.6*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*126*			*70.0-130*

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

(LCS) R3938095-1 06/16/23 21:19 • (LCSD) R3938095-2 06/16/23 21:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.250	0.253	0.264	101	106	70.0-123			4.26	20
Carbon tetrachloride	0.250	0.275	0.266	110	106	68.0-126			3.33	20
Chlorobenzene	0.250	0.250	0.254	100	102	80.0-121			1.59	20
Chloroform	0.250	0.268	0.272	107	109	73.0-120			1.48	20
1,4-Dichlorobenzene	0.250	0.248	0.254	99.2	102	79.0-120			2.39	20
1,2-Dichloroethane	0.250	0.299	0.312	120	125	70.0-128			4.26	20
1,1-Dichloroethene	0.250	0.245	0.231	98.0	92.4	71.0-124			5.88	20
2-Butanone (MEK)	1.25	1.33	1.44	106	115	44.0-160			7.94	20
Tetrachloroethene	0.250	0.275	0.274	110	110	72.0-132			0.364	20
Trichloroethene	0.250	0.272	0.235	109	94.0	78.0-124			14.6	20
Vinyl chloride	0.250	0.224	0.220	89.6	88.0	67.0-131			1.80	20
(S) Toluene-d8				*114*	*115*	*80.0-120*				
(S) 4-Bromofluorobenzene				*90.8*	*92.8*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*128*	*129*	*70.0-130*				

L1624952-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1624952-02 06/17/23 03:48 • (MS) R3938095-6 06/17/23 07:33

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Benzene	0.250	ND	0.239	95.6	1	17.0-158	
Carbon tetrachloride	0.250	ND	0.256	102	1	23.0-159	
Chlorobenzene	0.250	ND	0.228	91.2	1	33.0-152	
Chloroform	0.250	ND	0.316	126	1	29.0-154	
1,4-Dichlorobenzene	0.250	ND	0.221	88.4	1	35.0-142	
1,2-Dichloroethane	0.250	ND	0.245	98.0	1	29.0-151	
1,1-Dichloroethene	0.250	ND	0.231	92.4	1	11.0-160	
2-Butanone (MEK)	1.25	ND	1.31	105	1	10.0-160	
Tetrachloroethene	0.250	ND	0.245	98.0	1	10.0-160	
Trichloroethene	0.250	ND	0.271	108	1	10.0-160	
Vinyl chloride	0.250	ND	0.227	90.8	1	10.0-160	
(S) Toluene-d8				*118*		*80.0-120*	
(S) 4-Bromofluorobenzene				*93.0*		*77.0-126*	
(S) 1,2-Dichloroethane-d4				*118*		*70.0-130*	

L1625421-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625421-02 06/17/23 06:11 • (MS) R3938095-4 06/17/23 06:52 • (MSD) R3938095-5 06/17/23 07:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.250	ND	0.198	0.203	79.2	81.2	1	17.0-158			2.49	27
Carbon tetrachloride	0.250	ND	0.178	0.198	71.2	79.2	1	23.0-159			10.6	28
Chlorobenzene	0.250	ND	0.211	0.214	84.4	85.6	1	33.0-152			1.41	27
Chloroform	0.250	ND	ND	ND	84.0	84.8	1	29.0-154			0.948	28
1,4-Dichlorobenzene	0.250	ND	0.202	0.207	80.8	82.8	1	35.0-142			2.44	27
1,2-Dichloroethane	0.250	ND	0.234	0.226	93.6	90.4	1	29.0-151			3.48	27
1,1-Dichloroethene	0.250	ND	0.178	0.196	71.2	78.4	1	11.0-160			9.63	29
2-Butanone (MEK)	1.25	ND	1.08	0.959	86.4	76.7	1	10.0-160			11.9	32
Tetrachloroethene	0.250	ND	0.202	0.213	80.8	85.2	1	10.0-160			5.30	27
Trichloroethene	0.250	ND	0.188	0.208	75.2	83.2	1	10.0-160			10.1	25
Vinyl chloride	0.250	ND	0.167	0.181	66.8	72.4	1	10.0-160			8.05	27
(S) Toluene-d8					*116*	*116*		*80.0-120*				
(S) 4-Bromofluorobenzene					*92.8*	*92.1*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*119*	*119*		*70.0-130*				

Method Blank (MB)

(MB) R3937411-9 06/15/23 20:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
AK102 DRO C10-C25	304	J	170	800
AK103 RRO C25-C36	U		460	800
(S) o-Terphenyl	*77.3*			*60.0-120*
(S) n-Triacontane d62	*61.5*			*60.0-120*

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

(LCS) R3937411-1 06/15/23 12:07 • (LCSD) R3937411-2 06/15/23 12:31

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 %
AK102 DRO C10-C25	6000	5870	5960	97.8	99.3	75.0-125			1.52	20
(S) o-Terphenyl				*81.8*	*81.6*	*60.0-120*				
(S) n-Triacontane d62				*51.0*	*58.5*	*60.0-120*	J2	J2		

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

(LCS) R3937411-3 06/15/23 12:54 • (LCSD) R3937411-4 06/15/23 13:17

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 %
AK103 RRO C25-C36	6000	5660	5820	94.3	97.0	60.0-120			2.79	20
(S) o-Terphenyl				*79.7*	*82.0*	*60.0-120*				
(S) n-Triacontane d62				*73.5*	*80.5*	*60.0-120*				

L1624216-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624216-03 06/15/23 14:51 • (MS) R3937411-5 06/15/23 15:14 • (MSD) R3937411-6 06/15/23 15:37

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 %
AK102 DRO C10-C25	6320	211	6070	5670	92.7	86.4	1.05	75.0-125			6.81	20
(S) o-Terphenyl					*82.9*	*78.9*		*50.0-150*				
(S) n-Triacontane d62					*146*	*129*		*50.0-150*				

L1624216-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624216-03 06/15/23 14:51 • (MS) R3937411-7 06/15/23 16:01 • (MSD) R3937411-8 06/15/23 16:24

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 %
AK103 RRO C25-C36	6320	U	5970	6190	94.5	97.9	1.05	60.0-120			3.62	20
(S) o-Terphenyl					*38.7*	*41.8*		*50.0-150*	J2	J2		
(S) n-Triacontane d62					*81.3*	*84.8*		*50.0-150*				

Method Blank (MB)

(MB) R3936937-1 06/14/23 20:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
AK102 DRO C10-C25	U		52.1	150
AK103 RRO C25-C36	104	J	53.5	150
(S) o-Terphenyl	*89.1*			*60.0-120*
(S) n-Triacontane d62	*75.9*			*60.0-120*

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

(LCS) R3936937-2 06/14/23 20:37 • (LCSD) R3936937-3 06/14/23 20:50

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 %
AK102 DRO C10-C25	200	156	152	78.0	76.0	75.0-125			2.60	20
(S) o-Terphenyl				*85.4*	*83.9*	*60.0-120*				
(S) n-Triacontane d62				*0.000*	*0.000*	*60.0-120*	J2	J2		

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

(LCS) R3936937-4 06/14/23 21:02 • (LCSD) R3936937-9 06/15/23 08:23

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 %
AK103 RRO C25-C36	200	228	211	114	105	60.0-120			7.74	20
(S) o-Terphenyl				*0.000*	*0.000*	*60.0-120*	J2	J2		
(S) n-Triacontane d62				*76.2*	*74.8*	*60.0-120*				

L1625139-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625139-01 06/14/23 21:41 • (MS) R3936937-5 06/14/23 21:53 • (MSD) R3936937-6 06/14/23 22:06

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 %
AK102 DRO C10-C25	209	U	200	205	96.0	98.5	1	75.0-125			2.57	20
(S) o-Terphenyl					*96.3*	*96.6*		*50.0-150*				
(S) n-Triacontane d62					*0.000*	*0.000*		*50.0-150*	J2	J2		

L1625139-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625139-01 06/14/23 21:41 • (MS) R3936937-7 06/14/23 22:19 • (MSD) R3936937-8 06/14/23 22:32

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
AK103 RRO C25-C36	209	132	288	347	74.5	103	1	60.0-120			18.7	20
(S) o-Terphenyl					*0.000*	*0.000*		*50.0-150*	J2	J2		
(S) n-Triacontane d62					*75.9*	*81.9*		*50.0-150*				

Method Blank (MB)

(MB) R3938877-2 06/19/23 14:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,4-Dichlorobenzene	U		0.0333	0.100
2,4-Dinitrotoluene	U		0.0333	0.100
Hexachlorobenzene	U		0.0333	0.100
Hexachloro-1,3-butadiene	U		0.0333	0.100
Hexachloroethane	U		0.0333	0.100
Nitrobenzene	U		0.0333	0.100
Pyridine	U		0.0333	0.100
3&4-Methyl Phenol	U		0.0333	0.100
2-Methylphenol	U		0.0333	0.100
Pentachlorophenol	U		0.0333	0.100
2,4,5-Trichlorophenol	U		0.0333	0.100
2,4,6-Trichlorophenol	U		0.0333	0.100
(S) 2-Fluorophenol	*25.9*			*10.0-120*
(S) Phenol-d5	*17.5*			*10.0-120*
(S) Nitrobenzene-d5	*78.7*			*10.0-127*
(S) 2-Fluorobiphenyl	*81.4*			*10.0-130*
(S) 2,4,6-Tribromophenol	*82.0*			*10.0-155*
(S) p-Terphenyl-d14	*81.3*			*10.0-128*

Laboratory Control Sample (LCS)

(LCS) R3938877-1 06/19/23 13:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,4-Dichlorobenzene	0.500	0.284	56.8	18.0-120	
2,4-Dinitrotoluene	0.500	0.464	92.8	49.0-124	
Hexachlorobenzene	0.500	0.438	87.6	44.0-120	
Hexachloro-1,3-butadiene	0.500	0.400	80.0	19.0-120	
Hexachloroethane	0.500	0.305	61.0	15.0-120	
Nitrobenzene	0.500	0.360	72.0	27.0-120	
Pyridine	0.500	0.101	20.2	10.0-120	
3&4-Methyl Phenol	0.500	0.192	38.4	31.0-120	
2-Methylphenol	0.500	0.175	35.0	28.0-120	
Pentachlorophenol	0.500	0.382	76.4	23.0-120	
2,4,5-Trichlorophenol	0.500	0.440	88.0	44.0-120	
2,4,6-Trichlorophenol	0.500	0.429	85.8	42.0-120	
(S) 2-Fluorophenol			*26.6*	*10.0-120*	
(S) Phenol-d5			*18.3*	*10.0-120*	
(S) Nitrobenzene-d5			*67.4*	*10.0-127*	

Laboratory Control Sample (LCS)

(LCS) R3938877-1 06/19/23 13:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) 2-Fluorobiphenyl			*74.7*	*10.0-130*	
(S) 2,4,6-Tribromophenol			*87.5*	*10.0-155*	
(S) p-Terphenyl-d14			*81.3*	*10.0-128*	

L1624867-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624867-02 06/19/23 14:35 • (MS) R3938877-3 06/19/23 14:56 • (MSD) R3938877-4 06/19/23 15:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.500	ND	0.210	0.201	42.0	40.2	1	17.0-120			4.38	40
2,4-Dinitrotoluene	0.500	ND	0.393	0.387	78.6	77.4	1	39.0-125			1.54	25
Hexachlorobenzene	0.500	ND	0.353	0.374	70.6	74.8	1	35.0-122			5.78	24
Hexachloro-1,3-butadiene	0.500	ND	0.301	0.319	60.2	63.8	1	12.0-120			5.81	34
Hexachloroethane	0.500	ND	0.199	0.192	39.8	38.4	1	10.0-120			3.58	40
Nitrobenzene	0.500	ND	0.285	0.273	57.0	54.6	1	12.0-120			4.30	30
Pyridine	0.500	ND	ND	0.112	10.4	22.4	1	10.0-120		J3	73.3	37
3&4-Methyl Phenol	0.500	ND	0.148	0.150	29.6	30.0	1	10.0-120			1.34	36
2-Methylphenol	0.500	ND	0.133	0.136	26.6	27.2	1	10.0-120			2.23	30
Pentachlorophenol	0.500	ND	0.291	0.329	58.2	65.8	1	10.0-128			12.3	37
2,4,5-Trichlorophenol	0.500	ND	0.318	0.356	63.6	71.2	1	33.0-120			11.3	31
2,4,6-Trichlorophenol	0.500	ND	0.284	0.327	56.8	65.4	1	26.0-120			14.1	31
(S) 2-Fluorophenol					*27.6*	*19.4*		*10.0-120*				
(S) Phenol-d5					*14.2*	*13.1*		*10.0-120*				
(S) Nitrobenzene-d5					*56.4*	*51.0*		*10.0-127*				
(S) 2-Fluorobiphenyl					*61.3*	*63.4*		*10.0-130*				
(S) 2,4,6-Tribromophenol					*65.0*	*69.0*		*10.0-155*				
(S) p-Terphenyl-d14					*68.5*	*72.6*		*10.0-128*				

Method Blank (MB)

(MB) R3936458-3 06/13/23 22:24

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		0.0170	0.0500
Benzo(a)anthracene	U		0.0200	0.0500
Benzo(a)pyrene	U		0.0180	0.0500
Benzo(b)fluoranthene	U		0.0170	0.0500
Benzo(g,h,i)perylene	U		0.0180	0.0500
Benzo(k)fluoranthene	U		0.0200	0.250
Chrysene	U		0.0180	0.0500
Dibenz(a,h)anthracene	U		0.0180	0.0500
Fluoranthene	0.0162	J	0.0110	0.0500
Fluorene	U		0.0170	0.0500
Indeno(1,2,3-cd)pyrene	U		0.0180	0.0500
Naphthalene	U		0.128	0.500
Phenanthrene	0.0233	J	0.0180	0.0500
Pyrene	U		0.0170	0.0500
1-Methylnaphthalene	U		0.0200	0.500
2-Methylnaphthalene	U		0.0280	0.500
2-Chloronaphthalene	U		0.0120	0.500
(S) Nitrobenzene-d5	*82.5*			*11.0-135*
(S) 2-Fluorobiphenyl	*75.0*			*32.0-120*
(S) p-Terphenyl-d14	*72.5*			*23.0-122*

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

(LCS) R3936458-1 06/13/23 21:49 • (LCSD) R3936458-2 06/13/23 22:06

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	1.30	1.45	65.0	72.5	43.0-127			10.9	20
Acenaphthene	2.00	1.38	1.59	69.0	79.5	42.0-120			14.1	20
Acenaphthylene	2.00	1.41	1.62	70.5	81.0	43.0-120			13.9	20
Benzo(a)anthracene	2.00	1.33	1.50	66.5	75.0	46.0-120			12.0	20
Benzo(a)pyrene	2.00	1.28	1.46	64.0	73.0	44.0-122			13.1	20
Benzo(b)fluoranthene	2.00	1.42	1.57	71.0	78.5	43.0-122			10.0	20
Benzo(g,h,i)perylene	2.00	0.799	0.692	39.9	34.6	25.0-137			14.4	23
Benzo(k)fluoranthene	2.00	1.23	1.45	61.5	72.5	39.0-128			16.4	22
Chrysene	2.00	1.47	1.67	73.5	83.5	42.0-129			12.7	20
Dibenz(a,h)anthracene	2.00	0.559	0.364	27.9	18.2	25.0-139		J3 J4	42.3	22
Fluoranthene	2.00	1.51	1.65	75.5	82.5	48.0-131			8.86	20

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

(LCS) R3936458-1 06/13/23 21:49 • (LCSD) R3936458-2 06/13/23 22:06

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 %
Fluorene	2.00	1.51	1.63	75.5	81.5	42.0-120			7.64	20
Indeno(1,2,3-cd)pyrene	2.00	1.08	1.17	54.0	58.5	37.0-133			8.00	20
Naphthalene	2.00	1.49	1.70	74.5	85.0	30.0-120			13.2	22
Phenanthrene	2.00	1.53	1.73	76.5	86.5	42.0-120			12.3	20
Pyrene	2.00	1.73	1.95	86.5	97.5	38.0-124			12.0	20
1-Methylnaphthalene	2.00	1.51	1.72	75.5	86.0	43.0-120			13.0	20
2-Methylnaphthalene	2.00	1.40	1.61	70.0	80.5	40.0-120			14.0	20
2-Chloronaphthalene	2.00	1.52	1.70	76.0	85.0	39.0-120			11.2	20
(S) Nitrobenzene-d5				*86.5*	*96.0*	*11.0-135*				
(S) 2-Fluorobiphenyl				*75.5*	*88.0*	*32.0-120*				
(S) p-Terphenyl-d14				*71.0*	*84.0*	*23.0-122*				

Method Blank (MB)

(MB) R3937670-2 06/16/23 16:15

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) p-Terphenyl-d14	*81.5*			*23.0-120*
(S) Nitrobenzene-d5	*84.9*			*14.0-149*
(S) 2-Fluorobiphenyl	*80.8*			*34.0-125*

Laboratory Control Sample (LCS)

(LCS) R3937670-1 06/16/23 15:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0971	121	50.0-126	
Acenaphthene	0.0800	0.0843	105	50.0-120	
Acenaphthylene	0.0800	0.0940	117	50.0-120	
Benzo(a)anthracene	0.0800	0.102	128	45.0-120	J4
Benzo(a)pyrene	0.0800	0.0863	108	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0762	95.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0733	91.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0783	97.9	49.0-125	
Chrysene	0.0800	0.0891	111	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0783	97.9	47.0-125	
Fluoranthene	0.0800	0.0967	121	49.0-129	

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

Laboratory Control Sample (LCS)

(LCS) R3937670-1 06/16/23 15:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0901	113	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0893	112	46.0-125	
Naphthalene	0.0800	0.0821	103	50.0-120	
Phenanthrene	0.0800	0.0856	107	47.0-120	
Pyrene	0.0800	0.0869	109	43.0-123	
1-Methylnaphthalene	0.0800	0.0809	101	51.0-121	
2-Methylnaphthalene	0.0800	0.0883	110	50.0-120	
2-Chloronaphthalene	0.0800	0.0845	106	50.0-120	
(S) p-Terphenyl-d14			*97.0*	*23.0-120*	
(S) Nitrobenzene-d5			*111*	*14.0-149*	
(S) 2-Fluorobiphenyl			*102*	*34.0-125*	

L1625367-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1625367-01 06/16/23 19:14 • (MS) R3937670-3 06/16/23 19:31 • (MSD) R3937670-4 06/16/23 19:49

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0906	U	0.0774	0.0740	85.4	81.6	1	10.0-145			4.49	30
Acenaphthene	0.0906	U	0.0713	0.0646	78.6	71.3	1	14.0-127			9.84	27
Acenaphthylene	0.0906	U	0.0781	0.0705	86.1	77.8	1	21.0-124			10.2	25
Benzo(a)anthracene	0.0906	U	0.0854	0.0801	94.3	88.4	1	10.0-139			6.43	30
Benzo(a)pyrene	0.0906	U	0.0781	0.0704	86.1	77.6	1	10.0-141			10.4	31
Benzo(b)fluoranthene	0.0906	U	0.0658	0.0594	72.6	65.5	1	10.0-140			10.3	36
Benzo(g,h,i)perylene	0.0906	U	0.0628	0.0568	69.3	62.6	1	10.0-140			10.0	33
Benzo(k)fluoranthene	0.0906	U	0.0687	0.0595	75.8	65.6	1	10.0-137			14.3	31
Chrysene	0.0906	U	0.0795	0.0749	87.8	82.6	1	10.0-145			6.02	30
Dibenz(a,h)anthracene	0.0906	U	0.0705	0.0605	77.8	66.8	1	10.0-132			15.2	31
Fluoranthene	0.0906	U	0.0774	0.0768	85.4	84.8	1	10.0-153			0.735	33
Fluorene	0.0906	U	0.0767	0.0710	84.6	78.4	1	11.0-130			7.67	29
Indeno(1,2,3-cd)pyrene	0.0906	U	0.0725	0.0662	80.0	73.0	1	10.0-137			9.15	32
Naphthalene	0.0906	U	0.0683	0.0622	75.4	68.6	1	10.0-135			9.37	27
Phenanthrene	0.0906	U	0.0702	0.0709	77.5	78.3	1	10.0-144			0.963	31
Pyrene	0.0906	0.00278	0.0699	0.0668	74.1	70.7	1	10.0-148			4.47	35
1-Methylnaphthalene	0.0906	U	0.0700	0.0633	77.3	69.9	1	10.0-142			10.0	28
2-Methylnaphthalene	0.0906	U	0.0749	0.0676	82.6	74.6	1	10.0-137			10.2	28
2-Chloronaphthalene	0.0906	U	0.0732	0.0653	80.7	72.0	1	29.0-120			11.5	24
(S) p-Terphenyl-d14					*77.9*	*65.1*		*23.0-120*				
(S) Nitrobenzene-d5					*86.1*	*84.5*		*14.0-149*				
(S) 2-Fluorobiphenyl					*75.2*	*62.6*		*34.0-125*				

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.
MDL (dry)	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.
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.
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.
J4	The associated batch QC was outside the established quality control range for accuracy.
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.

Qualifier	Description
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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

Company Name/Address:
Arcadis - Chevron - AK

880 H St.
Anchorage, AK 99501

Billing Information:
Attn: Acounts Payable
630 Plaza Dr Ste 600
Highlands Ranch, CO 80129

Pres Chk

Report to:
Nick Wood/Sydney Clark/Erika Midkiff

Email To:
Sydney.Clark@arcadis.com;Nick.Wood@arcadis.

Project Description:
91518

City/State Collected: Anchorage/AK

Please Circle: PT MT CT ET AT

Phone: **907-276-8095**

Client Project #
30064209.19.45

Lab Project #
CHEVARCAK-91518

Collected by (print):
Danielle Gilbert

Site/Facility ID #
2927 NEW SEWARD HWY

P.O. #

Collected by (signature):
Danielle Gilbert

Immediately Packed on Ice N ___ Y ✓

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: Standard

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl / 60ML Amber MeOH	AK102/103 100ml Amb HCl / PAHs 4oz clear	FLASH 200 250mlAmb-No Pres	PAHs 8270SIM 100ml Amb-NoPres / 4oz clear DP6	TCLP VOC/SVOC/Metals 1L-Clr-NoPres / 4oz clear	pH 125mlHDPE-NoPres					Remarks	Sample # (lab only)
GW-Waste-060823	Grab	GW	–	6-8-23	1300	10	X	X	X	X	X	X						-01/02
S-Waste-060823	Grab	SS	–	6-8-23	1310	4	X	X	·	~~PAH~~ DP6	X							-03/04

Chain of Custody Page 1 of 1

Pace
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

L1624995
D216

Acctnum: **CHEVARCAK**
Template: **T229068**
Prelogin: **P994763**
PM: **110 - Brian Ford**
PB: BF 4/22/23
Shipped Via: **FedEX 2nd Day**

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

Remarks: Mercury to be run by TCLP 7470A

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 6337 2245 1232

Sample Receipt Checklist

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
Danielle Gilbert	6-9-23	1100		2	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: NSA7 °C Bottles Received: 1.4+0=1.4 14	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Eri Dossett 17	Date: 6-10-23 Time: 900	Hold: / Condition: NCF / OK

Appendix E

MW-12 Laboratory Data Validation Checklist

Laboratory Data Review Checklist

Completed By:

Dilip Kumar H S

Title:

Project Chemist

Date:

July 05, 2023

Consultant Firm:

ARCADIS U.S., Inc

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1610576

Laboratory Report Date:

05/12/2023

CS Site Name:

First Semi Annual 2023 Groundwater Monitoring Report

ADEC File Number:

2100.26.001

Hazard Identification Number:

23595

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

   Yes☒ No☐ N/A☐ Comments:

Yes.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-LAP approved?

   Yes☐ No☐ N/A☒ Comments:

Not applicable.

2. Chain of Custody (CoC)

   a. Is the CoC information completed, signed, and dated (including released/received by)?

   Yes☒ No☐ N/A☐ Comments:

Yes.

   b. Were the correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

Yes.

3. Laboratory Sample Receipt Documentation

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   Yes☒ No☐ N/A☐ Comments:

Yes.

   b. Is the sample preservation acceptable – acidified waters, methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

Yes.

   c. Is the sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials); canister vacuum/pressure checked and no open valves etc?

   Yes☒ No☐ N/A☐ Comments:

Yes.

   d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

   Yes☒ No☐ N/A☐ Comments:

Yes. no discrepancies.

e. Is the data quality or usability affected?

Comments:

Data quality or usability was not affected.

4. Case Narrative

a. Is the case narrative present and understandable?

Yes☒ No☐ N/A☐ Comments:

Yes.

b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes☐ No☒ N/A☐ Comments:

No.

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

Yes.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality/usability was not affected.

5. Samples Results

a. Are the correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

Yes.

b. Are all applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

Yes.

c. Are all soils reported on a dry weight basis?

Yes☐ No☒ N/A☐ Comments:

No soil samples were submitted for analysis.

d. Are the reported limit of quantitation (LOQs) or limits of detection (LOD), or reporting limits (RL) less than the Cleanup Level for the project?

Yes☒ No☐ N/A☐ Comments:

Yes.

e. Is the data quality or usability affected?

Comments:

Data quality/usability was not affected.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

Yes.

ii. Are all method blank results less than limit of quantitation LOQ (or RL)?

Yes☒ No☐ N/A☐ Comments:

Yes.

iii. If above LOQ or RL, what samples are affected?

Comments:

None of the samples were affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

Not applicable.

v. Data quality or usability affected?

Comments:

Data quality or usability was not affected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

Yes.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

Yes.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

Yes.

iv. Precision –Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

Yes.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None of the samples were affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

Not applicable.

vii. Is the data quality or usability affected? (Use comment box to explain.)

Comments:

Data quality or usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes☐ No☐ N/A☒ Comments:

The MS/MSD analysis was not performed on any of the samples for this method.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes☒ No☐ N/A☐ Comments:

The MS/MSD analysis was performed on sample ID MW-12-W-20230427.

iii. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes☒ No☐ N/A☐ Comments:

Yes.

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None of the samples were affected.

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes☐ No☐ N/A☒ Comments:

Not applicable.

vi. Is the data quality or usability affected? (Use comment box to explain.)
Comments:

Data quality or usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes☒ No☐ N/A☐ Comments:

Yes.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples 60-120% R for QC samples ; all other analyses see the laboratory report pages)

Yes☐ No☒ N/A☐ Comments:

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Method	Surrogate	Recovery
EQB-1-W-20230427	8260D	Toluene-d8	> UL

Note:
UL – Upper control limit

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	UJ1
	Detect	J1

Note:
[1] A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes☒ No☐ N/A☐ Comments:

Yes.

iv. Is the data quality or usability affected?

Comments:

Surrogate recovery exceedance are considered minor and would result in the estimation of the associated data. The reported data should still consider as usable.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes☒ No☐ N/A☐ Comments:

Trip blank samples were collected as TRIP BLANK 1.

ii. Are all results less than LOQ or RL?

Yes☒ No☐ N/A☐ Comments:

Yes.

iii. If above LOQ or RL, what samples are affected?

Comments:

None of the samples were affected.

iv. Is data quality or usability affected?

Comments:

Data quality or usability was not affected.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis and 10 project samples?

Yes☒ No☐ N/A☐ Comments:

Yes.

ii. Was the duplicate submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

Yes.

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R1-R2)}{((R1+R2)/2)} \times 100$$

Where R1 = Sample Concentration
R2 = Field Duplicate Concentration

Yes☒ No☐ N/A☐ Comments:

Yes.

Results for duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Method	Compounds / Analytes	Sample Result	Duplicate Result	RPD
MW-12-W-20230427/BD-1-W-20230427	AK 101	TPHGAK C6 to C10	173	168	AC
	8260D	Benzene	0.561 J	0.515 J	AC
		sec-Butylbenzene	0.940 J	0.894	AC
		1,2-Dichloroethane	0.0500 U	0.450 J	AC
		Ethylbenzene	3.66	3.43	AC
		Isopropylbenzene	7.41	6.88	7.4%
		p-Isopropyltoluene	1 U	0.242 J	AC
		n-Propylbenzene	6.06	5.61	7.7%
		Toluene	0.397 J	0.395 J	AC
		1,2,4-Trimethylbenzene	12.7	11.8	7.3%
		1,2,3-Trimethylbenzene	1.39	1.29	7.5%
		1,3,5-Trimethylbenzene	0.564 J	0.520 J	AC
		Xylenes, Total	3.83	3.55	AC
		o-Xylene	0.215 J	0.196 J	AC
		m&p-Xylene	3.62	3.35	AC
	AK 102/103	AK102 DRO C10-C25	336 J	334 J	AC
	AK 102SGT	AK102 DRO C10-C25	336 J	334 J	AC
	8270E SIM	Benzo(b)fluoranthene	0.0198 J	0.0229 J	AC
		Benzo(g,h,i)perylene	0.0189 J	0.0214 J	AC
		Fluoranthene	0.0310 J	0.0391 J	AC
		Naphthalene	0.649	0.655	AC
		Phenanthrene	0.0275 J	0.0408 J	AC
		Pyrene	0.0361 J	0.0471 J	AC
		1-Methylnaphthalene	0.500 U	0.112 J	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality or usability was not affected.

g. Decontamination or Equipment Blank

i. Were decontamination or equipment blanks collected?

Yes☒ No☐ N/A☐ Comments:

Equipment blank sample was collected as EQB-1-W-20230427.

ii. Are all results less than LOQ or RL?

Yes☒ No☐ N/A☐ Comments:

Yes.

iii. If above LOQ or RL, specify what samples are affected?

Comments:

Not applicable

iv. Are data quality or usability affected?

Comments:

Data quality or usability was not affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Are they defined and appropriate?

Yes☒ No☐ N/A☐ Comments:

Yes.

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compounds	Recovery
BD-1-W-20230427	CCV %D	n-Butylbenzene	Low
		Carbon disulfide	
		1,1-Dichloroethene	

Results associated with calibrations outside of the recovery limits are qualified as estimated (UJ).

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