

Tesoro North Store 111
April 2023 2Q GWM Event Report



AUTHORIZATION TO SUBMIT REPORT

Stantec has been authorized by the client representative Paula Sime, PG, Manager – Environmental Services, to submit the enclosed report to the Alaska Department of Environmental Conservation. If you have any questions or need additional information concerning this groundwater monitoring report, please contact me at (907) 227-9883 or via email at bob.gilfilian@stantec.com.

Regards,

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
AS	Air sparge
amsl	above mean sea level
B	analyte detected in associated blank
BTEX	benzene, toluene, ethylbenzene, and xylenes
chemox	chemical oxidation
DC	Data corrupted
DO	dissolved oxygen
DRO	diesel range organics
DUP	duplicate sample
EIT	Engineering in Training
EPA	U.S. Environmental Protection Agency
G	monitor well label
GCL	groundwater cleanup level
gpm	gallons per minute
GRO	gasoline range organics
J	The identification of the analyte is acceptable; the reported value is an estimate.
Klozur [®] One	Trademarked chemical oxidizer developed by PeroxyChem
LLC	limited-liability company
mg/L	milligrams per liter
MW	monitoring well
NA	Not applicable
NC	Not calculated
NE	Northeast
NM	Not measured
ORP	oxidation-reduction potential
PAH	polycyclic aromatic hydrocarbon
PE	Professional Engineer
QA/QC	quality assurance/ quality control
RM	remediation well
SE	Southeast
SIM	selective ion monitoring
Stantec	Stantec Consulting Services Inc.
SVE	Soil vapor extraction
Tesoro	Tesoro Refining and Marketing Company
TMB	trimethylbenzene
U	analyte not detected above the reported detection limit in parentheses
UST	underground storage tank
VOC	volatile organic compound
WP	Work Plan

1.0 INTRODUCTION

This second quarter 2023 semi-annual Groundwater Monitoring and Remediation Event Report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Tesoro North Store (TNS) 111, located at 3679 College Road, Fairbanks, Alaska (**Figure 1**). The methods used for this monitoring event were conducted in accordance with the 2023 Alaska Department of Environmental Conservation (ADEC) approved Work Plan for this site (**Appendix B**). Monitoring event was conducted by the Stantec field team of Geoff Moorhead, PE and Leslie Petre, EIT.

The monitoring event for the 2nd quarter 2023 occurred on April 25, 2023, for the analytical sampling of Monitoring Wells G1, G5, MW-10, MW-12, MW-16, MW17-1, and Remediation Well RM-2. This event was limited due to break up conditions and frozen wells. Sample locations are shown in **Figure 2**.

2.0 SITE BACKGROUND

Background information for this site is summarized in **Appendix A**.

3.0 FIELD ACTIVITIES

The following field activities were conducted during the April 25, 2023, monitoring event:

- Measured static groundwater levels at Monitoring and Remediation Wells G1, G5, MW-10, MW-12, MW-16, and MW17-1.
 - Remediation well RM-2 was pumping at a rate of 1.5 gpm and draw-down depth was not measured.
- Data Collection of the field measurements of the intrinsic water quality parameters pH, temperature, oxidation-reduction potential, dissolved oxygen, and conductivity from wells G-5, MW-12, and RM-2 occurred. Issues with the field report collection device resulted in most of the intrinsic values not being saved.
- Samples from the above locations were submitted for the following laboratory analysis: GRO by Alaska Test Method (AK)101, DRO by AK102, volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Test Method 8260C, polycyclic aromatic hydrocarbons (PAHs) by EPA Test Method 8270D with selective ion monitoring (SIM), and Metals 6010 for sodium.
- MW17-2 could not be accessed due to entire well housing being filled with ice. MW-13 had excessive external water levels that could not be kept clear of the well for sampling. MW-11 was still under hard pack and not located. RM-1 was not currently in operation and the manhole was buried under hardpack.

Field methods and procedures are provided in **Appendix B**, and field measurements and notes are provided in **Appendix C**.

4.0 GROUNDWATER MONITORING RESULTS

4.1 GROUNDWATER LEVELS

Table 1 presents groundwater elevations at this site based on the depths to groundwater measured during the April 2023 monitoring event. During the monitoring event the groundwater flow was determined to be to the southwest at approximately 200° with a gradient of 0.03 feet per foot. The groundwater level was not measured in RM-2, the well was not used to calculate gradient. Historical groundwater flow directions and gradient are shown in **Table 2**.

Table 1 Groundwater Elevations

Measured on April 25, 2023

Monitoring Well Identification	Top of Casing Elevation (feet) ¹	Depth to Groundwater (feet)	Groundwater Elevation (feet amsl)
G1	429.97	14.66	415.31
G5	431.36	14.81	416.55
MW-10	430.12	14.80	415.32
MW-11	430.50	NM	NC
MW-12	427.84	12.44	405.40
MW-13	429.76	NM	NC
MW-16	429.29	13.94	415.35
MW17-1	430.17	15.23	414.94
MW17-2	430.79	NM	NC
RM-1	428.22	NM	NC
RM-2	430.79	NM	NC

Key:

1 Based on a vertical control survey completed on July 21, 2021, using an elevation datum of 432.00 feet located on the concrete sidewalk next to the front entrance of the store.

amsl above mean sea level

NM Not measured

NC Not calculated

Table 2 Historical Groundwater Flow Direction and Gradient

Date	Flow Direction (azimuth)	Gradient (ft/ft)
3/16/2017	207°	0.001
7/7/2017	185°	0.001
3/29/2018	214°	0.003
9/4/2018	177°	0.001
3/13/2019	227°	0.002
7/29/2019	345°	0.004
8/4/2020	301°	0.023
10/15/2020	330°	0.007
10/12/2021	030°	0.002
5/17/2022	198°	0.003
9/20/2022	345°	0.006
4/25/2023	200°	0.03

4.2 FIELD PARAMETERS

The results of water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 3**. Dissolved oxygen (DO) levels are higher in MW-12 than in the rest of the wells, which is consistent with the pattern observed in previous events.

Table 3 Field Measured Intrinsic Water Quality Parameters

Measured on April 25, 2023

Monitoring Well Identification	Volume Purged (gallons)	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm °C)	ORP (mV)
G1	7.29	2.51	DC	DC	DC	DC
G5	1.56	3.17	6.31	3.30	674	31.5
MW-10	5.19	1.74	DC	DC	DC	DC
MW-11	0	NM	NM	NM	NM	NM
MW-12	5.85	3.23	9.5	36.39	438	9.7
MW-13	0	NM	NM	NM	NM	NM
MW-16	7.74	1.21	DC	DC	DC	DC
MW17-1	1.98	3.33	DC	DC	DC	DC
MW17-2	0	NM	NM	NM	NM	NM
RM-1	0	NM	NM	NM	NM	NM
RM-2	pumping	2.33	6.82	1.07	565	-17.5

Key:

°C degrees Celsius
 µs/cm°C microSiemens per centimeter degrees Celsius
 DC Data corrupted

DO Dissolved Oxygen
 mg/L milligrams per liter
 mV millivolts

NM Not measured
 pH log [H⁺]
 ORP oxidation-reduction potential

4.3 WATER SAMPLE ANALYTICAL RESULTS

All wells were sampled in accordance with the 2023 Work Plan. Historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for compounds detected in groundwater samples collected during these events are summarized in **Table 4**. The laboratory analytical reports are provided in **Appendix E**. Lower sodium levels in MW-16 indicate its position outside the zone influenced chemox treatment. Sodium is a good indicator of the presence of the Klozur[®] One product.

Table 4 Groundwater Analytical Results
Samples Collected on April 25, 2023

ID	Benzene	Toluene	Ethyl-Benzene	Total Xylene	GRO	DRO	1,2,4-TMB	1,3,5-TMB	Naph-Thalene ¹	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
G1	0.00114	0.000317	U(0.00100)	0.000201	U(0.500)	0.566	U(0.00100)	U(0.00100)	0.00428	95.1
G5	0.0191	0.00088	0.232	0.233	1.23	1.21	0.285	0.0245	0.0399	79.9
MW-10	0.00729	0.000835	0.0207	0.0421	0.568	1.43	0.0266	0.00718	0.00415	80.5
MW-12	U(0.00100)	0.000298	0.0198	0.0272	0.662	0.614	0.0483	0.0442	0.00737	56
MW-16	0.000111	0.00072	U(0.00100)	U(0.00300)	0.0331	3.48	U(0.00100)	U(0.00100)	U(0.000250)	48.8
MW17-1	0.174	0.157	1.22	3.2	13.4	4.14	0.845	0.152	0.0923	81.9
RM-2	0.00861	0.000523	0.199	0.331	1.88	0.739	0.0536	0.0351	0.0313	51.4
DUP	0.00916	0.000467	0.205	0.353	1.74	1.95	0.0553	0.0368	0.0300	51.2
GCLS	0.0046	1.1	0.015	0.19	2.2	1.5	0.056	0.06	0.0017	NA

Key:

- 1 Results from VOC Method 8270 D
- B Analyte found in associated blank.
- Bold** Concentration or estimated quantitation limit exceeds the GCL
- DUP Duplicate sample of the preceding sample.
- DRO Diesel range organics analyzed by AK102.
- GCLs Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019)
- GRO Gasoline range organics analyzed by AK101.
- J The identification of the analyte is acceptable; reported value estimated.
- mg/L milligrams per liter
- NA Not Applicable.
- U Undetected above practical quantitation limits shown

4.4 QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC) REVIEW

Pace Analytical performed all analysis of groundwater samples for the April 2023 sampling event. Pace Analytical did meet all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event.

DUP is a duplicate of sample RM-2. The duplicate sample sets were collected to determine the precision of the field collection and laboratory analysis for this sampling event. Data presented in **Table 5** shows the laboratory exceeded precision tolerances only for DRO. Laboratory QC data and the ADEC Laboratory Data Review Checklists are included in **Appendix E**.

Table 5 Laboratory Quality Control Objectives
Samples Collected on April 25, 2023

Quality Control Designation	Tolerance	Results for This Event
Holding Times		
DRO/Water/to analyze	40 days	15 days
DRO/Water/to extract	14 days	14 days
GRO/Water/to analyze	14 days	8 days
VOCs/Water/to analyze	14 days	4 days
PAHs/Water/to analyze	40 days	4 days
PAHs/Water/to extract	7 days	3 days
Field Duplicate – Precision		
Benzene/Water	± 30%	6.2%
Toluene/Water	± 30%	11.3%
Ethylbenzene/Water	± 30%	3.0%
Xylenes/Water	± 30%	6.4%
GRO/Water	± 30%	7.7%
DRO/Water	± 30%	90.1%
1,2,4-Trimethylbenzene	± 30%	3.1%
1,3,5-Trimethylbenzene	± 30%	4.7%
Naphthalene	± 30%	4.2%

Key:

% Absolute value percentage of variance
 ± Absolute Value
 DRO diesel range organics
 GRO gasoline range organics
 1 Maximum time. Some samples extracted or analyzed earlier.

PAH Polycyclic aromatic hydrocarbon
 VOC Volatile organic compound
BOLD Exceeds precision tolerance
 NC Not Calculated, undetected in duplicate

5.0 REMEDIATION SYSTEM OPERATION AND IN-SITU CHEMOX REMEDIATION

Flow from RM-2 was set to discharged at a rate of 1.5gpm through the 4 inch injection wells east of the UST over the winter of 2022-2023 and system stayed in operation without interruption moving over 389,000 gallons of water through the site November-April. This flow was adjusted during the April 2023 GWM to approximately 2 gpm. System operation was interrupted May 17-22, 2023, due to emergency replacement of the remediation shed and system repairs after a traffic accident disabled the above ground systems. System returned to normal operation on May 22, 2023, and flow into the eastern injection wells was restored to 2 gpm.

Groundwater contamination is treated in-situ through monthly injections of the chemical oxidation (chemox) product Klozur[®] One. Chemox monthly events resumed May 24, 2023, after winter break-up so solution could be mixed without flash freezing prior to injection. Frozen AS Well 4, AS Well 11, and the three former SVE horizontal wells placed beneath the UST tanks reduced the usual site dosage. The May monthly chemox event on this site involve the injection of 8 55-pound bags of Klozur[®] One into the formation. Due to the cold temperatures of the ground water at this

site, one bag of the chemical is mixed at a ratio of 1 pound per 2 gallons of water (60 g/L). This is within the manufacturer's suggested range of mixing ratios (50-200 g/L). The site treatment of chemox product involved 450 pounds of Klozur[®] diluted with more than 900 gallons of water sourced from remediation well RM-2 and applied to the site as follows:

- AS Well 12: 440 gallons of chemox solution followed by 220 gallons of water.
- Northern 4" injection well on east site of UST tanks: 220 gallons of chemox solution followed by 110 gallons of water.
- Southern 4" injections well on east side of UST tanks: 220 gallons of chemox solution. RM-2 was then used to return flow through this injection well at a rate of 2 gpm.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (updated September 18, 2019). Monitoring wells and the respective analytes in exceedance of ADEC GCLs included:

- Monitoring Well G1: Naphthalene.
- Monitoring Well G5: Benzene, ethylbenzene, total xylenes, 1,2,4-TMB, and naphthalene.
- Monitoring Well MW-10: Benzene, ethylbenzene, and naphthalene.
- Monitoring Well MW-12: Ethylbenzene and naphthalene.
- Monitoring Well MW-16: DRO.
- Monitoring Well MW17-1: Benzene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- Remediation Well RM-2: Benzene, ethylbenzene, total xylenes, and naphthalene.

During the monitoring event, the groundwater flow was determined to be to the north at approximately 200° with a gradient of 0.03 feet per foot. The groundwater level was not measured in RM-2, the well was not used to calculate gradient.

May 2023, chemox treatments were conducted which involved the injection of 440 pounds of Klozur[®] One and more than 1400 gallons of water from the onsite remediation well into formation to treat in-situ contamination.

6.1 PROPOSED ACTIVITIES

No anomalies were found during the April 2023 groundwater monitoring event that would require additional corrective action or changes to the approved year 2023 Corrective Action Work Plan for this site.

7.0 LIMITATIONS

Stantec conducted this monitoring event in accordance with the 2023 Corrective Action Work Plan approved by ADEC, and in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. All sampling activities were completed in accordance with the ADEC *Underground Storage Tanks Procedures Manual – Standard Sampling Procedures* (March 22, 2017). The conclusions in this report are Stantec’s professional opinion, as of the time of the report, and concerning the scope described in the report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not consider any subsequent changes. This report relates solely to the specific project for which Stantec was retained and the stated purpose for which the report was prepared. The report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient’s own risk.

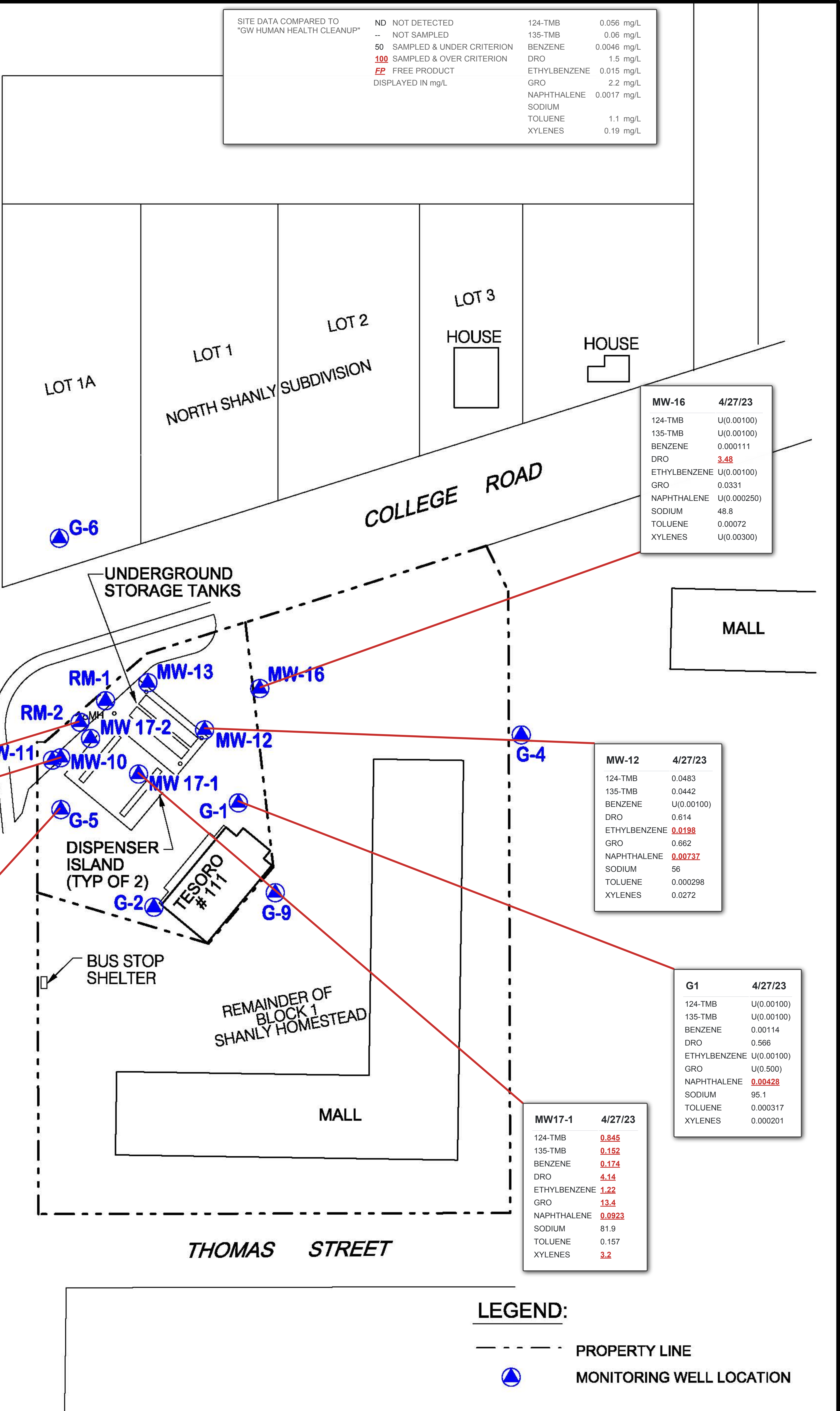
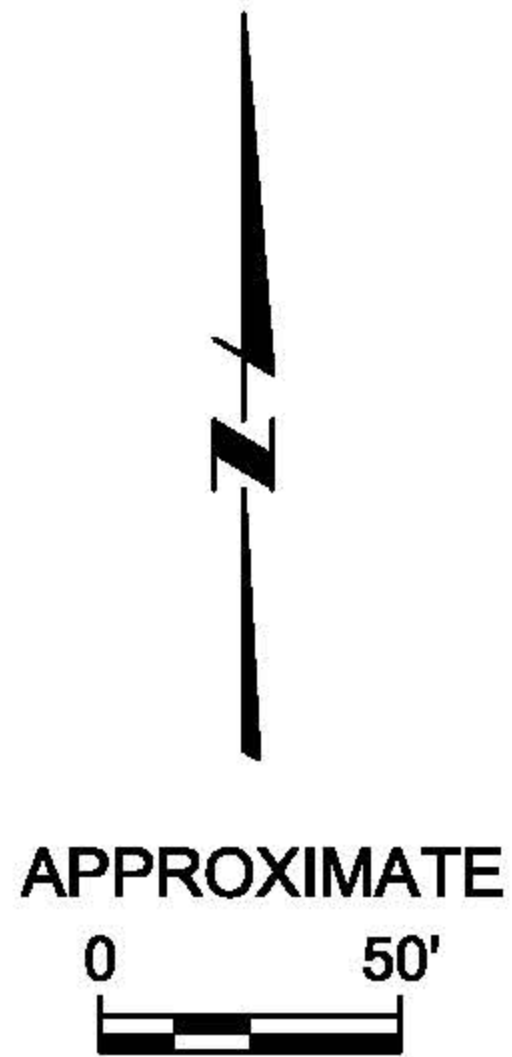
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FIGURES

- Figure 1 Location and Vicinity Map
Figure 2 Site Map Plan with Analytical Data
-



SITE DATA COMPARED TO "GW HUMAN HEALTH CLEANUP"			
ND	NOT DETECTED	124-TMB	0.056 mg/L
--	NOT SAMPLED	135-TMB	0.06 mg/L
50	SAMPLED & UNDER CRITERION	BENZENE	0.0046 mg/L
100	SAMPLED & OVER CRITERION	DRO	1.5 mg/L
EP	FREE PRODUCT	ETHYLBENZENE	0.015 mg/L
	DISPLAYED IN mg/L	GRO	2.2 mg/L
		NAPHTHALENE	0.0017 mg/L
		SODIUM	
		TOLUENE	1.1 mg/L
		XYLENES	0.19 mg/L



RM-2	4/27/23
124-TMB	0.0536
135-TMB	0.0351
BENZENE	0.00861
DRO	0.739
ETHYLBENZENE	0.199
GRO	1.88
NAPHTHALENE	0.0313
SODIUM	51.4
TOLUENE	0.000523
XYLENES	0.331

MW-10	4/27/23
124-TMB	0.0266
135-TMB	0.00718
BENZENE	0.00729
DRO	1.43
ETHYLBENZENE	0.0207
GRO	0.568
NAPHTHALENE	0.00415
SODIUM	80.5
TOLUENE	0.000835
XYLENES	0.0421

G5	4/27/23
124-TMB	0.285
135-TMB	0.0245
BENZENE	0.0191
DRO	1.21
ETHYLBENZENE	0.232
GRO	1.23
NAPHTHALENE	0.0399
SODIUM	79.9
TOLUENE	0.00088
XYLENES	0.233

MW-16	4/27/23
124-TMB	U(0.00100)
135-TMB	U(0.00100)
BENZENE	0.000111
DRO	3.48
ETHYLBENZENE	U(0.00100)
GRO	0.0331
NAPHTHALENE	U(0.000250)
SODIUM	48.8
TOLUENE	0.00072
XYLENES	U(0.00300)

MW-12	4/27/23
124-TMB	0.0483
135-TMB	0.0442
BENZENE	U(0.00100)
DRO	0.614
ETHYLBENZENE	0.0198
GRO	0.662
NAPHTHALENE	0.00737
SODIUM	56
TOLUENE	0.000298
XYLENES	0.0272

G1	4/27/23
124-TMB	U(0.00100)
135-TMB	U(0.00100)
BENZENE	0.00114
DRO	0.566
ETHYLBENZENE	U(0.00100)
GRO	U(0.500)
NAPHTHALENE	0.00428
SODIUM	95.1
TOLUENE	0.000317
XYLENES	0.000201

MW17-1	4/27/23
124-TMB	0.845
135-TMB	0.152
BENZENE	0.174
DRO	4.14
ETHYLBENZENE	1.22
GRO	13.4
NAPHTHALENE	0.0923
SODIUM	81.9
TOLUENE	0.157
XYLENES	3.2

LEGEND:
 - - - - - PROPERTY LINE
 MONITORING WELL LOCATION



Tesoro North Store #111
 Q2 April 2023 GWM Event Report

Site Map With Analytical Data Results

FIGURE
2
 185705774

APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

Tesoro 2 Go Mart #111 (3679 College Road, Fairbanks, Alaska)
ADEC Facility ID #1112; ADEC File #102.26.026

Tesoro 2 Go Mart #111 is a retail fuel service station located at the corner of University Drive and College Road in Fairbanks, Alaska. The service station is operated in conjunction with a Tesoro convenience store. A fuel dispensing service station is reported to have been operated at this site since 1971.

Gilfilian Engineering & Environmental Testing (GE²T), MWH Americas, Inc. (MWH), and Stantec Consulting Services Inc. (Stantec) have performed numerous site investigations and monitoring events at this site since 1995.

November 1990. Shannon & Wilson Inc. installed three groundwater monitoring wells (MW-1, MW-3, and MW-4) and drilled one soil boring (SB-2) at the site to evaluate potential for soil and groundwater contamination prior to right-of-way acquisition. Monitoring Well MW-1 and Boring SB-2 were drilled near the former underground storage tanks (USTs). Petroleum hydrocarbons were detected above Alaska Department of Environmental Conservation (ADEC) soil cleanup levels (SCLs) in MW-1 and Boring SB-2.

February 1991. A release investigation (RI) was conducted by Shannon & Wilson Inc., during which two monitoring wells (MW-10 and MW-16) and seven soil borings were installed. Petroleum hydrocarbons were detected above SCLs in six of the nine soil borings. Petroleum-related compounds were detected in all monitoring wells sampled. The highest concentrations were detected in MW-1 and MW-10.

September 1992. Two 12,000-gallon USTs, one 8,000-gallon UST, and one 1,000-gallon UST were removed and replaced with three 10,000-gallon STIP-3, single wall USTs. Petroleum hydrocarbons were detected above SCLs in the UST removal excavations. Due to a nearby high flow groundwater extraction process along the Chena River, operated by a non-Tesoro entity, the groundwater table was lowered by many feet in the surrounding area. Prior to the pumping operation, the groundwater table was typically 12 feet below the ground surface (bgs). When the USTs were replaced, the groundwater was found at 22 feet bgs. After the pumping operation along the Chena River was completed, the groundwater table returned to normal levels. The drop and rise of the groundwater resulted in spreading the smear zone of petroleum contamination over a 12-foot vertical range beneath the site.

July 1995. GE²T installed two new monitoring wells (G-1 and G-2). Petroleum hydrocarbons were not detected above SCLs but were above the ADEC groundwater cleanup levels (GCLs) in both monitoring wells.

August through October 1998. The canopy and fuel dispenser system were upgraded to include new fuel dispensers, a tank monitoring system, and a cathodic protection system. Soil samples collected from below the former dispensers and piping exceeded SCLs for hydrocarbons. As a

result, piping was laid in these excavations for expansion of the air sparge (AS) and soil vapor extraction (SVE) system. In addition, six vertical cathodic protection anodes were spaced around the USTs.

May 1991. A Phase III RI was conducted that involved drilling two soil borings off the site and installing two new monitoring wells (G-3 and G-4). Petroleum hydrocarbons were not detected above SCLs (borings) or GCLs (monitoring wells), indicating these wells are located beyond the extent of groundwater contamination at the site.

May 2001. A RI was conducted that involved drilling two soil borings and installing two new monitoring wells (on-site G-5 and off-site G-6). Samples collected from G-6 did not exceed SCLs or GCLs, but both were exceeded in samples from G-5 (on-site well)

May 2003. Four additional AS wells were installed at the site. Benzene was detected above the SCL in AS Wells AS-13 and AS-14, and diesel range organics (DRO) was detected slightly above the SCL in AS-14. No other compounds were detected above the SCLs.

November 2003. A RI was performed at the site. The RI involved drilling one soil boring that was completed as a 2-inch diameter monitoring well (G-9). No analytes of concern were detected at concentrations above the laboratory practical quantitation limits (PQLs) in soil or groundwater samples collected during the RI.

June 2010. A sampling event was conducted for sulfolane in Monitoring Well MW-10. Sample results were non-detect.

June 2012. MWH conducted an UST closure site assessment. The former UST system consisted of three 10,000-gallon capacity gasoline and diesel tanks, associated piping, and three dispenser islands with one overhead canopy. The three USTs were replaced with two, multi-compartment, 15,000-gallon capacity fiberglass USTs. Petroleum-contaminated soil was encountered during the UST removal. The contaminated soil was removed from the site for off-site thermal treatment. Soil contamination was found at 13 feet bgs, a couple of feet below the bottom of the new USTs. Due to the groundwater conditions, the saturated contaminated soil could not be removed and, therefore, was left in-place.

September 2012. A RI was performed at the site. The RI involved advancing four soil borings (three around the new USTs in the northern portion of the site and one along the west edge of the site) and collecting three soil samples from each soil boring. Three groundwater monitoring wells (MW-11, MW-12, and MW-13) and one air lift well (RM-1) were installed in the four soil borings and groundwater samples were collected. Petroleum hydrocarbons were detected above SCLs in the soil borings along the west edge of the site, the northern portion of the property line on the east side of the USTs, and the northern side of the dispenser island. Petroleum hydrocarbons were detected above the GCLs in all three monitoring wells.

June 2013. A first round of chemical oxidation application of Klozur CR[®] was injected into two on-site wells (Monitoring Well MW-10 and AS Well AS-9). Monitoring Well G-5 was used to measure the chemical oxidation impact to the groundwater table. The prior and post injection

results of intrinsic parameters clearly indicated the effectiveness of the chemical oxidant – in particular with respect to the sodium, pH, total organic carbon (TOC), and dissolved oxygen levels. The laboratory analytical results indicated significant reductions in the petroleum contaminants of concern.

July 2013. A pump test was conducted of Remediation Well RM-1, which was initially designed and constructed to serve as an air-lift well. Due to concerns about maintaining a continuous pumping air-lift well in the sub-Arctic climate found in the Fairbanks area, it was decided to pump the well with a submersible well pump. The field test data collected during the 2-day well pump test indicated that, by recirculating the water pumped from RM-1 into the upgradient horizontal wells that were installed along the bottom edge of the USTs, the contaminated groundwater flowing beneath the USTs would be captured in RM-1. Then the groundwater could be pumped (re-circulated) back into the upgradient horizontal wells. On a quarterly basis, the groundwater would undergo chemical oxidation with the injection of Klozur CR[®] into the horizontal wells. Also, it was initially planned to add air in the well pump discharge line via a venturi air injector.

August/September 2013. Two rounds of Klozur CR[®] were injected into one on-site well (Monitoring Well MW-12). Water samples were collected from Monitoring Wells MW-12 and MW-13, and Remediation Well RM-1 prior to and approximately 6 and 8 weeks after the first round of Klozur CR[®] application. Most analytes of concern showed a significant reduction in concentrations. In addition, the dissolved oxygen level in MW-12 was noted to be very high, which confirmed the claim that Klozur CR[®] provides an extended oxygen release for long-term remediation of contaminant plumes in groundwater. Given these positive preliminary pilot test findings, MWH recommended additional rounds of application of Klozur CR[®] chemical oxidant to treat the residual contamination found in the area beneath the USTs.

March 2014. Petroleum compounds were found to exceed GCLs in Monitoring Wells G-1, MW-10, MW-11, MW-12, MW-16, and Remediation Well RM-1. The SVE system remained in operation. The AS system operation was temporarily inactive pending system upgrades.

July 2014. Petroleum compounds were found to exceed GCLs in Monitoring Wells G-5, MW-10, MW-11, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operation. The AS system operation was temporarily inactive pending system upgrades. During July, Remediation Well RM-1 was outfitted with a submersible pump and linked to a series of horizontal injection wells which were positioned at the water table interface along the east and southern periphery of the UST system upgrades at the site. An in-line venturi was installed to aerate water within the remediation system prior to injection.

March 2015. Petroleum compounds were found to exceed GCLs in Monitoring Wells MW-10, MW-11, MW-12, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operation. The operation of the groundwater circulation system was suspended due to mineral deposits or biological growth (related to the abundance of aqueous iron in the system) that fouled the submersible pump and lowered the efficiency of the well screen at the remediation well (RM-1).

July 2015. Petroleum compounds were found to exceed GCLs in Monitoring Wells MW-10, MW-11, MW-12, and MW-16, as well as Remediation Well RM-1. The SVE system remained in operations. Well rehabilitation, by acid treatment, was performed in RM-1 and the south horizontal injection well. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

February 2016. Results of the analytical sampling showed the analytes detected above the GCLs included: DRO in Monitoring Wells MW-10 and MW-13, and gasoline range organics (GRO) in Remediation Well RM-1. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

October 2016. Results of the analytical sampling showed that DRO was detected above the GCL in Monitoring Well MW-10, and benzene and GRO were detected above the GCLs in Remediation Well RM-1. Remediation Well RM-1 was manually injected with NUWELL[™]. Chemical oxidation treatment with the manual injection of Klozur CR[®] product was performed at the southeast and northeast horizontal injection wells.

March 2017. Results of the analytical sampling showed analytes present above the GCLs in Monitoring Wells G-1, G-5, MW-10, MW-11, and MW-12. Analytes in exceedance included benzene, ethylbenzene, xylenes, GRO, and DRO. The SVE system continues to operate within normal parameters. Remediation Well RM-1 remains inactive, following the discovery of a frozen circulation line the last week of November 2016. The AS system is currently inactive pending evaluation of the system.

July 2017. Results of the analytical sampling showed analytes present above the GCLs in Monitoring Wells G-1, MW-11, MW-12, and MW-16. Monitoring Wells G-5 and MW-10 had ice plugs present. The expanded suite of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) for Monitoring Wells MW-11, MW-12, and Remediation Well RM-1 also indicated GCL exceedances. Remediation Wells RM-1 was placed back in operation at 1.4 gallons per minute at 90 pounds per square inch (psi). SVE and AS systems currently inactive.

March 2018. Results of the analytical sampling showed analytes were present above the GCLs in Monitoring Wells G-5, MW-10, MW-11, MW17-1, and MW17-2. Remediation Well RM-1 was shut down during the winter because of the continued power failure of the newly installed heat trace. The SVE and AS systems remain inactive.

September 2018. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW-12, MW17-1, and MW17-2, as well as Remediation Well RM-1. Analytes in exceedance included: BTEX, GRO, DRO, VOCs, and/or PAHs.

Upon arrival at the site, Remediation Well RM-1, for the groundwater recirculation chemox treatment system, was not operating due to freeze damage caused by heat trace failure. The RM-1 well pump was placed back into continuous operation after repairs were made to the water line located in RM-1 manhole.

A chemox solution consisting of 110 pounds of Klozur[®] One, with approximately 800 gallons of clean water, was injected into the two horizontal groundwater injection wells located along the eastern edge of the UST.

March 2019. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-1, G-5, MW-10, MW-11, MW-16, MW 17-1, and MW 17-2. Analytes in exceedance included: BTEX, GRO, and DRO. It is noted that GRO above the GCL was detected in Monitoring Well G-1, which was uncharacteristic since this well has not had an exceedance for GRO in past 17 years of monitoring. This well will be resampled during the semi-annual monitoring event to further assess the groundwater condition in this area of the site.

Upon arrival at the site, Remediation Well RM-1, for the groundwater recirculation chemox treatment system, was operating but was shut off due to debris entering the pump intake. It will be cleaned and restarted after daily air temperatures remain above freezing.

July 2019. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW 17-1, and MW 17-2 and Remediation Well RM-1. Analytes in exceedance included: BTEX; GRO; DRO; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; naphthalene; and 1-methylnaphthalene. It was noted that GRO above the GCL was detected in Monitoring Well G-1 during March 2019 monitoring (an anomaly after 17 years of sampling), and this well was resampled during this semi-annual monitoring event and GRO was found to be under the PQL and the GCL.

October 2019. A high dose chemox solution of 165 lbs of Klozur[®] One to 150 gallons of water was injected into three SVE access lines (SVE-1, SVE-2, and SVE-3) while 110 lbs of Klozur[®] One was injected into the horizontal groundwater injection well on the eastern edge of the UST. The Klozur[®] treatments were then pushed into the formation with more than 1000 gallons of water from RM-2. Analytical sampling of RM-1 and RM-2 was conducted. Analyte levels exceeding ADEC GCLs in RM-2 were Benzene, Ethylbenzene, and Xylene. Analyte levels exceeding ADEC GCLs in RM-1 were Ethylbenzene, Xylene, and GRO.

July and August 2020. RM-1 was turned off in January 2020 due to the system freezing. RM-1 was brought back online July 1, 2020. On July 15, 2020, a chemox solution of 110 lbs of Klozur[®] One to 100 gallons of water was injected into the three SVE access lines and into the horizontal groundwater injection well on the eastern edge of the UST, then pushed into the formation with 150 gallons of water from RM-2 at each point. In total the site was treated with 440 lbs of Klozur[®] One. A leaking fitting on the line feeding the eastern edge of the UST from the freeze up the previous winter was repaired.

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC GCLs in Monitoring Wells G-5, MW-10, MW-11, MW 17-1, and MW 17-2 and Remediation Well RM-1. Analytes in exceedance included: BTEX; GRO; DRO; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; naphthalene; and 1-methylnaphthalene. It was noted that sodium was detected for all locations sampled

After the August 2020 sampling event, a low profile equipment shed was installed over remediation well RM-2. Subsequently plumbing was installed to facilitate recirculated groundwater flow pumped from RM-2 to discharge on a full time and year round basis into the three former SVE horizontal wells located beneath and adjacent to the fuel dispenser islands. Since September 3, 2020, RM-2 had recirculated more than 316,000 gallons of water into the SVE lines prior to the October 14, 2020 sampling event.

October 2020. Stantec conducted a fourth quarter analytical sampling event of Monitoring Wells MW-10, MW-11, MW-12, MW-13, MW-16, MW 17-1, MW 17-2, G-1, and G-5 as well as Remediation Wells RM-1 and RM-2. The groundwater depth measurements indicate the average hydraulic gradient was approximately 0.007 feet per foot directed toward the northwest at 330 degrees. Analytes in exceedance included: benzene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene. It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

On October 15, 2020, a chemical oxidation (chemox) injection with Klozur[®] One of 550 pounds of Klozur[®] combined with 350 gallons of water from RM-2 into five treatment points that was then pushed into the formation with flow from RM-1 and RM-2. The Klozur[®] One injections were into the three soil vapor extraction (SVE) system lines on the western portion of the site and into the two former SVE horizontal lines along the eastern edge of the UST located on the eastern portion of the site. In November 2020, RM-1 shutoff to prevent clogging of the eastern SVE injection lines from the high amount of iron oxide (precipitates and flocculation) noted during the O&M and sampling events in 2020.

March 2021. Stantec conducted a first quarter (semi-annual) analytical sampling event of Monitoring Wells MW-12, MW-13, MW 17-1, MW 17-2, and G-1, as well as Remediation Well RM-1. Results of the March 2021 groundwater analytical sampling showed that analytes detected above ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for all wells tested in the primary groundwater samples were:

- Monitoring well MW 12: Ethylbenzene.
- Monitoring well MW 17-1: Ethylbenzene, xylenes, gasoline range organics (GRO), diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring well MW 17-2: DRO, and naphthalene (non-detect lab reporting level exceeded ADEC GCL).
- Remediation well RM-2: Benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, and naphthalene.

It is noted that analytes levels for RM-2 measurable increased since the August 2020 monitoring event which is interpreted as an indication that the remediation well is capturing the contaminated groundwater plume. Equally important is the finding that the petroleum contaminant levels have

decreased appreciably in MWs 17-1 and 17-2 which may be a positive indication of in-situ treatment with the chemox injection.

Hydraulic gradient and direction of groundwater flow was not calculated for this monitoring event since the pumping level in remediation well RM-2 was not measured to determine the radius of influence.

October 2021. Stantec conducted a fourth quarter (semi-annual) analytical sampling event of Monitoring Wells MW G-1, MW G-5, MW-10, MW-11, MW-12, MW-13, MW-16, MW-17-1, MW-17-2, and Remediation Wells RM-1, and RM-2. Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (updated November 18, 2021) for all wells tested. Monitoring wells and the respective analytes in exceedance of ADEC GCLs included:

- G-1: Naphthalene
- G-5: Benzene, ethylbenzene, 1,2,4-trimethylbenzene (TMB), and naphthalene.
- MW-10: DRO.
- MW-11: Ethylbenzene, xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- MW-12: Ethylbenzene, xylenes, and naphthalene.
- MW-16: DRO.
- MW 17-1: Benzene, toluene, ethylbenzene, xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- MW 17-2: DRO, and naphthalene.
- RM-1: Ethylbenzene, xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- RM-2: Ethylbenzene, and naphthalene.

The professional modeling software program (Surfer[®]) was used to calculate with polynomial regression the average groundwater hydraulic flow across the site. The groundwater gradient was calculated to be approximately 0.002 feet per foot with flow trending toward the north-northeast at 30 degrees presented on **Figure 2**. However, the “pump and treat” remediation system creates large variation in the groundwater elevations across the site. As shown on the groundwater contour map in **Appendix C**, there is a depression of the groundwater table at “pump and treat” remediation wells RM-1 and RM-2 and slight mounding of the groundwater table at MW G-5, and MW-17-2. In conclusion, it is recommended the average gradient and direction of flow across the site as calculated by regression analyses not be applied to the site but rather note the confirmation of flow towards the “pump and treat” wells (RM-1 and RM-2).

On October 14, 2021, Stantec conducted a chemical oxidation (chemox) injection of Klozur[®] One product into five treatment/injection points consisting of SVE-1, SVE-2, SVE-3, NE Injection Well, SE Injection Well. The Klozur[®] One product was mixed with potable water from the retail convenience store. Following the chemox injection, the Klozur[®] One solution was “hydraulically

flushed” into the subsurface formation by injecting additional potable water into several of the wells. In summary, a total of 550 pounds of Klozur[®] One product mixed with 1,100 gallons of potable water plus was injected into the subsurface via the remediation wells during the chemox injection process. In addition, 165 gallons of potable water was used to flush the chemox into the subsurface formation.

May 2022. Stantec conducted the second quarter 2022 Groundwater Monitoring Event that involved the sampling of Monitoring Wells MW G-1, MW G-5, MW-10, MW-11, MW-12, MW-16, MW-17-1, MW-17-2, and Remediation Well RM-2. Several of the well sampled had analytes of concern at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345, Table C (updated September 18, 2019) for all wells tested. Monitoring wells and the respective analytes in exceedance of ADEC GCLs included:

- G-1: Naphthalene
- G-5: Benzene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene (TMB), and naphthalene.
- MW-10: Ethylbenzene, DRO, 1,2,4-TMB, and naphthalene.
- MW-11: Benzene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- MW-12: Ethylbenzene and 1,2,4-TMB.
- MW 17-1: Benzene, toluene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- MW 17-2: Ethylbenzene, total xylenes, GRO, DRO, 1,2,4-TMB, and naphthalene.

The groundwater gradient was calculated to be approximately 0.003 feet per foot with flow trending toward the south-southwest at 198 degrees.

An injection of Klozur[®] One product (chemox) was not completed during the 1st quarter due to the severe winter conditions but is planned for the 2nd quarter in the month of June 2022.

September 2022: On September 20 and 21, 2022, the Stantec team, which included Engineer in Training (EIT) Geoff Moorhead and EIT Leslie Petre, conducted the 4th quarter analytical sampling event of Monitoring Wells G-1, G-5, MW-10, MW-11, MW-12, MW-13, MW-16, MW-17-1, MW-17-2, and Remediation Wells RM-1 and RM-2.

Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (updated September 18, 2019) for all wells except G-1 and MW-10. Monitoring wells and the respective analytes in exceedance of ADEC GCLs included:

- G-5: Benzene, ethylbenzene, total xylenes, GRO, 1,2,4-trimethylbenzene (TMB), and naphthalene.

-
- MW-11: Benzene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
 - MW-12: Benzene, ethylbenzene, 1,2,4-TMB, and naphthalene.
 - MW-13: Benzene and ethylbenzene.
 - MW-16: DRO.
 - MW 17-1: Benzene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
 - MW 17-2: Benzene and DRO.
 - RM-1: Ethylbenzene, total xylenes, GRO, DRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
 - RM-2: Benzene, ethylbenzene, total xylenes, GRO, 1,2,4-TMB, and naphthalene.

During the monitoring event the groundwater flow was determined to be to the north at approximately 345° towards the pump and treat wells (RM-1 and RM-2) with a gradient of 0.006 feet per foot. The groundwater level was not measured in RM-2, making it difficult to determine the effect of the pump's drawdown on the groundwater system.

Monthly between July and October, chemox treatments were conducted which involved the injection of 550 pounds of Klozur® One and 1700 gallons of water from the onsite remediation well into formation to treat in-situ contamination.

April 2023: Results of the analytical sampling showed analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (updated September 18, 2019). Monitoring wells and the respective analytes in exceedance of ADEC GCLs included:

- Monitoring Well G1: Naphthalene.
- Monitoring Well G5: Benzene, ethylbenzene, total xylenes, 1,2,4-TMB, and naphthalene.
- Monitoring Well MW-10: Benzene, ethylbenzene, and naphthalene.
- Monitoring Well MW-12: Ethylbenzene and naphthalene.
- Monitoring Well MW-16: DRO.
- Monitoring Well MW17-1: Benzene, ethylbenzene, total xylenes, DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, and naphthalene.
- Remediation Well RM-2: Benzene, ethylbenzene, total xylenes, and naphthalene.

During the monitoring event, the groundwater flow was determined to be to the north at approximately 200° with a gradient of 0.03 feet per foot. The groundwater level was not measured in RM-2, the well was not used to calculate gradient.

May 2023: Chemox monthly events resumed May 24, 2023, after winter break-up so solution could be mixed without flash freezing prior to injection. Frozen AS Well 4, AS Well 11, and the three former SVE horizontal wells placed beneath the UST tanks reduced the usual site dosage. The May monthly chemox event on this site involve the injection of 8 55-pound bags of Klozur[®] One into the formation. Due to the cold temperatures of the ground water at this site, one bag of the chemical is mixed at a ratio of 1 pound per 2 gallons of water (60 g/L). This is within the manufacturer's suggested range of mixing ratios (50-200 g/L). The site treatment of chemox product involved 450 pounds of Klozur[®] diluted with more than 900 gallons of water sourced from remediation well RM-2 and applied to the site as follows:

- AS Well 12: 440 gallons of chemox solution followed by 220 gallons of water.
- Northern 4" injection well on east site of UST tanks: 220 gallons of chemox solution followed by 110 gallons of water.
- Southern 4" injections well on east side of UST tanks: 220 gallons of chemox solution. RM-2 was then used to return flow through this injection well at a rate of 2 gpm.

APPENDIX B

Field Methods and Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

Tesoro North Store 111 (3679 College Road, Fairbanks, Alaska)

The following table presents the proposed tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2023 Corrective Action Work Plan. The scope of these tasks is based on the results and findings of the monitoring and remediation completed to date at Tesoro North Store 111, ADEC Facility ID #1112; ADEC File #100.26.026.

2023 Work Plan Schedule for Tesoro North Store 111

Work Plan Tasks for 2022		1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
Task 1	Monitoring Wells: MW-11, MW-12, MW-13, MW-16, MW-10, G1, G5,	V, G, D, P, I & S		V, G, D, P, I & S	
	MW17-1, MW17-2, and Recirculation/Remediation Wells: RM-1 and RM-2	V, G, D, P, I & S	V, G, D, P, I & S	V, G, D, P, I & S	V, G, D, P, I & S
Task 2	O&M Groundwater Recirculation Wells RM-1 & RM-2	✓	✓	✓	✓
Task 3	Chemical Oxidation Treatment	✓	✓	✓	✓
Task 4	Installation of 4” diameter Chemox Injection Wells in Manholes at Former Air Sparge Wells	✓	✓	✓	

Key:

- AK – Alaska Test Method
- D – Diesel range organics by AK102.
- E – Drinking water parameters by EPA Method 524.1.
- G – Gasoline range organics by AK101.
- I – Intrinsic indicators include: dissolved oxygen, specific conductance, oxygen-reduction potential, pH, and temperature.
- O&M – Operation and Maintenance
- P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds associated with petroleum fuel, by EPA Test Method 8270D Selective Ion Monitoring (SIM).
- S – Sodium analyzed by Metals (ICP) Method 6010C.
- V – Volatile organic compounds by EPA Test Method 8260C.

- Task 1 – Groundwater Monitoring

Monitoring of the on-site groundwater monitoring wells will be conducted on a variable frequency as outlined in 2023 Work Plan Schedule shown above. Sampling schedules, well locations and analyses are referenced in the 2023 Work Plan Schedule.

- Task 2 – O&M Groundwater Recirculation Wells RM-1 & RM-2

Perform quarterly maintenance on the remediation system, which consists of the existing 4-inch diameter recirculation/remediation wells RM-1 and RM-2. These wells are used as part of a pump and treat system to remediate the soil and groundwater beneath the existing USTs and fuel dispenser islands the injection of a chemical oxidant (see below Task 3).

The submersible pumps for the two pump and treat systems will run continuously (24-hours per day) subject to acceptable groundwater table levels for operation of the pumps. The pumping systems for both wells are monitored daily for electrical usage, water pressure and water line temperature with iMonnit® wireless sensors and the equipment checked monthly with maintenance that will be provided on an as need basis. The iMonnit® wireless based remote monitoring system uses a wireless broadband network via cellular internet.

- Task 3 – Chemical Oxidation Treatment

Stantec proposes to provide chemical oxidation (chemox) treatment of the petroleum contaminated soil and groundwater into the three existing horizontal injection lines located beneath the fuel dispenser islands and the two injection lines located on the east side of the USTs. The chemox injection system in the vicinity of the fueling islands will be expanded in 2023 as described below in Task 4. The injection of chemox will occur in all quarters of the year. Subject to suitable (non-freezing) weather conditions, Stantec will attempt to inject chemox monthly throughout the year.

A total of five hundred (500) gallons of a prepared solution of the chemical oxidant Klozur One® (a chemical mixture consisting primarily of sodium persulfate) will be injected into the five existing horizontal injection lines with a dose of 100 gallons per injection well. The chemox mixture for each well will consist of 110 pounds Klozur One® mixed with approximately 100 gallons of water pumped from RM-2 well. The horizontal injection well located along the northeast edge of the USTs will receive an additional 200 gallons of water pumped from RM-2 well to provide a “hydraulic push” to distribute the chemox solution into the surrounding formation. The other four injection lines are continuously dosed with recirculated groundwater discharged from wells RM-1 & RM-2. The on-site monitoring wells will be sampled quarterly as outlined in Task 1 to assess treatment impact on the groundwater table. The remediation/recirculation wells will be sampled on a quarterly basis. Also, the groundwater monitoring wells will be sampled for sodium to assess the distribution of the chemical oxidant.

- Task 4 – Installation of 4” diameter Chemox Injection Wells in Manholes at Former Air Sparge Wells

The purpose of this task is to make site modifications to improve the operation and distribution of the chemox pump and treat system in the vicinity of the fueling islands. The changes described below will be made to the underground plumbing system that receives and distributes the discharge of the groundwater from recirculation/remediation well RM-2. The existing air sparge line to each of the 5 AS wells (AS-1, AS-4, AS-11, AS-12, and AS-14) that were found to be functional under Task 4 in the 2022 CAP (described above) will be connected to the existing plumbing system that receives the discharge of flow from the recirculation/remediation well RM-2. The 2-inch diameter abandoned AS wells will be decommissioned and replaced with shallow (15-foot deep) 4-inch diameter screened wells for the injection of chemox and recirculation of groundwater discharged from RM-2.

A detailed work plan for the implementation of this task will be prepared by Stantec during the first quarter of 2023. The work plan will be submitted to the ADEC for approval prior to the execution of work on this task.

The Corrective Action Work Plan for the year 2023 will be implemented by Stantec on behalf of Tesoro North Store. Groundwater monitoring will be conducted to track migration and trends of contaminants that are present at the site.

All sampling activities will be completed in accordance with ADEC’s *Underground Storage Tanks Procedures Manual– Standard Sampling Procedures* (March 22, 2017). The methods that will be used for conducting a monitoring event, unless otherwise noted in the monitoring report, will include:

- The static water levels in the monitoring wells will be measured with respect to the top of each well casing. The elevation of the static water level will be based on an arbitrary datum established on-site during a vertical control survey that will be completed by Stantec on an annual basis. The survey will be performed during the summer after the seasonal frost layer thaws.
- The monitoring wells will be purged of a minimum of three well bore volumes prior to collecting the water samples. A new, disposable, Teflon® bailer will be used to sample each well. The first bail of water removed from each well will be examined for petroleum odor, sheen, and any other unique physical features.
- Water samples will be collected in laboratory-supplied sample containers. The samples will be delivered to an ADEC-approved laboratory in accordance with standard chain-of-custody procedures.
- Additional water samples will be collected from the monitoring wells after the well has been

purged, as described above, and tested in the field for chemical and physical intrinsic parameters listed in the 2023 Work Plan Schedule shown above.

APPENDIX C

Field Measurements and Notes

Site Name: TNS #111

Date: 04/25/2023, 6:38 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
G1			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)	Longitude (decimal)	Weather	
64.8553835	-147.8116683		

Analytical Parameters	Bottles to be filled
BTEX	3 X 40 mL Clear VOAs
Iron - Total	1 X 250 mL Poly
DRO	2 X 100 mL Amber
GRO	3 X 40 mL Amber VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
18:15	14.66													

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

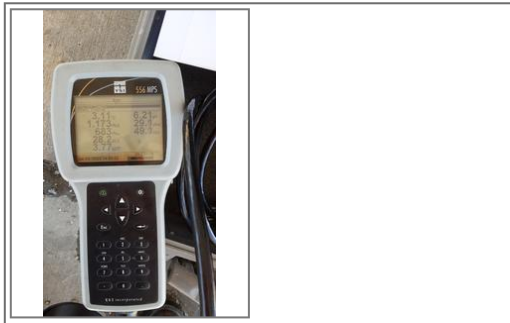
Site Name: TNS #111

Date: 04/25/2023, 2:30 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)	
G5				
TOC	Well Dia. (in)	Screen Length (ft)	Well Material	
Latitude (decimal)		Longitude (decimal)		Weather
64.8554093		-147.8125274		

Analytical Parameters	Bottles to be filled
Iron - Total	1 X 250 mL Poly
BTEX	3 X 40 mL Clear VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
DRO	2 X 100 mL Amber
GRO	3 X 40 mL Amber VOAs



Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
14:17	14.81	X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023, 8:53 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW17-1			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)	Longitude (decimal)		Weather
64.8554663	-147.8121813		

Analytical Parameters	Bottles to be filled
DRO	2 X 100 mL Amber
BTEX	3 X 40 mL Clear VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
GRO	3 X 40 mL Amber VOAs
Iron - Total	1 X 250 mL Poly

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
18:49	15.23	X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW17-2			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)		Longitude (decimal)	Weather
64.8555969		-147.8123578	

Analytical Parameters	Bottles to be filled
Iron - Total	1 X 250 mL Poly
BTEX	3 X 40 mL Clear VOAs
DRO	2 X 100 mL Amber
GRO	3 X 40 mL Amber VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs



Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
		X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023, 3:08 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-10			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)		Longitude (decimal)	Weather
64.8554886		-147.8125431	

Analytical Parameters	Bottles to be filled
GRO	3 X 40 mL Amber VOAs
BTEX	3 X 40 mL Clear VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
DRO	2 X 100 mL Amber
Iron - Total	1 X 250 mL Poly

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
14:50	14.8	X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

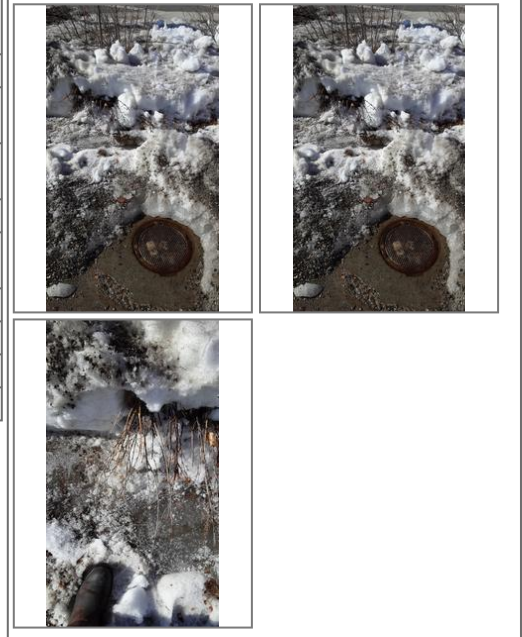
Site Name: TNS #111

Date: 04/25/2023

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-11			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)		Longitude (decimal)	
64.8555124		-147.8124959	
Weather			

Analytical Parameters	Bottles to be filled
DRO	2 X 100 mL Amber
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
GRO	3 X 40 mL Amber VOAs
Iron - Total	1 X 250 mL Poly
BTEX	3 X 40 mL Clear VOAs



Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
		X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023, 5:53 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-12			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)	Longitude (decimal)	Weather	
64.8555648	-147.8118883		

Analytical Parameters	Bottles to be filled
GRO	3 X 40 mL Amber VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
DRO	2 X 100 mL Amber
Iron - Total	1 X 250 mL Poly
BTEX	3 X 40 mL Clear VOAs

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
17:28	12.44	X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-13			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)		Longitude (decimal)	Weather
64.8556153		-147.8120686	

Analytical Parameters	Bottles to be filled
GRO	3 X 40 mL Amber VOAs
DRO	2 X 100 mL Amber
BTEX	3 X 40 mL Clear VOAs
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
Iron - Total	1 X 250 mL Poly



Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Date: 04/25/2023, 4:45 PM

Name(s): _____

Site Name: TNS #111

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
MW-16			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)		Longitude (decimal)	Weather
64.8556232		-147.8117198	

Analytical Parameters	Bottles to be filled
Iron - Total	1 X 250 mL Poly
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
BTEX	3 X 40 mL Clear VOAs
DRO	2 X 100 mL Amber
GRO	3 X 40 mL Amber VOAs

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
16:27	13.94	X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ Gal

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

Site Name: TNS #111

Date: 04/25/2023, 5:05 PM

Name(s): _____

Well ID	Free Product (ft)	Water (ft)	Bottom (ft)
RM-2			
TOC	Well Dia. (in)	Screen Length (ft)	Well Material
Latitude (decimal)	Longitude (decimal)	Weather	
64.855587	-147.812377		

Analytical Parameters	Bottles to be filled
DRO	2 X 100 mL Amber
cPAHs, including Naphthalene	2 X 40 mL Amber VOAs
GRO	3 X 40 mL Amber VOAs
Iron - Total	1 X 250 mL Poly
BTEX	3 X 40 mL Clear VOAs



QA/QC: Duplicate #1

Type/Model Meter Used: _____
 Calibrated: (date) _____ (time) _____
 Cell Vol: _____
 Type/Model Pump Used: _____
 Pump Intake? _____ ft
 Above / Below Bottom / TOC

Time	Depth to Water (ft)	Flow Rate (ml/Min)	pH		Conductivity (ms/cm)		Turbidity (NTU)		Dissolved O2 (mg/l)		Temp. (Celsius)		Oxygen Reduction Potential (ORP) mv	
			Reading	Change* (±0.1)	Reading	Change* (±3%)	Reading	Change* (±10% or <5)	Reading	Change* (±10% or <0.5)	Reading	Change* (±3%)	Reading	Change* (±10mv)
17:03		X												

Sample Collected? _____ Time _____ Total Pumped from Well? _____ L

NOTES / COMMENTS:

*Minimum pumping time 15 Mins. - Collect data every 3 mins once flow through cell is full or once every volume of the flow through cell based on flow rate, which ever is longest. Indicator Parameters Have Stabilized When 3 Consecutive Readings Are Within: ± 0.1 for pH; ± 3% for Specific Conductivity and Temperature; ± 10 mv for ORP; and ± 10% for Turbidity (when Turbidity is above 5 NTUs) or 3 readings less than 5.0 NTUs; ± 10% mg/l Dissolved Oxygen (when Dissolved Oxygen is above 0.5mg/l) or 3 readings less than 0.5 mg/l.

APPENDIX D

Tables of Historical Monitoring Data

	<i>Well Screen Interval</i>	<i>Ground Water Elevation</i>	<i>124-TMB</i>	<i>135-TMB</i>	<i>Benzene</i>	<i>DRO</i>	<i>EDB</i>	<i>Ethylbenzene</i>	<i>GRO</i>	<i>Lead</i>	<i>Naphthalene</i>	<i>Sodium</i>	<i>Toluene</i>	<i>Xylenes</i>
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
G1														
12/20/1995	--	414.48	--	--	1.54	--	--	0.56	--	--	--	--	1.26	2.53
05/16/1996	--	415.71	--	--	5.90	--	--	1.80	--	--	--	--	3.90	8.20
12/09/1996	--	--	--	--	2.10	--	--	0.73	--	--	--	--	2.10	3.10
03/20/1997	--	--	--	--	2.10	--	--	0.81	--	--	--	--	2.50	4.30
11/18/1997	--	415.22	--	--	4.91	--	--	1.89	--	--	--	--	4.21	8.00
05/01/1998	--	--	--	--	4.83	5.03	--	2.18	60.0	--	--	--	6.67	10.13
10/14/1998	--	416.35	--	--	5.04	4.37	--	1.80	43.0	--	--	--	3.81	7.47
05/27/1999	--	415.3	--	--	4.34	5.46	--	1.94	43.0	--	--	--	5.02	8.89
11/05/1999	--	415.48	--	--	2.59	3.16	--	1.01	23.0	--	--	--	1.74	3.89
04/17/2000	--	414.06	--	--	3.12	5.90	--	1.64	46.0	--	--	--	3.77	7.14
10/26/2000	--	417.48	--	--	3.04	2.19	--	1.15	23.0	--	--	0.596		3.39
05/30/2001	--	413.6	--	--	1.59	2.61	--	0.727	17.0	--	--	0.158		1.87
05/01/2002	--	414.52	--	--	1.30	1.84	--	0.683	8.60	--	--	0.03710		1.51
08/19/2002	--	417.79	--	--	0.89	1.41	--	0.774	13.5	--	--	0.05880		1.465
11/05/2002	--	417.06	--	--	0.06160	U (0.5)	--	0.0084500	0.787	--	--	U (0.002)	0.06660	
03/19/2003	--	416.18	--	--	0.0076500	0.509	--	U (0.002)	U (0.09)	--	--	U (0.002)	0.0024200	
08/05/2003	--	418.33	--	--	0.11	U (0.32)	--	0.101	1.30	--	--	0.0020900	0.0620	
03/08/2004	--	414.92	--	--	0.0097900	U (0.37)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.001)	
09/15/2004	--	416.65	--	--	0.0020600	U (0.385)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
01/10/2005	--	414.58	--	--	0.03270	U (0.388)	--	0.000623000	0.134	--	--	U (0.0005)	U (0.0015)	
07/15/2005	--	417.94	--	--	0.06260	U (0.391)	--	0.04450	0.426	--	--	U (0.0005)	0.0035400	
02/16/2006	--	414.54	--	--	0.0040600	U (0.397)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
07/27/2006	--	417.37	--	--	0.02220	U (0.397)	--	0.01040	0.163	--	--	0.000805000	0.0021700	
03/02/2007	--	414.59	--	--	0.0015900	U (0.424)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
10/17/2007	--	416.88	--	--	U (0.0005)	U (0.403)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
06/05/2008	--	415.81	--	--	0.0061400	0.877	--	U (0.0005)	0.0820	--	--	U (0.0005)	0.0037900	
09/29/2008	--	417.21	--	--	U (0.0005)	U (0.435)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
02/25/2009	--	414.48	--	--	U (0.0005)	U (0.417)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
07/21/2009	--	416.75	--	--	0.0060100	U (0.397)	--	U (0.001)	0.09540	--	--	U (0.001)	0.0036300	
03/17/2010	--	414.03	--	--	U (0.001)	U (0.431)	--	U (0.001)	U (0.05)	--	--	U (0.001)	U (0.002)	
09/15/2010	--	416.56	--	--	U (0.0005)	U (0.385)	--	0.0092600	0.15	--	--	U (0.0005)	0.06190	
03/22/2011	--	413.97	--	--	U (0.0005)	0.657	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
09/01/2011	--	417.44	--	--	0.002900	U (0.410)	--	U (0.0005)	0.07190	--	--	0.000601000	U (0.0015)	
03/13/2012	--	414.37	--	--	U (0.0005)	U (0.446)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
07/23/2012	--	417.01	--	--	0.01340	U (0.397)	--	U (0.0010)	0.263	--	--	U (0.0010)	U (0.0030)	
02/21/2013	--	414.26	--	--	U (0.0005)	U (0.431)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
08/13/2013	--	416.5	--	--	0.0062100	U (0.413)	--	U (0.0005)	U (0.05)	--	--	0.000688000	U (0.0015)	
03/18/2014	--	414.38	--	--	U (0.0005)	U (0.403)	--	U (0.0005)	U (0.05)	--	--	U (0.0005)	U (0.0015)	
07/31/2014	--	419.66	--	--	0.002600	0.67	--	0.002200	0.0560	--	--	U (0.001)	U (0.001)	

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
03/03/2015	--	415.09			U (0.0005)	U (0.45)		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
07/27/2015	--	416.21			U (0.00054)	0.25		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
02/23/2016	--	415.25			U (0.001)	U (0.11)		U (0.001)	U (0.05)				U (0.001)	U (0.001)
10/06/2016	--	418.73			U (0.001)	0.24		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/16/2017	--	414.96			0.005800	0.60		U (0.003)	U (0.05)				U (0.002)	U (0.002)
03/29/2018	--	414.63			0.004100	0.76		U (0.003)	U (1)				U (0.002)	U (0.002)
09/07/2018	--	418.62			0.002400	0.28		U (0.001)	U (0.15)				U (0.001)	U (0.002)
03/12/2019	--	415.23			U (0.003)	0.33		U (0.003)	9.40				U (0.002)	U (0.003)
07/29/2019	--	416.29			U (0.003)	0.30		U (0.003)	U (0.25)				U (0.002)	U (0.003)
08/03/2020	--	419.66			0.000817000	U (0.800)		U (0.001)	0.01090				U (0.001)	U (0.003)
10/14/2020	--	418.84			0.01340	0.362		0.000186000	U (0.10)			0.000615000	0.000653000	
03/30/2021	--	415.54			0.0014100	0.256		U (0.001)	0.0194 BJ				U (0.001)	U (0.003)
07/22/2021	--	--			U (0.0200)	2.78		0.608	10.2				0.124	3.43
10/12/2021	--	417.96			0.0010200	0.704 J		U (0.001)	0.04270				U (0.001)	0.000267 J
05/17/2022	--	418.0	0.0010600	0.0019200	0.0024200	0.586		0.0029300	0.08290		0.0017300	78.1	U (0.00100)	0.0010900
09/21/2022	--	417.47	U(0.00100)	U(0.00100)	0.000813000	0.367		U(0.00100)	U(0.100)		0.000752000	78.5	U(0.00100)	U(0.00300)
04/27/2023	--	--	U(0.00100)	U(0.00100)	0.0011400	0.566		U(0.00100)	U(0.500)		0.0042800	95.1	0.000317000	0.000201000
G2														
12/20/1995	--	414.49			0.0690			U					U	U
05/16/1996	--	415.74			0.20			U					U	U
08/15/1996	--	416.57			0.32			U					U	U
12/09/1996	--	415.42			0.14			U					U	U
03/20/1997	--	414.4			0.00200			U					U	U
08/15/1997	--	415.88			0.02530			U	0.0770				U	U
11/18/1997	--	415.2			U			U	U				U	0.0016900
05/01/1998	--	414.35			0.0052300	0.221		U	U				U	0.0013900
10/14/1998	--	416.55			0.03180	0.248		U	0.0760				U	0.0013500
05/27/1999	--	415.27			U	0.345		U	U			0.0062400	U	0.0032600
11/05/1999	--	415.47			0.05140	U		U	0.13				U	U
04/17/2000	--	414.12			0.0074900	U		U	U				U	U
10/26/2000	--	417.44			0.005100	U		U	U			0.003200	U	0.0075900
05/30/2001	--	413.58			U	U		U	U				U	U
12/13/2001	--	413.04			U	U		U	U				U	U
05/01/2002	--	414.52			U	U		U	U				U	U
08/19/2002	--	417.79			0.000596000	U (0.505)		U (0.002)	U (0.09)				U (0.002)	U (0.002)
11/05/2002	--	416.99			U (0.0005)	U (0.5)		U (0.002)	U (0.09)				U (0.002)	U (0.002)
07/22/2021	--	--			0.07630	2.14		0.728	8.01				0.145	2.27
G3														
04/01/1999	--	--			U	U		U	U				0.00100	U
05/27/1999	--	--			U	0.413		U	U				U	U

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
11/05/1999	--	--	—	—	U	0.883	—	U	U	—	—	—	U	U
04/17/2000	--	--	—	—	U	—	—	U	U	—	—	—	U	U
10/26/2000	--	--	—	—	U	—	—	U	U	—	—	—	U	U
05/30/2001	--	--	—	—	0.00029000	—	—	0.000718000	—	—	—	—	U	0.00185500
12/13/2001	--	--	—	—	0.00064000	—	—	U	U	—	—	—	U	U
08/19/2002	--	--	—	—	U (0.0005)	U (0.505)	—	U (0.002)	U (0.09)	—	—	—	U (0.002)	0.0024100
G4														
04/01/1999	--	--	—	—	U	—	—	U	U	—	—	—	U	U
05/27/1999	--	--	—	—	U	—	—	U	U	—	—	—	U	U
11/05/1999	--	--	—	—	U	—	—	U	U	—	—	—	U	U
04/17/2000	--	--	—	—	U	—	—	U	U	—	—	—	U	U
10/26/2000	--	--	—	—	U	—	—	U	U	—	—	—	U	U
05/30/2001	--	--	—	—	U	—	—	U	U	—	—	—	U	0.00100
12/13/2001	--	--	—	—	U	—	—	U	U	—	—	—	U	U
08/19/2002	--	--	—	—	0.000545000	U (0.5)	—	U (0.002)	U (0.09)	—	—	—	U (0.002)	0.0036600
G5														
05/30/2001	--	412.59	—	—	12.4	6.47	—	2.10	107	—	—	—	11.5	9.90
12/13/2001	--	413.22	—	—	6.21	3.05	—	1.71	72.8	—	—	—	8.71	12.74
05/01/2002	--	414.55	—	—	11.9	6.75	—	1.95	83.4	—	—	—	7.70	15.1
08/19/2002	--	417.8	—	—	12.9	7.85	—	2.00	86.6	—	—	—	7.31	8.53
11/05/2002	--	417.05	—	—	5.70	7.17	—	1.38	41.9	—	—	—	4.37	6.70
03/19/2003	--	416.19	—	—	2.46	7.55	—	0.741	30.0	—	—	—	1.75	5.25
08/05/2003	--	418.76	—	—	5.07	5.78	—	0.943	47.5	—	—	—	2.99	6.41
03/08/2004	--	414.93	—	—	0.0025400	3.45	—	0.0010400	0.126	—	—	0.0049500	—	0.03270
09/15/2004	--	416.64	—	—	0.0057700	1.84	—	0.000506000	0.0610	—	—	0.0012600	—	0.0046700
01/10/2005	--	414.8	—	—	U (0.0005)	1.22	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
07/15/2005	--	417.83	—	—	U (0.0005)	1.19	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
02/16/2006	--	414.48	—	—	U (0.0005)	1.08	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
07/27/2006	--	417.09	—	—	U (0.0005)	0.865	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
03/02/2007	--	414.24	—	—	U (0.0005)	1.03	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
10/17/2007	--	416.22	—	—	0.000837000	3.44	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
06/05/2008	--	415.73	—	—	U (0.0005)	1.10	—	0.0045200	0.112	—	—	U (0.0005)	—	0.03160
09/29/2008	--	417.2	—	—	U (0.0005)	1.66	—	0.0045800	0.07940	—	—	U (0.0005)	—	0.01030
02/25/2009	--	414.45	—	—	0.00068000	1.30	—	0.05790	2.53	—	—	0.00053000	—	0.174
07/21/2009	--	416.73	—	—	0.001800	1.27	—	U (0.001)	U (0.05)	—	—	U (0.0010)	—	U (0.003)
03/17/2010	--	413.98	—	—	0.0130	0.961	—	0.19	4.40	—	—	0.001400	—	0.37
09/15/2010	--	416.59	—	—	0.08490	1.10	—	0.0027900	0.287	—	—	0.000886000	—	0.01490
03/22/2011	--	413.96	—	—	U (0.0005)	1.04	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
09/01/2011	--	417.44	—	—	0.0033100	0.898	—	U (0.0005)	U (0.05)	—	—	U (0.0005)	—	U (0.0015)
03/13/2012	--	414.37	—	—	0.03070	1.02	—	0.113	3.63	—	—	0.0034600	—	0.23

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
07/23/2012	--	416.9			0.0019900	0.571		U (0.0010)	U (0.05)				U (0.0010)	U (0.0030)
08/13/2013	--	416.5			U (0.0005)	0.884		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
03/18/2014	--	414.36			0.0250	0.778		0.07390	2.44				0.0061200	0.161
07/31/2014	--	419.24			0.49	1.40		0.0710	2.20				0.006400	0.21
03/03/2015	--	414.58			U (0.0005)	0.43		U (0.0005)	U (0.05)				U (0.0005)	0.001500
07/27/2015	--	416.18			0.92	1.40		0.59	10.0				0.57	1.10
02/23/2016	--	415.19			U (0.001)	0.21		U (0.001)	U (0.05)				U (0.001)	U (0.001)
10/06/2016	--	418.75			U (0.001)	0.95		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/16/2017	--	414.93			0.27	1.30		0.56	7.90				0.36	1.91
03/29/2018	--	414.68			0.38	1.60		0.72	14.0				0.30	2.27
09/07/2018	--	418.68			0.61	2.40		0.51	7.40				0.91	1.92
03/13/2019	--	415.24			0.11	1.20		0.39	5.80				0.0110	1.05
07/30/2019	--	416.31			U (0.15)	1.20		0.18	2.90				U (0.1)	0.71
08/04/2020	--	419.57			0.114	1.07		0.123	0.712				0.000683000	0.124
10/14/2020	--	418.67			0.001600	2.16		0.01480	0.251				0.0051300	0.0790
10/12/2021	--	419.21			0.0060700	1.42		0.06610	0.909				0.000300 J	0.09280
05/17/2022	--	417.95	0.06810	0.0039900	0.04620	1.46		0.315	1.45		0.03970	66.8	0.178	0.258
09/20/2022	--	417.59	0.122	0.04460	0.04760	1.05		0.266	2.89		0.03570	61.5	0.0200	0.666
04/27/2023	--	--	0.285	0.02450	0.01910	1.21		0.232	1.23		0.03990	79.9	0.00088000	0.233
G6														
05/30/2001	--	--			U	U		U	U				U	U
12/13/2001	--	--			U	U		U	U				U	U
08/19/2002	--	--			U (0.0005)	U (0.505)		U (0.002)	U (0.09)				U (0.002)	U (0.002)
G9														
11/07/2003	--	--			U (0.0005)	U (0.32)		U (0.0005)	U (0.08)				U (0.0005)	U (0.001)
03/08/2004	--	--			U (0.0005)	U (0.37)		U (0.0005)	U (0.05)				U (0.0005)	U (0.001)
09/15/2004	--	--			U (0.0005)	U (0.385)		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
MW17-1														
03/29/2018	--	--			2.90	6.00		1.20	U (100)				6.60	8.50
09/07/2018	--	--			0.18	4.80		3.30	80.0				26.0	18.0
03/14/2019	--	415.28			3.00	3.30		1.70	47.0				7.40	7.40
07/30/2019	--	416.35			0.36	3.90		3.40	88.0				9.20	14.9
08/04/2020	--	419.63			0.126	2.78		3.47	61.1				22.5	13.8
10/15/2020	--	418.92			0.0231 J	4.03		0.305	5.90				0.254 J	2.10
03/30/2021	--	415.86			0.000535 J	2.66		0.04010	2.59				U (0.001)	0.178
10/12/2021	--	417.63			1.61 Q	3.68		1.03 E	30.9				5.27 Q	3.69
05/17/2022	--	417.95	1.53	0.315	0.582	7.43		3.03	30.8		0.241	60.3	1.63	9.48
09/21/2022	--	417.52	0.761	0.172	0.36	4.20		1.41	15.0		0.138	117	0.313	4.20
10/26/2022	--	417.18			0.05850	4.44	0.000241000	0.603	6.34	1.06	0.06240	143	0.04040	1.62
04/27/2023	--	--	0.845	0.152	0.174	4.14		1.22	13.4		0.09230	81.9	0.157	3.20

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
MW17-2														
03/29/2018	--	--	--	--	U (0.30)	12.0	--	U (0.30)	22.0	--	--	--	2.70	2.11
09/07/2018	--	--	--	--	0.18	15.0	--	0.66	17.0	--	--	--	3.20	4.50
03/14/2019	--	415.28	--	--	0.0470	10.0	--	0.0940	4.20	--	--	--	0.94	1.49
07/29/2019	--	416.35	--	--	U (0.15)	8.50	--	0.50	16.0	--	--	--	1.80	3.90
08/04/2020	--	419.67	--	--	0.05050	20.5	--	0.236	5.03	--	--	--	0.477	415
10/15/2020	--	418.62	--	--	0.00395 J	8.25	--	0.05080	0.601	--	--	--	0.02350	0.218
03/30/2021	--	415.35	--	--	0.000952 J	7.78	--	0.01320	0.309	--	--	--	U (0.001)	0.02640
10/12/2021	--	418.57	--	--	0.00157 J	3.22	--	0.00324 J	0.0560 B,J	--	--	--	0.005900	0.0107 J
05/17/2022	--	418.02	0.241	0.06790	0.0032500	7.44	--	0.618	4.50	--	0.02690	70.9	0.0041700	1.50
09/21/2022	--	417.49	0.0020800	0.000324000	0.03270	3.13	--	0.0070200	0.194	--	0.000392000	206	0.001100	0.01980
10/26/2022	--	417.16	--	--	0.04850	1.76	0.000951000	0.0063800	0.227	0.145	U	146	0.000738000	0.01930
MW-10														
03/10/1994	--	418.07	--	--	19.0	--	--	2.30	--	--	--	--	24.0	19.0
09/09/1994	--	419.89	--	--	15.2	--	--	0.90	--	--	--	--	18.0	14.9
12/12/1994	--	418.1	--	--	16.7	--	--	2.10	--	--	--	--	20.0	15.5
08/15/1997	--	415.92	--	--	8.30	--	--	1.16	77.0	--	--	--	14.4	9.35
05/27/1999	--	415.09	--	--	6.88	12.8	--	1.35	64.0	--	--	--	13.4	7.17
04/17/2000	--	413.89	--	--	1.86	5.84	--	0.887	35.0	--	--	--	7.06	3.47
10/26/2000	--	417.44	--	--	1.88	9.04	--	0.914	39.7	--	--	--	7.20	5.53
12/13/2001	--	413.14	--	--	2.70	10.1	--	1.59	53.8	--	--	--	9.60	7.73
05/01/2002	--	414.55	--	--	0.01220	1.96	--	0.01370	1.10	--	--	--	0.007400	0.117
08/19/2002	--	417.86	--	--	1.92	15.9	--	0.664	27.5	--	--	--	3.55	3.512
11/05/2002	--	417.06	--	--	0.04560	6.78	--	0.03680	1.70	--	--	--	0.0053300	0.1189
03/19/2003	--	416.21	--	--	0.477	12.9	--	0.319	8.80	--	--	--	0.313	1.404
08/05/2003	--	418.43	--	--	2.54	17.6	--	0.876	61.8	--	--	--	8.79	7.09
03/08/2004	--	414.92	--	--	0.198	10.3	--	U (0.025)	12.8	--	--	--	0.912	2.89
09/15/2004	--	416.64	--	--	0.08020	6.01	--	0.04970	2.06	--	--	--	0.0023400	0.446
07/15/2005	--	417.82	--	--	0.416	14.9	--	0.513	25.6	--	--	--	3.37	3.63
07/27/2006	--	417.06	--	--	0.413	16.3	--	0.714	32.5	--	--	--	5.30	4.88
03/02/2007	--	414.23	--	--	0.203	8.80	--	0.545	32.8	--	--	--	2.33	3.90
10/17/2007	--	416.47	--	--	0.0032400	6.43	--	0.01050	1.15	--	--	--	0.0010200	0.04060
06/05/2008	--	415.69	--	--	0.23	10.2	--	1.18	38.4	--	--	--	2.90	8.14
09/29/2008	--	417.2	--	--	0.0013900	3.67	--	0.0120	1.18	--	--	--	0.0040300	0.07770
02/25/2009	--	--	--	--	0.07780	30.3	--	1.18	43.4	--	--	--	2.70	8.89
07/21/2009	--	416.71	--	--	0.0140	11.8	--	1.26	47.3	--	--	--	1.77	12.2
03/17/2010	--	413.98	--	--	0.002700	16.2	--	1.20	92.0	--	--	--	1.50	9.50
09/15/2010	--	416.6	--	--	0.0063500	21.3	--	0.776	16.2	--	--	--	0.09020	4.06
03/22/2011	--	414.01	--	--	0.0042500	17.4	--	0.678	16.0	--	--	--	0.01950	3.15
09/01/2011	--	417.49	--	--	0.0067300	30.5	--	0.498	22.5	--	--	--	0.09080	3.00

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
03/13/2012	--	414.42			U (0.010)	10.3		0.118	4.24				U (0.010)	0.679
07/23/2012	--	416.97			0.0022600	2.57		0.0016100	0.32				0.001200	U (0.0030)
02/21/2013	--	414.24			0.000877000	4.55		0.0070200	2.69				0.0015600	0.166
08/13/2013	--	416.54			0.0024500	10.3		0.02160	1.59				0.0045500	0.07550
03/19/2014	--	414.3			0.000642000	7.82		0.01450	1.98				0.0040400	0.119
07/31/2014	--	419.65			0.0110	10.0		0.0470	5.00				0.002400	1.20
03/03/2015	--	414.98			0.00067000	3.20		0.00200	0.23				U (0.0005)	0.006300
07/27/2015	--	416.16			0.001200	4.00		0.003700	0.65				0.00200	0.0110
02/23/2016	--	415.2			U (0.001)	2.70		U (0.001)	U (0.05)				U (0.001)	U (0.001)
10/06/2016	--	418.72			U (0.001)	2.30		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/16/2017	--	414.92			0.0110	6.70		0.16	3.70				0.002700	0.489
03/29/2018	--	414.6			0.0220	13.0		0.35	9.60				0.0100	1.30
09/07/2018	--	418.69			0.0270	13.0		0.27	5.20				0.005200	1.283
03/13/2019	--	415.23			0.0160	8.00		0.21	3.50				U (0.002)	0.726
07/29/2019	--	416.33			U (0.15)	13.0		0.20	5.60				U (0.1)	0.82
08/04/2020	--	419.74			0.05770	1.90		0.597	4.20				0.142	1.89
10/15/2020	--	418.63			0.0050600	1.74		0.06490	1.12				0.03870	0.198
10/12/2021	--	417.98			0.000209 J,Q	2.43		0.00142 J	0.280 B,J				U (0.005)	0.00214 J
05/17/2022	--	418.01	0.06940	0.01850	0.0014700	3.65		0.03180	0.858			0.0028600	68.8	0.00300
09/20/2022	--	417.45	0.02010	0.0059600	0.002100	1.34		0.0095500	0.105			0.001500	111	0.000407000
04/27/2023	--	--	0.02660	0.0071800	0.0072900	1.43		0.02070	0.568			0.0041500	80.5	0.000835000
MW-11														
09/28/2012	--	416.27			0.235	19.4		0.873	40.3				0.594	5.52
02/21/2013	--	414.26			0.01770	5.72		1.61	41.1				0.0070700	7.20
08/13/2013	--	416.53			0.257	7.79		0.60	5.45				0.01520	1.15
03/19/2014	--	414.33			0.09330	14.1		0.915	22.1				0.05480	3.28
07/31/2014	--	419.65			0.0880	7.00		0.51	10.0				0.0320	2.00
03/03/2015	--	414.99			0.0380	3.00		0.60	17.0				0.0710	2.90
07/27/2015	--	416.2			0.46	13.0		1.50	34.0				0.16	6.60
02/23/2016	--	415.22			U (0.001)	1.20		U (0.001)	0.13				U (0.001)	0.002500
10/06/2016	--	418.74			U (0.001)	0.77		0.006800	0.20				U (0.001)	0.002500
03/16/2017	--	414.93			U (0.2)	6.20		0.89	14.0				0.48	3.99
07/07/2017	--	416.97			0.11	7.40		0.40	7.10				0.26	1.76
03/29/2018	--	414.62			U (0.15)	8.00		0.92	U (90)				0.71	6.10
09/07/2018	--	418.71			0.0680	3.20		0.57	7.80				0.0660	2.29
03/13/2019	--	415.23			0.10	9.90		0.85	19.0				0.30	5.00
07/29/2019	--	416.28			U (0.15)	9.80		0.67	15.0				0.16	4.96
08/04/2020	--	419.64			0.0570	3.51		0.434	5.63				0.0040300	1.75
10/15/2020	--	418.6			0.000929 J	1.06 J		0.01060	0.386 J				0.0012100	0.0810
10/12/2021	--	417.94			0.0010300	1.97		0.492 Q	5.40				0.000688 J	1.38

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
05/17/2022	--	418.05	0.531	0.126	0.0071200	3.70		1.29	6.62		0.161	72.1	0.0079300	2.19
09/20/2022	--	417.45	0.227	0.0610	0.0057800	1.63		0.315	2.53		0.04410	102	0.000431000	0.733
MW-12														
09/28/2012	--	416.3			0.0043800	2.74		3.51	165				13.9	19.5
02/21/2013	--	414.3			0.0120	3.66		2.69	71.1				7.69	12.8
08/13/2013	--	416.54			0.03340	6.05		1.00	22.6				7.30	6.21
09/24/2013	--	--			0.0091300	7.11		0.344	8.35				1.65	1.72
11/19/2013	--	415.65			0.01170	11.7		0.527	13.5				1.83	2.19
03/19/2014	--	414.4			0.01280	11.4		0.663	27.9				2.24	5.34
07/31/2014	--	419.67			U (0.0005)	0.50		0.002700	0.18				0.006300	0.0150
03/03/2015	--	416.05			U (0.0005)	1.20		0.0220	6.80				0.0100	0.24
07/27/2015	--	416.21			0.00057000	0.99		0.0260	3.20				0.0110	0.19
02/23/2016	--	415.28			U (0.001)	0.32		U (0.001)	U (0.05)				U (0.001)	U (0.001)
10/06/2016	--	418.79			U (0.001)	0.39		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/16/2017	--	415.0			U (0.02)	1.50		0.30	3.80				U (0.02)	0.52
07/07/2017	--	417.04			U (0.002)	1.40		0.13	2.80				U (0.04)	0.38
03/29/2018	--	414.69			U (0.003)	0.58		U (0.003)	2.00				U (0.002)	U (0.002)
09/07/2018	--	418.78			U (0.0004)	0.56		0.0190	1.10				U (0.001)	0.0630
03/13/2019	--	415.3			U (0.003)	0.78		0.0100	1.30				U (0.002)	0.0550
07/30/2019	--	416.38			U (0.003)	0.47		U (0.003)	0.26				U (0.002)	0.003900
08/03/2020	--	422.58			0.000353000	0.852		0.05380	1.23				0.03640	0.487
10/14/2020	--	418.68			0.01920	0.658 J		0.123	1.08				0.000817 J	0.425
03/30/2021	--	415.36			0.000395 J	1.26		0.02210	2.30				0.000853 J	0.06760
10/12/2021	--	418.0			0.000217 J	0.989		0.07220	1.93				0.0021500	0.50
05/17/2022	--	418.03	0.116	0.0250	0.000342000	0.745		0.01840	0.547		0.000545000	66.9	0.000613000	0.0940
09/21/2022	--	417.55	0.05720	0.02380	0.0240	0.787		0.0980	0.528		0.005800	66.5	0.0024300	0.188
04/27/2023	--	--	0.04830	0.04420	U(0.00100)	0.614		0.01980	0.662		0.0073700	56.0	0.000298000	0.02720
MW-13														
09/28/2012	--	416.31			U (0.0005)	0.738		0.02630	8.11				0.03160	0.609
02/21/2013	--	414.31			0.001300	1.90		0.01250	0.649				U (0.0005)	0.167
08/13/2013	--	416.55			U (0.0005)	0.839		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
09/24/2013	--	--			U (0.0005)	0.736		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
11/19/2013	--	415.48			U (0.0005)	0.478		U (0.0005)	U (0.05)				0.000751000	0.0016800
03/18/2014	--	414.42			0.000671000	1.13		U (0.0005)	0.05930				0.000846000	0.0020800
07/31/2014	--	419.67			U (0.0005)	U (0.42)		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/03/2015	--	415.04			0.0200	0.62		0.0280	0.82				U (0.0005)	0.13
07/27/2015	--	416.24			U (0.0005)	0.58		0.001400	U (0.05)				U (0.0005)	0.004600
02/23/2016	--	415.31			U (0.001)	2.30		0.009600	1.00				U (0.001)	0.0730
10/06/2016	--	418.8			U (0.001)	0.65		U (0.001)	U (0.05)				U (0.001)	0.005800
03/16/2017	--	415.02			U (0.002)	0.44		U (0.0053)	0.15				U (0.002)	0.0130

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
07/07/2017	--	417.06			U (0.002)	0.32		U (0.003)	U (1.0)				U (0.002)	U (0.002)
03/29/2018	--	414.7			U (0.003)	0.45		U (0.003)	U (1)				U (0.002)	U (0.002)
09/07/2018	--	418.76			U (0.0004)	0.43		U (0.001)	U (0.15)				U (0.001)	U (0.002)
03/13/2019	--	415.34			U (0.003)	0.36		0.007200	U (1.3)				U (0.002)	0.009400
07/29/2019	--	416.37			U (0.003)	1.10		0.008500	0.45				U (0.002)	0.02140
08/03/2020	--	419.57			0.000323000	0.554		0.04390	1.01				0.03510	0.454
10/14/2020	--	418.67			0.0180	1.30		0.155	1.86				0.01080	0.63
03/30/2021	--	415.41			0.00019 J	0.341 J		0.0036100	0.139 B				U (0.001)	0.0070500
10/12/2021	--	418.0			U (0.001)	0.538 J		0.000274 J	0.0684 B,J				U (0.001)	0.0076900
09/21/2022	--	417.54	0.01530	0.0074900	0.0079700	0.569		0.03090	0.293		U(0.000250)	64.1	0.001200	0.07240
MW-16														
02/26/1992	--	418.29			0.00400			U					U	U
06/04/1992	--	418.41			0.00300			U					U	0.00700
11/30/1992	--	416.6			0.51			0.0560					0.0940	0.15
02/24/1993	--	418.13			0.41			0.0360					0.0330	0.0840
08/18/1993	--	420.26			0.0990			U					U	0.0140
11/23/1993	--	419.59			0.0390			U					U	0.00400
03/10/1994	--	418.28			0.00500			U					0.00100	U
06/01/1994	--	418.82			0.0220			0.00300					U	0.00300
09/08/1994	--	420.22			U			U					U	U
12/14/1994	--	418.22			0.0120			0.00100					U	U
12/20/1995	--	414.53			0.0550			U					U	0.00300
05/16/1996	--	415.78			0.00700			U					U	U
08/15/1996	--	416.58			U			U					U	U
12/09/1996	--	415.43			0.007100			U					U	U
03/20/1997	--	414.4			0.005600			U					U	U
11/18/1997	--	415.22			0.0013400			U	U				0.0010100	0.0013500
05/01/1998	--	414.38			0.0056700	0.534		0.0019300	0.0890				0.0030800	0.0073900
10/14/1998	--	416.59			U	0.281		U	U				U	0.0022200
05/27/1999	--	415.29			0.0020300	2.64		U	U				U	U
11/05/1999	--	415.51			U	13.0		U	U				U	U
04/17/2000	--	414.15			0.0030500	3.66		U	U				U	U
10/26/2000	--	417.47			0.0018600	3.98		U	U				0.0026100	0.00300
05/30/2001	--	413.63			0.0007000	6.65		U	U				U	U
12/13/2001	--	413.23			0.0480	5.29		0.01090	0.90				0.302	0.05540
08/19/2002	--	417.85			U (0.0005)	U (0.5)		U (0.002)	U (0.09)				U (0.002)	0.0089600
11/05/2002	--	417.07			0.000589000	0.595		U (0.002)	U (0.09)				U (0.002)	0.0023400
03/19/2003	--	416.23			0.000531000	1.10		U (0.002)	U (0.09)				0.0065300	0.0046900
03/08/2004	--	414.95			U (0.0005)	2.85		U (0.0005)	0.0720				0.02880	U (0.001)
09/15/2004	--	416.65			0.0006000	1.36		U (0.0005)	0.05210				0.01430	U (0.0015)

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	EDB	Ethylbenzene	GRO	Lead	Naphthalene	Sodium	Toluene	Xylenes
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
01/10/2005	--	414.7			0.000648000	1.24		U (0.0005)	0.175				0.08860	0.0022100
07/15/2005	--	417.99			0.0007000	1.06		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
02/16/2006	--	414.58			U (0.0005)	2.09		U (0.0005)	0.06410				0.02250	U (0.0015)
07/27/2006	--	417.08			0.000638000	1.06		U (0.0005)	U (0.05)				0.01080	U (0.0015)
03/02/2007	--	414.25			U (0.0005)	1.95		U (0.0005)	U (0.05)				0.0020600	U (0.0015)
10/17/2007	--	416.62			U (0.0025)	6.53		U (0.0025)	U (0.25)				0.0031800	U (0.0075)
06/05/2008	--	415.88			U (0.0005)	4.40		U (0.0005)	0.07610				0.01170	U (0.0015)
09/29/2008	--	417.26			U (0.0005)	2.69		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
02/25/2009	--	414.49			U (0.0005)	3.44		U (0.0005)	0.06330				0.01350	U (0.0015)
07/21/2009	--	416.76			U (0.0005)	0.564		U (0.001)	U (0.05)				U (0.001)	U (0.003)
03/17/2010	--	413.98			U (0.001)	0.586		U (0.001)	U (0.05)				U (0.001)	U (0.002)
09/15/2010	--	416.52			U (0.0005)	2.35		0.000796000	U (0.05)				U (0.0005)	0.0050800
03/22/2011	--	413.98			U (0.0005)	2.82		U (0.0005)	0.221				0.08520	U (0.0015)
09/01/2011	--	417.42			U (0.0005)	2.38		U (0.0005)	U (0.05)				U (0.0005)	U (0.0015)
03/13/2012	--	414.39			U (0.0005)	4.18		U (0.0005)	0.241				0.08450	U (0.0015)
07/23/2012	--	417.64			U (0.0005)	1.04		U (0.0010)	U (0.05)				U (0.0010)	U (0.0030)
02/21/2013	--	414.34			U (0.0005)	1.38		U (0.0005)	0.182				0.0660	U (0.0015)
08/13/2013	--	416.56			U (0.0005)	3.61		U (0.0005)	U (0.05)				0.0014300	U (0.0015)
03/18/2014	--	414.51			U (0.0005)	3.17		U (0.0005)	0.178				0.06940	U (0.0015)
07/31/2014	--	419.7			U (0.0005)	2.30		U (0.001)	U (0.05)				U (0.001)	U (0.001)
03/03/2015	--	415.2				0.0150	1.30		0.007300	0.74			0.0390	0.13
07/27/2015	--	416.22				0.006800	0.81		0.005700	0.42			0.001600	0.0710
02/23/2016	--	415.26					0.40		U (0.001)	U (0.05)			U (0.001)	0.005800
10/06/2016	--	418.77					0.35		U (0.001)	U (0.05)			U (0.001)	0.002400
03/16/2017	--	414.98					0.88		U (0.003)	U (0.05)			U (0.002)	U (0.002)
07/07/2017	--	417.02					3.70		U (0.003)	U (1.0)			U (0.002)	U (0.003)
09/07/2018	--	418.73					0.34		U (0.001)	U (0.15)			U (0.001)	U (0.002)
03/13/2019	--	415.27					1.90		U (0.003)	U (1.3)			U (0.002)	U (0.003)
07/30/2019	--	415.37					0.39		U (0.003)	U (0.25)			U (0.002)	0.00300
10/14/2020	--	418.63					0.01440	0.918		0.000399 J	0.0468 J		0.000556 J	0.02410
03/30/2021	--	415.38					0.97		U (0.001)	0.0233 BJ			U (0.001)	0.000994 J
10/12/2021	--	418.0					1.57		U (0.001)	U (0.1)			U (0.001)	0.000223 J
05/17/2022	--	418.08	0.000654000	0.000128000			0.967		U(0.00100)	0.02970			U(0.000250)	40.4
09/20/2022	FP	417.51	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
04/27/2023	--	--	U(0.00100)	U(0.00100)	0.000111000		3.48		U(0.00100)	0.03310			U(0.000250)	48.8
RM-1														
10/10/2012	--	416.29				0.04250	1.40		0.0840	7.60			6.09	1.80
02/21/2013	--	414.27					0.92		0.942	9.80			15.4	0.51
08/13/2013	--	416.55					1.30		3.08	1.80			0.09220	6.83
09/24/2013	--	--				0.006700	1.70		0.131	27.2			0.23	16.7

	<i>Well Screen Interval</i>	<i>Ground Water Elevation</i>	<i>124-TMB</i>	<i>135-TMB</i>	<i>Benzene</i>	<i>DRO</i>	<i>EDB</i>	<i>Ethylbenzene</i>	<i>GRO</i>	<i>Lead</i>	<i>Naphthalene</i>	<i>Sodium</i>	<i>Toluene</i>	<i>Xylenes</i>
Unit	ft	ft	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
GW Human Health Cleanup			0.056	0.06	0.0046	1.5		0.015	2.2		0.0017		1.1	0.19
11/19/2013	--	415.53			<u>0.0550</u>	<u>12.6</u>		<u>0.20</u>	<u>175</u>				0.33	<u>1.32</u>
03/19/2014	--	414.37			<u>0.02130</u>	<u>10.8</u>		U (0.001) <u>2.81</u>					0.68	<u>2.06</u>
07/31/2014	--	419.58			<u>0.02510</u>	1.23		<u>0.0960</u>	<u>4.70</u>					<u>2.83</u>
03/03/2015	--	402.63			0.00261 J	1.20		<u>0.593</u>	<u>3.50</u>					<u>7.25</u>
07/27/2015	--	--				0.74		<u>2.14</u>	<u>8.40</u>				0.137	<u>5.09</u>
02/23/2016	--	414.75			<u>0.008700</u>	1.50		<u>0.246</u>	<u>14.7</u>				0.40	<u>11.3</u>
10/06/2016	--	417.91			<u>0.0840</u>	<u>17.5</u>		<u>0.23</u>	<u>69.9</u>				0.69	<u>1.89</u>
07/07/2017	--	417.04			<u>0.02680</u>	<u>10.7</u>		<u>0.45</u>	<u>4.26</u>				0.77	<u>1.55</u>
09/06/2017	--	--			<u>0.04320</u>	<u>2.31</u>		<u>0.36</u>	<u>6.10</u>				0.201	<u>2.73</u>
09/07/2018	--	413.04			0.000358 J	1.10		<u>0.568</u>	<u>12.0</u>					<u>12.2</u>
07/30/2019	--	415.38			(0.003) U	<u>3.30</u>		<u>1.80</u>	<u>12.0</u>			0.000503 J		<u>2.55</u>
10/24/2019	--	--			<u>0.00500</u>	<u>5.20</u>		<u>0.142</u>	<u>11.9</u>				0.0380	<u>10.4</u>
08/04/2020	--	417.0			U (0.001)	<u>13.2</u>		<u>0.15</u>	<u>39.9</u>				0.74	<u>1.25</u>
10/15/2020	--	--			U (0.0005)	<u>9.27</u>		<u>0.27</u>	<u>5.34</u>				0.93	<u>1.49</u>
10/12/2021	--	417.82			<u>0.02460</u>	<u>2.22</u>		<u>0.20</u>	<u>4.30</u>				0.15	<u>2.00</u>
09/20/2022	--	417.43	<u>0.826</u>	<u>0.32</u>	0.000939000	<u>3.32</u>		<u>0.266</u>	<u>7.88</u>		<u>0.06990</u>	62.8	0.002600	<u>1.98</u>
RM-2														
08/29/2019	--	--			0.0017900	0.384 J		<u>0.01570</u>	0.479				0.0020900	0.06660
10/24/2019	--	--			0.004600	0.45		<u>0.0890</u>	2.00				0.0580	<u>0.342</u>
08/04/2020	--	--			U (0.001)	U (0.800)		0.000505000	0.01350				U (0.001)	0.000565000
10/15/2020	--	--			<u>0.02260</u>	1.49		<u>0.274</u>	<u>3.98</u>				0.413	<u>1.24</u>
03/30/2021	--	--			<u>0.02970</u>	1.21		<u>0.352</u>	<u>4.16</u>				0.05410	<u>0.74</u>
10/12/2021	--	417.79			0.000496 J	0.650 J		<u>0.04010</u>	0.645				U (0.001)	0.06170
05/17/2022	--	418.05	0.0014900	0.000547000	0.000133000	U(0.840)		0.004900	0.133		0.000327000	25.8	U(0.00100)	0.0018300
09/20/2022	--	--	<u>0.147</u>	0.05490	<u>0.04840</u>	0.95		<u>0.286</u>	<u>2.96</u>		<u>0.03740</u>	60.4	0.02710	<u>0.756</u>
10/26/2022	--	--					0.00015000							
04/27/2023	--	--	0.05360	0.03510	<u>0.0086100</u>	0.739		<u>0.199</u>	1.88		<u>0.03130</u>	51.4	0.000523000	<u>0.331</u>

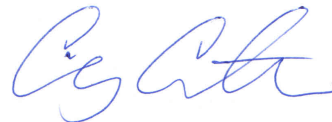
APPENDIX E

*Laboratory Analytical Report and
ADEC Laboratory Data Review
Checklist*

Stantec - Anchorage, AK

Sample Delivery Group: L1609881
Samples Received: 04/27/2023
Project Number: 203723075
Description: Speedway 5315 - Fairbanks, AK
Site: 0005315
Report To: Ms. Leslie Petre
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Entire Report Reviewed By:

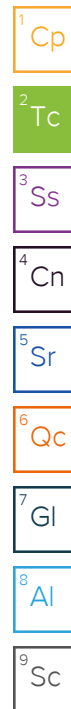


Craig Cothron
Project Manager

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

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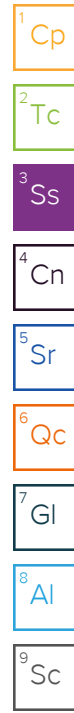


SAMPLE SUMMARY

G-1 L1609881-01 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050287	1	04/30/23 10:00	04/30/23 16:45	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 04:26	05/03/23 04:26	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 14:26	04/28/23 14:26	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2053006	1	05/04/23 18:13	05/06/23 12:02	HLJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 00:46	JCH	Mt. Juliet, TN



G-5 L1609881-02 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050287	1	04/30/23 10:00	04/30/23 16:48	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 04:48	05/03/23 04:48	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 14:47	04/28/23 14:47	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2051179	10	04/29/23 21:24	04/29/23 21:24	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2056392	1	05/09/23 09:48	05/09/23 22:10	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 01:03	JCH	Mt. Juliet, TN

MW-10 L1609881-03 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:31	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 05:10	05/03/23 05:10	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 15:09	04/28/23 15:09	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2056392	1	05/09/23 09:48	05/09/23 22:30	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 01:21	JCH	Mt. Juliet, TN

MG-12 L1609881-04 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:33	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 05:32	05/03/23 05:32	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 15:30	04/28/23 15:30	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2056392	1	05/09/23 09:48	05/09/23 22:50	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 01:38	JCH	Mt. Juliet, TN

MG-16 L1609881-05 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

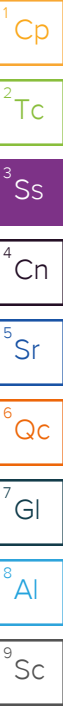
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:36	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	1	05/03/23 04:04	05/03/23 04:04	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 15:51	04/28/23 15:51	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2051179	1	04/29/23 18:49	04/29/23 18:49	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2053006	5	05/04/23 18:13	05/06/23 18:13	HLJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 01:55	JCH	Mt. Juliet, TN

SAMPLE SUMMARY

MG17-1 L1609881-06 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:38	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	20	05/03/23 06:37	05/03/23 06:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 16:13	04/28/23 16:13	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2051179	100	04/29/23 21:43	04/29/23 21:43	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2053006	1	05/04/23 18:13	05/06/23 13:35	HLJ	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 02:13	JCH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	10	04/28/23 16:23	04/30/23 15:22	DSH	Mt. Juliet, TN



RM-2 L1609881-07 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:41	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 05:53	05/03/23 05:53	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 16:34	04/28/23 16:34	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2056392	1.2	05/09/23 09:48	05/09/23 23:10	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1	04/28/23 16:23	04/29/23 02:31	JCH	Mt. Juliet, TN

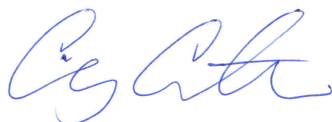
DUP L1609881-08 GW

Collected by
GF/LP Collected date/time
04/25/23 18:38 Received date/time
04/27/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2050288	1	04/29/23 12:18	04/29/23 21:44	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2052744	5	05/03/23 06:15	05/03/23 06:15	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2050636	1	04/28/23 16:55	04/28/23 16:55	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2051179	10	04/29/23 22:02	04/29/23 22:02	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2056392	1.22	05/09/23 09:48	05/10/23 10:32	MWS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2050888	1.05	04/28/23 16:23	04/29/23 02:47	JCH	Mt. Juliet, TN

CASE NARRATIVE

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



Craig Cothron
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	95.1		0.504	3.00	1	04/30/2023 16:45	WG2050287

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	U		0.143	0.500	5	05/03/2023 04:26	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	74.3			50.0-150		05/03/2023 04:26	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	173	<u>J1</u>		79.0-125		05/03/2023 04:26	WG2052744

Sample Narrative:

L1609881-01 WG2052744: Lowest possible dilution due to sample foaming.

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

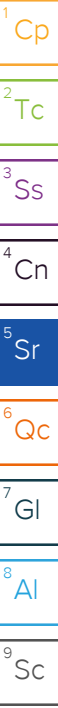
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00114		0.0000941	0.00100	1	04/28/2023 14:26	WG2050636
n-Butylbenzene	U		0.000157	0.00100	1	04/28/2023 14:26	WG2050636
sec-Butylbenzene	0.000546	<u>J</u>	0.000125	0.00100	1	04/28/2023 14:26	WG2050636
tert-Butylbenzene	U		0.000127	0.00100	1	04/28/2023 14:26	WG2050636
Ethylbenzene	U		0.000137	0.00100	1	04/28/2023 14:26	WG2050636
Isopropylbenzene	0.000768	<u>J</u>	0.000105	0.00100	1	04/28/2023 14:26	WG2050636
Naphthalene	0.00447	<u>B J</u>	0.00100	0.00500	1	04/28/2023 14:26	WG2050636
Toluene	0.000317	<u>B J</u>	0.000278	0.00100	1	04/28/2023 14:26	WG2050636
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/28/2023 14:26	WG2050636
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/28/2023 14:26	WG2050636
Total Xylenes	0.000201	<u>J</u>	0.000174	0.00300	1	04/28/2023 14:26	WG2050636
(S) Toluene-d8	113			80.0-120		04/28/2023 14:26	WG2050636
(S) 4-Bromofluorobenzene	104			77.0-126		04/28/2023 14:26	WG2050636
(S) 1,2-Dichloroethane-d4	85.1			70.0-130		04/28/2023 14:26	WG2050636

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.566	<u>B J</u>	0.170	0.800	1	05/06/2023 12:02	WG2053006
(S) o-Terphenyl	54.2			50.0-150		05/06/2023 12:02	WG2053006

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 00:46	WG2050888
Acenaphthene	U		0.0000190	0.0000500	1	04/29/2023 00:46	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 00:46	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 00:46	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 00:46	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 00:46	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 00:46	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 00:46	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 00:46	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 00:46	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 00:46	WG2050888
Fluorene	U		0.0000169	0.0000500	1	04/29/2023 00:46	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 00:46	WG2050888
Naphthalene	0.00428		0.0000917	0.000250	1	04/29/2023 00:46	WG2050888



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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.0000180	0.0000500	1	04/29/2023 00:46	WG2050888
Pyrene	U		0.0000169	0.0000500	1	04/29/2023 00:46	WG2050888
1-Methylnaphthalene	0.0000979	↓	0.0000687	0.000250	1	04/29/2023 00:46	WG2050888
2-Methylnaphthalene	0.0000767	↓	0.0000674	0.000250	1	04/29/2023 00:46	WG2050888
(S) Nitrobenzene-d5	108			31.0-160		04/29/2023 00:46	WG2050888
(S) 2-Fluorobiphenyl	92.1			48.0-148		04/29/2023 00:46	WG2050888
(S) p-Terphenyl-d14	86.3			37.0-146		04/29/2023 00:46	WG2050888

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

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	79.9		0.504	3.00	1	04/30/2023 16:48	WG2050287

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	1.23	<u>B</u>	0.143	0.500	5	05/03/2023 04:48	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	78.0			50.0-150		05/03/2023 04:48	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	173	<u>J1</u>		79.0-125		05/03/2023 04:48	WG2052744

Sample Narrative:

L1609881-02 WG2052744: Lowest possible dilution due to sample foaming.

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

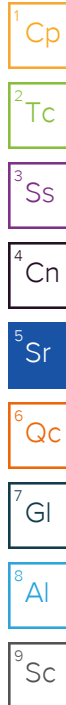
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.0191		0.0000941	0.00100	1	04/28/2023 14:47	WG2050636
n-Butylbenzene	0.00468		0.000157	0.00100	1	04/28/2023 14:47	WG2050636
sec-Butylbenzene	0.00515		0.000125	0.00100	1	04/28/2023 14:47	WG2050636
tert-Butylbenzene	0.000361	<u>J</u>	0.000127	0.00100	1	04/28/2023 14:47	WG2050636
Ethylbenzene	0.232		0.00137	0.0100	10	04/29/2023 21:24	WG2051179
Isopropylbenzene	0.0300		0.000105	0.00100	1	04/28/2023 14:47	WG2050636
Naphthalene	0.0518		0.00100	0.00500	1	04/28/2023 14:47	WG2050636
Toluene	0.000880	<u>B J</u>	0.000278	0.00100	1	04/28/2023 14:47	WG2050636
1,2,4-Trimethylbenzene	0.285		0.00322	0.0100	10	04/29/2023 21:24	WG2051179
1,3,5-Trimethylbenzene	0.0245		0.000104	0.00100	1	04/28/2023 14:47	WG2050636
Total Xylenes	0.233		0.000174	0.00300	1	04/28/2023 14:47	WG2050636
(S) Toluene-d8	112			80.0-120		04/28/2023 14:47	WG2050636
(S) Toluene-d8	105			80.0-120		04/29/2023 21:24	WG2051179
(S) 4-Bromofluorobenzene	101			77.0-126		04/28/2023 14:47	WG2050636
(S) 4-Bromofluorobenzene	89.3			77.0-126		04/29/2023 21:24	WG2051179
(S) 1,2-Dichloroethane-d4	86.6			70.0-130		04/28/2023 14:47	WG2050636
(S) 1,2-Dichloroethane-d4	92.1			70.0-130		04/29/2023 21:24	WG2051179

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.21	<u>B</u>	0.170	0.800	1	05/09/2023 22:10	WG2056392
(S) o-Terphenyl	81.5			50.0-150		05/09/2023 22:10	WG2056392

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 01:03	WG2050888
Acenaphthene	0.000231		0.0000190	0.0000500	1	04/29/2023 01:03	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 01:03	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 01:03	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 01:03	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 01:03	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 01:03	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 01:03	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 01:03	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 01:03	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 01:03	WG2050888



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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	0.000727		0.0000169	0.0000500	1	04/29/2023 01:03	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 01:03	WG2050888
Naphthalene	0.0399		0.0000917	0.000250	1	04/29/2023 01:03	WG2050888
Phenanthrene	0.000230		0.0000180	0.0000500	1	04/29/2023 01:03	WG2050888
Pyrene	U		0.0000169	0.0000500	1	04/29/2023 01:03	WG2050888
1-Methylnaphthalene	0.0126		0.0000687	0.000250	1	04/29/2023 01:03	WG2050888
2-Methylnaphthalene	0.00583		0.0000674	0.000250	1	04/29/2023 01:03	WG2050888
<i>(S)</i> Nitrobenzene-d5	102			31.0-160		04/29/2023 01:03	WG2050888
<i>(S)</i> 2-Fluorobiphenyl	90.0			48.0-148		04/29/2023 01:03	WG2050888
<i>(S)</i> p-Terphenyl-d14	84.7			37.0-146		04/29/2023 01:03	WG2050888

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

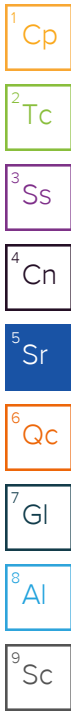
7 Gl

8 Al

9 Sc

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	80.5		0.504	3.00	1	04/29/2023 21:31	WG2050288



Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.568	<u>B</u>	0.143	0.500	5	05/03/2023 05:10	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	75.9			50.0-150		05/03/2023 05:10	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	171	<u>J1</u>		79.0-125		05/03/2023 05:10	WG2052744

Sample Narrative:

L1609881-03 WG2052744: Lowest possible dilution due to sample foaming.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00729		0.0000941	0.00100	1	04/28/2023 15:09	WG2050636
n-Butylbenzene	0.00123		0.000157	0.00100	1	04/28/2023 15:09	WG2050636
sec-Butylbenzene	0.00125		0.000125	0.00100	1	04/28/2023 15:09	WG2050636
tert-Butylbenzene	U		0.000127	0.00100	1	04/28/2023 15:09	WG2050636
Ethylbenzene	0.0207		0.000137	0.00100	1	04/28/2023 15:09	WG2050636
Isopropylbenzene	0.00253		0.000105	0.00100	1	04/28/2023 15:09	WG2050636
Naphthalene	0.00952	<u>B</u>	0.00100	0.00500	1	04/28/2023 15:09	WG2050636
Toluene	0.000835	<u>B, J</u>	0.000278	0.00100	1	04/28/2023 15:09	WG2050636
1,2,4-Trimethylbenzene	0.0266		0.000322	0.00100	1	04/28/2023 15:09	WG2050636
1,3,5-Trimethylbenzene	0.00718		0.000104	0.00100	1	04/28/2023 15:09	WG2050636
Total Xylenes	0.0421		0.000174	0.00300	1	04/28/2023 15:09	WG2050636
(S) Toluene-d8	113			80.0-120		04/28/2023 15:09	WG2050636
(S) 4-Bromofluorobenzene	103			77.0-126		04/28/2023 15:09	WG2050636
(S) 1,2-Dichloroethane-d4	84.3			70.0-130		04/28/2023 15:09	WG2050636

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.43	<u>B</u>	0.170	0.800	1	05/09/2023 22:30	WG2056392
(S) o-Terphenyl	71.4			50.0-150		05/09/2023 22:30	WG2056392

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 01:21	WG2050888
Acenaphthene	0.0000893		0.0000190	0.0000500	1	04/29/2023 01:21	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 01:21	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 01:21	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 01:21	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 01:21	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 01:21	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 01:21	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 01:21	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 01:21	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 01:21	WG2050888
Fluorene	0.000404		0.0000169	0.0000500	1	04/29/2023 01:21	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 01:21	WG2050888
Naphthalene	0.00415		0.0000917	0.000250	1	04/29/2023 01:21	WG2050888

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.000152		0.0000180	0.0000500	1	04/29/2023 01:21	WG2050888
Pyrene	U		0.0000169	0.0000500	1	04/29/2023 01:21	WG2050888
1-Methylnaphthalene	0.00216		0.0000687	0.000250	1	04/29/2023 01:21	WG2050888
2-Methylnaphthalene	0.00157		0.0000674	0.000250	1	04/29/2023 01:21	WG2050888
(S) Nitrobenzene-d5	98.9			31.0-160		04/29/2023 01:21	WG2050888
(S) 2-Fluorobiphenyl	87.9			48.0-148		04/29/2023 01:21	WG2050888
(S) p-Terphenyl-d14	78.9			37.0-146		04/29/2023 01:21	WG2050888

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

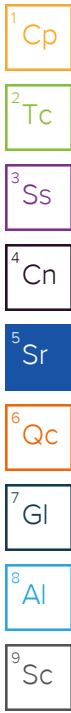
7 Gl

8 Al

9 Sc

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	56.0		0.504	3.00	1	04/29/2023 21:33	WG2050288



Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.662	<u>B</u>	0.143	0.500	5	05/03/2023 05:32	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	72.3			50.0-150		05/03/2023 05:32	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	172	<u>J1</u>		79.0-125		05/03/2023 05:32	WG2052744

Sample Narrative:

L1609881-04 WG2052744: Lowest possible dilution due to sample foaming.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	U		0.0000941	0.00100	1	04/28/2023 15:30	WG2050636
n-Butylbenzene	0.00188		0.000157	0.00100	1	04/28/2023 15:30	WG2050636
sec-Butylbenzene	0.00184		0.000125	0.00100	1	04/28/2023 15:30	WG2050636
tert-Butylbenzene	U		0.000127	0.00100	1	04/28/2023 15:30	WG2050636
Ethylbenzene	0.0198		0.000137	0.00100	1	04/28/2023 15:30	WG2050636
Isopropylbenzene	0.00193		0.000105	0.00100	1	04/28/2023 15:30	WG2050636
Naphthalene	0.00521	<u>B</u>	0.00100	0.00500	1	04/28/2023 15:30	WG2050636
Toluene	0.000298	<u>B_J</u>	0.000278	0.00100	1	04/28/2023 15:30	WG2050636
1,2,4-Trimethylbenzene	0.0483		0.000322	0.00100	1	04/28/2023 15:30	WG2050636
1,3,5-Trimethylbenzene	0.0442		0.000104	0.00100	1	04/28/2023 15:30	WG2050636
Total Xylenes	0.0272		0.000174	0.00300	1	04/28/2023 15:30	WG2050636
(S) Toluene-d8	113			80.0-120		04/28/2023 15:30	WG2050636
(S) 4-Bromofluorobenzene	102			77.0-126		04/28/2023 15:30	WG2050636
(S) 1,2-Dichloroethane-d4	85.1			70.0-130		04/28/2023 15:30	WG2050636

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.614	<u>B_J</u>	0.170	0.800	1	05/09/2023 22:50	WG2056392
(S) o-Terphenyl	87.9			50.0-150		05/09/2023 22:50	WG2056392

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 01:38	WG2050888
Acenaphthene	0.0000466	<u>J</u>	0.0000190	0.0000500	1	04/29/2023 01:38	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 01:38	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 01:38	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 01:38	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 01:38	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 01:38	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 01:38	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 01:38	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 01:38	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 01:38	WG2050888
Fluorene	0.0000606		0.0000169	0.0000500	1	04/29/2023 01:38	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 01:38	WG2050888
Naphthalene	0.00737		0.0000917	0.000250	1	04/29/2023 01:38	WG2050888

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.0000269	U	0.0000180	0.0000500	1	04/29/2023 01:38	WG2050888
Pyrene	U		0.0000169	0.0000500	1	04/29/2023 01:38	WG2050888
1-Methylnaphthalene	0.00992		0.0000687	0.000250	1	04/29/2023 01:38	WG2050888
2-Methylnaphthalene	0.0134		0.0000674	0.000250	1	04/29/2023 01:38	WG2050888
(S) Nitrobenzene-d5	98.9			31.0-160		04/29/2023 01:38	WG2050888
(S) 2-Fluorobiphenyl	91.1			48.0-148		04/29/2023 01:38	WG2050888
(S) p-Terphenyl-d14	90.0			37.0-146		04/29/2023 01:38	WG2050888

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

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	48.8		0.504	3.00	1	04/29/2023 21:36	WG2050288

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.0331	<u>B J</u>	0.0287	0.100	1	05/03/2023 04:04	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	76.3			50.0-150		05/03/2023 04:04	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	172	<u>J1</u>		79.0-125		05/03/2023 04:04	WG2052744

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.000111	<u>J</u>	0.0000941	0.00100	1	04/29/2023 18:49	WG2051179
n-Butylbenzene	U		0.000157	0.00100	1	04/28/2023 15:51	WG2050636
sec-Butylbenzene	U		0.000125	0.00100	1	04/28/2023 15:51	WG2050636
tert-Butylbenzene	U		0.000127	0.00100	1	04/28/2023 15:51	WG2050636
Ethylbenzene	U		0.000137	0.00100	1	04/28/2023 15:51	WG2050636
Isopropylbenzene	U		0.000105	0.00100	1	04/28/2023 15:51	WG2050636
Naphthalene	U		0.00100	0.00500	1	04/29/2023 18:49	WG2051179
Toluene	0.000720	<u>J</u>	0.000278	0.00100	1	04/29/2023 18:49	WG2051179
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	04/28/2023 15:51	WG2050636
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	04/29/2023 18:49	WG2051179
Total Xylenes	U		0.000174	0.00300	1	04/29/2023 18:49	WG2051179
(S) Toluene-d8	117			80.0-120		04/28/2023 15:51	WG2050636
(S) Toluene-d8	107			80.0-120		04/29/2023 18:49	WG2051179
(S) 4-Bromofluorobenzene	105			77.0-126		04/28/2023 15:51	WG2050636
(S) 4-Bromofluorobenzene	87.1			77.0-126		04/29/2023 18:49	WG2051179
(S) 1,2-Dichloroethane-d4	85.4			70.0-130		04/28/2023 15:51	WG2050636
(S) 1,2-Dichloroethane-d4	94.1			70.0-130		04/29/2023 18:49	WG2051179

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	3.48	<u>B J</u>	0.850	4.00	5	05/06/2023 18:13	WG2053006
(S) o-Terphenyl	46.4	<u>J2</u>		50.0-150		05/06/2023 18:13	WG2053006

Sample Narrative:

L1609881-05 WG2053006: Dilution and surrogate failure due to matrix interference.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 01:55	WG2050888
Acenaphthene	U		0.0000190	0.0000500	1	04/29/2023 01:55	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 01:55	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 01:55	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 01:55	WG2050888
Benzo(b)fluoranthene	0.0000207	<u>J</u>	0.0000168	0.0000500	1	04/29/2023 01:55	WG2050888
Benzo(g,h,i)perylene	0.0000388	<u>J</u>	0.0000184	0.0000500	1	04/29/2023 01:55	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 01:55	WG2050888
Chrysene	0.0000218	<u>J</u>	0.0000179	0.0000500	1	04/29/2023 01:55	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 01:55	WG2050888
Fluoranthene	0.0000371	<u>J</u>	0.0000270	0.000100	1	04/29/2023 01:55	WG2050888

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	U		0.0000169	0.0000500	1	04/29/2023 01:55	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 01:55	WG2050888
Naphthalene	U		0.0000917	0.000250	1	04/29/2023 01:55	WG2050888
Phenanthrene	0.0000255	U	0.0000180	0.0000500	1	04/29/2023 01:55	WG2050888
Pyrene	0.0000714		0.0000169	0.0000500	1	04/29/2023 01:55	WG2050888
1-Methylnaphthalene	U		0.0000687	0.000250	1	04/29/2023 01:55	WG2050888
2-Methylnaphthalene	U		0.0000674	0.000250	1	04/29/2023 01:55	WG2050888
<i>(S)</i> Nitrobenzene-d5	107			31.0-160		04/29/2023 01:55	WG2050888
<i>(S)</i> 2-Fluorobiphenyl	93.2			48.0-148		04/29/2023 01:55	WG2050888
<i>(S)</i> p-Terphenyl-d14	83.7			37.0-146		04/29/2023 01:55	WG2050888

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	81.9		0.504	3.00	1	04/29/2023 21:38	WG2050288

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	13.4		0.574	2.00	20	05/03/2023 06:37	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	73.3			50.0-150		05/03/2023 06:37	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	174	J1		79.0-125		05/03/2023 06:37	WG2052744

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

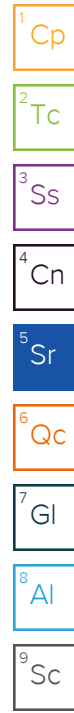
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.174		0.0000941	0.00100	1	04/28/2023 16:13	WG2050636
n-Butylbenzene	0.00321		0.000157	0.00100	1	04/28/2023 16:13	WG2050636
sec-Butylbenzene	0.00367		0.000125	0.00100	1	04/28/2023 16:13	WG2050636
tert-Butylbenzene	U		0.000127	0.00100	1	04/28/2023 16:13	WG2050636
Ethylbenzene	1.22		0.0137	0.100	100	04/29/2023 21:43	WG2051179
Isopropylbenzene	0.0624		0.000105	0.00100	1	04/28/2023 16:13	WG2050636
Naphthalene	0.146	J	0.100	0.500	100	04/29/2023 21:43	WG2051179
Toluene	0.157		0.000278	0.00100	1	04/28/2023 16:13	WG2050636
1,2,4-Trimethylbenzene	0.845		0.0322	0.100	100	04/29/2023 21:43	WG2051179
1,3,5-Trimethylbenzene	0.152		0.000104	0.00100	1	04/28/2023 16:13	WG2050636
Total Xylenes	3.20		0.0174	0.300	100	04/29/2023 21:43	WG2051179
(S) Toluene-d8	132	J1		80.0-120		04/28/2023 16:13	WG2050636
(S) Toluene-d8	102			80.0-120		04/29/2023 21:43	WG2051179
(S) 4-Bromofluorobenzene	112			77.0-126		04/28/2023 16:13	WG2050636
(S) 4-Bromofluorobenzene	86.9			77.0-126		04/29/2023 21:43	WG2051179
(S) 1,2-Dichloroethane-d4	82.2			70.0-130		04/28/2023 16:13	WG2050636
(S) 1,2-Dichloroethane-d4	91.3			70.0-130		04/29/2023 21:43	WG2051179

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	4.14		0.170	0.800	1	05/06/2023 13:35	WG2053006
(S) o-Terphenyl	64.4			50.0-150		05/06/2023 13:35	WG2053006

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	0.0000478	J	0.0000190	0.0000500	1	04/29/2023 02:13	WG2050888
Acenaphthene	0.000329		0.0000190	0.0000500	1	04/29/2023 02:13	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 02:13	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 02:13	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 02:13	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 02:13	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 02:13	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 02:13	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 02:13	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 02:13	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 02:13	WG2050888
Fluorene	0.00131		0.0000169	0.0000500	1	04/29/2023 02:13	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 02:13	WG2050888
Naphthalene	0.0923		0.000917	0.00250	10	04/30/2023 15:22	WG2050888



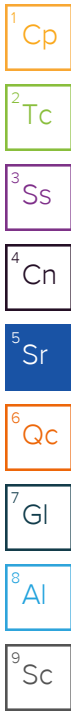
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.00112		0.0000180	0.0000500	1	04/29/2023 02:13	WG2050888
Pyrene	0.0000374	J	0.0000169	0.0000500	1	04/29/2023 02:13	WG2050888
1-Methylnaphthalene	0.0159		0.0000687	0.000250	1	04/29/2023 02:13	WG2050888
2-Methylnaphthalene	0.0149		0.0000674	0.000250	1	04/29/2023 02:13	WG2050888
(S) Nitrobenzene-d5	82.1			31.0-160		04/30/2023 15:22	WG2050888
(S) Nitrobenzene-d5	121			31.0-160		04/29/2023 02:13	WG2050888
(S) 2-Fluorobiphenyl	97.9			48.0-148		04/30/2023 15:22	WG2050888
(S) 2-Fluorobiphenyl	84.2			48.0-148		04/29/2023 02:13	WG2050888
(S) p-Terphenyl-d14	78.4			37.0-146		04/29/2023 02:13	WG2050888
(S) p-Terphenyl-d14	81.6			37.0-146		04/30/2023 15:22	WG2050888

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

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	51.4		0.504	3.00	1	04/29/2023 21:41	WG2050288



Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	1.88		0.143	0.500	5	05/03/2023 05:53	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	73.9			50.0-150		05/03/2023 05:53	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	173	J1		79.0-125		05/03/2023 05:53	WG2052744

Sample Narrative:

L1609881-07 WG2052744: Lowest possible dilution due to sample foaming.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00861		0.0000941	0.00100	1	04/28/2023 16:34	WG2050636
n-Butylbenzene	0.00463		0.000157	0.00100	1	04/28/2023 16:34	WG2050636
sec-Butylbenzene	0.00613		0.000125	0.00100	1	04/28/2023 16:34	WG2050636
tert-Butylbenzene	0.000623	J	0.000127	0.00100	1	04/28/2023 16:34	WG2050636
Ethylbenzene	0.199		0.000137	0.00100	1	04/28/2023 16:34	WG2050636
Isopropylbenzene	0.0260		0.000105	0.00100	1	04/28/2023 16:34	WG2050636
Naphthalene	0.0374		0.00100	0.00500	1	04/28/2023 16:34	WG2050636
Toluene	0.000523	B, J	0.000278	0.00100	1	04/28/2023 16:34	WG2050636
1,2,4-Trimethylbenzene	0.0536		0.000322	0.00100	1	04/28/2023 16:34	WG2050636
1,3,5-Trimethylbenzene	0.0351		0.000104	0.00100	1	04/28/2023 16:34	WG2050636
Total Xylenes	0.331		0.000174	0.00300	1	04/28/2023 16:34	WG2050636
(S) Toluene-d8	114			80.0-120		04/28/2023 16:34	WG2050636
(S) 4-Bromofluorobenzene	98.9			77.0-126		04/28/2023 16:34	WG2050636
(S) 1,2-Dichloroethane-d4	83.8			70.0-130		04/28/2023 16:34	WG2050636

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	0.739	B, J	0.204	0.960	1.2	05/09/2023 23:10	WG2056392
(S) o-Terphenyl	69.0			50.0-150		05/09/2023 23:10	WG2056392

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	04/29/2023 02:31	WG2050888
Acenaphthene	0.000104		0.0000190	0.0000500	1	04/29/2023 02:31	WG2050888
Acenaphthylene	U		0.0000171	0.0000500	1	04/29/2023 02:31	WG2050888
Benzo(a)anthracene	U		0.0000203	0.0000500	1	04/29/2023 02:31	WG2050888
Benzo(a)pyrene	U		0.0000184	0.0000500	1	04/29/2023 02:31	WG2050888
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	04/29/2023 02:31	WG2050888
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	04/29/2023 02:31	WG2050888
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	04/29/2023 02:31	WG2050888
Chrysene	U		0.0000179	0.0000500	1	04/29/2023 02:31	WG2050888
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	04/29/2023 02:31	WG2050888
Fluoranthene	U		0.0000270	0.000100	1	04/29/2023 02:31	WG2050888
Fluorene	0.000254		0.0000169	0.0000500	1	04/29/2023 02:31	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	04/29/2023 02:31	WG2050888
Naphthalene	0.0313		0.0000917	0.000250	1	04/29/2023 02:31	WG2050888

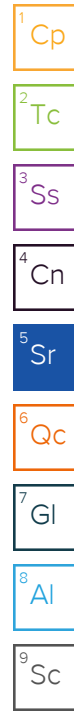
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Phenanthrene	0.0000888		0.0000180	0.0000500	1	04/29/2023 02:31	WG2050888
Pyrene	U		0.0000169	0.0000500	1	04/29/2023 02:31	WG2050888
1-Methylnaphthalene	0.0110		0.0000687	0.000250	1	04/29/2023 02:31	WG2050888
2-Methylnaphthalene	0.00626		0.0000674	0.000250	1	04/29/2023 02:31	WG2050888
<i>(S)</i> Nitrobenzene-d5	123			31.0-160		04/29/2023 02:31	WG2050888
<i>(S)</i> 2-Fluorobiphenyl	94.2			48.0-148		04/29/2023 02:31	WG2050888
<i>(S)</i> p-Terphenyl-d14	92.6			37.0-146		04/29/2023 02:31	WG2050888

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

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	51.2		0.504	3.00	1	04/29/2023 21:44	WG2050288



Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	1.74	<u>B</u>	0.143	0.500	5	05/03/2023 06:15	WG2052744
(S) a,a,a-Trifluorotoluene(FID)	73.9			50.0-150		05/03/2023 06:15	WG2052744
(S) a,a,a-Trifluorotoluene(PID)	173	<u>J1</u>		79.0-125		05/03/2023 06:15	WG2052744

Sample Narrative:

L1609881-08 WG2052744: Lowest possible dilution due to sample foaming.

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.00916		0.0000941	0.00100	1	04/28/2023 16:55	WG2050636
n-Butylbenzene	0.00492		0.000157	0.00100	1	04/28/2023 16:55	WG2050636
sec-Butylbenzene	0.00643		0.000125	0.00100	1	04/28/2023 16:55	WG2050636
tert-Butylbenzene	0.000609	<u>J</u>	0.000127	0.00100	1	04/28/2023 16:55	WG2050636
Ethylbenzene	0.205		0.00137	0.0100	10	04/29/2023 22:02	WG2051179
Isopropylbenzene	0.0276		0.000105	0.00100	1	04/28/2023 16:55	WG2050636
Naphthalene	0.0399		0.00100	0.00500	1	04/28/2023 16:55	WG2050636
Toluene	0.000467	<u>B J</u>	0.000278	0.00100	1	04/28/2023 16:55	WG2050636
1,2,4-Trimethylbenzene	0.0553		0.000322	0.00100	1	04/28/2023 16:55	WG2050636
1,3,5-Trimethylbenzene	0.0368		0.000104	0.00100	1	04/28/2023 16:55	WG2050636
Total Xylenes	0.353		0.000174	0.00300	1	04/28/2023 16:55	WG2050636
(S) Toluene-d8	110			80.0-120		04/28/2023 16:55	WG2050636
(S) Toluene-d8	102			80.0-120		04/29/2023 22:02	WG2051179
(S) 4-Bromofluorobenzene	98.6			77.0-126		04/28/2023 16:55	WG2050636
(S) 4-Bromofluorobenzene	90.4			77.0-126		04/29/2023 22:02	WG2051179
(S) 1,2-Dichloroethane-d4	84.4			70.0-130		04/28/2023 16:55	WG2050636
(S) 1,2-Dichloroethane-d4	91.8			70.0-130		04/29/2023 22:02	WG2051179

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	1.95	<u>B</u>	0.207	0.976	1.22	05/10/2023 10:32	WG2056392
(S) o-Terphenyl	57.4			50.0-150		05/10/2023 10:32	WG2056392

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000199	0.0000525	1.05	04/29/2023 02:47	WG2050888
Acenaphthene	0.000106		0.0000199	0.0000525	1.05	04/29/2023 02:47	WG2050888
Acenaphthylene	U		0.0000180	0.0000525	1.05	04/29/2023 02:47	WG2050888
Benzo(a)anthracene	U		0.0000213	0.0000525	1.05	04/29/2023 02:47	WG2050888
Benzo(a)pyrene	U		0.0000193	0.0000525	1.05	04/29/2023 02:47	WG2050888
Benzo(b)fluoranthene	U		0.0000176	0.0000525	1.05	04/29/2023 02:47	WG2050888
Benzo(g,h,i)perylene	U		0.0000193	0.0000525	1.05	04/29/2023 02:47	WG2050888
Benzo(k)fluoranthene	U		0.0000212	0.0000525	1.05	04/29/2023 02:47	WG2050888
Chrysene	U		0.0000188	0.0000525	1.05	04/29/2023 02:47	WG2050888
Dibenz(a,h)anthracene	U		0.0000168	0.0000525	1.05	04/29/2023 02:47	WG2050888
Fluoranthene	U		0.0000284	0.000105	1.05	04/29/2023 02:47	WG2050888

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	0.000255		0.0000177	0.0000525	1.05	04/29/2023 02:47	WG2050888
Indeno(1,2,3-cd)pyrene	U		0.0000166	0.0000525	1.05	04/29/2023 02:47	WG2050888
Naphthalene	0.0300		0.0000963	0.000263	1.05	04/29/2023 02:47	WG2050888
Phenanthrene	0.0000845		0.0000189	0.0000525	1.05	04/29/2023 02:47	WG2050888
Pyrene	U		0.0000177	0.0000525	1.05	04/29/2023 02:47	WG2050888
1-Methylnaphthalene	0.0109		0.0000721	0.000263	1.05	04/29/2023 02:47	WG2050888
2-Methylnaphthalene	0.00618		0.0000708	0.000263	1.05	04/29/2023 02:47	WG2050888
<i>(S)</i> Nitrobenzene-d5	119			31.0-160		04/29/2023 02:47	WG2050888
<i>(S)</i> 2-Fluorobiphenyl	91.4			48.0-148		04/29/2023 02:47	WG2050888
<i>(S)</i> p-Terphenyl-d14	90.0			37.0-146		04/29/2023 02:47	WG2050888

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

Method Blank (MB)

(MB) R3919208-1 04/30/23 16:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sodium	U		0.504	3.00

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3919208-2 04/30/23 16:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	10.2	102	80.0-120	

⁴Cn

⁵Sr

L1609749-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1609749-04 04/30/23 17:01 • (MS) R3919208-4 04/30/23 17:06 • (MSD) R3919208-5 04/30/23 17:09

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 %
Sodium	10.0	3.56	13.4	12.9	98.1	93.4	1	75.0-125			3.56	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3919173-1 04/29/23 20:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sodium	U		0.504	3.00

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3919173-2 04/29/23 20:55

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sodium	10.0	10.4	104	80.0-120	

⁴Cn

⁵Sr

L1608984-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1608984-05 04/29/23 20:58 • (MS) R3919173-4 04/29/23 21:03 • (MSD) R3919173-5 04/29/23 21:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sodium	10.0	63.6	71.2	71.5	76.2	79.2	1	75.0-125			0.432	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3920317-2 05/02/23 23:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	0.0351	<u>J</u>	0.0287	0.100
(S) a,a,a-Trifluorotoluene(FID)	76.3			60.0-120
(S) a,a,a-Trifluorotoluene(PID)	165	<u>J1</u>		79.0-125

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

(LCS) R3920317-1 05/02/23 21:48 • (LCSD) R3920317-5 05/03/23 08:05

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 %
TPHGAK C6 to C10	5.00	4.76	4.75	95.2	95.0	60.0-120			0.210	20
(S) a,a,a-Trifluorotoluene(FID)				76.7	78.1	60.0-120				
(S) a,a,a-Trifluorotoluene(PID)				169	188	79.0-125	<u>J1</u>	<u>J1</u>		

L1609081-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1609081-04 05/03/23 01:30 • (MS) R3920317-3 05/03/23 06:59 • (MSD) R3920317-4 05/03/23 07:21

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 %
TPHGAK C6 to C10	5.00	0.0648	4.86	4.85	95.9	95.7	1	70.0-130			0.206	20
(S) a,a,a-Trifluorotoluene(FID)					78.8	76.8		50.0-150				
(S) a,a,a-Trifluorotoluene(PID)					195	195		79.0-125	<u>J1</u>	<u>J1</u>		

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3919013-3 04/28/23 10:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000941	0.00100
n-Butylbenzene	U		0.000157	0.00100
sec-Butylbenzene	U		0.000125	0.00100
tert-Butylbenzene	U		0.000127	0.00100
Ethylbenzene	U		0.000137	0.00100
Isopropylbenzene	U		0.000105	0.00100
Naphthalene	0.00107	U	0.00100	0.00500
Toluene	0.000462	U	0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	114			80.0-120
(S) 4-Bromofluorobenzene	103			77.0-126
(S) 1,2-Dichloroethane-d4	87.1			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3919013-1 04/28/23 09:01 • (LCSD) R3919013-2 04/28/23 09:22

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	0.00500	0.00451	0.00445	90.2	89.0	70.0-123			1.34	20
n-Butylbenzene	0.00500	0.00422	0.00422	84.4	84.4	73.0-125			0.000	20
sec-Butylbenzene	0.00500	0.00444	0.00440	88.8	88.0	75.0-125			0.905	20
tert-Butylbenzene	0.00500	0.00449	0.00436	89.8	87.2	76.0-124			2.94	20
Ethylbenzene	0.00500	0.00502	0.00522	100	104	79.0-123			3.91	20
Isopropylbenzene	0.00500	0.00501	0.00498	100	99.6	76.0-127			0.601	20
Naphthalene	0.00500	0.00519	0.00549	104	110	54.0-135			5.62	20
Toluene	0.00500	0.00568	0.00551	114	110	79.0-120			3.04	20
1,2,4-Trimethylbenzene	0.00500	0.00460	0.00444	92.0	88.8	76.0-121			3.54	20
1,3,5-Trimethylbenzene	0.00500	0.00418	0.00426	83.6	85.2	76.0-122			1.90	20
Xylenes, Total	0.0150	0.0158	0.0158	105	105	79.0-123			0.000	20
(S) Toluene-d8				114	113	80.0-120				
(S) 4-Bromofluorobenzene				106	106	77.0-126				
(S) 1,2-Dichloroethane-d4				89.8	86.7	70.0-130				

Method Blank (MB)

(MB) R3919127-3 04/29/23 14:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	U		0.000278	0.00100
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	108			80.0-120
(S) 4-Bromofluorobenzene	86.7			77.0-126
(S) 1,2-Dichloroethane-d4	93.0			70.0-130

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

(LCS) R3919127-1 04/29/23 13:34 • (LCSD) R3919127-2 04/29/23 13:53

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.00500	0.00427	0.00427	85.4	85.4	70.0-123			0.000	20
Ethylbenzene	0.00500	0.00469	0.00468	93.8	93.6	79.0-123			0.213	20
Naphthalene	0.00500	0.00460	0.00486	92.0	97.2	54.0-135			5.50	20
Toluene	0.00500	0.00477	0.00488	95.4	97.6	79.0-120			2.28	20
1,2,4-Trimethylbenzene	0.00500	0.00495	0.00499	99.0	99.8	76.0-121			0.805	20
1,3,5-Trimethylbenzene	0.00500	0.00455	0.00477	91.0	95.4	76.0-122			4.72	20
Xylenes, Total	0.0150	0.0138	0.0141	92.0	94.0	79.0-123			2.15	20
(S) Toluene-d8				101	102	80.0-120				
(S) 4-Bromofluorobenzene				90.0	87.9	77.0-126				
(S) 1,2-Dichloroethane-d4				94.8	93.5	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3921759-1 05/06/23 10:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
AK102 DRO C10-C25	0.246	↓	0.170	0.800
(S) o-Terphenyl	64.7			60.0-120

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

(LCS) R3921759-2 05/06/23 10:29 • (LCSD) R3921759-3 05/06/23 10:53

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 %
AK102 DRO C10-C25	6.00	5.06	5.01	84.3	83.5	75.0-125			0.993	20
(S) o-Terphenyl				86.9	89.1	60.0-120				

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

Method Blank (MB)

(MB) R3922841-1 05/09/23 20:24

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
AK102 DRO C10-C25	0.214	↓	0.170	0.800
<i>(S) o-Terphenyl</i>	63.2			60.0-120

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

(LCS) R3922841-2 05/09/23 20:44 • (LCSD) R3922841-3 05/09/23 21:09

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
AK102 DRO C10-C25	6.00	4.66	5.32	77.7	88.7	75.0-125			13.2	20
<i>(S) o-Terphenyl</i>				61.9	74.3	60.0-120				

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

Method Blank (MB)

(MB) R3919133-3 04/28/23 23:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
<i>(S) Nitrobenzene-d5</i>	114			31.0-160
<i>(S) 2-Fluorobiphenyl</i>	96.0			48.0-148
<i>(S) p-Terphenyl-d14</i>	94.0			37.0-146

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3919133-1 04/28/23 22:45 • (LCSD) R3919133-2 04/28/23 23:02

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 %
Anthracene	0.00200	0.00221	0.00220	111	110	67.0-150			0.454	20
Acenaphthene	0.00200	0.00212	0.00214	106	107	65.0-138			0.939	20
Acenaphthylene	0.00200	0.00218	0.00220	109	110	66.0-140			0.913	20
Benzo(a)anthracene	0.00200	0.00223	0.00225	111	112	61.0-140			0.893	20
Benzo(a)pyrene	0.00200	0.00220	0.00229	110	115	60.0-143			4.01	20
Benzo(b)fluoranthene	0.00200	0.00187	0.00194	93.5	97.0	58.0-141			3.67	20
Benzo(g,h,i)perylene	0.00200	0.00182	0.00192	91.0	96.0	52.0-153			5.35	20
Benzo(k)fluoranthene	0.00200	0.00182	0.00192	91.0	96.0	58.0-148			5.35	20
Chrysene	0.00200	0.00216	0.00223	108	111	64.0-144			3.19	20
Dibenz(a,h)anthracene	0.00200	0.00197	0.00206	98.5	103	52.0-155			4.47	20
Fluoranthene	0.00200	0.00225	0.00229	112	115	69.0-153			1.76	20
Fluorene	0.00200	0.00216	0.00220	108	110	64.0-136			1.83	20

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

(LCS) R3919133-1 04/28/23 22:45 • (LCSD) R3919133-2 04/28/23 23:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Indeno(1,2,3-cd)pyrene	0.00200	0.00207	0.00218	104	109	54.0-153			5.18	20
Naphthalene	0.00200	0.00210	0.00213	105	106	61.0-137			1.42	20
Phenanthrene	0.00200	0.00205	0.00208	103	104	62.0-137			1.45	20
Pyrene	0.00200	0.00213	0.00214	106	107	60.0-142			0.468	20
1-Methylnaphthalene	0.00200	0.00216	0.00219	108	109	66.0-142			1.38	20
2-Methylnaphthalene	0.00200	0.00220	0.00223	110	111	62.0-136			1.35	20
<i>(S) Nitrobenzene-d5</i>				112	118	31.0-160				
<i>(S) 2-Fluorobiphenyl</i>				94.5	95.0	48.0-148				
<i>(S) p-Terphenyl-d14</i>				88.0	88.5	37.0-146				

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

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

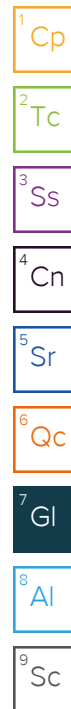
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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.
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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Company Name/Address:
Stantec - Anchorage, AK
 725 E Fireweed Lane
 Suite 200
 Anchorage, AK 99503

Billing Information:
 Attn: 5030 ETS Group
 PO Box 7601
 Springfield, OH 45501

Report to:
Ms. Leslie Petre

Email T:
leslie.petre@stantec.com

Project Description:
Speed Way 5315

City/State Collected:
 Please Circle:
 PT MT CT ET

Phone
907-343-5108

Client Project #
203723075

Lab Project #
STAAAKSSA-5315

Collected by (print):
Geoff Moorhead & Leslie Petre

Site/Facility ID #
0005315

P.O. #

Collected by (signature):
[Signature]

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

Quote #

Immediately Packed on Ice N Y

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
-----------	-----------	----------	-------	------	------	--------------

G-1	G	GW		4/25/23	18:38	11
G-5		GW			14:30	11
MW-10		GW			15:08	11
MW-12		GW			17:53	11
MW-16					16:45	11
MW17-1					19:07	11
RM-2					17:05	11
Dup					17:05	11

Analysis / Container / Preservative	AK101 40mlAmb HCl	AK102 100ml Amb HCl	PAHSIMLVID 40mlAmb-NoPres-WT	NAIICP 250ml HDPE-HN03	V8260C 40mlAmb-HCl
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X

Chain of Custody Page ___ of ___

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/hubs/pas-standard-terms.pdf>

4609861
B226

Acctnum: **STAAAKSSA**
 Template: **T216964**
 Prelogin: **P952841**
 PM: **034 - Craig Gothron**
 PB: *[Signature]*

Shipped Via: **FedEx 2nd Day**

Remarks	Sample # (lab only)
	-01
	-02
	-03
	-04
	-05
	-06
	-07
	-08

* 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 FedEx Courier

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact: NP N

COC Signed/Accurate: N N

Bottles arrive intact: N N

Correct bottles used: N N

Sufficient volume sent: N N

If Applicable

VOA Zero HeadSpace: N N

Preservation Correct/Checked: N N

RAD Screen <0.5 mR/hr: N N

Relinquished by: (Signature)
[Signature]

Date: *4/26/2023* Time: *11:30*

Received by: (Signature)

Trip Blank Received: Yes/No
 Yes No
 HCL MeOH TBR

Relinquished by: (Signature)

Date: _____ Time: _____

Received by: (Signature)

Temp: _____ °C Bottles Received: *88*

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: _____ Time: _____

Received for lab by: (Signature)
9 10

Date: *4/27/23* Time: *9:30*

Hold: _____ Condition: **NCF / OK**

Company Name/Address: **Stantec - Anchorage, AK** 2/2
 725 E Fireweed Lane
 Suite 200
 Anchorage, AK 99503

Billing Information:
 Attn: 5030 ETS Group
 PO Box 7601
 Springfield, OH 45501

Report to:
 Ms. Leslie Petre

Project Description:
 Speed Way 5315

City/State Collected:
 (AK) Please Circle: PT MT CT ET

Analysis / Container / Preservative

Chain of Custody Page ___ of ___



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>

Email T: *leslie.petre@stantec.com*

Client Project #: 203723075

Lab Project #: STAAAKSSA-5315

Phone: 907-343-5108

Collected by (print): *Geoff Moorhead & Leslie Petre*

Site/Facility ID #: 0005315

Collected by (signature): *[Signature]*

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

Date Results Needed

Immediately Packed on Ice N ___ Y

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40ml/Amb HCl	AK102 100ml Amb HCl	PAHSIMLVID 40ml/Amb-NoPres-WT	NAIICP 250ml HOPE-HNO3	V8260C 40ml/Amb-HCl	Remarks	Sample # (lab only)
G-1	G	GW		4/25/23	18:38	11	X	X	X	X	X		-01
G-5		GW			14:30	11	X	X	X	X	X		-02
MW-10		GW			15:08	11	X	X	X	X	X		-03
MW-12		GW			17:53	11	X	X	X	X	X		-04
MW-16					16:45	11	X	X	X	X	X		-05
MW17-1					19:07	11	X	X	X	X	X		-06
RM-2					17:05	11	X	X	X	X	X		-07
Dup					17:05	11	X	X	X	X	X		-08

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

Remarks:

Samples returned via:
 ___ UPS ___ FedEx ___ Courier

Tracking #

pH ___ Temp ___
 Flow ___ Other ___

Sample Receipt Checklist

COC Seal Present/Intact: 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) *[Signature]* Date: 4/26/2023 Time: 11:30

Received by: (Signature) *[Signature]* Trip Blank Received: Yes / No HCL / MeoH TBR

Temp: °C Bottles Received: If preservation required by Login: Date/Time

Relinquished by: (Signature) Date: Time: Received by: (Signature) Date: Time: Hold: Condition: NCF / OK

Relinquished by: (Signature) Date: Time: Received for lab by: (Signature) *[Signature]* 10 Date: 4/27/23 Time: 9:30

U1009581

Tracking Numbers		Temperature
607454709961		NSA71.0A0=1.0
62951086 0924		NSA71.3A0=1.3
62951086 0534		NSA72.0A0=2.0
63579918 2476		NSA71.0A0=1.0
60533812903 63579918 2476		NSA74.0A0=4.0

60533812903

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Sydney Souza	CS Site Name:	Tesoro North Store #111	Lab Name:	Pace Analytical
Title:	Environmental Scientist	ADEC File No.:	100.26.026	Lab Report No.:	L1609881
Consulting Firm:	Stantec Consulting Services Inc.	Hazard ID No.:	24247	Lab Report Date:	May 10, 2023

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: Click or tap here to enter text.
- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
Yes No N/A
Comments: Samples were not transferred

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?
Yes No N/A
Comments: Click or tap here to enter text.
- b. Were the correct analyses requested?
Yes No N/A
Analyses requested: Click or tap here to enter text.
Comments: Click or tap here to enter text.

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
Cooler temperature(s): ° C
Comments: Temperature not listed but noted as arriving withing standards.

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- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes No N/A

Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: Sample condition documented as OK

- 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: No discrepancies documented

- e. Is the data quality or usability affected?

Yes No N/A

Comments: No discrepancies documented

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes No N/A

Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: Case narrative documents no errors or discrepancies “unless qualified or notated within report”

- c. Were all the corrective actions documented?

Yes No N/A

Comments: No corrective actions taken

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

Comments: No effect on data quality/usability

5. Sample Results

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

Yes No N/A

Comments: Click or tap here to enter text.

- b. Are all applicable holding times met?

Yes No N/A

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Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: No soil samples submitted to the lab

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes No N/A

Comments: Click or tap here to enter text.

- e. Is the data quality or usability affected?

Yes No N/A

Comments: Click or tap here to enter text.

6. QC Samples

- a. Method Blank

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

Yes No N/A

Comments: Click or tap here to enter text.

- ii. Are all method blank results less than LOQ (or RL)?

Yes No

Comments: Click or tap here to enter text.

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

Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: Click or tap here to enter text.

- v. Data quality or usability affected?

Yes No N/A

Comments: Click or tap here to enter text.

- 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

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Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: Click or tap here to enter text.

- 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: Click or tap here to enter text.

- 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: Click or tap here to enter text.

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

Comments:

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

Yes No N/A

Comments: Click or tap here to enter text.

- vii. Is the data quality or usability affected?

Yes No N/A

Comments: Click or tap here to enter text.

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

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

Yes No N/A

Comments: Click or tap here to enter text.

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

Yes No N/A

Comments: Click or tap here to enter text.

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- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes No N/A
Comments: Click or tap here to enter text.
 - iv. 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.
Yes No N/A
Comments: Click or tap here to enter text.
 - v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Click or tap here to enter text.
 - vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No N/A
Comments: Click or tap here to enter text.
 - vii. Is the data quality or usability affected?
Yes No N/A
Comments: Click or tap here to enter text.
- 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: Click or tap here to enter text.
 - 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 and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes No N/A
Comments: Click or tap here to enter text.
 - 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: Click or tap here to enter text.
 - iv. Is the data quality or usability affected?
Yes No N/A

Comments: Click or tap here to enter text.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes No N/A

Comments: Click or tap here to enter text.

- ii. Are all results less than LoQ or RL?

Yes No N/A

Comments: Click or tap here to enter text.

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

Comments: None.

- iv. Is the data quality or usability affected?

Yes No N/A

Comments: No affected samples.

f. Field Duplicate

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

Yes No N/A

Comments: Click or tap here to enter text.

- ii. Was the duplicate submitted blind to lab?

Yes No N/A

Comments: Click or tap here to enter text.

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

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes No N/A

Comments: Click or tap here to enter text.

- iv. Is the data quality or usability affected? (Explain)

Yes No N/A

Comments: Click or tap here to enter text.

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g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?

Yes No N/A

Comments: Used disposable equipment

ii. Are all results less than LoQ or RL?

Yes No N/A

Comments: Used disposable equipment

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

Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?

Yes No N/A

Comments: Click or tap here to enter text.

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

a. Are they defined and appropriate?

Yes No N/A

Comments: Click or tap here to enter text.