Speedway Store 5310
(Former Tesoro 2 Go Mart #112)
ADEC File #100.26.159

2Q-June 2021 GWM Event Report

Prepared For

Stantec

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Test Method
amsl	above mean sea level
BTEX	benzene, toluene, ethylbenzene, and xylenes
Chemox	chemical oxidation
DO	dissolved oxygen
DRO	diesel range organics
EIT	Engineer in Training
EPA	U.S. Environmental Protection Agency
GCL	groundwater cleanup level
GRO	gasoline range organics
Klozur® One	Trademarked chemical oxidizer developed by PeroxyChem
mg/L	milligrams per liter
MW	monitoring well
PAH	polycyclic aromatic hydrocarbon
PQL	practical quantitation limit
ORP	oxidation-reduction potential
QA	quality assurance
QC	quality control
RW	remediation well
Speedway	Speedway, LLC
Stantec	Stantec Consulting Services, Inc.
Tesoro	Tesoro Refining and Marketing Company
UST	underground storage tank
VOC	Volatile Organic Compounds

1.0 EXECUTIVE SUMMARY

This 2nd quarter (semi-annual) Groundwater Monitoring and Remediation Event Report was prepared by Stantec Consulting Services, Inc. (Stantec) on behalf of Speedway LLC for Store #5310 (formerly known as Tesoro 2 Go Mart #112), located at 3392 Badger Road, North Pole, Alaska (**Figure 1**). The methods that were used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2021 Corrective Action Work Plan for this site (see **Appendix B**).

The groundwater monitoring event on June 24, 2021was conducted by Stantec personnel Engineer-In-Training (EIT) Leslie Petre and Geoff Moorhead. The sampling task included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-2, MW-3, MW-6, MW-10, and MW17-2 (**Figure 2**). In addition, depth to groundwater was measured in MW-1 and MW-4.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.0054 feet per foot with flow trending east-northeast at 80 degrees. The gradient for this monitoring event was consistent with the historical values for this site, and the flow direction was in the same quadrant, although more easterly, as shown in the groundwater flow summary presented on **Figure 2**.

The laboratory analytical sample results showed petroleum associated analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for the following two monitoring wells:

- MW-3: Benzene, Ethylbenzene, Xylenes, Naphthalene, Gasoline Range Organics (GRO), Diesel Range Organics (DRO), 1,2,4 Trimethylbenzene (TMB) and 1,3,5 TMB.

- MW 17-2: Ethylbenzene, DRO, 1,2,4 TMB and Naphthalene.

On June 28, 2021, Stantec completed groundwater remediation event that included the injection of chemical oxidation (chemox) solution into four treatment/remediation wells (RM 17-1, RM 17-3, RM 17-4 and RM 17-6). The chemox injection process involved the gravity injection of 110 pounds of Klozur® One product mixed with 50 gallons of potable water into each of the remediation wells. The solution was "hydraulically pushed" into the subsurface formation with an additional 200 gallons of potable water into each well.

2.0 SITE BACKGROUND

Background information is summarized in **Appendix A**.

3.0 FIELD ACTIVITIES

The following field activities were conducted during this monitoring event:

- Measuring depth to groundwater in Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-10, and MW17-2. Depth to groundwater could not be measured in MW 17-5 due to the presence of an ice block that could not be thawed during the field measurements despite attempts to thaw the well with injection of hot water.
- Collected field measurements of the following intrinsic water quality parameters: temperature, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductance.
- Collected groundwater samples from Monitoring Wells MW-2, MW-3, MW-6, MW-10, and MW17-2, and submitted them for the following laboratory analysis: U.S. Environmental Protection Agency (EPA) Method 8260C for Volatile Organic Compounds (VOC) including benzene, toluene, ethylbenzene, and xylenes (BTEX); 8270D-SIM for naphthalene; Alaska Test Method AK101 for GRO; AK102 for DRO; and EPA Test Method 6010C metals (ICP) for sodium.
- Completed chemox injection with Klozur One® into remediation wells RW 17-1, 17-3, 17-4 and 17-6.

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

4.0 GROUNDWATER MONITORING RESULTS

Groundwater Levels. Table 1 presents groundwater elevations at this site based on the depths to static groundwater levels measured during this monitoring event. When evaluated by hand calculation by triangulation method, fitted to the water level observations, the groundwater flow direction was determined to be to the northeast at 80 degrees at an average gradient of 0.0054 feet per foot, which generally agrees with historical data for the site, but trends more easterly (see **Figure 2**).

Table 1 Groundwater Elevations

Measurements taken on June 24, 2021

Monitoring Well Identification	Top of Casing Elevation (feet)[1]	Depth to Groundwater (feet)[2]	Groundwater Elevation (feet)
MW-1	98.42	8.48	89.94
MW-2	98.73	8.98	89.75
MW-3	98.87	9.07	89.80
MW-4	98.38	8.55	89.83
MW-6	101.37	12.41	88.96
MW-10	101.51	12.97	88.54
MW17-2	98.30	8.42	89.88
MW17-5	98.62	-	-

Key:

1 Based on vertical control survey taken July 21st, 2021, using an arbitrary datum of 100.00 ft. Previous surveys used a benchmark elevation of 400 ft. Static water level measurements taken June 24th, 2021.

2 SWL measurement not taken at MW17-5 because the well was frozen and attempts to thaw failed. MW17-2 was also frozen but was thawed prior to SWL measurements being taken.

Field Parameters. The results of water quality parameter testing of the water samples collected during this monitoring event are presented in **Table 2**. Temperature, pH, DO, ORP, and specific conductance were measured. Specific conductance values were generally within an expected range and pH values were within an expected range.

Table 2 Field Measured Intrinsic Water Quality Parameters
Measurements taken on June 24, 2021

Monitoring Well Identification	Purged Volume (gallons)	Temperature (°C)	pH	DO (mg/L)	ORP (mV)	SC (µs/cm°C)
MW-2	4.74	8.82	6.57	1.56	-21.3	238
MW-3	10.35	5.93	6.87	1.39	-25.3	393
MW-6	2.52	6.85	6.26	2.29	70.4	234
MW-10	3.09	5.61	6.10	1.43	90.7	193
MW17-2	3.18	6.73	6.57	0.76	-52.9	716

Key:
°C degrees Celsius
µs/cm°C microSiemens per centimeter degrees Celsius
mg/L milligrams per liter
mV millivolts
DO Dissolved Oxygen
NM Not measured
ORP oxidation-reduction potential
pH log [H^+]
SC specific conductance corrected to 25 °C

Water Sample Analytical Results. Historical monitoring data for this site are tabulated in **Appendix D**. Laboratory analytical results for BTEX, Naphthalene, GRO, DRO, and Sodium in the groundwater samples collected during this monitoring event are summarized in **Tables 3.** The laboratory analytical report is provided in **Appendix E**.

Table 3 Groundwater Analytical Results for
BTEX, GRO, DRO, 1,3,5 TMB, 1,2,4 TMB, Naphthalene and Sodium
Samples collected on June 24, 2021

ID	BENZENE[1]	TOLUENE[1]	ETHYL-BENZENE[1]	XYLENE[1] (TOTAL)	GRO	DRO	1,2,4-TRIMETHYL-BENZENE[1]	1,3,5-TRIMETHYL-BENZENE[1]	NAPH-THALENE[2]	SODIUM[3]
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/l
MW-02	*0.000620*	*0.000453*	0.00637	0.0121	0.850	0.950	0.0132 C3	0.00636	*0.000181*	11.5
MW-03	***0.0292***	0.278	**0.598**	**6.45**	**16.0**	**2.03**	**1.71 C3**	**0.484**	**0.0208**	25.1
MW-06	(0.00100)	(0.00100)	(0.00100)	(0.00300)	*0.0384*	(0.800)	(0.00100) C3	(0.00100)	(0.000250)	9.09
MW-10	(0.00100)	(0.00100)	(0.00100)	(0.00300)	(0.100)	(0.800)	(0.00100) C3	(0.00100)	(0.000250)	6.11
MW-17-2	*0.000581*	(0.00500)	**0.0176**	0.0426	1.36 B	**1.58**	**0.109 C3**	0.0127	**0.00227**	73.1
DUP-1 MW-17-2	*0.00163*	(0.0100)	**0.0727**	0.173	1.28	1.33	**0.389**	0.0569	***0.0164 B***	94.6
GCLS	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	**0.056**	**0.06**	**0.0017**	**N/A**

Key:

1	VOC by EPA Test Method 8260C
Blank	Trip Blank
Bold	indicates the concentration exceeds the GCL or the estimated quantitation limit exceeds the GCL
Italics	The identification of the analyte is acceptable; the reported value is an estimate.
B	The same analyte is found in the associated blank.
DUP	Duplicate sample of MW 17-2 (the time stamp was scrubbed from the duplicate sample]
DRO	Diesel range organics analyzed by AK102.
TMB	Trimethylbenzene
2	Semi-Volatile Organic Compounds by EPA Method 8270D-SIM
3	Sodium Metals (ICP) by EPA Method 6010C
GCLs	Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019)
GRO	Gasoline range organics analyzed by AK101.
mg/L	milligrams per liter
NA	Not Applicable
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
( )	Undetected above practical quantitation limits shown in parentheses.

Sodium is a by-product of the chemox treatments and a change in sodium levels can indicate how effectively the chemox is being pushed into the formation.

Quality Assurance (QA)/Quality Control (QC) Review. PACE Analytical met all laboratory QA/QC criteria during the analysis of groundwater samples, except for field duplicate precision measurements, as described in **Table 4**, which provides a summary of the laboratory QC objectives and outcomes for this monitoring event, and other discrepancies noted in the Laboratory Data Review Checklist included in **Appendix E** along with the laboratory data.

Table 4 Laboratory Quality Control Objectives

Quality Control Designation	Tolerance	Results for this Event
Holding Times		
DRO/Water/to analyze	40 days	12 days
DRO/Water/to extract	14 days	12 days
GRO/Water/to analyze	14 days	13 to 14 days[1]
BTEX/Water/to analyze	14 days	10 to 12 days[1]
Field Duplicates – Precision		
Benzene	30%	28.20%
Toluene	30%	NC
Ethylbenzene	30%	**122.04%**
Xylenes	30%	**120.96%**
Naphthalene	30%	**151.14%**
GRO	30%	6.06%
DRO	30%	17.18%
Sodium	NA	25.64%

Key:

%	Percentage of variance in absolute value	DRO	diesel range organics
BOLD	Exceeds precision tolerance	GRO	gasoline range organics
BTEX	benzene, toluene, ethylbenzene, and xylenes	NA	Not Applicable
1	The field duplicate sample was analyzed 2 days later than the others for GRO and BTEX		

Sample DUP is a quality control duplicate of Sample MW 17-2. The duplicate sample set was collected to determine the precision of the field collection and laboratory analyses for this sampling event. Data presented in **Table 5** show that the precision for the duplicate sample set was within the established QA criteria tolerances for Benzene, Toluene, GRO, and DRO analytes while exceeding tolerance for Naphthalene, Ethylbenzene, and Xylenes. The holding times were within established criteria.

5.0 IN-SITU CHEMOX REMEDIATION

Stantec completed an injection of the chemox product, Klozur One®, into the four remediation wells (RW17-1, RW17-3, RW17-4, and RW17-6) on June 28, 2021. Klozur One® is a granular product manufactured by PeroxyChem that consists primarily of sodium persulfate and patented activator reagents. A total of 440 pounds of Klozur One® product was mixed with 200 gallons of clean water and then injected as a solution into the contaminated source area by gravity into the four remediation wells. The solution was then "hydraulically pushed" into the formation with an additional 200 gallons of water injected into each remediation well. Water testing for sodium in wells with elevated contaminates after prior injection treatments of Klozur shows that the current treatments are influencing the formation.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The following summarizes laboratory test results that exceeded the GCLs for the June 2021 semi-annual groundwater monitoring event:

- MW-3: Benzene, Ethylbenzene, Xylenes, 1,2,4 TMB, 1,3,5 TMB, Naphthalene, GRO, and DRO.
- MW 17-2: Ethylbenzene, DRO, 1,2,4 TMB and Naphthalene.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.0054 feet per foot with flow trending east-northeast at 80 degrees. The flow direction and gradient for this monitoring event were consistent with the historical values for this site.

No anomalies were found during the June 2021 semi-annual monitoring event that would require additional corrective action or changes to the approved year 2021 Corrective Action Work Plan for this site.

7.0 LIMITATIONS

Stantec conducted this monitoring event in accordance with the 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). No other warranty, expressed or implied, is made. Data and recommendations made herein were prepared for Speedway, LLC Store 5310, formally known as Tesoro 2 Go Mart #112 and Tesoro Refining and Marketing Company. Information herein is for use at this site in accordance with the purpose of the report described.

FIGURES

Figure 1 Location and Vicinity Map
Figure 2 Site Plan with Groundwater Detections and Analytical Exceedances
Figure 3 Remediation System Layout

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SPEEDWAY STORE 5310
(Former Tesoro TGMart #112)
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LOCATION AND VICINITY MAP

FIGURE
1

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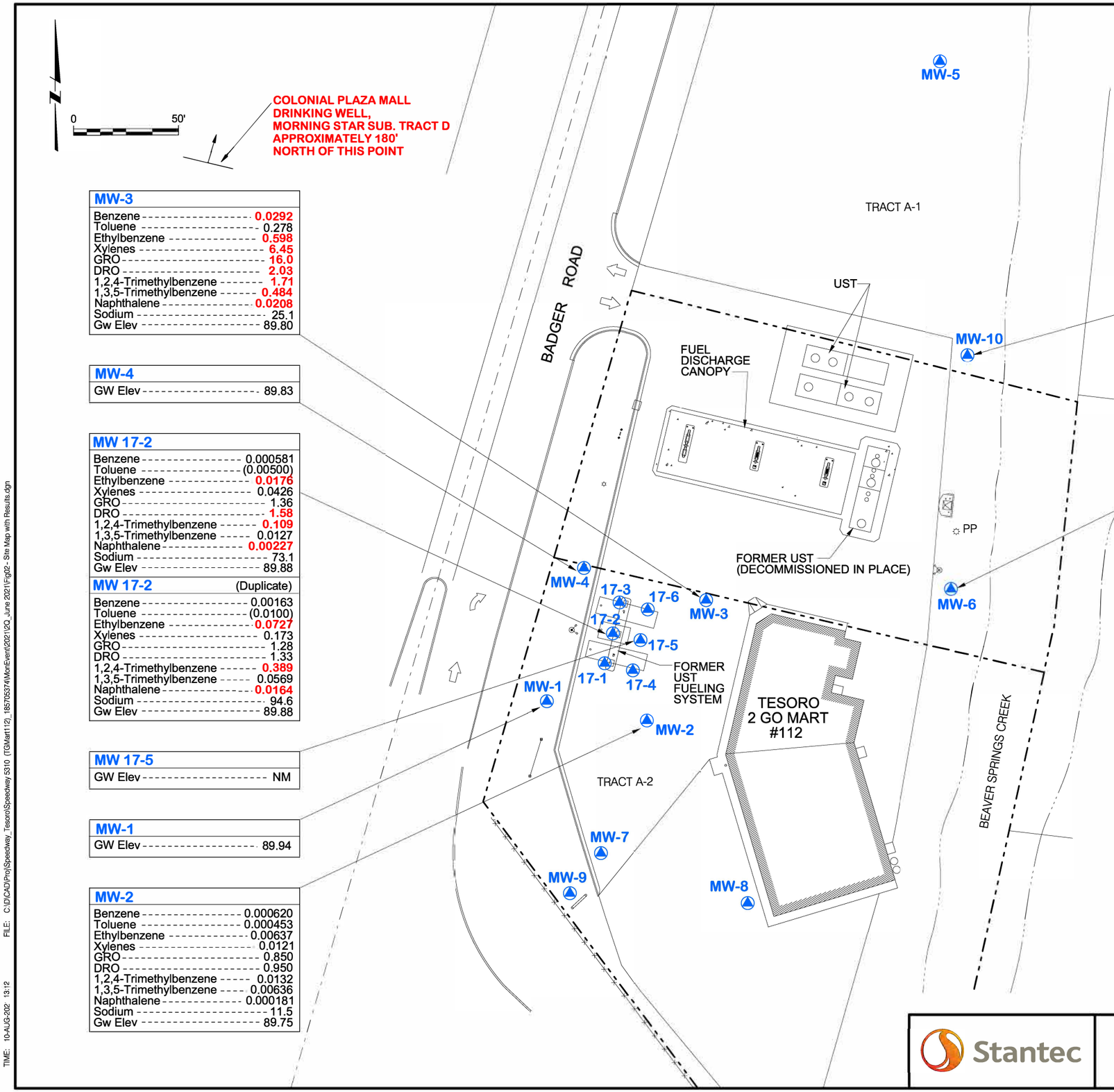


MW-3

Benzene	**0.0292**
Toluene	0.278
Ethylbenzene	**0.598**
Xylenes	**6.45**
GRO	**16.0**
DRO	**2.03**
1,2,4-Trimethylbenzene	**1.71**
1,3,5-Trimethylbenzene	**0.484**
Naphthalene	**0.0208**
Sodium	25.1
Gw Elev	89.80

MW-4

GW Elev	89.83

MW 17-2

Benzene	0.000581
Toluene	(0.00500)
Ethylbenzene	**0.0176**
Xylenes	0.0426
GRO	1.36
DRO	**1.58**
1,2,4-Trimethylbenzene	**0.109**
1,3,5-Trimethylbenzene	0.0127
Naphthalene	**0.00227**
Sodium	73.1
Gw Elev	89.88

MW 17-2 (Duplicate)

Benzene	0.00163
Toluene	(0.0100)
Ethylbenzene	**0.0727**
Xylenes	0.173
GRO	1.28
DRO	1.33
1,2,4-Trimethylbenzene	**0.389**
1,3,5-Trimethylbenzene	0.0569
Naphthalene	**0.0164**
Sodium	94.6
Gw Elev	89.88

MW 17-5

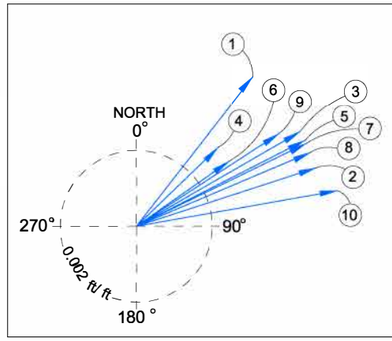
GW Elev	NM

MW-1

GW Elev	89.94

MW-2

Benzene	0.000620
Toluene	0.000453
Ethylbenzene	0.00637
Xylenes	0.0121
GRO	0.850
DRO	0.950
1,2,4-Trimethylbenzene	0.0132
1,3,5-Trimethylbenzene	0.00636
Naphthalene	0.000181
Sodium	11.5
Gw Elev	89.75



GROUNDWATER FLOW SUMMARY

	DATE	BEARING	GRADIENT (ft/ft)
1	MAY 11, 2016	38°	0.005
2	OCT. 5, 2016	72°	0.005
3	MAY 8, 2017	60°	0.005
4	JUNE 14, 2018	46°	0.003
5	OCT. 30, 2018	63°	0.005
6	MAY 9, 2019	55°	0.003
7	OCT 22, 2019	64°	0.005
8	AUG 18, 2020	67°	0.005
9	OCT 6, 2020	57°	0.0045
10	JUNE 24, 2021	80°	0.0054

MW-10

Benzene	(0.00100)
Toluene	(0.00100)
Ethylbenzene	(0.00100)
Xylenes	(0.00300)
GRO	(0.100)
DRO	(0.800)
1,2,4-Trimethylbenzene	(0.00100)
1,3,5-Trimethylbenzene	(0.00100)
Naphthalene	(0.000250)
Sodium	6.11
Gw Elev	88.54

MW-6

Benzene	(0.00100)
Toluene	(0.00100)
Ethylbenzene	(0.00100)
Xylenes	(0.00300)
GRO	0.0384
DRO	(0.800)
1,2,4-Trimethylbenzene	(0.00100)
1,3,5-Trimethylbenzene	(0.00100)
Naphthalene	(0.000250)
Sodium	9.09
Gw Elev	88.96

LEGEND:

— - — - —	PROPERTY LINE
▲	MONITORING WELL
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
GW Elev.	GROUNDWATER ELEVATION IN FEET
NM	NOT MEASURED
PP	POWER POLE
U	UNDETECTED ABOVE PRACTICAL QUANTITATION LIMITS SHOWN IN PARENTHESES
UST	UNDERGROUND STORAGE TANK

NOTES:

1. RESULTS SHOWN ARE FOR WELLS SAMPLED ON JUNE 24, 2021
2. RESULTS ARE IN MILLIGRAMS PER LITER
3. BOLD/ RED TEXT INDICATES CONTAMINANT CONCENTRATIONS ABOVE CLEANUP LEVELS FOR THIS SITE

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SITE PLAN WITH GROUNDWATER DETECTIONS AND EXCEEDANCES

FIGURE
2

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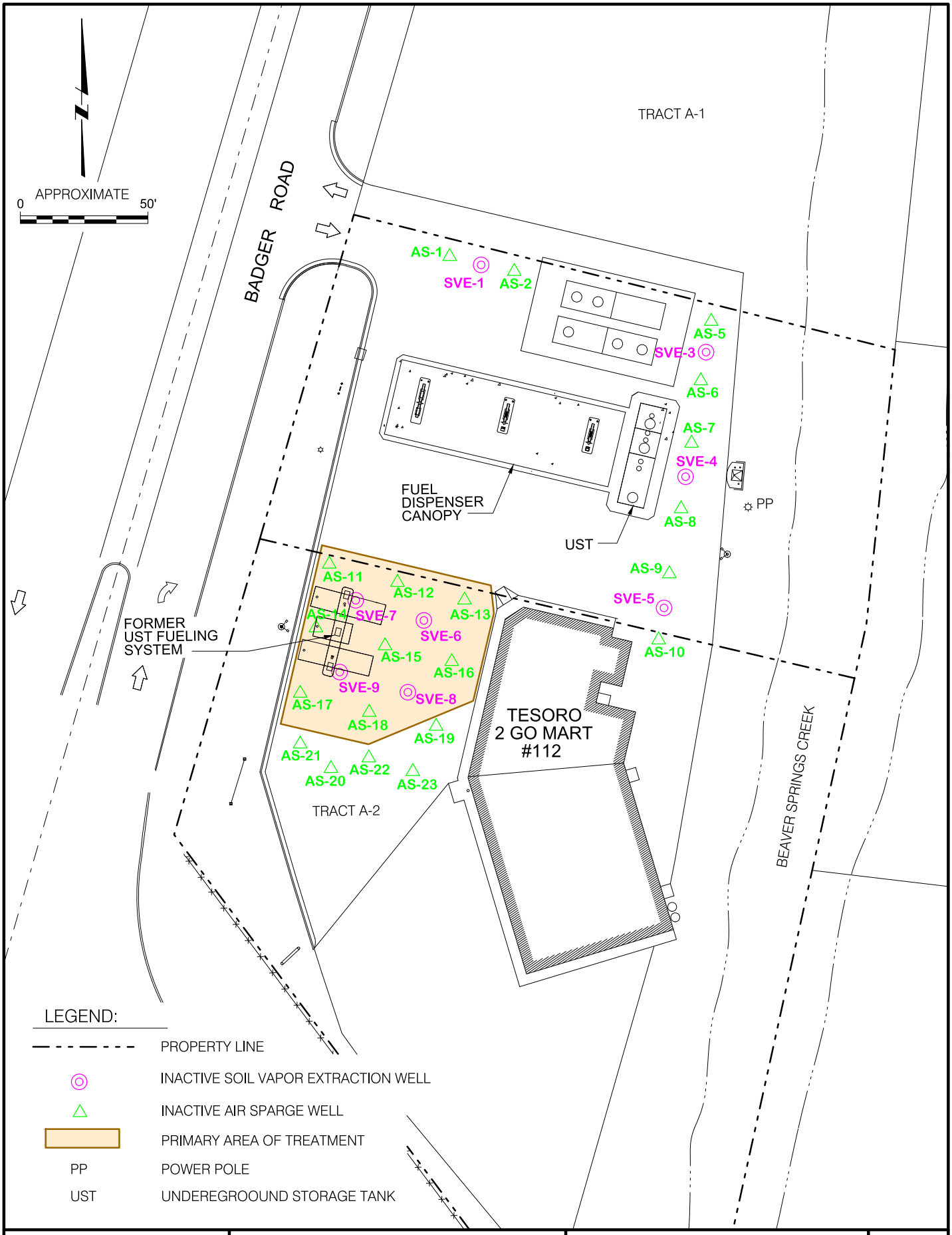

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SPPEEDWAY 5310
(Former Tesoro TGMart #112)

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REMEDIATION SYSTEM LAYOUT

FIGURE
3

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APPENDIX A

Site Background

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APPENDIX A – SITE BACKGROUND

Tesoro 2 Go Mart #112 (3392 Badger Road, North Pole, Alaska)
ADEC Facility ID #1116; ADEC File #100.26.159

Tesoro 2 Go Mart #112 is a retail fuel service/convenience store located northeast of the Richardson Highway overpass on Badger Road in North Pole, Alaska. The property is approximately 1.9 acres in size and the legal description is Tract A-2, Morningstar Subdivision. The store is in the north end of a small strip mall. Beaver Springs Creek flows to the north immediately behind the strip mall. Three underground storage tanks (USTs) were initially installed to serve the original convenience store in December 1984.

November 1996. During field installation of a cathodic protection system on the USTs, a petroleum hydrocarbon release was discovered in several subsurface boreholes drilled around the perimeter of the USTs.

May 1997. Gilfilian Engineering and Environmental Testing, Inc. (GE^2T) completed a Phase 1 Release Investigation (RI) at the site and installed four groundwater monitoring wells. In addition, representative water samples were collected from the mall drinking water system (served by an on-site water well) and from Beaver Springs Creek. Petroleum contaminants were detected above Alaska Department of Environmental Conservation (ADEC) cleanup levels in samples collected from all four soil borings/monitoring wells. Petroleum contaminants were detected at very low concentrations in the creek water samples, and none in the drinking water sample.

September 1997. Free phase petroleum was discovered in two of the four groundwater monitoring wells at the site, and dissolved petroleum contaminants was detected above ADEC groundwater cleanup levels (GCLs) in the other two monitoring wells.

March 1998. A well search was conducted within a ¼-mile radius of the site. The findings of the well search noted there were approximately 24 domestic water supply wells within the search radius.

August/September 1998. GE^2T conducted a UST Closure Site Assessment (SA) at the site. Three USTs and associated piping and dispensers were removed from the site and a new UST system was installed on an adjacent downgradient lot (to the north) of the site on Tract A-1 Morning Star Subdivision. Petroleum hydrocarbon contamination was found in the monitoring wells constructed in the area of the former and new UST systems. Seven soil vapor extraction (SVE) wells and sixteen air sparge (AS) wells systems were installed at the site for remediation of contamination found in the vadose soil zone and groundwater table beneath the site. Additional AS and SVE wells were installed at a later date

September 1999. An SA was completed for the removal of the new UST that were installed in September 1998 and replace with a new UST. Soil contamination was discovered in the area of

the replacement UST system. Contaminated soil was removed and transported off-site for thermal treatment.

June 2000. GE^2T conducted a RI for installation of an additional monitoring well (MW-6) at the site. No contaminants were detected in soil samples from the boring.

March 2001. A Falco 300 Cat-Ox unit was installed as part of the remediation system to treat vapors captured in the SVE system.

September/October 2003. MWH Americas, Inc. (MWH) completed a RI that included the installation of additional AS and groundwater monitoring wells. The RI involved drilling five soil borings, of which four were completed as AS wells (AS-20, AS-21, AS-22, and AS-23) and one monitoring well (MW-7). Contaminants were detected in soil from borings MW-7, AS-20, and AS-21 and the water sample from MW-7.

March 2004. MWH completed a RI that involved the drilling two soil borings. These borings were completed as 2-inch diameter monitoring wells (MW-8 and MW-9). Laboratory results indicate that no contaminants were detected in the soil or groundwater samples collected.

September 2004. MWH completed a RI that involved the drilling of one soil boring. The boring that was completed as 2-inch diameter monitoring well (MW-10). Laboratory results indicate that no contaminants were detected in the soil samples collected. Benzene was detected above the GCL water sample collected from MW-10.

May 2005. Benzene, toluene, ethylbenzene, GRO, and DRO were detected above the ADEC GCLs in Monitoring Well MW-3. Benzene, GRO, and DRO were also detected above the GCLs in Monitoring Well MW-2. No analytes of concern were detected above the GCLs in any of the other tested wells. The AS and SVE systems remained in operation.

September 2005. Benzene, GRO, and DRO were detected above the ADEC GCLs in Monitoring Wells MW-2 and MW-3. Toluene was also detected above the GCL in Monitoring Well MW-3. No analytes of concern were detected above the GCLs in Monitoring Well MW-10. The AS and SVE systems remained in operation. The SVE exhaust vapor concentrations had decreased to a relatively low level that no longer necessitated the use of the catalytic oxidizer unit. Therefore, the catalytic oxidizer was disconnected from the SVE system in summer 2005.

May 2006. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above the ADEC GCLs in Monitoring Well MW-3. GRO and DRO were also detected above the GCLs in Monitoring Well MW-2. No analytes of concern were detected above the GCLs in Monitoring Wells MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, and MW-10. The AS and SVE system were shut down until system maintenance could be performed.

November 2006. Benzene, toluene, ethylbenzene, and gasoline range organics were detected above the ADEC GCLs in Monitoring Wells MW-2 and MW-3. Xylenes and diesel range organics

were also detected above the GCLs in Monitoring Well MW-3. No analytes of concern were detected above the GCLs in Monitoring Well MW-10. AS and SVE system were brought back online after system repair was performed.

May 2007. GRO and DRO were detected above the ADEC GCLs in Monitoring Wells MW-2 and MW-3. Benzene, toluene, ethylbenzene, and xylenes were detected above the practical quantitation limits (PQLs) in Monitoring Wells MW-2 and MW-3, but only benzene was above the GCL. DRO was detected above the PQL, but below the GCL, in Monitoring Wells MW-4 and MW-5. No analytes of concern were detected above the PQLs in Monitoring Wells MW-1, MW-6, MW-8, MW-9, and MW-10. AS and SVE system remain in operation.

April 2008. DRO was detected above the ADEC GCLs in Monitoring Wells MW-2, MW-3, and MW-4. GRO were detected above the ADEC GCLs in Monitoring Wells MW-3 and MW-4. Benzene was also detected above the GCLs in Monitoring Well MW-3. DRO in Monitoring Well MW-1; ethylbenzene, xylenes, and GRO in MW-2; toluene, ethylbenzene, and xylenes in Monitoring Well MW-3; and benzene, toluene, ethylbenzene, and xylenes in Monitoring Well MW-4 were detected above the PQLs, but below the GCLs. No analytes were detected above the PQLs in Monitoring Wells MW-5 through MW-10. AS and SVE system remain in operation.

October 2008. DRO were detected above the ADEC GCL in Monitoring Well MW-3. GRO were detected above the GCL in Monitoring Wells MW-2 and MW-3. All other analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-2 and MW-3. No analytes were detected above the PQLs in Monitoring Well MW-10. AS and SVE system remain in operation.

May 2009. Diesel range organics were detected above the ADEC GCLs in Monitoring Wells MW-1, MW-2, and MW-3. GRO were detected above the GCL in Monitoring Wells MW-2 and MW-3. Benzene was detected above the GCL in Monitoring Well MW-3. All other analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-2 and MW-3. Toluene in Monitoring Wells MW-1 through MW-4, and MW-8; ethylbenzene in Monitoring Wells MW-1 through MW-3, MW-7, and MW-8; xylenes in Monitoring Wells MW-1 through MW-4 and MW-7 through MW-9; and GRO in Monitoring Well MW-7 were detected above PQLs but below GCLs. All other analytes in the above wells sampled were not detected above the PQLs. No analytes were detected above the PQLs in Monitoring Wells MW-5, MW-6, and MW-10. AS and SVE system remain in operation.

October 2009. All analytes tested were detected above the ADEC GCLs in Monitoring Well MW-3. Ethylbenzene and gasoline range organics were detected above the GCLs in Monitoring Well MW-2. Benzene, toluene, xylenes, and diesel range organics were detected above the practical quantitation limits, but below the GCLs, in Monitoring Well MW-2. No analytes of concern were detected above the practical quantitation limits in Monitoring Well MW-10. AS and SVE system remain in operation.

June 2010. Benzene, GRO, and DRO were detected above the ADEC groundwater cleanup levels GCLs in Monitoring Well MW-3. Toluene, ethylbenzene, and xylenes were detected above the

PQLs, but below the GCLs, in Monitoring Well MW-3. Benzene, toluene, ethylbenzene, xylenes, and GRO were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-1 and MW-2. DRO was also detected above the PQL, but below the GCL, in Monitoring Well MW-2. No analytes of concern were detected above the PQLs in Monitoring Wells MW-4, MW-6, or MW-10. AS and SVE system remain in operation. Measurements of the SVE exhaust with a PID indicated low amounts of volatile petroleum hydrocarbons are being removed from the vadose soil zone.

October 2010. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above the ADEC GCLs in Monitoring Well MW-3. GRO was detected above the GCL in Monitoring Well MW-2. Benzene, toluene, ethylbenzene, xylenes, and DRO were detected above the PQLs, but below the GCLs, in Monitoring Well MW-2. No analytes of concern were detected above the PQLs in Monitoring Well MW-10. AS and SVE system remain in operation.

May 2011. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above the ADEC GCLs in Monitoring Well MW-3. GRO and DRO were detected above the GCL in Monitoring Well MW-2. Benzene, toluene, ethylbenzene, and xylenes were detected above the PQLs, but below the GCLs, in Monitoring Well MW-2. Toluene, ethylbenzene, xylenes, GRO, and DRO were also detected above the PQLs, but below the GCLs, in Monitoring Well MW-1. Benzene was not detected above the PQL in Monitoring Well MW-1. No analytes of concern were detected above the PQLs in Monitoring Wells M-4, MW-6, and MW-10. AS and SVE system remain in operation.

October 2011. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above the ADEC GCLs in Monitoring Well MW-3. GRO was detected above the GCL in Monitoring Well MW-2. Ethylbenzene, xylenes, and DRO were detected above the PQLs, but below the GCLs, in Monitoring Well MW-2. Benzene and toluene were not detected above the PQLs in MW-2; however, the PQL for benzene is above the GCL and the result might exceed the GCL. No analytes of concern were detected above the PQLs in Monitoring Wells MW-6 and MW-10. The AS and SVE systems remain in operation on a full-time basis.

May 2012. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. Benzene and GRO were detected above GCLs in Monitoring Well MW-2. Benzene, toluene, ethylbenzene, xylenes, and GRO were detected above PQLs and below GCLs in Monitoring Well MW-1. Toluene, ethylbenzene, and xylenes were detected above PQLs and below GCLs in Monitoring Well MW-2. No other analytes were detected above the PQLs in any of the samples collected during this monitoring event. The AS and SVE systems remained in operation on a full-time basis.

October 2012. Benzene and GRO were detected above GCLs in Monitoring Well MW-3. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above PQLs and below GCLs in Monitoring Well MW-2. Toluene, ethylbenzene, xylenes, and DRO were detected above PQLs and below GCLs in Monitoring Well MW-3. The AS and SVE systems were taken offline pending repairs and improvements. A total of 130 gallons of Klozur CR® was applied at the site

over two events. Approximately 10 gallons of Klozur CR was poured into SVE-7, and approximately 55 gallons into SVE-9 on August 29, 2012. Additionally, 65 gallons of Klozur CR were injected into Well SVE-9 on October 9, 2012.

May 2013. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. Benzene, ethylbenzene, xylenes, GRO, and DRO were detected above PQLs but below GCLs in Monitoring Well MW-1. Benzene, toluene, ethylbenzene, xylenes, and GRO were detected above PQLs but below GCLs in Monitoring Well MW-2. The AS and SVE systems remain offline pending repairs and improvements.

September 2013. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. GRO was detected above GCL in Monitoring Well MW-2. Benzene, toluene, ethylbenzene, xylenes, and DRO were detected above PQLs but below GCLs in Monitoring Well MW-2. The AS and SVE systems remain offline pending repairs and improvements.

May 2014. Benzene, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. Ethylbenzene, xylenes, and DRO were detected above PQL and below GCLs in Monitoring Well MW-1. Benzene, ethylbenzene, xylenes, GRO, and DRO were detected above PQLs but below GCLs in Monitoring Well MW-2. Toluene, ethylbenzene, and xylenes were detected above PQLs and below GCLs in Monitoring Well MW-3. Xylenes were detected above PQLs but below GCLs in Monitoring Well MW-10. The AS and SVE systems remain offline pending repairs and improvements.

September 2014. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. Benzene, toluene, ethylbenzene, xylenes, and GRO were detected above PQLs and below GCLs in Monitoring Well MW-2. The AS and SVE systems remain offline pending repairs and improvements.

May 2015. Benzene, toluene, ethylbenzene, xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. DRO was detected above GCL in Monitoring Wells MW-1 and MW-2. Toluene, ethylbenzene, xylenes, and GRO were detected above PQLs but below GCLs in Monitoring Well MW-1. Benzene, ethylbenzene, xylenes, and GRO were detected above PQLs but below GCLs in Monitoring Well MW-2. DRO was detected above PQL but below GCL in Monitoring Well MW-4. The AS and SVE systems remain offline pending repairs and improvements.

October 2015. Benzene and GRO were detected above GCLs in Monitoring Well MW-2. Benzene, toluene, ethylbenzene, total xylenes, GRO, and DRO were detected above GCLs in Monitoring Well MW-3. One or more analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-2 (all analytes), MW-6 (DRO), and MW-10 (DRO). The AS and SVE systems remain offline pending repairs and improvements. Chemical oxidation of the groundwater at the site was conducted on October 6, 2015, with the injection of Klozur CR® into

Injection Well SVE-6 and well clusters SVE-7 and SVE-9 located at the footprint of the former underground storage tanks (USTs – Figure 3). Follow-up intrinsic measurements indicated negligible influence of the injection on groundwater at Monitoring Well MW-3.

May 2017. Results of analytical sampling showed concentrations exceeding the GCLs for:

- Monitoring Well MW-1: ethylbenzene, xylenes, 1,2,4-trimethylbenzene, and DRO.
- Monitoring Well MW-2: ethylbenzene, xylenes, 1,2,4-trimethylbenzene, naphthalene, and GRO.
- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, GRO, and DRO.

One or more analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-1, MW-2, MW-3, MW-4, and MW-10.

September 2017: Results of the semi-annual groundwater monitoring event conducted in September 2017 showed concentrations exceeding the GCLs for ethylbenzene in Monitoring Well MW-2; and benzene, ethylbenzene, xylenes, GRO, and DRO in MW-3. Monitoring Wells MW-6 and MW-10 were found to be absent of contaminants of concern. These findings are similar to results found in previous monitoring events

June 2018. Results of analytical sampling showed concentrations exceeding the GCLs for:

- Monitoring Well MW-1: 1,2,4-trimethylbenzene.
- Monitoring Well MW-2: ethylbenzene, 1,2,4-trimethylbenzene, benzopyrene, and indenopyrene.
- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring Well MW 17-5: benzene, ethylbenzene, xylenes, and 1,2,4-trimethylbenzene.

One or more analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-1, MW-2, MW-3, MW-4, and MW-17-5.

October 2018. The following summarizes results exceeding the GCLs for the October 2018 semi-annual groundwater monitoring event:

- Monitoring Well MW-2: ethylbenzene and DRO.
- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, GRO, DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring Well MW 17-2: ethylbenzene, xylenes, GRO, DRO and 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.
- Monitoring Well MW 17-5: benzene, ethylbenzene, xylenes, GRO, 1,2,4-trimethylbenzene,1,3,5-trimethylbenzene, and naphthalene

One or more analytes were detected above the PQLs, but below the GCLs, in Monitoring Wells MW-2, MW-3, MW-6, and MW-17-5.

In addition, several volatile organic compounds (VOCs) were reported by the laboratory as undetected but had laboratory reporting limits that equaled or exceeded their corresponding GCLs.

The chemical oxidation (chemox) treatment process was delayed until the third quarter of 2018 due to replacement of the chemical oxidant. In September 2018, Stantec completed an injection of the replacement chemox product, Klozur One®, into the four remediation wells. Klozur One® is a granular product manufactured by PeroxyChem that consists primarily of sodium persulfate and patented activator reagents. A total of 220 pounds of Klozur One® product was mixed with clean water and then manually injected as a solution into the contaminated source area via Remediation Wells RM17-1, RM17-3, RM17-4, and RM17-6. Each of the four remediation wells received 55 pounds of Klozur One® that was prepared as a solution with 50 gallons of clean water. Following the injection of the chemox solution, a combined total of 550 gallons of clean water was injected in all the wells. It was noted that each of the remediation wells had different acceptance rates for delivery of the clean water that ranged from 55 to 210 gallons each.

May 2019. This May 2019 semi-annual groundwater monitoring event included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-10, MW 17-2, and MW 17-5. The methods that were used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2019 Corrective Action Work Plan for this site.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.003 feet per foot with flow tending toward the northeast at 55 degrees. The flow direction and gradient for this monitoring event were consistent with the historical values for this site.

Results of the analytical sampling showed concentrations exceeding the ADEC groundwater cleanup levels (GCLs) for the following monitoring wells:

- Monitoring Well MW-2: ethylbenzene.
- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, gasoline range organics (GRO), and naphthalene.
- Monitoring Well MW 17-5: ethylbenzene.

October 2019. This October 2019 semi-annual groundwater monitoring event included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-10, MW 17-2, and MW 17-5. The methods that were used for this monitoring event were conducted in accordance with the ADEC approved 2020 Corrective Action Work Plan for this site.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.005 feet per foot with flow tending toward the northeast at 64 degrees. The flow direction and gradient for this monitoring event were consistent with the historical values for this site.

Results of the analytical sampling showed concentrations exceeding the ADEC GCLs for the following monitoring wells:

- Monitoring Well MW-2: ethylbenzene.
- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, GRO, and DRO.
- Monitoring Well MW 17-2: ethylbenzene, xylenes, and GRO.
- Monitoring Well MW 17-5: benzene, ethylbenzene, xylenes, and GRO.

Stantec completed an injection of 220 pounds of the chemox product, Klozur One®, into the four remediation wells (RW17-1, RW17-3, RW17-4, and RW17-6).

August 2020. The semi-annual groundwater monitoring event included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-2, MW-3, MW-6, MW-10, MW17-2, and MW17-5. The methods that were used for this monitoring event were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) approved 2020 Corrective Action Work Plan for this site.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.005 feet per foot with flow tending toward the northeast at 67 degrees. The flow direction and gradient for this monitoring event were consistent with the historical values for this site.

The following summarizes laboratory test results that exceeded the GCLs for the August 2020 semi-annual groundwater monitoring event:

- Monitoring Well MW-3: Benzene, Ethylbenzene, Total Xylenes, 1-2-4 Trimethylbenzene, 1-3-5 Trimethylbenzene, Naphthalene, GRO, and DRO.
- Monitoring Well MW 17-2: Ethylbenzene, Total Xylenes, 1-2-4 Trimethylbenzene, 1-3-5 Trimethylbenzene, Naphthalene, and DRO.
- Monitoring Well MW 17-5: Benzene, Ethylbenzene, Total Xylenes, 1-2-4 Trimethylbenzene, 1-3-5 Trimethylbenzene, Naphthalene, and GRO.

Stantec completed an injection of 440 pounds of the chemox product, Klozur One®, into the four remediation wells (RW17-1, RW17-3, RW17-4, and RW17-6).

October 2020. This October 2020 semi-annual groundwater monitoring event included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-2, MW-3, MW-6, MW-10, MW 17-2, and MW 17-5. The methods that were used for this monitoring event were conducted in accordance with the ADEC approved 2020 Corrective Action Work Plan for this site.

Analytes in exceedance included: benzene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), and naphthalene.

- MW-3: Benzene, Ethylbenzene, Total Xylenes, Naphthalene, GRO, and DRO.
- MW 17-2: Ethylbenzene, Total Xylenes, DRO, and Naphthalene.
- MW 17-5: Benzene, Ethylbenzene, Total Xylenes, and Naphthalene.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.0045 feet per foot with flow tending toward the northeast at 57 degrees. The flow direction and gradient for this monitoring event were consistent with the historical values for this site.

Stantec completed an injection of 440 pounds of the chemox product, Klozur One®, into the four remediation wells (RW17-1, RW17-3, RW17-4, and RW17-6).

June 2021. This June 2021 semi-annual groundwater monitoring event included measuring the depth to groundwater, measuring water quality parameters, and collecting and analyzing groundwater samples from Monitoring Wells MW-2, MW-3, MW-6, MW-10, MW 17-2, and MW 17-5. In addition, depth to groundwater was measured in MW-1 and MW-4. The methods that were used for this monitoring event were conducted in accordance with the ADEC approved 2021 Corrective Action Work Plan for this site.

Results from the groundwater depth measurements indicate the average hydraulic gradient was approximately 0.0054 feet per foot with flow trending east-northeast at 80 degrees. The gradient for this monitoring event was generally consistent with the historical values for this site, and the flow direction was in the same quadrant, although more easterly.

Results of the analytical sampling showed petroleum associated analytes were present at concentrations exceeding ADEC groundwater cleanup levels (GCLs) as listed in Alaska Administrative Code (AAC) 18AAC 75.345 Table C (9/18/2019) for the following wells sampled:

- MW-3: Benzene, Ethylbenzene, Xylenes, Naphthalene, GRO, DRO, 1,2,4-TMB and 1,3,5-TMB.
- MW 17-2: Ethylbenzene, DRO, 1,2,4-TMB and Naphthalene.

The remediation event on October 7th, 2020, consisted of a chemical oxidation (chemox) injection of 440 pounds of Klozur® One product combined with 200 gallons of potable water equally into four treatment wells (RM 17-1, RM 17-3, RM 17-4, and RM 17-6). The chemox solution was

“hydraulically pushed” into the subsurface formation with an additional 200 gallons of water into each remediation well.

APPENDIX B

Field Methods and Procedures

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ADEC Approved Work Plan Tasks for 2021

- *Task 1 –Groundwater Monitoring*

  This task consists of semi-annual monitoring of six groundwater monitoring wells and annual monitoring of two additional monitoring wells. Sampling locations and analyses for the groundwater monitoring wells and remediation wells are listed on the 2021 Work Plan Schedule below.

Work Plan Task		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1	Monitoring Wells: MW-2, MW-3, MW-6, MW-10, MW-17-2 and MW-17-5.		V, G, D, I & S		V, G, D, I, S & P
	Monitoring Wells MW-1 and MW-4				V, G, D, I, S & P
Task 2	Chemical Oxidation Treatment		✓	✓	✓

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 consisting of dissolved oxygen, specific conductance, oxygen-reduction potential, pH, and temperature.
O&M – Operation and Maintenance
V – Volatile organic compounds by EPA Test Method 8260C.
S – Sodium analyzed by Metals (ICP) Method 6010C.
P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds, by EPA Test Method 8270D Selective Ion Monitoring (SIM).

- *Task 4 – Chemical Oxidation Treatment*

  Stantec proposes to provide chemical oxidation treatment of the petroleum contaminated soil and groundwater located in the source area of the former underground storage tank (UST) system. The chemox injection will occur three times in the 2nd, 3rd and 4th quarters of the year into the following injection wells: RM17-1, RM17-3, RM17-4, and RM17-6. The first annual injection will occur in the spring of the year after the winter frost dissipates, and the second and third injections will take place several months later just prior to winter freeze-up. Approximately 100 gallons of a prepared solution of clean water and 110 pounds of Klozur One® will be manually injected via gravity and/or a low pressure booster pump into each of the four remediation wells. Following the injection of the chemox solution, a minimum of 100 gallons of clear water will be injected into each injection well to provide a means of "hydraulically pushing" the chemox solution into the subsurface

formation. In addition, the groundwater monitoring wells will be sampled for sodium to check on the distribution/migration of the oxidant.

The Corrective Action Plan for the year 2021 will be implemented by Stantec on behalf of Speedway. 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 2021 Work Plan Schedule shown above.

APPENDIX C

Field Measurements and Notes

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Appendix C
Field Measurements and Notes

Project: Speedway Store #5310, aka TNS #112 **Date:** 6/24/2021

Stantec Project Number: 185705374 **Samplers:** Leslie Petre and Geoff Moorhead

Weather:

Well ID	Volume Purged (gallons)	Sheen/ Odor	Temp. (°C)	pH	Dissolved Oxygen (mg/l)	ORP (mV)	Specific Conductance (µs/cm)	Top of Casing* (feet)	Depth to Groundwater (feet btoc)	Water Column (feet)	Groundwater Elevation (feet)	Depth to Bottom (feet btoc)
MW-1	-	-	-	-	-	-	-	98.42	8.48	4.08	89.94	12.56
MW-2	4.74	N/N	8.82	6.57	1.56	-21.3	238	98.73	8.98	2.42	89.75	11.40
MW-3	10.35	Y/Y	5.93	6.87	1.39	-25.3	393	98.87	9.07	5.29	89.80	14.36
MW-4	-	-	-	-	-	-	-	98.38	8.55	6.13	89.83	14.68
MW-6	2.52	N/N	6.85	6.26	2.29	70.4	234	101.37	12.41	5.15	88.96	17.56
MW-10	3.09	N/N	5.61	6.10	1.43	90.7	193	101.51	12.97	6.30	88.54	19.27
MW17-2	3.18	N/N	6.73	6.57	0.76	-52.9	716	98.30	8.42	6.49	89.88	14.91
MW17-5	-	-	-	-	-	-	-	98.62	-	-	-	-

NC - Not Calculated
NM - Not Measured
NP - Not Purged

* Based on a vertical control survey of July 21, 2021, using an arbitrary datum of 100.00 feet at mark on the right side of the NW store entrance

Well ID	Notes	Well Dia.	Sample Time
MW-1	Measured depth	4"	-
MW-2	Cover upside down, Well frost jacked	4"	1320
MW-3		4"	1702
MW-4	Measured depth	4"	
MW-6		2"	1110
MW-10		2"	1140
TNS 112 Dup	Of 17-2	--	
MW17-2*	Frozen, thawed with hot water. Dark grey	2"	1511
MW17-5**	Frozen, could not thaw	2"	

* Used ~4 gallons, bailed 8 gallons.
** Used ~3 gallons, didn't thaw. Bailed water back out, very dirty. Tried second and third time with 15 and 2 gallons, respectively. Did not thaw, overflowed.

Instruments / methods used		Model
Static water level	Heron	H01L
pH *	YSI Pro Solo	556
Conductivity *	YSI Pro Solo	556
Dissolved Oxygen *	YSI Pro Solo	556
Temperature	YSI Pro Solo	556
ORP *	YSI Pro Solo	556

Lab Analytical Methods:	
VOCs (8260C)	ALL
GRO (AK101)	ALL
DRO (AK102)	ALL
Sodium (200.8)	ALL

APPENDIX D

Tables of Historical Groundwater Monitoring Data

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Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-1

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
30-May-97	**0.310**	**9.00**	**2.30**	**10.0**	**42.0**	**8.5**	NT	88.88
11-Sep-97	**0.571**	**12.60**	**2.00**	**9.37**	**55.0**	**6.05**	NT	89.26
12-Mar-98	**0.220**	**4.90**	**1.30**	**6.0**	**37**	**5.1**	NT	88.92
21-Jul-98	**0.143**	**4.29**	**0.84**	**3.92**	**22**	**7.59**	NT	89.51
12-Oct-98	**0.277**	**4.36**	**0.458**	**1.929**	**16**	**5.98**	NT	87.78
21-Jan-99	**0.036**	**1.08**	**0.24**	**1.208**	**6.8**	**2.46**	NT	88.80
31-Mar-99	**0.015**	0.297	**0.151**	**0.703**	**3.3**	0.686	NT	88.28
28-Jul-99	**0.087**	**10.80**	**1.96**	**9.38**	**46**	**3.89**	NT	89.14
15-Oct-99	**0.174**	**2.97**	**0.503**	**2.334**	**15**	**3.74**	NT	88.91
10-Mar-00	**0.0216**	0.718	**0.161**	**0.783**	**4.7**	0.81	NT	88.52
21-Jun-00	**0.0220**	0.931	**0.284**	**1.321**	**7.6**	1.03	NT	89.32
21-Sep-00	**0.0329**	0.471	**0.160**	**0.736**	**5.0**	**1.61**	NT	89.26
25-Jan-01	**0.0170**	0.322	**0.110**	**0.523**	**3.69**	0.644	NT	88.90
19-Apr-01	**0.0123**	0.097	**0.046**	**0.221**	**1.48**	0.920	NT	88.87
24-Jul-01	**0.0119**	0.209	**0.104**	**0.409**	**2.07**	0.628	NT	89.25
28-Jan-02	**0.1200**	**2.070**	**0.604**	**2.841**	**10.8**	0.778	NT	89.16
30-Apr-02	**5.020**	**9.480**	**0.284**	**3.470**	**32.2**	**2.1**	NT	89.65
30-Sep-02	**0.659**	0.209	**0.0551**	**0.736**	**3.87**	1.11	NT	89.72
12-May-03	**0.538**	**3.14**	**0.814**	**20.42**	**44.5**	**4.84**	NT	89.70
09-Oct-03	0.00437	0.00571	0.00189	0.0998	0.697	U (0.32)	NT	389.08
21-Apr-04	U (0.0005)	0.000709	U (0.0005)	0.00984	U (0.05)	U (0.5)	NT	388.75
21-Oct-04	**0.00544**	0.00284	0.00585	**1.46**	**3.52**	**2.41**	NT	388.32
19-May-05	0.000943	0.00248	0.00272	0.0211	0.0709	0.48	NT	389.26
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.413)	NT	388.45
29-Apr-08	U (0.0005)	0.00088	U (0.0005)	U (0.0015)	U (0.05)	0.862	NT	388.52
12-May-09	U (0.0005)	0.00427	0.00077	0.00586	U (0.05)	**1.77**	NT	389.20
15-Jun-10	0.00134	0.0297	**0.0357**	**0.249**	0.849	U (0.420)	NT	389.00
24-May-11	U (0.0005)	0.00056	0.00479	0.0377	0.0857	0.652	NT	389.11
22-May-12	0.000701	0.00284	**0.0765**	**0.407**	1.41	U (0.410)	NT	388.89
21-May-13	0.000845	U (0.0005)	**0.125**	**0.455**	1.21	0.587	NT	389.20
06-May-14	U (0.0005)	U (0.0005)	0.0021	0.011	U (0.05)	0.64	NT	389.34
26-May-15	U (0.001)	0.0044	0.0045	0.031	0.21	**2.3**	NT	389.72
11-May-16	0.00055	0.0026	0.0053	0.029	U (0.1)	U (0.40)	NT	389.18
08-May-17	U (0.002)	U (0.002)	**0.034**	**0.285**	U (10)	**1.5**	NT	389.46
14-Jun-18	U (0.003)	0.0021	0.0086	0.071	0.028	0.43	NT	389.56
09-May-19	U (0.003)	U (0.002)	U (0.003)	0.0034	U (0.25)	0.42	NT	388.94
06-Oct-20	0.000373 J	0.0428	0.00419	0.0374	0.153	1.27	33	389.46
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Dates Well was not tested have been removed from this table.

Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
30-May-97	**92**	**64**	**7.1**	**33**	**170**	**8.2**	NT	88.86
12-Mar-98	**2.8**	**44**	**13**	**62**	**420**	**21**	NT	88.90
19-Apr-01	**2.93**	**52.9**	**9.9**	**44.5**	**216**	**27.4**	NT	88.85
24-Jul-01	**1.95**	**30.5**	**5.3**	**33.9**	**136**	**18.5**	NT	89.24
28-Jan-02	**1.23**	**33.4**	**7.38**	**39.8**	**156**	**10.5**	NT	89.14
30-Apr-02	**0.116**	**10.2**	**2.60**	**17.43**	**51.4**	**6.9**	NT	89.66
30-Sep-02	**0.656**	**17.9**	**2.92**	**26.61**	**118**	**6.93**	NT	89.29
12-May-03	**0.569**	**19.7**	**4.15**	**25.43**	**90.8**	**5.68**	NT	89.74
09-Oct-03	**0.25**	**6.21**	**2.88**	**14.2**	**64.9**	U (0.32)	NT	389.00
21-Apr-04	U (0.005)	0.116	**0.114**	**1.21**	**5.42**	**7**	NT	388.73
21-Oct-04	**0.00518**	0.0824	**0.109**	**0.699**	**3.2**	**1.74**	NT	388.03
19-May-05	**0.00681**	0.513	**0.376**	**1.61**	**7.88**	**5.49**	NT	389.21
26-Sep-05	**0.0125**	0.58	**0.422**	**1.78**	**9.6**	**3.15**	NT	388.93
15-May-06	0.00058	0.0273	**0.0533**	**0.223**	**1.5**	**1.87**	NT	388.80
07-Nov-06	**0.0102**	**1.11**	**0.906**	**3.24**	**17**	1.35	NT	388.64
15-May-07	0.00279	0.0199	**0.0356**	0.173	**1.99**	**1.9**	NT	388.15
16-Oct-07	0.0032	0.173	**0.412**	1.03	**7.61**	**1.55**	NT	388.15
29-Apr-08	U (0.0005)	U (0.0005)	0.0043	0.0131	0.453	**2.09**	NT	388.82
01-Oct-08	0.00114	0.0194	**0.228**	**0.739**	**3.12**	1.38	NT	389.24
12-May-09	0.00385	0.0114	**0.308**	**0.537**	**4.0**	**8.79**	NT	389.14
26-Oct-09	0.00138	0.0108	**0.717**	**1.48**	**4.25**	0.738	NT	388.76
15-Jun-10	0.00143	0.00135	**0.0205**	0.0729	1.32	0.510	NT	388.99
14-Oct-10	0.00192	0.0136	**0.127**	**0.700**	**4.45**	1.49	NT	388.66
24-May-11	0.00232	0.0313	**0.798**	**1.320**	**6.24**	**3.04**	NT	388.96
26-Oct-11	U (0.010)	U (0.010)	**0.345**	**1.110**	**6.53**	0.744	NT	388.59
22-May-12	**0.00566**	0.00275	**0.179**	**0.503**	**5.17**	NR	NT	388.88
11-Oct-12	0.000750	0.0197	0.00707	0.0614	0.687	0.655	NT	389.13
21-May-13	0.001730	0.000638	**0.0190**	0.0325	0.388	U (0.397)	NT	389.20
25-Sep-13	0.001300	0.00104	**0.269**	**0.481**	**2.61**	0.573	NT	389.27
06-May-14	0.003800	U (0.0005)	**0.150**	**0.210**	1.80	0.670	NT	389.28
17-Sep-14	0.000720	0.00068	**0.096**	0.150	1.30	U (0.38)	NT	388.88
26-May-15	0.0018	U (0.003)	**0.092**	**0.21**	1.6	**2.5**	NT	389.53
06-Oct-15	**0.036**	0.0039	**0.290**	**0.640**	**4.7**	0.76	NT	389.86
11-May-16	0.0023	U (0.001)	**0.10**	0.14	1.2	0.73	NT	389.13
05-Oct-16	U (0.020)	U (0.020)	**0.15**	**0.22**	1.7	1.4	NT	389.51
08-May-17	U (0.002)	U (0.002)	**0.23**	**0.639**	**2.8**	0.68	NT	389.42
05-Sep-17	0.0014	U (0.001)	**0.041**	0.081	1.000	0.9	NT	389.34
14-Jun-18	U (0.003)	U (0.002)	**0.077**	0.1128	1.1	0.3	NT	389.52
30-Oct-18	U (0.003)	U (0.002)	**0.042**	0.062	0.69	**2.4**	NT	389.22
09-May-19	U (0.003)	U (0.002)	**0.023**	0.051	0.41	0.26	NT	388.88
22-Oct-19	U (0.003)	U (0.002)	**0.017**	0.029	0.36	0.72	NT	389.44
18-Aug-20	0.00074	0.000886 J	0.00728	0.0156	0.203	0.632	NT	389.8
06-Oct-20	0.00121	0.000531 J	0.0104	0.0245	0.277	0.38 J	12.3	389.4
24-Jun-21	0.00062 J	0.000453 J	0.00673	0.0121	0.85	0.95	11.5	389.94
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Dates Well was not tested have been removed from this table.

Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well MW-3

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
30-May-97	**23**	**69**	**12**	**54**	**380**	**54**	NT	88.79
30-Sep-02	**36.6**	**75.3**	**3.87**	**40.3**	**337**	**7.38**	NT	89.15
12-May-03	**5.41**	**6.45**	**1.44**	**7.86**	**36.6**	**2.37**	NT	89.68
09-Oct-03	**13.6**	**52.3**	**5.31**	**49.9**	**392**	U (0.32)	NT	388.92
16-Mar-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Apr-04	**0.617**	**1.47**	**0.722**	**5.69**	**20.2**	**1.9**	NT	389.34
17-Sep-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Oct-04	**9.38**	**29.5**	**3.68**	**24.3**	**157**	**4.96**	NT	388.26
19-May-05	**0.846**	**5.38**	**1.04**	**8.9**	**37.3**	**2.03**	NT	389.41
26-Sep-05	**0.0496**	**1.27**	**0.261**	**4.24**	**14.6**	**3.15**	NT	389.12
15-May-06	**0.833**	**5.05**	**1.63**	**12.5**	**44.3**	**4.44**	NT	388.90
07-Nov-06	**1.74**	**26.4**	**3.74**	**31.4**	**174**	**4.68**	NT	388.87
15-May-07	**0.0124**	0.136	**0.0942**	**0.948**	**3.93**	**2.49**	NT	388.37
16-Oct-07	**0.126**	**2.3**	**0.272**	**17.5**	**55.3**	**7.82**	NT	387.31
29-Apr-08	**0.0063**	0.143	**0.0197**	**0.321**	**1.44**	**4.71**	NT	388.74
01-Oct-08	0.00305	0.0238	**0.0572**	**0.913**	**2.4**	**3.2**	NT	389.36
12-May-09	**0.056**	0.833	**0.624**	**5.7**	**17.2**	**5.95**	NT	389.26
26-Oct-09	**0.0903**	**2.25**	**0.935**	**13.6**	**51.5**	**3.41**	NT	388.70
15-Jun-10	**0.0428**	0.377	**0.449**	**4.2**	**12.8**	**2.86**	NT	388.90
14-Oct-10	**0.113**	**9.24**	**2.48**	**25.6**	**137**	**7.56**	NT	388.28
24-May-11	**0.205**	**2.53**	**1.31**	**20.9**	**62.4**	**7.72**	NT	388.85
26-Oct-11	**0.104**	**2.09**	**1.39**	**20.7**	**47.0**	**12.0**	NT	388.56
22-May-12	**0.131**	**1.99**	**0.751**	**12.9**	**41.3**	**5.22**	NT	388.82
11-Oct-12	**0.0102**	0.373	**0.271**	**3.83**	**23.2**	1.35	NT	389.05
21-May-13	**1.50**	**11.2**	**2.39**	**15.9**	**70.0**	**20.3**	NT	389.13
25-Sep-13	**0.102**	**4.01**	**1.93**	**23.9**	**47.9**	**7.15**	NT	389.18
06-May-14	**0.037**	0.470	**0.420**	**3.8**	**12.0**	**4.70**	NT	389.10
17-Sep-14	**0.047**	**1.5**	**1.200**	**14.0**	**26.0**	**2.70**	NT	388.75
26-May-15	**0.057**	**2.0**	**1.6**	**13.0**	**79.0**	**4.6**	NT	389.50
06-Oct-15	**0.10**	**2.1**	**1.5**	**16.0**	**57.0**	**2.2**	NT	389.77
11-May-16	0.00093	0.024	**0.034**	**0.34**	1.1	**1.6**	NT	389.07
05-Oct-16	**0.054**	0.61	**0.92**	**7.9**	**21**	**2.5**	NT	389.44
08-May-17	**0.021**	0.32	**0.63**	**6.6**	**19**	**4.4**	NT	389.37
05-Sep-17	**0.040**	0.750	**1.000**	**12.000**	**30.000**	**2.000**	NT	389.25
14-Jun-18	**0.027**	0.67	**1.1**	**11.6**	**U (25)**	**2.8**	NT	389.44
30-Oct-18	**0.036**	0.37	**1.2**	**12**	**39**	**5.7**	NT	389.14
10-May-19	**0.029**	0.200	**0.380**	**4.02**	**10**	0.66	NT	388.84
22-Oct-19	**0.028**	0.150	**0.750**	**5.5**	**17**	**3.7 H**	NT	389.42
18-Aug-20	**0.0244**	0.194	**0.637**	**6.86**	**12.6**	**2.84**	28.8	389.75
06-Oct-20	**0.0446**	0.187	**0.473**	**4.59**	**10.7**	**3.64**	23.5	389.35
24-Jun-21	**0.0292**	0.278	**0.598**	**6.45**	**16**	**2.03**	25.1	389.80
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Dates Well was not tested have been removed from this table.

Monitoring Well MW-4

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
30-May-97	**0.85**	0.71	**0.160**	**0.64**	**3.8**	0.55	NT	88.79
11-Sep-97	**8.41**	**14.5**	**1.150**	**5.57**	**64**	**1.71**	NT	89.2
12-Mar-98	**2.30**	**3.3**	**0.420**	**1.80**	**15**	0.68	NT	88.84
21-Jul-98	**3.71**	**3.69**	**0.485**	**2.09**	**21**	0.7	NT	89.41
12-Oct-98	**1.95**	**1.99**	**0.360**	**1.58**	**12**	1.29	NT	88.73
21-Jan-99	**0.94**	0.483	**0.127**	**0.579**	**4.3**	0.7	NT	88.75
28-Jul-99	**3.48**	**5.6**	**0.390**	**1.86**	**21**	**2.65**	NT	89.03
15-Oct-99	**3.3**	**5.4**	**0.422**	**1.962**	**26**	**3.84**	NT	88.81
10-Mar-00	**1.88**	**2.52**	**0.466**	**2.03**	**14**	**1.91**	NT	88.45
21-Jun-00	**1.44**	**1.78**	**0.201**	**0.923**	**10**	0.660	NT	89.24
21-Sep-00	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	0.838	NT	89.18
25-Jan-01	**0.5330**	0.602	0.397	**1.464**	**7.27**	**1.71**	NT	88.82
19-Apr-01	U (0.0005)	0.015	0.011	0.066	0.225	U(0.8)	NT	88.78
24-Jul-01	0.001	U (0.002)	U (0.002)	U (0.002)	U (0.09)	0.869	NT	89.17
28-Jan-02	**0.2710**	0.802	**0.631**	**2.646**	**9.580**	0.708	NT	89.06
30-Apr-02	**0.0644**	U (0.002)	**0.509**	0.128	0.623	U (0.495)	NT	89.66
30-Sep-02	**0.0157**	U (0.002)	0.00523	0.0114	0.0943	U (0.5)	NT	89.22
12-May-03	**0.0138**	0.00268	0.00595	0.05252	0.167	U (0.3)	NT	89.69
09-Oct-03	**0.0311**	U (0.0005)	0.00555	0.0657	0.266	**2.95**	NT	388.92
21-Apr-04	0.00295	U (0.0005)	0.00506	0.113	0.311	U (0.5)	NT	388.65
21-Oct-04	**0.0121**	U (0.0005)	U (0.0005)	0.00791	0.0646	0.455	NT	387.82
19-May-05	0.00295	U (0.0005)	U (0.0005)	0.0167	0.067	U (0.391)	NT	389.16
15-May-06	0.000635	U (0.0005)	U (0.0005)	0.00919	0.051	U (0.403)	NT	388.63
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.782	NT	387.97
29-Apr-08	0.00175	0.00338	0.00097	**1.2**	**1.75**	**3.78**	NT	388.88
12-May-09	U (0.0005)	0.00121	U (0.0005)	0.00189	U (0.05)	U (0.427)	NT	388.98
15-Jun-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.00976)	U (0.05)	U (0.410)	NT	388.93
24-May-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NT	388.87
22-May-12	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	388.82
21-May-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NT	389.13
06-May-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	NT	389.23
26-May-15	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	0.23	NT	389.50
11-May-16	U (0.0020)	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.40)	NT	389.09
08-May-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (1)	0.14	NT	389.41
14-Jun-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	U (0.000054)	U (0.25)	NT	389.49
09-May-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	0.51	NT	393.87
06-Oct-20	U (0.001)	U (0.001)	U (0.001)	U (0.003)	0.0144	0.574	13.3	389.38
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Dates Well was not tested have been removed from this table.

Monitoring Well MW-5

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
12-Oct-98	**0.019**	U	U	0.002	0.045	0.110	NT	85.78
21-Jan-99	**0.051**	U	U	U	0.110	0.127	NT	86.04
31-Mar-99	**0.023**	U (0.001)	U (0.001)	0.0013	U (0.09)	U (0.297)	NT	86.56
28-Jul-99	**0.008**	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.300)	NT	88.23
15-Oct-99	**0.040**	U (0.002)	U (0.002)	U (0.002)	0.11	U (0.297)	NT	88.17
10-Mar-00	**0.104**	0.003	U (0.002)	0.005	0.22	U (0.297)	NT	88.17
21-Jun-00	**0.025**	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.297)	NT	88.67
21-Sep-00	**0.025**	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.303)	NT	88.39
25-Jan-01	**0.066**	0.003	0.002	0.007	0.19	U (0.300)	NT	88.15
19-Apr-01	U(0.0005)	0.002	0.003	0.003	U (0.09)	U(0.816)	NT	88.06
24-Jul-01	U(0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.495)	NT	88.37
28-Jan-02	0.0029	U (0.002)	U (0.002)	0.002	U (0.09)	U (0.521)	NT	88.28
30-Apr-02	U(0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.500)	NT	88.85
30-Sep-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	NT	88.00
12-May-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.3)	NT	87.94
09-Oct-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	NT	388.19
21-Apr-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	NT	387.86
21-Oct-04	U (0.0002)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.4)	NT	387.72
19-May-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	388.12
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	387.69
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	0.00154	U (0.05)	0.522	NT	387.46
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.435)	NT	387.92
12-May-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.450)	NT	388.21
GCLs	0.0046	1.1	0.015	0.19	2.2	1.5	NA	NA

Well not tested between May 12, 2009 and October 6, 2020. Dates Well was not tested have been removed from table.

Monitoring Well MW-6

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
21-Jun-00	0.0012	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.3)	NT	88.51
21-Sep-00	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.297)	NT	88.47
25-Jan-01	0.00051	0.0026	U (0.002)	0.003	U (0.09)	U (0.3)	NT	88.22
19-Apr-01	U (0.0005)	U (0.002)	U (0.002)	0.003	U (0.09)	U(0.808)	NT	88.17
24-Jul-01	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.495)	NT	88.48
28-Jan-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.500)	NT	88.43
30-Apr-02	0.000565	0.00411	0.00203	0.01081	U (0.09)	U (0.500)	NT	88.77
30-Sep-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.495)	NT	88.40
12-May-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.3)	NT	88.13
09-Oct-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	NT	388.30
21-Apr-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	NT	387.99
21-Oct-04	U (0.0002)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.4)	NT	387.21
19-May-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	388.24
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	NT	387.96
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	387.44
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.481)	NT	388.23
12-May-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.400)	NT	388.52
15-Jun-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.00976)	U (0.05)	U (0.431)	NT	NM
24-May-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NT	388.26
26-Oct-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NT	388.12
22-May-12	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	388.26
11-Oct-12	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.403)	NT	388.44
21-May-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	388.48
25-Sep-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NT	388.63
06-May-14	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.42)	NT	388.59
17-Sep-14	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0005)	U (0.05)	U (0.39)	NT	389.46
26-May-15	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.21)	NT	389.20
06-Oct-15	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.01)	0.84	NT	388.99
11-May-16	U (0.0020)	U (0.0020)	U (0.0020)	U (0.0020)	U (0.0020)	U (0.0020)	NT	388.41
05-Oct-16	U (0.0020)	U (0.0020)	U (0.0030)	U (0.0020)	U (0.05)	U (0.12)	NT	388.70
08-May-17	U (0.002)	U (0.002)	U (0.003)	U (0.002)	U (1)	U (0.11)	NT	388.70
05-Sep-17	U (0004)	U (0.001)	U (0.001)	U (0.003)	U (0.150)	U (0.290)	NT	388.64
14-Jun-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	U (025)	U (0.12)	NT	388.77
30-Oct-18	U (0.003)	U (0.002)	U (0.003)	0.0084	U (0.25)	U (0.12)	NT	388.53
09-May-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.12)	NT	388.30
22-Oct-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.12)	NT	388.72
18-Aug-20	U (0.200)	U (0.500)	U (0.500)	U (1.500)	U (0.0500)	J (0.210)	NT	389.05
06-Oct-20	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.0100)	U (0.800)	15	388.69
24-Jun-21	U (0.001)	U (0.001)	U (0.001)	U (0.003)	J 0.0384	U (0.800)	9.09	388.96
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Dates Well was not tested have been removed from this table.

Monitoring Well MW-7

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
09-Oct-03	**0.0237**	0.00185	0.014	0.0877	**2.36**	U (0.32)	NT	389.10
16-Mar-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Apr-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	NT	388.83
17-Sep-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Oct-04	0.00325	U (0.0005)	0.000934	0.00498	0.298	0.508	NT	388.25
19-May-05	0.000909	U (0.0005)	0.000527	U (0.0015)	0.275	U (0.391)	NT	389.29
26-Sep-05	NT	NT	NT	NT	NT	NT	NT	NM
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	0.109	0.412	NT	388.70
07-Nov-06	NT	NT	NT	NT	NT	NT	NT	NM
15-May-07	NT	NT	NT	NT	NT	NT	NT	NM
16-Oct-07	NT	NT	NT	NT	NT	NT	NT	NM
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.413)	NT	388.88
01-Oct-08	NT	NT	NT	NT	NT	NT	NT	NM
12-May-09	U (0.0005)	U (0.0005)	0.00063	0.00231	1.16	U (0.442)	NT	389.18
26-Oct-09	NT	NT	NT	NT	NT	NT	NT	NM
06-Oct-20	NT	NT	NT	NT	NT	NT	NT	NM
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Well not tested between May 12, 2009 and October 6, 2020

Monitoring Well MW-8

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
09-Oct-03	NT	NT	NT	NT	NT	NT	NT	NM
16-Mar-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NT	388.69
21-Apr-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	NT	388.79
17-Sep-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Oct-04	0.000298	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.4)	NT	388.30
19-May-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	389.26
26-Sep-05	NT	NT	NT	NT	NT	NT	NT	NM
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	NT	388.73
07-Nov-06	NT	NT	NT	NT	NT	NT	NT	NM
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.394)	NT	388.41
16-Oct-07	NT	NT	NT	NT	NT	NT	NT	NM
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	388.87
01-Oct-08	NT	NT	NT	NT	NT	NT	NT	NM
12-May-09	U (0.0005)	0.00062	0.00067	0.00199	U (0.05)	U (0.413)	NT	389.22
26-Oct-09	NT	NT	NT	NT	NT	NT	NT	NM
06-Oct-20	NT	NT	NT	NT	NT	NT	NT	NM
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Well not tested between May 12, 2009 and October 6, 2020

Monitoring Well MW-9

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
09-Oct-03	NT	NT	NT	NT	NT	NT	NT	NM
16-Mar-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.37)	NT	388.27
21-Apr-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	NT	388.88
17-Sep-04	NT	NT	NT	NT	NT	NT	NT	NM
21-Oct-04	U (0.0002)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	U (0.4)	NT	388.22
19-May-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	389.41
26-Sep-05	NT	NT	NT	NT	NT	NT	NT	NM
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	388.83
07-Nov-06	NT	NT	NT	NT	NT	NT	NT	NM
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	NT	388.33
16-Oct-07	NT	NT	NT	NT	NT	NT	NT	NM
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	NT	388.94
01-Oct-08	NT	NT	NT	NT	NT	NT	NT	NM
12-May-09	U (0.0005)	U (0.0005)	U (0.0005)	0.00182	U (0.05)	U (0.400)	NT	389.33
26-Oct-09	NT	NT	NT	NT	NT	NT	NT	NM
06-Oct-20	NT	NT	NT	NT	NT	NT	NT	NM
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Well not tested between May 12, 2009 and October 6, 2020

Monitoring Well MW-10

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
09-Oct-03	NT	NT	NT	NT	NT	NT	NT	NM
17-Sep-04	**0.0103**	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	NT	NM
21-Oct-04	U (0.0002)	U (0.0005)	U (0.0005)	U (0.001)	U (0.05)	**2.19**	NT	387.01
19-May-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	387.92
26-Sep-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	NT	387.87
15-May-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	NT	387.69
07-Nov-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.442)	NT	387.72
15-May-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	NT	387.31
16-Oct-07	U (0.0005)	0.000745	U (0.0005)	0.00843	U (0.05)	U (0.427)	NT	387.31
29-Apr-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	NT	387.79
01-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.49)	NT	388.12
12-May-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NT	388.04
26-Oct-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.417)	NT	387.77
15-Jun-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.00976)	U (0.05)	U (0.417)	NT	387.95
14-Oct-10	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.397)	NT	387.82
24-May-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.410)	NT	387.92
26-Oct-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.410)	NT	387.79
22-May-12	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.410)	NT	387.87
11-Oct-12	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.413)	NT	388.03
21-May-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.410)	NT	388.09
25-Sep-13	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	NT	388.21
06-May-14	U (0.0005)	U (0.0005)	U (0.0005)	0.0027	U (0.05)	U (0.41)	NT	388.19
17-Sep-14	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	NT	389.21
26-May-15	U (0.001)	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.22)	NT	388.95
06-Oct-15	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.1)	0.41	NT	388.59
11-May-16	U (0.0020)	U (0.001)	U (0.001)	U (0.003)	U (0.1)	U (0.42)	NT	388.07
05-Oct-16	U (0.0020)	U (0.002)	U (0.003)	U (0.002)	U (0.05)	**2.6**	NT	388.42
08-May-17	U (0.002)	U (0.002)	U (0.003)	0.0056	U (1)	U (0.11)	NT	388.32
05-Sep-17	U (.0004)	U (0.001)	U (0.001)	U (0.003)	U (0.150)	U (0.280)	NT	388.28
14-Jun-18	U (0.003)	U (0.002)	U (0.003)	U (0.002)	U (0.25)	U (0.12)	NT	388.37
30-Oct-18	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.12)	NT	388.19
09-May-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.12)	NT	388.01
22-Oct-19	U (0.003)	U (0.002)	U (0.003)	U (0.003)	U (0.25)	U (0.12)	NT	388.37
18-Aug-20	U (0.0002)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.050)	J (0.283)	NT	388.65
06-Oct-20	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.0100)	U (0.800)	5.51	388.32
24-Jun-21	U (0.001)	U (0.001)	U (0.001)	U (0.003)	U (0.0100)	U (0.800)	6.11	388.54
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Appendix D
Tables of Historical Groundwater Monitoring Data

Monitoring Well 17-2

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
30-Oct-18	U (0.003)	U (0.002)	**0.18**	**0.9**	**3.9**	**2.5**	NT	NM
10-May-19	U (0.003)	U (0.002)	0.0051	0.012	U (0.25)	0.91	NT	NM
22-Oct-19	U (0.003)	U (0.002)	**0.210**	**0.790**	**3.5**	1.4 H	NT	NM
18-Aug-20	J 0.0017	J 0.00186	**0.084**	**0.320**	1.76	**1.96**	41.6	389.83
06-Oct-20	J 0.00132	U (0.001)	**0.1130**	**0.591**	2.08	**2.43**	75.8	389.41
24-Jun-21	J 0.00163	U (0.01)	**0.0727**	0.173	1.36	**1.58**	94.6	389.88
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Monitoring Well 17-5

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	Sodium (mg/L)	GW Elev (feet)
14-Jun-18	**0.025**	0.52	**0.064**	**0.548**	1.7	0.17	NT	NM
30-Oct-18	**0.055**	0.21	**0.15**	**0.505**	**3.7**	0.26	NT	NM
09-May-19	0.0032	0.0026	**0.016**	0.048	0.31	0.92	NT	NM
22-Oct-19	**0.022**	0.360	**0.230**	**0.721**	**3.7**	0.47 H	NT	NM
18-Aug-20	**0.0308**	0.386	**0.151**	**0.896**	**2.68**	0.825	12.4	389.82
06-Oct-20	**0.0314**	0.144	**0.158**	**0.401**	1.68	J 0.569	14.1	389.43
GCLs	**0.0046**	**1.1**	**0.015**	**0.19**	**2.2**	**1.5**	NA	NA

Monitoring Well 17-2 Supplemental

Date	1,2,4-TMB (mg/L)	1,3,5-TMB (mg/L)	Naphthalene (mg/L)
19-Jul-17	NT	NT	**U(0.039)**
10-May-19	NT	NT	U(0.00011)
18-Aug-20	**0.457**	**0.088**	**0.00805**
06-Oct-20	NT	NT	**0.00614**
24-Jun-21	**0.389**	0.0569	**0.0164 B,J**
GCLs	**0.056**	**0.06**	**0.0017**

Monitoring Well 17-5 Supplemental

Date	1,2,4-TMB (mg/L)	1,3,5-TMB (mg/L)	Naphthalene (mg/L)
19-Jul-17	**0.86**	NT	**0.027**
14-Jun-18	**0.044**	**0.063**	0.0011
10-May-19	NT	NT	0.00014
18-Aug-20	**0.19**	**0.117**	**0.00729**
06-Oct-20	NT	NT	**0.00475**
GCLs	**0.056**	**0.06**	**0.0017**

Key:
DRO - diesel range organics
GCL - ground water cleanup levels
GRO - gasoline range organics
GW Elev - ground water elevation
J - The identification of the analyte is acceptable; the reported value is an estimate.
H - Sample was preppred or analyzed beyond the specified holding time
mg/L - milligrams per liter
NA - not applicable
NM - not measured
NR - Reported as an unreliable result by the laboratory.
NT - not tested
U - Undetected above practical quantitation limits.

Analytical data for the June 2010 Monitoring Event may have an associated low bias for some samples.
See ADEC laboratory QC checklist for impacted analytes.

Bold, shade indicates concentration exceeds the GCL.

APPENDIX E

Laboratory Analytical Report and ADEC Laboratory Data Review Checklist

Stantec

ANALYTICAL REPORT

July 14, 2021

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Stantec - Anchorage, AK - Speedway

Sample Delivery Group:	L1371608
Samples Received:	06/26/2021
Project Number:	0005310
Description:	Speedway 5310
Site:	0005310
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.

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

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MW-02 L1371608-01 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 13:20	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 20:58	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1700636	1	07/07/21 12:00	07/07/21 12:00	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1699434	1	07/04/21 02:30	07/04/21 02:30	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 15:57	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 08:50	LEA	Mt. Juliet, TN

MW-03 L1371608-02 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 17:02	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 21:06	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1700636	20	07/07/21 14:57	07/07/21 14:57	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1699434	50	07/04/21 07:34	07/04/21 07:34	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 15:34	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 09:07	LEA	Mt. Juliet, TN

MW-06 L1371608-03 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 11:10	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 21:09	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1700636	1	07/07/21 12:47	07/07/21 12:47	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1699434	1	07/04/21 02:50	07/04/21 02:50	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 14:03	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 09:24	LEA	Mt. Juliet, TN

MW-10 L1371608-04 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 11:40	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 21:11	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1700636	1	07/07/21 13:08	07/07/21 13:08	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1699434	1	07/04/21 03:10	07/04/21 03:10	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 14:25	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 09:41	LEA	Mt. Juliet, TN

MW17-02 L1371608-05 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 15:11	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 21:14	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1700636	5	07/07/21 15:45	07/07/21 15:45	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1699434	5	07/04/21 07:55	07/04/21 07:55	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 14:48	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 09:59	LEA	Mt. Juliet, TN

DUP1 L1371608-06 GW

Collected by	Collected date/time	Received date/time
LP&GM	06/24/21 00:00	06/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010C	WG1701142	1	07/09/21 13:38	07/09/21 21:17	KMG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG1702207	1	07/08/21 21:08	07/08/21 21:08	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1700642	10	07/06/21 15:15	07/06/21 15:15	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG1698750	1	07/06/21 05:35	07/06/21 15:11	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG1698042	1	06/30/21 22:46	07/01/21 10:16	LEA	Mt. Juliet, TN

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

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	11.5		0.504	3.00	1	07/09/2021 20:58	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.850		0.0287	0.100	1	07/07/2021 12:00	WG1700636
(S) a,a,a-Trifluorotoluene(FID)	*94.8*			*50.0-150*		*07/07/2021 12:00*	WG1700636
(S) a,a,a-Trifluorotoluene(PID)	*108*			*79.0-125*		*07/07/2021 12:00*	WG1700636

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000620	J	0.0000941	0.00100	1	07/04/2021 02:30	WG1699434
n-Butylbenzene	0.000347	J	0.000157	0.00100	1	07/04/2021 02:30	WG1699434
sec-Butylbenzene	0.000691	J	0.000125	0.00100	1	07/04/2021 02:30	WG1699434
tert-Butylbenzene	U		0.000127	0.00100	1	07/04/2021 02:30	WG1699434
Ethylbenzene	0.00637		0.000137	0.00100	1	07/04/2021 02:30	WG1699434
Isopropylbenzene	0.00219		0.000105	0.00100	1	07/04/2021 02:30	WG1699434
Naphthalene	U		0.00100	0.00500	1	07/04/2021 02:30	WG1699434
Toluene	0.000453	J	0.000278	0.00100	1	07/04/2021 02:30	WG1699434
1,2,4-Trimethylbenzene	0.0132	C3	0.000322	0.00100	1	07/04/2021 02:30	WG1699434
1,3,5-Trimethylbenzene	0.00636		0.000104	0.00100	1	07/04/2021 02:30	WG1699434
Total Xylenes	0.0121		0.000174	0.00300	1	07/04/2021 02:30	WG1699434
(S) Toluene-d8	*102*			*80.0-120*		*07/04/2021 02:30*	WG1699434
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*07/04/2021 02:30*	WG1699434
(S) 1,2-Dichloroethane-d4	*92.7*			*70.0-130*		*07/04/2021 02:30*	WG1699434

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	0.950		0.229	0.800	1	07/06/2021 15:57	WG1698750
(S) o-Terphenyl	*46.3*	J2		*50.0-150*		*07/06/2021 15:57*	WG1698750

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
Naphthalene	0.000181	J	0.0000917	0.000250	1	07/01/2021 08:50	WG1698042
(S) Nitrobenzene-d5	*101*			*31.0-160*		*07/01/2021 08:50*	WG1698042
(S) 2-Fluorobiphenyl	*61.0*			*48.0-148*		*07/01/2021 08:50*	WG1698042
(S) p-Terphenyl-d14	*47.0*			*37.0-146*		*07/01/2021 08:50*	WG1698042

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	25.1		0.504	3.00	1	07/09/2021 21:06	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	16.0		0.574	2.00	20	07/07/2021 14:57	WG1700636
(S) a,a,a-Trifluorotoluene(FID)	*72.2*			*50.0-150*		*07/07/2021 14:57*	WG1700636
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*07/07/2021 14:57*	WG1700636

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.0292	J	0.00471	0.0500	50	07/04/2021 07:34	WG1699434
n-Butylbenzene	U		0.00785	0.0500	50	07/04/2021 07:34	WG1699434
sec-Butylbenzene	0.00815	J	0.00625	0.0500	50	07/04/2021 07:34	WG1699434
tert-Butylbenzene	U		0.00635	0.0500	50	07/04/2021 07:34	WG1699434
Ethylbenzene	0.598		0.00685	0.0500	50	07/04/2021 07:34	WG1699434
Isopropylbenzene	0.0807		0.00525	0.0500	50	07/04/2021 07:34	WG1699434
Naphthalene	U		0.0500	0.250	50	07/04/2021 07:34	WG1699434
Toluene	0.278		0.0139	0.0500	50	07/04/2021 07:34	WG1699434
1,2,4-Trimethylbenzene	1.71	C3	0.0161	0.0500	50	07/04/2021 07:34	WG1699434
1,3,5-Trimethylbenzene	0.484		0.00520	0.0500	50	07/04/2021 07:34	WG1699434
Total Xylenes	6.45		0.00870	0.150	50	07/04/2021 07:34	WG1699434
(S) Toluene-d8	*102*			*80.0-120*		*07/04/2021 07:34*	WG1699434
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*07/04/2021 07:34*	WG1699434
(S) 1,2-Dichloroethane-d4	*93.0*			*70.0-130*		*07/04/2021 07:34*	WG1699434

Sample Narrative:

L1371608-02 WG1699434: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	2.03		0.229	0.800	1	07/06/2021 15:34	WG1698750
(S) o-Terphenyl	*90.8*			*50.0-150*		*07/06/2021 15:34*	WG1698750

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
Naphthalene	0.0208		0.0000917	0.000250	1	07/01/2021 09:07	WG1698042
(S) Nitrobenzene-d5	*78.5*			*31.0-160*		*07/01/2021 09:07*	WG1698042
(S) 2-Fluorobiphenyl	*63.5*			*48.0-148*		*07/01/2021 09:07*	WG1698042
(S) p-Terphenyl-d14	*57.0*			*37.0-146*		*07/01/2021 09:07*	WG1698042

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	9.09		0.504	3.00	1	07/09/2021 21:09	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	0.0384	B J	0.0287	0.100	1	07/07/2021 12:47	WG1700636
(S) a,a,a-Trifluorotoluene(FID)	*92.3*			*50.0-150*		*07/07/2021 12:47*	WG1700636
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*07/07/2021 12:47*	WG1700636

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	07/04/2021 02:50	WG1699434
n-Butylbenzene	U		0.000157	0.00100	1	07/04/2021 02:50	WG1699434
sec-Butylbenzene	U		0.000125	0.00100	1	07/04/2021 02:50	WG1699434
tert-Butylbenzene	U		0.000127	0.00100	1	07/04/2021 02:50	WG1699434
Ethylbenzene	U		0.000137	0.00100	1	07/04/2021 02:50	WG1699434
Isopropylbenzene	U		0.000105	0.00100	1	07/04/2021 02:50	WG1699434
Naphthalene	U		0.00100	0.00500	1	07/04/2021 02:50	WG1699434
Toluene	U		0.000278	0.00100	1	07/04/2021 02:50	WG1699434
1,2,4-Trimethylbenzene	U	C3	0.000322	0.00100	1	07/04/2021 02:50	WG1699434
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	07/04/2021 02:50	WG1699434
Total Xylenes	U		0.000174	0.00300	1	07/04/2021 02:50	WG1699434
(S) Toluene-d8	*101*			*80.0-120*		*07/04/2021 02:50*	WG1699434
(S) 4-Bromofluorobenzene	*97.9*			*77.0-126*		*07/04/2021 02:50*	WG1699434
(S) 1,2-Dichloroethane-d4	*94.9*			*70.0-130*		*07/04/2021 02:50*	WG1699434

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	U		0.229	0.800	1	07/06/2021 14:03	WG1698750
(S) o-Terphenyl	*88.3*			*50.0-150*		*07/06/2021 14:03*	WG1698750

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
Naphthalene	U		0.0000917	0.000250	1	07/01/2021 09:24	WG1698042
(S) Nitrobenzene-d5	*107*			*31.0-160*		*07/01/2021 09:24*	WG1698042
(S) 2-Fluorobiphenyl	*79.0*			*48.0-148*		*07/01/2021 09:24*	WG1698042
(S) p-Terphenyl-d14	*89.5*			*37.0-146*		*07/01/2021 09:24*	WG1698042

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	6.11		0.504	3.00	1	07/09/2021 21:11	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	U		0.0287	0.100	1	07/07/2021 13:08	WG1700636
(S) a,a,a-Trifluorotoluene(FID)	*80.9*			*50.0-150*		*07/07/2021 13:08*	WG1700636
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*07/07/2021 13:08*	WG1700636

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.0000941	0.00100	1	07/04/2021 03:10	WG1699434
n-Butylbenzene	U		0.000157	0.00100	1	07/04/2021 03:10	WG1699434
sec-Butylbenzene	U		0.000125	0.00100	1	07/04/2021 03:10	WG1699434
tert-Butylbenzene	U		0.000127	0.00100	1	07/04/2021 03:10	WG1699434
Ethylbenzene	U		0.000137	0.00100	1	07/04/2021 03:10	WG1699434
Isopropylbenzene	U		0.000105	0.00100	1	07/04/2021 03:10	WG1699434
Naphthalene	U		0.00100	0.00500	1	07/04/2021 03:10	WG1699434
Toluene	U		0.000278	0.00100	1	07/04/2021 03:10	WG1699434
1,2,4-Trimethylbenzene	U	C3	0.000322	0.00100	1	07/04/2021 03:10	WG1699434
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	07/04/2021 03:10	WG1699434
Total Xylenes	U		0.000174	0.00300	1	07/04/2021 03:10	WG1699434
(S) Toluene-d8	*104*			*80.0-120*		*07/04/2021 03:10*	WG1699434
(S) 4-Bromofluorobenzene	*101*			*77.0-126*		*07/04/2021 03:10*	WG1699434
(S) 1,2-Dichloroethane-d4	*94.6*			*70.0-130*		*07/04/2021 03:10*	WG1699434

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	U		0.229	0.800	1	07/06/2021 14:25	WG1698750
(S) o-Terphenyl	*88.5*			*50.0-150*		*07/06/2021 14:25*	WG1698750

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
Naphthalene	U		0.0000917	0.000250	1	07/01/2021 09:41	WG1698042
(S) Nitrobenzene-d5	*99.5*			*31.0-160*		*07/01/2021 09:41*	WG1698042
(S) 2-Fluorobiphenyl	*79.0*			*48.0-148*		*07/01/2021 09:41*	WG1698042
(S) p-Terphenyl-d14	*89.0*			*37.0-146*		*07/01/2021 09:41*	WG1698042

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	73.1		0.504	3.00	1	07/09/2021 21:14	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	1.36	B	0.143	0.500	5	07/07/2021 15:45	WG1700636
(S) a,a,a-Trifluorotoluene(FID)	*93.3*			*50.0-150*		*07/07/2021 15:45*	WG1700636
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*		*07/07/2021 15:45*	WG1700636

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000581	J	0.000471	0.00500	5	07/04/2021 07:55	WG1699434
n-Butylbenzene	0.000818	J	0.000785	0.00500	5	07/04/2021 07:55	WG1699434
sec-Butylbenzene	0.00134	J	0.000625	0.00500	5	07/04/2021 07:55	WG1699434
tert-Butylbenzene	U		0.000635	0.00500	5	07/04/2021 07:55	WG1699434
Ethylbenzene	0.0176		0.000685	0.00500	5	07/04/2021 07:55	WG1699434
Isopropylbenzene	0.00486	J	0.000525	0.00500	5	07/04/2021 07:55	WG1699434
Naphthalene	U		0.00500	0.0250	5	07/04/2021 07:55	WG1699434
Toluene	U		0.00139	0.00500	5	07/04/2021 07:55	WG1699434
1,2,4-Trimethylbenzene	0.109	C3	0.00161	0.00500	5	07/04/2021 07:55	WG1699434
1,3,5-Trimethylbenzene	0.0127		0.000520	0.00500	5	07/04/2021 07:55	WG1699434
Total Xylenes	0.0426		0.000870	0.0150	5	07/04/2021 07:55	WG1699434
(S) Toluene-d8	*102*			*80.0-120*		*07/04/2021 07:55*	WG1699434
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*07/04/2021 07:55*	WG1699434
(S) 1,2-Dichloroethane-d4	*92.8*			*70.0-130*		*07/04/2021 07:55*	WG1699434

Sample Narrative:

L1371608-05 WG1699434: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	1.58		0.229	0.800	1	07/06/2021 14:48	WG1698750
(S) o-Terphenyl	*98.5*			*50.0-150*		*07/06/2021 14:48*	WG1698750

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
Naphthalene	0.00227		0.0000917	0.000250	1	07/01/2021 09:59	WG1698042
(S) Nitrobenzene-d5	*89.5*			*31.0-160*		*07/01/2021 09:59*	WG1698042
(S) 2-Fluorobiphenyl	*76.5*			*48.0-148*		*07/01/2021 09:59*	WG1698042
(S) p-Terphenyl-d14	*61.5*			*37.0-146*		*07/01/2021 09:59*	WG1698042

Metals (ICP) by Method 6010C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	94.6		0.504	3.00	1	07/09/2021 21:17	WG1701142

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	1.28		0.0287	0.100	1	07/08/2021 21:08	WG1702207
(S) a,a,a-Trifluorotoluene(FID)	*94.3*			*50.0-150*		*07/08/2021 21:08*	WG1702207
(S) a,a,a-Trifluorotoluene(PID)	*102*			*79.0-125*		*07/08/2021 21:08*	WG1702207

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00163	J	0.000941	0.0100	10	07/06/2021 15:15	WG1700642
n-Butylbenzene	0.00318	J	0.00157	0.0100	10	07/06/2021 15:15	WG1700642
sec-Butylbenzene	0.00500	J	0.00125	0.0100	10	07/06/2021 15:15	WG1700642
tert-Butylbenzene	U		0.00127	0.0100	10	07/06/2021 15:15	WG1700642
Ethylbenzene	0.0727		0.00137	0.0100	10	07/06/2021 15:15	WG1700642
Isopropylbenzene	0.0179		0.00105	0.0100	10	07/06/2021 15:15	WG1700642
Naphthalene	0.0164	B J	0.0100	0.0500	10	07/06/2021 15:15	WG1700642
Toluene	U		0.00278	0.0100	10	07/06/2021 15:15	WG1700642
1,2,4-Trimethylbenzene	0.389		0.00322	0.0100	10	07/06/2021 15:15	WG1700642
1,3,5-Trimethylbenzene	0.0569		0.00104	0.0100	10	07/06/2021 15:15	WG1700642
Total Xylenes	0.173		0.00174	0.0300	10	07/06/2021 15:15	WG1700642
(S) Toluene-d8	*104*			*80.0-120*		*07/06/2021 15:15*	WG1700642
(S) 4-Bromofluorobenzene	*98.1*			*77.0-126*		*07/06/2021 15:15*	WG1700642
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*07/06/2021 15:15*	WG1700642

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	1.33		0.229	0.800	1	07/06/2021 15:11	WG1698750
(S) o-Terphenyl	*89.0*			*50.0-150*		*07/06/2021 15:11*	WG1698750

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
Naphthalene	0.00231		0.0000917	0.000250	1	07/01/2021 10:16	WG1698042
(S) Nitrobenzene-d5	*83.0*			*31.0-160*		*07/01/2021 10:16*	WG1698042
(S) 2-Fluorobiphenyl	*64.5*			*48.0-148*		*07/01/2021 10:16*	WG1698042
(S) p-Terphenyl-d14	*59.0*			*37.0-146*		*07/01/2021 10:16*	WG1698042

QUALITY CONTROL SUMMARY

L1371608-01,02,03,04,05,06

Method Blank (MB)

(MB) R3677797-1 07/09/21 19:57

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

Laboratory Control Sample (LCS)

(LCS) R3677797-2 07/09/21 20:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sodium	10.0	9.62	96.2	80.0-120	

L1370075-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1370075-01 07/09/21 20:03 • (MS) R3677797-4 07/09/21 20:09 • (MSD) R3677797-5 07/09/21 20:12

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sodium	10.0	990	978	982	0.000	0.000	1	75.0-125	V	V	0.350	20

Method Blank (MB)

(MB) R3677091-2 07/07/21 10:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	0.0412	J	0.0287	0.100
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*
(S) a,a,a-Trifluorotoluene(FID)	*94.4*			*60.0-120*

Laboratory Control Sample (LCS)

(LCS) R3677091-1 07/07/21 08:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	4.23	84.6	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			*124*	*79.0-125*	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*60.0-120*	

Method Blank (MB)

(MB) R3677942-2 07/08/21 17:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	0.0516	J	0.0287	0.100
(S) a,a,a-Trifluorotoluene(PID)	*101*			*79.0-125*
(S) a,a,a-Trifluorotoluene(FID)	*92.0*			*60.0-120*

Laboratory Control Sample (LCS)

(LCS) R3677942-1 07/08/21 16:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPHGAK C6 to C10	5.00	5.05	101	60.0-120	
(S) a,a,a-Trifluorotoluene(PID)			*116*	*79.0-125*	
(S) a,a,a-Trifluorotoluene(FID)			*85.8*	*60.0-120*	

Method Blank (MB)

(MB) R3675875-2 07/04/21 01:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	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	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	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*103*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*94.3*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3675875-1 07/04/21 01:08

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00481	96.2	70.0-123	
n-Butylbenzene	0.00500	0.00461	92.2	73.0-125	
sec-Butylbenzene	0.00500	0.00459	91.8	75.0-125	
tert-Butylbenzene	0.00500	0.00436	87.2	76.0-124	
Ethylbenzene	0.00500	0.00463	92.6	79.0-123	
Isopropylbenzene	0.00500	0.00469	93.8	76.0-127	
Naphthalene	0.00500	0.00515	103	54.0-135	
Toluene	0.00500	0.00464	92.8	79.0-120	
1,2,4-Trimethylbenzene	0.00500	0.00415	83.0	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00423	84.6	76.0-122	
Xylenes, Total	0.0150	0.0135	90.0	79.0-123	
(S) Toluene-d8			*102*	*80.0-120*	
(S) 4-Bromofluorobenzene			*102*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*94.3*	*70.0-130*	

Method Blank (MB)

(MB) R3676158-4 07/06/21 12:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	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	0.00149	J	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	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*96.7*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*102*			*70.0-130*

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

(LCS) R3676158-1 07/06/21 11:33 • (LCSD) R3676158-2 07/06/21 11:53

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 %
Benzene	0.00500	0.00496	0.00493	99.2	98.6	70.0-123			0.607	20
n-Butylbenzene	0.00500	0.00540	0.00572	108	114	73.0-125			5.76	20
sec-Butylbenzene	0.00500	0.00505	0.00529	101	106	75.0-125			4.64	20
tert-Butylbenzene	0.00500	0.00474	0.00505	94.8	101	76.0-124			6.33	20
Ethylbenzene	0.00500	0.00509	0.00518	102	104	79.0-123			1.75	20
Isopropylbenzene	0.00500	0.00473	0.00493	94.6	98.6	76.0-127			4.14	20
Naphthalene	0.00500	0.00525	0.00568	105	114	54.0-135			7.87	20
Toluene	0.00500	0.00520	0.00536	104	107	79.0-120			3.03	20
1,2,4-Trimethylbenzene	0.00500	0.00523	0.00559	105	112	76.0-121			6.65	20
1,3,5-Trimethylbenzene	0.00500	0.00505	0.00524	101	105	76.0-122			3.69	20
Xylenes, Total	0.0150	0.0153	0.0157	102	105	79.0-123			2.58	20
(S) Toluene-d8				*103*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*97.6*	*99.9*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*102*	*102*	*70.0-130*				

QUALITY CONTROL SUMMARY

L1371608-01,02,03,04,05,06

Method Blank (MB)

(MB) R3676443-1 07/06/21 10:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
AK102 DRO C10-C25	U		0.229	0.800
(S) o-Terphenyl	*93.8*			*60.0-120*

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

(LCS) R3676443-2 07/06/21 11:00 • (LCSD) R3676443-3 07/06/21 11:23

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	3.00	2.85	2.91	95.0	97.0	75.0-125			2.08	20
(S) o-Terphenyl				*102*	*109*	*60.0-120*				

Method Blank (MB)

(MB) R3674698-3 07/01/21 07:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Naphthalene	U		0.0000917	0.000250
(S) Nitrobenzene-d5	*110*			*31.0-160*
(S) 2-Fluorobiphenyl	*96.0*			*48.0-148*
(S) p-Terphenyl-d14	*116*			*37.0-146*

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

(LCS) R3674698-1 07/01/21 06:13 • (LCSD) R3674698-2 07/01/21 06:48

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 %
Naphthalene	0.00200	0.00175	0.00167	87.5	83.5	61.0-137			4.68	20
(S) Nitrobenzene-d5				*105*	*101*	*31.0-160*				
(S) 2-Fluorobiphenyl				*82.0*	*79.0*	*48.0-148*				
(S) p-Terphenyl-d14				*83.5*	*87.0*	*37.0-146*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

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725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Billing Information:
Accounts Payable
PO Box 1510
Springfield, OH 45501

Report to: Ms. Leslie Petre

Email To: craig.cothron@pacelabs.com

Project Description: Speedway 5310

City/State Collected: North Pole AK

Please Circle: PT MT CT ET

Phone: 907-266-1108 450-1428

Client Project # 0005310

Lab Project # STAAAKSSA-5310

Collected by (print): Leslie Petre & Geoff Moorhead

Site/Facility ID # 0005310

P.O. #

Collected by (signature): Leslie Petre

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	NAICP 250mlHDPE-HNO3	PAHSIMLVID 40mlAmb-NoPres-WT	V8260C 40mlAmb-HCl						Remarks	Sample # (lab only)
MW-2		GW		6/24/2021	1320	11	X	X	X	X	X							-01
MW-3		GW		6/24/2021	1702	11	X	X	X	X	X							-02
MW-6		GW		6/24/21	1110	11	X	X	X	X	X							-03
MW-10		GW		6/24/21	1140	11	X	X	X	X	X							-04
MW17-2		GW		6/24/21	1511	11	X	X	X	X	X							-05
MW17-5		GW			—	11	X	X	X	X	X							-06
DUPLICATE		GW		6/24/21	—	11	X	X	X	X	X							-07

* 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 # 5117 4435 9442

Relinquished by: (Signature) Leslie Petre — Date: 06/25/2021 — Time: 11:15 — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received for lab by: (Signature) Olivia Tomi — Date: 6/26/21 — Time: 930

Trip Blank Received: Yes / No HCL / MeoH TBR

Temp: 8.2-6 °C Bottles Received: 66

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

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

Chain of Custody Page ___ of ___

Pace Analytical®

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

SDG # L1371606

Table # F106

Acctnum: STAAAKSSA
Template: T188519
Prelogin: P851649
PM: 034 - Craig Cothron
PB: 5/26/21
Shipped Via: FedEX Ground

Laboratory Data Review Checklist

Completed By:

Jeremiah Malenfant

Title:

Intern, Environmental Services

Date:

July 29, 2021

Consultant Firm:

Stantec Consulting Services, Inc.

Laboratory Name:

Pace Analytical

Laboratory Report Number:

L1371608

Laboratory Report Date:

July 14, 2021

CS Site Name:

Speedway Store 0005310, formally Tesoro 2 Go TNS #112

ADEC File Number:

100.26.159

Hazard Identification Number:

unknown

L1371608

Laboratory Report Date:

July 14, 2021

CS Site Name:

Speedway Store 0005310, formally Tesoro 2 Go TNS #112

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

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   Yes☒ No☐ N/A☐ Comments:

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

   Yes☐ No☐ N/A☒ Comments:

   Samples not transferred.

2. Chain of Custody (CoC)

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

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

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

   Yes☒ No☐ N/A☐ Comments:

   0.8-2.6 °C

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   Yes☒ No☐ N/A☐ Comments:

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c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes☒ No☐ N/A☐ Comments:

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, etc.?

Yes☐ No☐ N/A☒ Comments:

No discrepancies documented; none apparent.

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes☐ No☒ N/A☐ Comments:

c. Were all corrective actions documented?

Yes☒ No☐ N/A☐ Comments:

Several sample analyses were diluted as high as 50 times, causing some reported values to be below their respective RDLs.

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

Comments:

In the case of sample MW-03, some RDLs were above their associated ADEC cleanup levels.

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5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes☒ No☐ N/A☐ Comments:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

c. All soils reported on a dry weight basis?

Yes☐ No☐ N/A☒ Comments:

No soil samples.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes☐ No☒ N/A☐ Comments:

For sample MW-03, Benzene and Ethylbenzene had RDLs above the ADEC cleanup levels.

e. Data quality or usability affected?

The affected analyses were not non-detections, so the reported exceedances are useable data.

6. QC Samples

a. Method Blank

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

Yes☒ No☐ N/A☐ Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

Several analyses were not non-detections, but were below the RDL, affected data tagged in report.

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iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

GRO in MW-06 and MW-17-2

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

Yes☒ No☐ N/A☐ Comments:

v. Data quality or usability affected?

Comments:

No.

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

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

iii. Accuracy – 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:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? 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:

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

Comments:

N/A

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

Yes☐ No☐ N/A☒ Comments:

No affected samples.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No.

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

Note: Leave blank if not required for project

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

Yes☐ No☒ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes☐ No☒ N/A☐ Comments:

The sample concentration of sodium was too high to report an accurate MS recovery results.

iv. Precision – 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:

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

Comments:

All samples have sodium analyses.

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

Yes☐ No☒ N/A☐ Comments:

The issue is flagged in the QC summary but not in the sample results.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No, because sodium is being used as a tracer at this site and high sodium concentrations are not abnormal.

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:

ii. Accuracy – 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:

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:

iv. Data quality or usability affected?

Comments:

No.

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e. Trip Blanks

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

Yes☒ No☐ N/A☐ Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☒ No☐ N/A☐ Comments:

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

No.

f. Field Duplicate

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

Yes☒ No☐ N/A☐ Comments:

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

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

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes☐ No☒ N/A☐ Comments:

Ethylbenzene and Total Xylenes both exceeded the tolerance with RPDs over 120%

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

Yes. Ethylbenzene and Total Xylene measurements for MW-03, MW-06, and MW-10 are consistent with historical data, but the same for MW-02 and MW17-2 are inconsistent with historical data and it is unclear whether the difference is due to an actual change in the groundwater or a laboratory measurement error.

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes☐ No☒ N/A☐ Comments:

All disposable, no decontamination required.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☒ Comments:

ii. If above LOQ or project specified objectives, what samples are affected?
Comments:

iii. Data quality or usability affected?
Comments:

No.

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

   a. Defined and appropriate?

      Yes☒ No☐ N/A☐ Comments: