
Annual GWM Report for
MPC Site #157575
TNS 101/IFC
ADEC File #: 100.26.022
November 20, 2023
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
EDB	ethylene dibromide
EIT	Engineer in Training
EPA	U.S. Environmental Protection Agency
GCLs	groundwater cleanup levels
GRO	gasoline range organics
mg/L	milligrams per liter
MPC	Marathon Petroleum Company
MW	monitoring well
NuWell®	pelletized sulfamic acid used to break down mineral buildup for well cleaning
PAH	polycyclic aromatic hydrocarbon
ORP	oxidation-reduction potential
QA	quality assurance
QC	quality control
RW	remediation well
Stantec	Stantec Consulting Services, Inc.
Tesoro	Tesoro Refining and Marketing Company
UST	underground storage tank
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

This 2023 annual groundwater monitoring event report was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of Tesoro Refining and Marketing Company (Tesoro) c/o Marathon Petroleum Company (MPC) for MPC Site #157575 - TNS101/ IFC, located at the northeast corner of the intersection of South Cushman Street and Van Horn Road at 3569 South Cushman Street, Fairbanks, Alaska (**Figure 1**). The methods used for this annual monitoring event were conducted in accordance with the 2023 Alaska Department of Environmental Conservation (ADEC) approved Work Plan for this site.

2.0 SITE BACKGROUND

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

3.0 FIELD ACTIVITIES

The groundwater monitoring event was conducted on October 5, 2023, by Stantec personnel Leslie Petre, Engineer-In-Training (EIT) and Geoff Moorhead, EIT. This monitoring event included:

- Measured the depth to groundwater in Monitoring Wells MW-3, MW-4, MW-8, MW-14, MW-17, MW-19-1, MW-19-2, ERW, OMW-3, OMW-4, CRW, CRW-2, IFC Aeration Tank, and WRW2020
- Collected water samples from Monitoring and Remediation Wells MW-3, MW-4, MW-8, MW-14, MW-17, MW-19-2, CRW, CRW-2, OMW-3, ERW, and WRW2020 as well as the effluent (IFC Aeration Tank) discharged from the treatment aeration tank. The samples were measured in the field for the following intrinsic water quality parameters: temperature, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductivity (SC).
- Collected groundwater samples were submitted for laboratory analysis of the following test parameters: Gasoline Range Organics (GRO) by Alaska Test Method (AK)101; Diesel Range Organics (DRO) by AK102; Alaska expanded list of Volatile Organic Compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260C, reporting benzene, toluene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB; Ethylene Dibromide (EDB) by EPA Method 8011; Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270D Selective Ion Monitoring (SIM), reporting naphthalene; EPA Method 6010D metals for sodium to establish a baseline for sodium levels in the effluent. Sodium amounts were not analyzed in all wells.

Field methods and procedures for this site are included in **Appendix B**.

4.0 GROUNDWATER MONITORING RESULTS

4.1 GROUNDWATER LEVELS

Table 1 presents groundwater elevations at this site based on the depths to static water levels measured during this monitoring event on October 5, 2023. Depth to groundwater was measured in 14 wells. Wells MW19-1 and CRW-2 both contained free product. Well OMW-4 was dry. The direction of groundwater flow across the site was influenced by the pumping of the water from CRW-2 well that is used for free product recovery as it appears groundwater flow is predominantly altered towards CRW-2.

Table 1 Groundwater Elevations
Measurements taken on October 5, 2022

Monitoring Well Identification	Top of Casing Elevation (feet)[1]	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-3	439.45	6.5	432.95
MW-4	442.64	9.83	432.81
MW-8	445.23	11.77	433.46
MW-14	441.13	8.23	432.90
MW-17	441.42	8.52	432.90
MW-19-1	442.52	9.86	432.66
MW-19-2	432.93	9.03	432.93
ERW	444.48	11.41	433.07
OMW-3	445.4	12.41	432.99
OMW-4	NM	NM	NM
CRW	444.71	11.77	432.94
CRW-2	445.45	15.26	430.19
IFC Aeration Tank	443.12	5.86	437.26
WRW2020	443.53	10.67	432.86

Key:
1 Based on a vertical control survey completed on October 13, 2023
NM Not measured

4.2 WATER SAMPLE INTRINSIC FIELD PARAMETERS

The results of intrinsic water quality parameters (temperature, pH, DO, ORP, and SC) collected during this monitoring event are presented in **Table 2**. The IFC Aeration Tank (effluent) has a significantly higher level of SC than the rest of the wells. ORP concentrations were highest in MW-4. pH levels were slightly acidic, consistent with normal groundwater, in all monitoring wells but slightly basic in MW-4. Field methods and procedures are provided in **Appendix B**.

Table 2 Field Tested Intrinsic Water Quality Parameters
Measured on October 5, 2022

Monitoring Well Identification	pH	SC (µs/cm°C)	Dissolved Oxygen (mg/L)	Temperature (ºC)	ORP (mV)
MW-3	6.31	0.682	7.1	5.36	25.9
MW-4	5.83	0.45	3.39	4.13	136.7
MW-8	6.23	0.682	5.11	8.43	20
MW-14	5.92	0.674	2.3	7.81	109
MW-17	6.55	0.363	2.73	5.86	36
MW-19-2	6.52	0.508	2.61	6.23	71.5
OMW-3	6.19	0.522	4.5	5.32	113.6
OMW-4	NM	NM	NM	NM	NM
ERW	6.23	0.577	3.18	3.01	111.9
CRW	6.24	0.585	2.55	5.73	54.8
CRW-2	6.56	0.57	5.78	7	-8.3
WRW2020	6.91	0.569	4.26	7.06	-13.1
IFC Aeration Tank Effluent	6.68	560	9.96	9.1	46

Key:
ºC 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 ºC

4.3 WATER SAMPLE LABORATORY ANALYTICAL RESULTS

Historical monitoring data for this site are presented in **Appendix C**. Laboratory analytical results for benzene, toluene, ethylbenzene, and xylenes (BTEX), GRO, DRO, naphthalene, 1,2,4-TMB, 1,3,5-TMB, EDB, and sodium are summarized in **Tables 3a and 3b**. Each well that was sampled (except for MW-4, ERW, and OMW-3) has at least one analyte that exceeds groundwater clearance levels (GCLs). The other VOCs and PAHs are in the laboratory analytical report is provided in **Appendix D.** All monitoring/remediation wells and the effluent from the aeration tank were sampled in accordance with the 2023 Corrective Action Work Plan.

Table 3a Groundwater Analytical Results
Samples collected on October 5, 2023

ID	Benzene	Ethylbenzene	Toluene	Total Xylenes	GRO	DRO
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MW-3	**0.0106**	**0.120**	0.0311	**1.90**	**5.24**	**215**
MW-4	U(0.00100)	U(0.00100)	U(0.00100)	U(0.00300)	U(0.100)	0.905 B
MW-8	U(0.00100)	0.0131	0.0284	**0.310**	1.48	**22.5**
DUP 2	U(0.00100)	0.0128	0.0283	**0.305**	1.49	**38.3**
MW-14	**0.0493**	**0.384**	0.0269	**2.68**	**6.26**	**3.04**
MW-17	0.00342	**0.0288**	0.00112	0.186	0.285	**3.39**
MW-19-2	0.00389 J	**0.0988**	U(0.00100)	**0.669**	**2.80**	**7.74**
DUP 1	**0.00486 J**	**0.120**	U(0.00100)	**0.817**	**2.83**	**16.4**
CRW	**0.00515**	**0.0295**	0.000488 J	0.176	0.541	**2.01 B**
CRW-2	0.00201	**0.0170**	0.00259	0.145	0.374	0.736 B J
WRW2020	0.00112	**0.0288**	U(0.00100)	0.130	0.110	1.22 B
IFC Aeration Tank	0.000175 J	0.00151	0.000358 J	0.0121	0.0774 J	**5.52**
ERW	U(0.00100)	U(0.00100)	U(0.00100)	0.000521 J	U(0.100)	0.398 B J
OMW-3	U(0.00100)	U(0.00100)	U(0.00100)	U(0.00300)	U(0.100)	0.766 B J
GCLS	**0.0046**	**0.015**	**1.1**	**0.19**	**2.2**	**1.5**

Table 3b Groundwater Analytical Results
Samples collected on October 5, 2023

ID	1,2,4-TMB	1,3,5-TMB	Naphthalene[1]	EDB	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L
MW-3	**0.901**	**0.418**	**0.380**	U(0.0000200)	NM
MW-4	U(0.00100)	U(0.00100)	U(0.000250)	U(0.0000206)	NM
MW-8	**0.257**	**0.124**	**0.0567**	U(0.0000214)	11.5
DUP 2	**0.247**	**0.120**	**0.0531**	U(0.0000212)	11.5
MW-14	**0.555**	**0.185**	**0.219**	U(0.0000214)	NM
MW-17	0.0434	0.0116	U(0.000250)	U(0.0000208)	NM
MW-19-2	**0.398**	**0.140**	0.000239	U(0.0000206)	14.7
DUP 1	**0.428**	**0.148**	**0.0441**	U(0.0000214)	14.6
CRW	**0.0773**	0.0220	**0.0151**	U(0.0000212)	10.5
CRW-2	0.0470	0.0158	0.000628	U(0.0000214)	NM
WRW2020	**0.0662**	0.0199	0.000201 J	U(0.0000200)	NM
IFC Aeration Tank	0.00657	0.00278	U(0.000250)	U(0.0000204)	10.8
ERW	U(0.00100)	U(0.00100)	U(0.000250)	U(0.0000200)	9.35
OMW-3	U(0.00100)	U(0.00100)	U(0.000250)	U(0.0000204)	9.85
GCLS	**0.056**	**0.06**	**0.0017**	**0.00024**	**NA**

Key:
1 Results from VOC Method 8270 D
B Analyte found in associated blank.
Bold Concentration or estimated quantitation limit exceeds the GCL
TMB Trimethylbenzene
EDB Ethylene Dibromide analyzed by EPA 8011
DRO Diesel Range Organics analyzed by AK 102
NM Not measured
GCLs Groundwater cleanup levels, 18 AAC 75.345, Table C, (9/18/2019)
GRO Gasoline range organics analyzed by AK101.
J The identification of the analyte is acceptable; reported value estimated.
J3 The associated batch QC was outside the established quality control range for precision.
DUP Duplicate sample of the preceding sample

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

Pace Analytical, Inc. did not meet all laboratory QA/QC criteria during the analysis of groundwater samples for this sampling event, as described in **Table 4**, which provides a summary of the laboratory QC objectives and outcomes for this monitoring event. Laboratory QC data and the ADEC Laboratory Data Review Checklist are included with the laboratory report in **Appendix D**.

Sample duplicate (DUP) 1 is a duplicate of sample MW-19-2. DUP 2 is a duplicate of sample MW-8. The duplicate sample sets were collected to determine the precision of the field collection and laboratory analysis for this monitoring event. Data presented in **Table 4** show that holding times were within the established criteria. The laboratory precision tolerance was exceeded for DRO and naphthalene in DUP 1.

Table 4 Laboratory Quality Control Objectives

Quality Control Designation	Tolerance	Results for This Event	
Holding Times			
DRO/Water/to analyze	40 days	10 days	
DRO/Water/to extract	14 days	7 days	
GRO/Water/to analyze	14 days	13 days	
VOCs/Water/to analyze	14 days	8 days	
PAHs/Water/to extract	7 days	7 days	
PAHs/Water/to analyze	40 days	7 to 8 days	
Field Duplicates – Precision		**DUP 1**	**DUP 2**
Benzene/Water	±30%	22.2 %	NC
Toluene/Water	±30%	NC	0.4%
Ethylbenzene/Water	±30%	19.4%	2.3%
Xylenes/Water	±30%	19.9%	1.6%
GRO/Water	±30%	1.1%	0.7%
DRO/Water	±30%	**71.7%**	52.0%
1,2,4-TMB/Water	±30%	7.3%	4.0%
1,3,5-TMB/Water	±30%	5.6%	3.3%
EDB/Water	±30%	NC	NC
Naphthalene/Water	±30%	**197.8%**	6.6%

Key:

%	Percentage of variance in absolute value	GRO	gasoline range organics
BOLD	Exceeds precision tolerance	NC	cannot be calculated, undetected in duplicate and/or primary sample
EDB	Ethylene Dibromide		
TMB	trimethylbenzene	PAH	polynuclear aromatic hydrocarbon
DRO	diesel range organics	VOC	volatile organic compound

5.0 REMEDIATION SYSTEM OPERATION AND PERFORMANCE MONITORING

5.1 FREE PRODUCT RECOVERY

Free product accumulation in CRW-2 and MW-19-1 was monitored monthly and periodically removed with a peristaltic pump using a line attached to a water level meter to verify the free product presence above the water interface. The free product collected with the peristaltic pump from the above referenced wells is currently being stored on-site in a 55-gallon drum that is contained in an over-pack drum (secondary containment) until it can be properly disposed of. The entire free product recovery system was shut down for one month from June 21, 2023, to July 21, 2023, due to an issue with the electrical power company.

5.2 CRW-2 DRAWDOWN SYSTEM

The 1.0-horsepower (hp) submersible drawdown pump in CRW-2 has been operating on a continuous basis (24-hours per day). The free product collected in CRW-2 is periodically removed with the peristaltic pump and then temporarily stored on-site in a 55-gallon drum. The drawdown pump has a constant discharge rate of 1.7 gallons per minute. The pumped drawdown groundwater is discharged to the on-site 1,500-gallon IFC aeration tank for treatment. Treated effluent from the IFC aeration tank flows by gravity into the new on-site drain field that was installed in October

2021. In the summer of 2022, CRW-2 well was dosed with NuWell® pellets to treat the iron precipitates that were accumulating in the well which improved groundwater flow into the well.

5.3 WRW2020 DRAWDOWN SYSTEM

A ½-hp submersible pump is used to drawdown the groundwater table in the WRW2020 well to control groundwater flow in the general area in the right-of-way north of the Speedway store property. The flow from the drawdown pump is discharged to the 1,500-gallon IFC aeration tank for treatment. The drawdown pump operates with a flow of 1.5-2 gallons per minute (gpm) on a continuous basis (24-hours per day). During the past several months, Stantec has noted a significant reduction (estimated at less than 0.5 gpm) in the flow from the drawdown pump and plans to renovate the pump and its discharge piping system next month. It is assumed the pump and water line are clogging up with precipitated iron deposits. The drawdown pump discharges into an insulated/heat traced water line to the IFC aeration tank.

5.4 SITE TREATMENT SYSTEM

The drawdown pumps CRW-2 and WRW2020 discharge into separate insulated/heat traced water lines into the 1,500-gallon, double compartment IFC Aeration Treatment Tank. The aerated, treated effluent from the aeration treatment tank discharges by gravity to an on-site drain field that is located upgradient of the groundwater interceptor trench. A replacement FUJI ½-hp regenerative blower that is used to aerate the treatment tank was installed in mid-August 2022. The blower delivers up to 98 cubic feet per minute of air to the tank and operates on a continuous basis (24-hour per day).

As indicated by the sample laboratory test results for the sample collected from the treatment tank "effluent" shown on **Table 3**, the aeration treatment system is discharging effluent that is significantly "cleaner" (below ADEC GCLs except for DRO that is slightly above the GCL) than the water entering the tank from the combined drawdown flow from the pumps in wells CRW-2 and WRW2020. During August of 2022, Stantec hired US Ecology Alaska, LLC to pump out the contents (1,000 gallons) of the aeration tank, which was found to be nearly 1/3 full of iron precipitates. US Ecology Alaska, LLC transported the tank contents to their facility in North Pole for treatment and disposal. The cleaning of the aeration tank should minimize carry-over of the iron sludge into the new drain field.

6.0 CONCLUSIONS AND RECOMMENDATIONS

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

- MW-3 and MW-14: Benzene, ethylbenzene, total xylenes, GRO, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- MW-8: Total xylenes, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.

- MW-17: DRO and ethylbenzene.
- MW-19-2: Ethylbenzene, total xylenes, GRO, DRO, 1,2,4-TMB, and 1,3,5-TMB.
- CRW: Benzene, ethylbenzene, DRO, naphthalene, and 1,2,4-TMB.
- CRW-2: Ethylbenzene
- WRW2020: Ethylbenzene and 1,2,4-TMB

Monitoring Well MW-19-1 was not sampled due to the presence of free product.

As previously noted, the entire free product recovery system was shut down for one month from June 21, 2023, to July 21, 2023, due to an issue with the electrical power company. After power was restored at the site, Stantec was able to resume operation of the free product recovery system without any major problems.

However, Stantec has noted a significant reduction (estimated at less than 0.5 gpm) in the flow from the drawdown pump in WRW-2020 free product recovery well during the past several months. Stantec plans to renovate the pump and its discharge piping system next month - it is assumed the pump and water line are clogging up with precipitated iron deposits.

The direction of groundwater flow across the site was influenced by the pumping of the water from free product recovery well CRW-2 as it appears groundwater flow is predominantly altered towards CRW-2. Unfortunately, groundwater flow influenced by drawdown pumping in WRW-2020 was not obvious due to the reduced flow from the drawdown pump that needs to be renovated in the immediate future.

For the past two years, Stantec has maintained the iMonnit telemetry equipment to monitor via the internet the operation of the following equipment: groundwater drawdown pumps in WRW2020 and CRW-2, and the regenerative blower that provides aeration to the aeration treatment tank.

6.1 RECOMMENDATIONS AND PROPOSED ACTIVITIES

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

7.0 LIMITATIONS

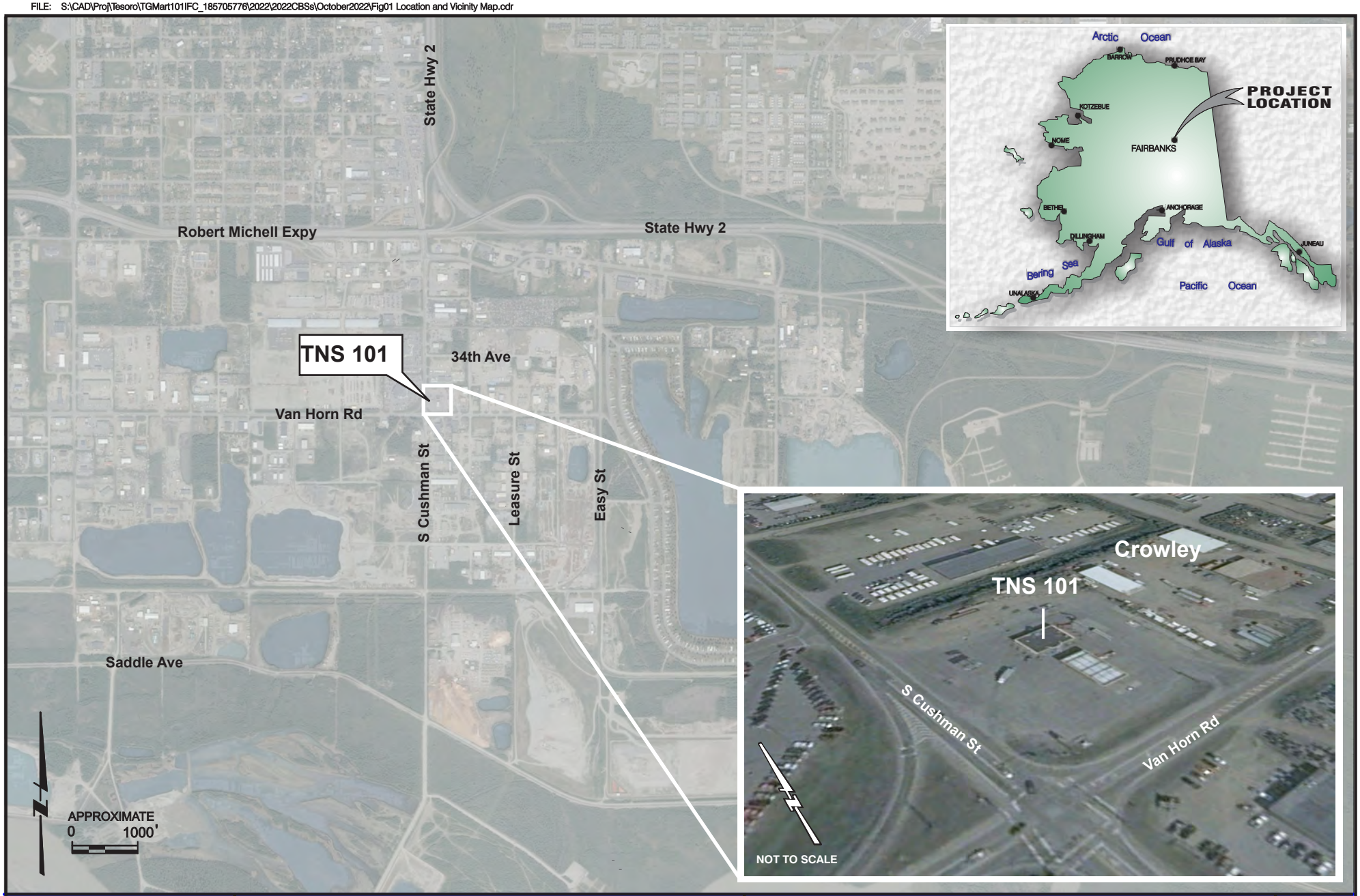
Stantec conducted this monitoring event in accordance with the 2023 Corrective Action Work Plan approved by ADEC, and in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. All sampling activities were completed in accordance with the ADEC *Underground Storage Tanks Procedures Manual – Standard Sampling Procedures* (March 22, 2017). The conclusions in this report are Stantec's professional opinion, as of the time of the report, and concerning the scope described in the report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not consider any subsequent changes. This report relates

solely to the specific project for which Stantec was retained and the stated purpose for which the report was prepared. The report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

This report is intended solely for use by the client in accordance with Stantec's contract with the client. While the report may be provided to applicable authorities having jurisdiction and others for whom the client is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

FIGURES

FILE: S:\CAD\Proj\Tesoro\TGMart101IFC_185705776\2022\2022CBSs\October2022\Fig01 Location and Vicinity Map.cdr



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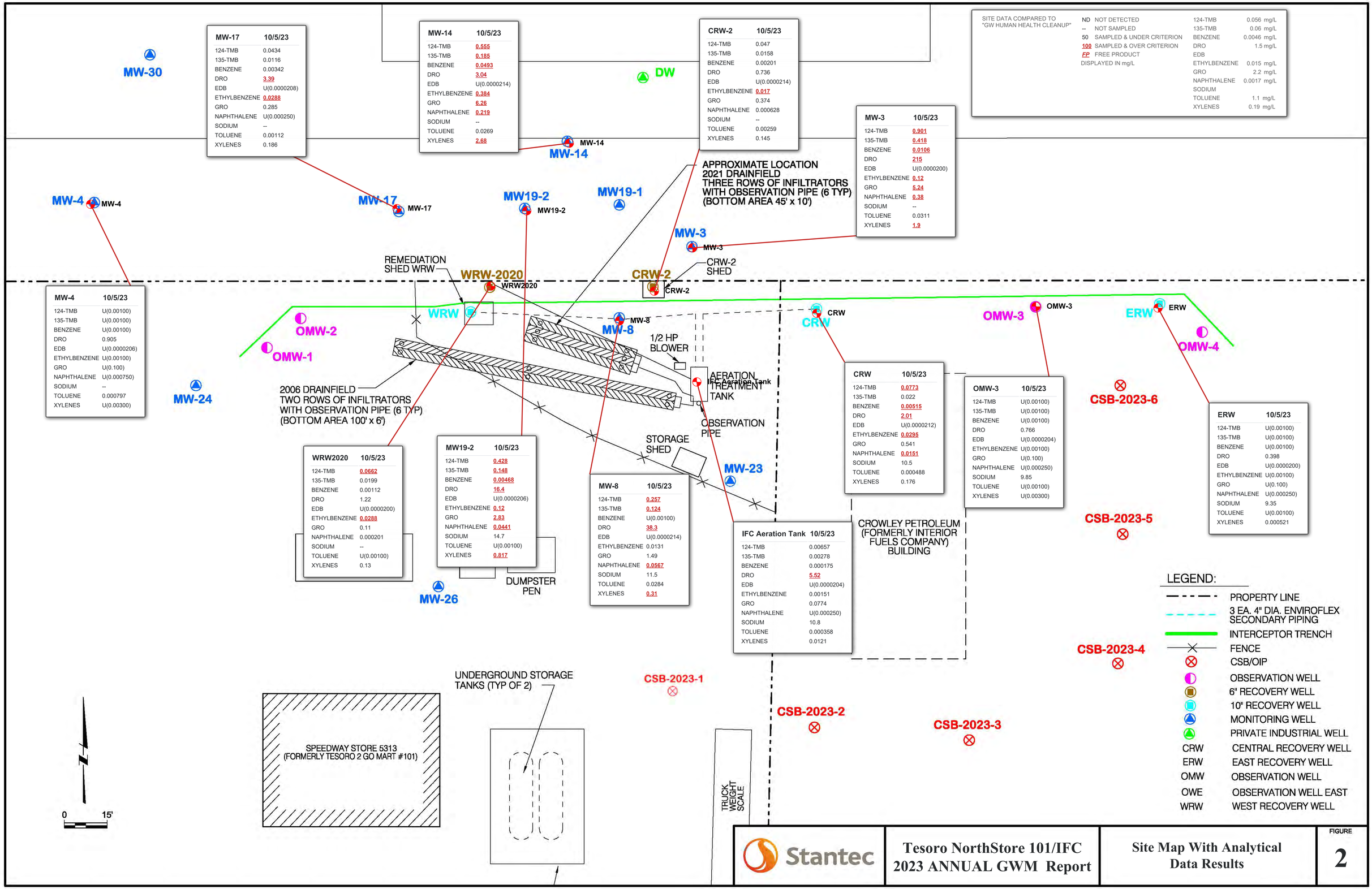
LOCATION AND VICINITY MAP for TNS 101 - IFC

FIGURE
1
185705776


MW-30
MW-17 10/5/23
124-TMB 0.0434
135-TMB 0.0116
BENZENE 0.00342
DRO 3.39
EDB U(0.0000208)
ETHYLBENZENE 0.0288
GRO 0.285
NAPHTHALENE U(0.000250)
SODIUM --
TOLUENE 0.00112
XYLENES 0.186
MW-14 10/5/23
124-TMB 0.555
135-TMB 0.185
BENZENE 0.0493
DRO 3.04
EDB U(0.0000214)
ETHYLBENZENE 0.384
GRO 6.26
NAPHTHALENE 0.219
SODIUM --
TOLUENE 0.0269
XYLENES 2.68
DW
CRW-2 10/5/23
124-TMB 0.047
135-TMB 0.0158
BENZENE 0.00201
DRO 0.736
EDB U(0.0000214)
ETHYLBENZENE 0.017
GRO 0.374
NAPHTHALENE 0.000628
SODIUM --
TOLUENE 0.00259
XYLENES 0.145
SITE DATA COMPARED TO "GW HUMAN HEALTH CLEANUP"
ND NOT DETECTED
-- NOT SAMPLED
50 SAMPLED & UNDER CRITERION
100 SAMPLED & OVER CRITERION
FP FREE PRODUCT
DISPLAYED IN mg/L
124-TMB 0.056 mg/L
135-TMB 0.06 mg/L
BENZENE 0.0046 mg/L
DRO 1.5 mg/L
EDB
ETHYLBENZENE 0.015 mg/L
GRO 2.2 mg/L
NAPHTHALENE 0.0017 mg/L
SODIUM
TOLUENE 1.1 mg/L
XYLENES 0.19 mg/L
MW-14
MW-4
MW-17
MW19-2
MW19-1
APPROXIMATE LOCATION
2021 DRAINFIELD
THREE ROWS OF INFILTRATORS
WITH OBSERVATION PIPE (6 TYP)
(BOTTOM AREA 45' x 10')
MW-3 10/5/23
124-TMB 0.901
135-TMB 0.418
BENZENE 0.0106
DRO 215
EDB U(0.0000200)
ETHYLBENZENE 0.12
GRO 5.24
NAPHTHALENE 0.38
SODIUM --
TOLUENE 0.0311
XYLENES 1.9
MW-3
REMEDIATION SHED WRW
WRW-2020
CRW-2
CRW-2 SHED
MW-4 10/5/23
124-TMB U(0.00100)
135-TMB U(0.00100)
BENZENE U(0.00100)
DRO 0.905
EDB U(0.0000206)
ETHYLBENZENE U(0.00100)
GRO U(0.100)
NAPHTHALENE U(0.000750)
SODIUM --
TOLUENE 0.000797
XYLENES U(0.00300)
WRW
MW-8
CRW
OMW-3
ERW
OMW-2
OMW-1
OMW-4
MW-24
1/2 HP BLOWER
AERATION TREATMENT TANK
IFC Aeration Tank
2006 DRAINFIELD
TWO ROWS OF INFILTRATORS
WITH OBSERVATION PIPE (6 TYP)
(BOTTOM AREA 100' x 6')
OBSERVATION PIPE
STORAGE SHED
MW-23
CRW 10/5/23
124-TMB 0.0773
135-TMB 0.022
BENZENE 0.00515
DRO 2.01
EDB U(0.0000212)
ETHYLBENZENE 0.0295
GRO 0.541
NAPHTHALENE 0.0151
SODIUM 10.5
TOLUENE 0.000488
XYLENES 0.176
OMW-3 10/5/23
124-TMB U(0.00100)
135-TMB U(0.00100)
BENZENE U(0.00100)
DRO 0.766
EDB U(0.0000204)
ETHYLBENZENE U(0.00100)
GRO U(0.100)
NAPHTHALENE U(0.000250)
SODIUM 9.85
TOLUENE U(0.00100)
XYLENES U(0.00300)
CSB-2023-6
ERW 10/5/23
124-TMB U(0.00100)
135-TMB U(0.00100)
BENZENE U(0.00100)
DRO 0.398
EDB U(0.0000200)
ETHYLBENZENE U(0.00100)
GRO U(0.100)
NAPHTHALENE U(0.000250)
SODIUM 9.35
TOLUENE U(0.00100)
XYLENES 0.000521
WRW2020 10/5/23
124-TMB 0.0662
135-TMB 0.0199
BENZENE 0.00112
DRO 1.22
EDB U(0.0000200)
ETHYLBENZENE 0.0288
GRO 0.11
NAPHTHALENE 0.000201
SODIUM --
TOLUENE U(0.00100)
XYLENES 0.13
MW19-2 10/5/23
124-TMB 0.428
135-TMB 0.148
BENZENE 0.00468
DRO 16.4
EDB U(0.0000206)
ETHYLBENZENE 0.12
GRO 2.83
NAPHTHALENE 0.0441
SODIUM 14.7
TOLUENE U(0.00100)
XYLENES 0.817
MW-8 10/5/23
124-TMB 0.257
135-TMB 0.124
BENZENE U(0.00100)
DRO 38.3
EDB U(0.0000214)
ETHYLBENZENE 0.0131
GRO 1.49
NAPHTHALENE 0.0567
SODIUM 11.5
TOLUENE 0.0284
XYLENES 0.31
IFC Aeration Tank 10/5/23
124-TMB 0.00657
135-TMB 0.00278
BENZENE 0.000175
DRO 5.52
EDB U(0.0000204)
ETHYLBENZENE 0.00151
GRO 0.0774
NAPHTHALENE U(0.000250)
SODIUM 10.8
TOLUENE 0.000358
XYLENES 0.0121
MW-26
DUMPSTER PEN
CROWLEY PETROLEUM (FORMERLY INTERIOR FUELS COMPANY) BUILDING
CSB-2023-5
CSB-2023-4
CSB-2023-1
CSB-2023-2
CSB-2023-3
UNDERGROUND STORAGE TANKS (TYP OF 2)
SPEEDWAY STORE 5313
(FORMERLY TESORO 2 GO MART #101)
TRUCK WEIGHT SCALE
0
15'
LEGEND:
PROPERTY LINE
3 EA. 4" DIA. ENVIROFLEX SECONDARY PIPING
INTERCEPTOR TRENCH
FENCE
CSB/OIP
OBSERVATION WELL
6" RECOVERY WELL
10" RECOVERY WELL
MONITORING WELL
PRIVATE INDUSTRIAL WELL
CRW CENTRAL RECOVERY WELL
ERW EAST RECOVERY WELL
OMW OBSERVATION WELL
OWE OBSERVATION WELL EAST
WRW WEST RECOVERY WELL
Stantec
Tesoro NorthStore 101/IFC
2023 ANNUAL GWM Report
Site Map With Analytical Data Results
FIGURE
2

APPENDIX A

Site Background

APPENDIX A – SITE BACKGROUND

Tesoro North Store #101/ Interior Fuels Company
ADEC Facility ID #2960; ADEC File #100.26.022

The Tesoro 2 Go Mart #101 is a retail gas service/convenience store and the former Interior Fuels Company (IFC) are located at the intersection of South Cushman Street and Van Horn Road in Fairbanks, Alaska. The site has a combined address of 170 East Van Horn Road and 3569 South Cushman Street.

The Tesoro 2 Go Mart #101 was formerly called the Tesoro Discount Truck Stop (DTS) Facility. The IFC was a former heating fuel distribution service company that was located on an adjacent lot next to the Tesoro 2 Go Mart #101 site. Due to their common history of ownership by Tesoro and their shared property lines, both sites are being managed as a single contaminated site. The legal description for these properties is Lot 3 and Lot 4, Block 26, Leisure Subdivision.

July 1991. A former underground storage tank (UST) system and a tanker truck loading rack was removed from the IFC site in July 1991. The UST system contained heating fuel oil and consisted of three 20,000-gallon tanks and a 15,000-gallon tank with a diesel fuel pump station connected the truck loading rack. A Site Assessment (SA) of the closure of the heating oil UST system and the loading rack was conducted by Dames & Moore. A significant amount of petroleum contamination was encountered. The excavation was lined with a reinforced polyethylene liner, and the excavated soil was placed within the liner subject to approval from the Alaska Department of Environmental Conservation (ADEC).

April 1992. Dames and Moore conducted a Release Investigation at IFC to assess the extent of contamination that was associated with the former heating oil USTs and truck loading rack facility. Seven soil borings were drilled and seven groundwater monitoring wells were installed on the IFC property. Extensive subsurface contamination was discovered and free phase petroleum product was found in three of the monitoring wells. The free product thickness ranged from 1.24 feet to 2.95 feet. A well search for domestic drinking water wells was completed around the IFC site.

August 1993. A release of petroleum contamination was discovered during the upgrade of the UST system serving the former DTS facility.

August 1994. Dames and Moore conducted a Release Assessment at the former DTS facility. The Release Assessment included installing three on-site groundwater monitoring wells. Contamination was detected in all three wells and the source of the contamination was assumed to be another off-site facility located upgradient (south of Van Horn Road) of the Tesoro site. A well search of domestic wells located within 0.5 miles of the site was completed.

April 1995. Gilfilian Engineering & Environmental Services, Inc. (GE2T) conducted a groundwater monitoring event of 10 monitoring wells associated with the combined IFC and DTS sites. Free product was found in three of the monitoring wells, with thickness that ranged from

2.68 feet to 5.97 feet. Delineation of the free phase contaminants and dissolved phase contaminants in the groundwater table was estimated and noted to extend downgradient of the Tesoro site to surrounding private property.

July 1995. GE2T conducted a groundwater monitoring event and installed a new off-site, downgradient monitoring well (G-1). A total of 12 wells were surveyed and sampled. The new well was found to be free of contamination. The 6-inch diameter free product recovery well (MW-3) was found to be producing an average of 2.7 gallons of free product on a daily basis.

February 1998. GE2T completed a SA of the abandonment of two floor drain pits located inside the IFC garage. Contamination was discovered in the underlying soil and determined not to warrant clean up or removal. The floor drain system was upgraded by the installation of an aboveground oil/water separator.

March 1998. GE2T completed a well search of drinking water wells located within 0.25 miles of the IFC/DTS properties. A total of 24 wells were identified, of which the majority were located downgradient of the subject site.

June 1999. GE2T conducted a SA of the removal of a 1,000-gallon gasoline UST that served the IFC garage facility. No contamination was detected during the removal of the UST.

June 2001. The former UST system serving the DTS (renamed to Tesoro 2 Go Mart #101) was removed and replaced with a new UST fueling system. A SA for the UST System Closure was completed by GE2T. The former UST system consisted of two 20,000-gallon gasoline tanks and two 20,000-gallon diesel tanks. A 1,000-gallon heating oil tank was also removed during the upgrade of the convenience store. Approximately 1,500 tons of contaminated soil was excavated and shipped off-site for thermal remediation. The new UST system consisted of two 20,000-gallon USTs. An undetermined, small amount of contaminated soil was left in-place at the base of the new USTs and a soil vapor extraction (SVE) piping system was installed for future treatment of the in-situ contaminated soil.

September 2001. A fuel recovery system for the removal of floating fuel product from groundwater on the property of the Tesoro 2 Go Mart #101 and IFC was designed and installed under the direction of GE2T. The fuel recovery system consisted of a 12-foot deep by 350-foot long groundwater interceptor trench and three 12-inch diameter free product recovery wells. The recovery wells were equipped with Spillbuster™ pump systems that were connected to free product storage drums and underground piping to discharge dewatered groundwater to a 1,500-gallon treatment aeration and settling tank, with discharge to the upgradient groundwater via a subsurface infiltration (seepage) bed.

November 2001. GE2T drilled two soil borings and installed five new groundwater monitoring wells (MW-24, MW-25, MW-26, MW-27, and MW-28). Several of these wells were installed for the purpose of assessing the groundwater impact associated with the former seepage pits that served the IFC garage floors. The impact to the groundwater quality from the seepage pits was determined not to be contaminated above ADEC groundwater cleanup levels.

May 2002. GE2T conducted a SA during the removal of a log crib seepage pit that was previously used for the on-site disposal of floor drain waste collected in the IFC garage. A total of 23 tons of contaminated soil was excavated and taken off-site for thermal treatment. The underlying soil was found to have contamination concentration below the soil clean up levels.

August 2002. MWH Americas, Inc. (MWH) performed a SA at IFC for an excavation for the foundation of a new building (garage) located in the northwest corner of the IFC property. The building foundation covered an area that was 40 feet wide and 100 feet long and to a depth of 10 feet. The excavation area included former bulk fuel loading racks. A total of 3,999 tons of contaminated soil was excavated and transported for thermal remediation. A SVE system was installed at the base of the excavation to address the potential threat of hydrocarbon vapor migration into the new garage building.

October 2003. MWH conducted a Release Investigation (RI) that included replacing two downgradient monitoring wells and a seepage bed for the recirculation of groundwater that was pumped from the groundwater treatment recovery system. The purpose of the RI was to investigate the extent of soil contamination and to evaluate groundwater quality at the site. The RI involved drilling two soil borings downgradient and off-site of the Tesoro 2 Go Mart #101 property. These wells were completed as 2-inch diameter monitoring wells (MW-29 and MW-30). Petroleum hydrocarbon contamination was not detected in either soil or groundwater in the two, new off-site groundwater monitoring wells. The fuel recovery system was re-started on October 16, 2003, immediately following the installation of a replacement, expanded infiltration (seepage) bed that is used for the discharge of aerated and settled water pumped from the free product recovery wells. The free product recovery system recovered approximately 1,200 gallons of fuel, from November 2001 to 2003.

May 2007. The free product recovery system remains in operation, as does the dissolved phase groundwater treatment system. Free product is still present in several recovery wells and monitoring wells. Groundwater contaminant plume is stable. Twice yearly monitoring well sampling and quarterly treatment system operation and maintenance continue.

November 2011. MWH decommissioned eight groundwater monitoring wells (MW-2, MW-5, MW-9, MW-16, MW-18, MW-25, MW-27, and MW-28) and two observation wells (OWW and OWE).

July 2013. MWH conducted a SA for purpose of evaluating the characterization and extent of petroleum contamination in the shallow soil strata located on the Tesoro 2 Go Mart #101 and former IFC properties. Three shallow test pits were excavated on the #101 property and one soil test pit excavated on the former IFC property. All of the test holes were located in close proximity to the upgradient edge of the Interceptor Trench. Nearly all of the soil samples had a significant amount of petroleum contamination remaining in the soil strata. The extent of contamination was greatest at the groundwater table. Based on the relatively tight (fine grained) soil found in the test pits, it was recommended not to use chemical oxidation treatment methods, but to continue use of the existing Interceptor Trench. This trench has proven to be an effective means of controlling the

flow of the contaminated groundwater and associated free product from moving downgradient (off-site) of the sites.
August 2013. Well CRW (Central Recovery Well) was added to the monitoring event sampling due to the recent findings during the excavation of test pits on July 23, 2013.

May 2015. MWH conducted a second quarter groundwater monitoring event on May 26, 2015. Monitoring Well MW-3 contained ice and could not be sampled. Monitoring Wells MW-8, MW-14, and MW-17 all exceeded the ADEC groundwater cleanup levels (GCLs) for GRO and DRO, with MW-14 also for benzene. The Aeration Tank exceeded the GCLs for both benzene and DRO. The product recovery system in Recovery Well WRW was not operational.

May 2016. MWH conducted a second quarter groundwater monitoring event on May 12, 2016. Free product was observed in Monitoring Well MW-3 (0.2124 feet thick) and CRW-2 (1.60185 feet thick). Monitoring Well MW-14 was not sampled because of the presence of an ice plug. The GCL was exceeded for DRO in Monitoring Well MW-8, GRO and DRO in MW-17, and benzene in the Aeration Tank. The product recovery system in Recovery Well WRW and CRW-2 were not operational, although the drawdown pump was operating as normal in CRW-2.

September 2017. Stantec conducted the annual groundwater monitoring event during the month of September 2017. Results of the analytical sampling found analytes detected above the ADEC GCLs in the following wells:

- Monitoring Well MW-3: benzene, xylene, ethylbenzene, GRO, DRO, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Monitoring Well MW-8: benzene, ethylbenzene, and DRO.
- Monitoring Well MW-14: benzene, xylene, ethylbenzene, GRO, and DRO.
- Monitoring Well MW-17: benzene, xylene, ethylbenzene, GRO, DRO, naphthalene, 1,2,4-trimethylbenzene, and vinyl chloride.
- Remediation Well CRW-2: benzene, ethylbenzene, naphthalene, 1,2,4-trimethylbenzene, and vinyl chloride.

Analytes were detected above practical quantitation limits (PQLs), but below the GCLs, in all of the monitoring wells and effluent from the Aeration Treatment Tank. A new free product skimmer pump was installed in Recovery/Remediation Well CRW-2. Upgrades were also made to the aeration treatment tank including the water discharge line from the groundwater drawdown pump in CRW-2 and the aeration line from the blower to the treatment tank.

September 2018. The analytical results for the monitoring wells sampled during the September 2018 monitoring event were relatively consistent with the last groundwater monitoring event (September 2017). The effluent from the remediation aeration tank was found to have no contaminants of concern that exceeded the GCLs, which is an indication that effective treatment is being provided by the aeration tank.

Results of the analytical sampling showed the analytes detected above the ADEC GCLs were:

- Monitoring Well MW-3: ethylbenzene, xylenes, DRO, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4 trimethylbenzene, 1,3,5 trimethylbenzene, and naphthalene.
- Monitoring Well MW-8: DRO.
- Monitoring Well MW-14: benzene, ethylbenzene, xylenes, GRO, DRO, 1-methylnaphthalene, naphthalene, 2-methylnaphthalene, 1,2,4 trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1,2,4-trimethylbenzene.
- Remediation Well CRW-2: benzene, ethylbenzene, xylenes, DRO, naphthalene, 1,2,4-trimethylbenzene, and 1-methylnaphthalene.

Several VOCs and PAHs were reported as undetected but had PQLs that equaled or exceeded their corresponding GCLs.

The free product skimmer and groundwater drawdown pump in CRW-2 are operating on a year-round basis. Stantec installed telemetry components to monitor the operation of the following equipment: free product skimmer, drawdown pump discharge line, and the blower aeration line to the aeration remediation tank.

October 2019. The analytical results for the monitoring wells sampled during the October 2019 monitoring event were relatively consistent with the last groundwater monitoring event (September 2018). The effluent from the remediation aeration tank was found to have no contaminants of concern that exceeded the GCLs, which is an indication that effective treatment is being provided by the aeration tank.

Results of the analytical sampling showed the analytes detected above the ADEC GCLs were:

- Monitoring Well MW-3: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-8: DRO.
- Monitoring Well MW-14: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Monitoring Well MW-17: benzene, ethylbenzene, and DRO.
- Monitoring Well MW 19-1: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- Remediation Well CRW-2: benzene, ethylbenzene, xylenes, naphthalene, and 1,2,4-trimethylbenzene.

Several VOCs and PAHs were reported as undetected but had PQLs that exceeded their corresponding GCLs. The free product skimmer and groundwater drawdown pump in CRW-2 are operating on a year-round basis.

January thru July 2020. The free product skimmer and groundwater drawdown pump in CRW-2 were initially operating on a year-round basis. When large particulates of iron oxide blocked the skimmer screen, the skimmer was taken offline until maintenance could be completed. The site blower stopped working between April and June of 2020.. Once the depth of free product in the well exceeded 4' at the end of June, the drawdown pump was shut off until the skimmer could be pulled and completely cleaned.

Installation of WRW-2020 occurred on July 14, 2020 and has been previously document in November 24, 2020 Technical Memo "Speedway Store 5313 (Former Tesoro 2Go Mart 101/IFC) - Installation of 6" Diameter Product Recovery Well WRW 2020". Skimmer was turned off when the system was once again obstructed with iron oxide.

August and September 2020. The skimmer was removed in August and a repurposed blower was installed next to the aeration remediation tank in September 2020. During site review, free product was found in MW 19-1 and MW 19-2. The free product from CRW-2, MW 19-1 and MW 19-2 was monitored and removed periodically with a peristaltic pump. The repurposed blower stopped working and new blower was installed. A temporary influent line was installed from WRW-2020 to with minor adjustments of flow during regular site monitoring to balance the treatment system.

October 2020. The annual groundwater monitoring event included: measuring the depth to groundwater; measuring water quality intrinsic parameters; collecting and analyzing groundwater samples from Monitoring Wells MW-3, MW-4, MW-8, MW-14, and MW-17, as well as Drainfield (Aeration Tank effluent) and both Remediation Wells CRW-2 and WRW-2020(**Figure 2**). Monitoring Well MW 19-1 and 19-2 was not sampled due to the presence of free product in the well.

Results of the analytical sampling showed the analytes detected above the ADEC groundwater cleanup levels (GCLs) were:

- Monitoring Wells MW-3, MW-14, and MW-17: benzene, ethylbenzene, xylenes, diesel range organics (DRO), naphthalene, 1-2-4 trimethylbenzene, and 1-3-5 trimethylbenzene.
- Monitoring Well MW-8: DRO and naphthalene.
- Remediation Well CRW-2: benzene, ethylbenzene, naphthalene, and DRO.
- Remediation Well WRW-2020: ethylbenzene, total xylenes, naphthalene, and 1-2-4 trimethylbenzene.
- Drainfield: naphthalene. Sampling occurred last, with purge water from all other sampled wells having been disposed of in the aeration tank that discharges to the effluent line.

- Monitoring Wells MW 19-1 and 19-2 was not sampled due to the presence of free product which was actively measured and removed using a peristaltic pump on more than one occasion prior to this sampling event.

September 2021: The groundwater monitoring event was conducted on September 27, 2021, by Stantec personnel Engineer-In-Training (EIT) staff members Leslie Petre and Geoff Moorhead. This monitoring event included: measurement of the depth to groundwater; measurement of water quality intrinsic parameters; collection and analyses of groundwater samples from Monitoring Wells MW-3, MW- 4, MW-8, MW-14, MW-17, and MW-19-1, as well as treated effluent from the Aeration Treatment Tank and both free product recovery wells CRW-2 and WRW-2020. Monitoring Well MW 19-2 was not sampled due to the presence of a thin layer (0.01-feet thick) of free product in the well. In response to a verbal request from the ADEC, a representative sample was collected and analyzed from MW-30.

Results of the analytical sampling showed the analytes detected above the ADEC groundwater cleanup levels (GCLs) were:

- MW-3: ethylbenzene, diesel range organics (DRO), 1-2-4 trimethylbenzene (TMB) and naphthalene.
- MW-14, and MW 19-1: benzene, ethylbenzene, xylenes, gasoline range organics (GRO), DRO, naphthalene, 1-2-4 TMB, and 1-3-5 TMB.
- MW-17: benzene, ethylbenzene, xylenes, GRO, DRO, naphthalene, and 1-2-4 TMB
- MW-8: DRO and naphthalene.
- Free Product Recovery Well CRW-2: ethylbenzene.
- Free Product Recovery Well WRW-2020: ethylbenzene, xylenes, naphthalene, and 1-2-4 TMB.

A peristaltic pump is used to remove/extract free product from the wells. No measurable free product was detected in the wells except for a thin layer (0.01-feet thick) in MW 19-2.

An aeration system is currently used for treating groundwater that is pumped from the groundwater drawdown pumps in Free Product Recovery Wells CRW-2 and WRW-2020. The drawdown pumps discharge at a combined rate of 3-4 gpm. The aerated effluent from the 1,500 gallon, double compartment Aeration Treatment Tank discharges to an on-site drainfield Infiltrator System) that is located upgradient of the groundwater interceptor trench. Following the completion of the annual groundwater monitoring event, Stantec increased the size of the drainfield by adding a 450-square foot bottom area drainfield. **Figure 2** shows the layout of the site improvements consisting of the 100-foot long (600-square foot) drainfield installed in 2006, 450-square foot drainfield installed in 2021 and the groundwater interceptor trench installed in 2001.

September 2022: The groundwater monitoring event was conducted on September 19, 2022, by Stantec personnel Engineer-In-Training (EIT) Leslie Petre and EIT Geoff Moorhead. The analytical results for the monitoring wells sampled during the September 2022 monitoring event differed from those from the September 2021 annual monitoring event. Analyte concentrations were higher across the board in wells MW-3 and MW-8, while concentrations in MW-17 were generally lower.

Results of the analytical sampling showed the analytes detected above the ADEC groundwater cleanup levels (GCLs) were:

- Monitoring Well MW-3 and MW-8: ethylbenzene, total xylenes, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
    - In addition, the LOQ for benzene in well MW-8 was above ADEC GCLs.
- Monitoring Wells MW-14 and MW-19-1: benzene, ethylbenzene, total xylenes, GRO, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- Monitoring well MW-17 and the Aeration Tank Effluent: DRO.
- Remediation Well CRW-2: ethylbenzene, DRO, naphthalene, and 1,2,4-TMB.
- Remediation Well WRW-2020: ethylbenzene, naphthalene, and 1,2,4-TMB.
- Monitoring Well MW-19-2 was not sampled due to the presence of free product which was actively measured and removed using a peristaltic pump on more than one occasion prior to this sampling event.

Wells gauged during this monitoring event indicate that the groundwater flow north of the infiltrator trenches flows south towards the groundwater drawdown well WRW-2020. North of this area, the groundwater flow direction is to the west-northwest, at approximately 303°.

Free product accumulation in CRW-2, MW 19-1 and MW 19-2 was monitored on a monthly basis and periodically removed with a peristaltic pump using a line attached to a water level meter to verify the free product presence above the water interface. The free product collected with the peristaltic pump from the above referenced wells is temporarily stored on-site in a 55-gallon drum that is contained in an over-pack drum (secondary containment). On September 19, 2022, US Ecology Alaska, LLC, picked up the 55 gallon drum of free product from the site and brought it to their North Pole facility for proper disposal.

During August of this year Stantec hired US Ecology Alaska, LLC to pump out the contents (1,000 gallons) of the aeration tank which was found to be nearly 1/3 full of iron precipitates. US Ecology Alaska, LLC transported the tank contents to their facility in North Pole for treatment and disposal. The cleaning of the aeration tank should minimize carry-over of the iron sludge into the new drainfield.

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

- MW-3 and MW-14: Benzene, ethylbenzene, total xylenes, GRO, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- MW-8: Total xylenes, DRO, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.

- MW-17: DRO and ethylbenzene.
- MW-19-2: Ethylbenzene, total xylenes, GRO, DRO, 1,2,4-TMB, and 1,3,5-TMB.
- CRW: Benzene, ethylbenzene, DRO, naphthalene, and 1,2,4-TMB.
- CRW-2: Ethylbenzene
- WRW2020: Ethylbenzene and 1,2,4-TMB

Monitoring Well MW-19-1 was not sampled due to the presence of free product.

As previously noted, the entire free product recovery system was shut down for one month from June 21, 2023, to July 21, 2023, due to an issue with the electrical power company. After power was restored at the site, Stantec was able to resume operation of the free product recovery system without any major problems.

However, Stantec has noted a significant reduction (estimated at less than 0.5 gpm) in the flow from the drawdown pump in WRW-2020 free product recovery well during the past several months. Stantec plans to renovate the pump and its discharge piping system next month - it is assumed the pump and water line are clogging up with precipitated iron deposits.

The direction of groundwater flow across the site was influenced by the pumping of the water from free product recovery well CRW-2 as it appears groundwater flow is predominantly altered towards CRW-2. Unfortunately, groundwater flow influenced by drawdown pumping in WRW-2020 was not obvious due to the reduced flow from the drawdown pump that needs to be renovated in the immediate future.

For the past two years, Stantec has maintained the iMonnit telemetry equipment to monitor via the internet the operation of the following equipment: groundwater drawdown pumps in WRW2020 and CRW-2, and the regenerative blower that provides aeration to the aeration treatment tank.

APPENDIX B

Field Methods and Procedures

APPENDIX B – FIELD METHODS AND PROCEDURES

The following table presents the tasks for the Alaska Department of Environmental Conservation (ADEC)-approved 2022 Corrective Action Work Plan. The scope of these tasks is based on the results and findings of the monitoring and remediation completed to date at Speedway Store 5313 [formally Tesoro 2 Go Mart #101/Interior Fuels Company (ADEC Facility ID #2960; ADEC File #100.26.022)].

2022 Work Plan Schedule for Speedway Store 5313 (former T2GM 101/IFC)

Work Plan Task		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1	Monitoring Wells: MW-3, MW-4, MW-8, MW-14, MW-17, MW-19-1, MW-19-2, and Aeration Treatment Tank (influents from wells CRW-2 and WRW 2020 and effluent discharged to the drainfield)			V, G, D, P & I	
Task 2	O&M Free Product Recovery Systems in wells CRW-2 and WRW 2020. Includes pumping out sludge in Aeration Treatment Tank and Off-site treatment and disposal of sludge.	✓	✓	✓	✓
Task 3	The 40-cubic yard stockpile of contaminated soil generated from the construction of the new 2021 drainfield will be hauled to an ADEC approved off-site treatment facility for treatment and disposal.		✓	✓	
Task 4	Drill 6 Confirmation Soil Borings on IFC property and Speedway Store 5313.		✓	✓	
Task 5	Decommission 5 Abandoned Monitoring Wells.		✓	✓	

Key:
AK – Alaska Test Method
D – Diesel range organics by AK102.
EPA – U.S. Environmental Protection Agency
G – Gasoline range organics by AK101.
I – Indicators, parameters tested include: dissolved oxygen, specific conductance, oxygen-reduction potential, pH, and temperature.
O&M – Operation and Maintenance
P – Polynuclear aromatic hydrocarbons (PAHs), i.e., semi-volatile organic compounds, by EPA Test Method 8270D Selective Ion Monitoring.
V – Volatile organic compounds by EPA Test Method 8260C.

The Corrective Action Work Plan for the year 2022 will be implemented by Stantec on behalf of Marathon Petroleum Company. 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 and vapor 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 aboveand tested in the field for chemical and physical intrinsic parameters listed in the 2020 Work Plan Schedule shown above.

APPENDIX C

Tables of Historical Monitoring Data

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	Ethylbenzene	GRO	Naphthalene	Toluene	Xylenes
Unit	**ft**	**ft**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
GW Human Health Cleanup			0.056	0.06	0.0046	**1.5**	0.015	2.2	0.0017	1.1	0.19
CRW											
10/05/2023	--	--	**0.07730**	0.0220	**0.0051500**	**2.01**	**0.02950**	0.541	**0.01510**	0.000488000	0.176
CRW-2											
09/24/2013	--	--	—	—	U (0.0005)	U (0.439)	—	U (0.05)	—	—	—
05/07/2014	--	--	—	—	0.001400	1.20	—	0.0500	—	—	—
09/07/2017	--	--	—	—	**0.0160**	0.96	—	0.35	—	—	—
09/07/2018	--	--	—	—	**0.0130**	**2.80**	—	0.91	—	—	—
10/23/2019	--	--	—	—	**0.0110**	1.40	—	0.99	—	—	—
10/22/2020	--	--	—	—	**0.0073900**	**1.51**	—	0.385	—	—	—
09/19/2022	--	--	**0.105**	0.03050	0.000936000	**2.35**	**0.03350**	0.602	**0.0059600**	0.000641000	0.155
10/05/2023	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*	*FP*
ERW											
10/05/2023	--	--	U(0.00100)	U(0.00100)	U(0.00100)	0.398	U(0.00100)	U(0.100)	U(0.000250)	U(0.00100)	0.000521000
IFC Aeration Tank											
05/24/2012	--	--	—	—	**0.0048600**	0.478	—	0.532	—	—	—
05/26/2015	--	--	—	—	**0.006500**	**21.0**	—	0.59	—	—	—
05/12/2016	--	--	—	—	**0.00500**	U (0.43)	—	0.21	—	—	—
09/07/2017	--	--	—	—	U (0.00040)	0.74	—	U (0.150)	—	—	—
09/07/2018	--	--	—	—	U (0.00040)	0.28	—	U (0.150)	—	—	—
10/23/2019	--	--	—	—	U (0.003)	0.37	—	U (0.25)	—	—	—
10/22/2020	--	--	—	—	0.000701000	0.988	—	0.08610	—	—	—
09/19/2022	--	--	0.0079600	0.0025600	0.000169000	**1.51**	0.0029200	0.07120	U(0.000250)	U(0.00100)	0.01590
10/05/2023	--	--	0.0065700	0.0027800	0.000175000	**5.52**	0.0015100	0.07740	U(0.000250)	0.000358000	0.01210
MW19-1											
06/26/2019	--	--	—	—	**0.0480**	**2.0 H**	—	**5.20**	—	—	—
10/23/2019	--	--	—	—	**0.0850**	**42 H**	—	**8.60**	—	—	—
09/19/2022	--	--	**0.27**	**0.103**	**0.0210**	**12.2**	**0.132**	**2.93**	**0.126**	0.0048100	**0.627**
MW19-2											
06/26/2019	--	--	—	—	**0.0740**	**5.0 H**	—	**7.40**	—	—	—
10/05/2023	--	--	**0.428**	**0.148**	**0.0046800**	**16.4**	**0.12**	**2.83**	**0.04410**	U(0.00100)	**0.817**
MW-3											
04/13/1995	--	--	—	—	**0.0900**	—	—	—	—	—	—
10/25/1995	--	--	—	—	**0.48**	**200**	—	—	—	—	—
05/22/1996	--	--	—	—	**0.0500**	—	—	—	—	—	—
03/19/1997	--	--	—	—	**0.0950**	—	—	—	—	—	—
11/17/1997	--	--	—	—	**0.04210**	—	—	2.20	—	—	—
04/29/1998	--	--	—	—	**0.02730**	**118**	—	**2.30**	—	—	—
05/06/2014	--	--	—	—	U (0.0005)	1.10	—	0.0720	—	—	—

Unit	Well Screen Interval ft	Ground Water Elevation ft	124-TMB ppm	135-TMB ppm	Benzene ppm	DRO ppm	Ethylbenzene ppm	GRO ppm	Naphthalene ppm	Toluene ppm	Xylenes ppm
GW Human Health Cleanup			0.056	0.06	0.0046	**1.5**	0.015	2.2	0.0017	1.1	0.19
09/07/2017	--	--	—	—	**0.0240**	**160**	—	**3.70**	—	—	—
09/07/2018	--	--	—	—	0.003300	**60.0**	—	1.30	—	—	—
10/23/2019	--	--	—	—	**0.004700**	**210**	—	**3.10**	—	—	—
10/21/2020	--	--	—	—	**0.0073500**	**2.67**	—	1.37	—	—	—
09/19/2022	--	--	**0.168**	**0.08260**	0.0032500	**5.91**	**0.0430**	1.87	**0.03580**	0.0230	**0.638**
10/05/2023	--	--	**0.901**	**0.418**	**0.01060**	**215**	**0.12**	**5.24**	**0.38**	0.03110	**1.90**
MW-4											
11/04/1991	--	--	—	—	U (0.0005)	—	—	—	—	—	—
01/28/1992	--	--	—	—	—	—	—	U	—	—	—
04/23/1992	--	--	—	—	—	U	—	—	—	—	—
07/16/1992	--	--	—	—	U (0.0005)	—	—	—	—	—	—
08/11/1992	--	--	—	—	—	—	—	0.308	—	—	—
09/10/1992	--	--	—	—	—	0.581	—	—	—	—	—
10/07/1992	--	--	—	—	U (0.0005)	—	—	—	—	—	—
12/21/1992	--	--	—	—	—	—	—	U (0.05)	—	—	—
03/09/1993	--	--	—	—	—	U (0.417)	—	—	—	—	—
09/23/1994	--	--	—	—	U (0.0005)	—	—	—	—	—	—
03/12/1995	--	--	—	—	—	—	—	U (0.05)	—	—	—
04/13/1995	--	--	—	—	—	U (0.455)	—	—	—	—	—
07/19/1995	--	--	—	—	U (0.0005)	—	—	—	—	—	—
10/25/1995	--	--	—	—	—	—	—	U (0.05)	—	—	—
05/22/1996	--	--	—	—	—	0.439	—	—	—	—	—
11/06/1996	--	--	—	—	U (0.0005)	—	—	—	—	—	—
03/19/1997	--	--	—	—	—	—	—	U (0.05)	—	—	—
11/17/1997	--	--	—	—	—	0.565	—	—	—	—	—
04/29/1998	--	--	—	—	U (0.0005)	—	—	—	—	—	—
10/13/1998	--	--	—	—	—	—	—	U (0.05)	—	—	—
11/05/1999	--	--	—	—	—	U (0.400)	—	—	—	—	—
06/04/2001	--	--	—	—	U (0.0005)	—	—	—	—	—	—
11/30/2001	--	--	—	—	—	—	—	U (0.05)	—	—	—
08/20/2002	--	--	—	—	—	U (0.41)	—	—	—	—	—
08/04/2003	--	--	—	—	U (0.001)	—	—	—	—	—	—
05/03/2004	--	--	—	—	—	—	—	U (0.05)	—	—	—
05/16/2006	--	--	—	—	—	U (0.21)	—	—	—	—	—
09/14/2006	--	--	—	—	U (0.0020)	—	—	—	—	—	—
05/14/2007	--	--	—	—	—	—	—	U (0.1)	—	—	—
06/04/2008	--	--	—	—	—	0.78	—	—	—	—	—
05/13/2009	--	--	—	—	U (0.00040)	—	—	—	—	—	—
06/15/2010	--	--	—	—	—	—	—	U (0.150)	—	—	—
05/26/2011	--	--	—	—	—	0.59	—	—	—	—	—

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	Ethylbenzene	GRO	Naphthalene	Toluene	Xylenes
Unit	**ft**	**ft**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
GW Human Health Cleanup			0.056	0.06	0.0046	**1.5**	0.015	2.2	0.0017	1.1	0.19
05/24/2012	--	--	—	—	U (0.00040)	—	—	—	—	—	—
08/12/2013	--	--	—	—	—	—	—	U (0.150)	—	—	—
05/06/2014	--	--	—	—	—	U (0.28)	—	—	—	—	—
05/26/2015	--	--	—	—	U (0.003)	—	—	—	—	—	—
05/12/2016	--	--	—	—	—	—	—	U (0.25)	—	—	—
09/07/2017	--	--	—	—	—	0.33 H	—	—	—	—	—
09/07/2018	--	--	—	—	U(0.001)	—	—	—	—	—	—
10/23/2019	--	--	—	—	—	—	—	0.595	—	—	—
10/21/2020	--	--	—	—	—	0.95	—	—	—	—	—
09/19/2022	--	--	U(0.00100)	U(0.00100)	U(0.00100)	U(0.840)	U(0.00100)	0.04330	U(0.000250)	0.01220	U(0.00300)
10/05/2023	--	--	U(0.00100)	U(0.00100)	U(0.00100)	0.905	U(0.00100)	U(0.100)	U(0.000750)	0.000797000	U(0.00300)
MW-8											
08/30/2004	--	--	—	—	**0.0051600**	**1.69**	—	0.329	—	—	—
09/27/2005	--	--	—	—	U (0.0005)	U (0.4)	—	U (0.05)	—	—	—
05/16/2006	--	--	—	—	0.000695000	**4.12**	—	0.07660	—	—	—
09/14/2006	--	--	—	—	**0.0064500**	0.956	—	0.284	—	—	—
06/04/2008	--	--	—	—	0.0018800	**5.81**	—	0.45	—	—	—
05/13/2009	--	--	—	—	0.0023800	**12.6**	—	0.74	—	—	—
06/15/2010	--	--	—	—	**0.0046700**	**2.45**	—	1.39	—	—	—
05/26/2011	--	--	—	—	0.0018800	**13.1**	—	1.10	—	—	—
05/24/2012	--	--	—	—	0.0013400	**1.88**	—	0.524	—	—	—
05/07/2014	--	--	—	—	0.00067000	**43.0**	—	2.20	—	—	—
05/26/2015	--	--	—	—	0.002500	**65.0**	—	**2.80**	—	—	—
05/12/2016	--	--	—	—	0.00087000	**12.0**	—	0.86	—	—	—
09/07/2017	--	--	—	—	**0.0160**	**27.0**	—	0.39	—	—	—
09/07/2018	--	--	—	—	0.00067000	**20.0**	—	0.28	—	—	—
10/23/2019	--	--	—	—	U (0.003)	**12.0**	—	0.45	—	—	—
10/21/2020	--	--	—	—	0.000695000	**8.97**	—	0.126	—	—	—
09/19/2022	--	--	**0.245**	**0.116**	U(0.00500)	**11.3**	**0.02690**	1.50	**0.05090**	0.0040700	**0.456**
10/05/2023	--	--	**0.257**	**0.124**	U(0.00100)	**38.3**	0.01310	1.49	**0.05670**	0.02840	**0.31**
MW-14											
04/01/2005	--	--	—	—	**0.01620**	**22.0**	—	2.16	—	—	—
09/27/2005	--	--	—	—	**0.01940**	**4.34**	—	1.07	—	—	—
09/14/2006	--	--	—	—	0.0032300	**1.51**	—	0.457	—	—	—
06/04/2008	--	--	—	—	**0.01280**	**3.02**	—	0.964	—	—	—
05/13/2009	--	--	—	—	**0.02670**	**1.77**	—	2.18	—	—	—
06/15/2010	--	--	—	—	**0.01190**	**1.89**	—	1.15	—	—	—
05/26/2011	--	--	—	—	**0.01030**	**3.78**	—	1.23	—	—	—
05/24/2012	--	--	—	—	0.0027100	**2.72**	—	0.284	—	—	—
08/12/2013	--	--	—	—	**0.04420**	**120**	—	**3.77**	—	—	—

	Well Screen Interval	Ground Water Elevation	124-TMB	135-TMB	Benzene	DRO	Ethylbenzene	GRO	Naphthalene	Toluene	Xylenes
Unit	**ft**	**ft**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
GW Human Health Cleanup			0.056	0.06	0.0046	**1.5**	0.015	2.2	0.0017	1.1	0.19
05/06/2014	--	--	—	—	**0.0270**	67.0	—	**12.0**	—	—	—
05/26/2015	--	--	—	—	**0.0200**	**6.40**	—	**3.60**	—	—	—
09/07/2017	--	--	—	—	**0.0500**	**14.0**	—	**6.50**	—	—	—
09/07/2018	--	--	—	—	**0.0740**	**26.0**	—	U (7.5)	—	—	—
10/23/2019	--	--	—	—	**0.0540**	**15 H**	—	**12.0**	—	—	—
10/21/2020	--	--	—	—	**0.05850**	**4.75**	—	**6.68**	—	—	—
09/19/2022	--	--	**0.565**	**0.174**	**0.03490**	**2.72**	**0.532**	**6.86**	**0.331**	0.0300	**3.37**
10/05/2023	--	--	**0.555**	**0.185**	**0.04930**	**3.04**	**0.384**	**6.26**	**0.219**	0.02690	**2.68**
MW-17											
07/27/2000	--	--	—	—	**0.0700**	**57.6**	—	**6.80**	—	—	—
08/04/2003	--	--	—	—	0.001600	**4.50**	—	0.535	—	—	—
05/03/2004	--	--	—	—	**0.08230**	**65.2**	—	1.14	—	—	—
04/01/2005	--	--	—	—	**0.01480**	**118**	—	**5.37**	—	—	—
09/27/2005	--	--	—	—	0.0042200	**6.53**	—	0.204	—	—	—
05/16/2006	--	--	—	—	0.000652000	**51.2**	—	0.633	—	—	—
09/14/2006	--	--	—	—	**0.0063400**	**9.33**	—	0.642	—	—	—
05/14/2007	--	--	—	—	0.0018200	**74.1**	—	0.467	—	—	—
06/04/2008	--	--	—	—	0.00054000	**3.49**	—	0.213	—	—	—
05/13/2009	--	--	—	—	U (0.0005)	1.11	—	U (0.05)	—	—	—
06/15/2010	--	--	—	—	0.0038400	**3.70**	—	0.148	—	—	—
05/26/2011	--	--	—	—	U (0.0005)	0.963	—	U (0.05)	—	—	—
05/24/2012	--	--	—	—	U (0.0005)	1.05	—	0.122	—	—	—
08/12/2013	--	--	—	—	U (0.0005)	**114**	—	1.68	—	—	—
05/06/2014	--	--	—	—	U (0.0005)	**28.0**	—	1.20	—	—	—
05/26/2015	--	--	—	—	U (0.0010)	**32.0**	—	**3.90**	—	—	—
05/12/2016	--	--	—	—	U (0.00026)	**74.0**	—	**3.30**	—	—	—
09/07/2017	--	--	—	—	**0.005900**	**47.0**	—	**2.40**	—	—	—
09/07/2018	--	--	—	—	**0.006400**	**24.0**	—	**2.90**	—	—	—
10/23/2019	--	--	—	—	**0.007700**	**14.0**	—	0.38	—	—	—
10/21/2020	--	--	—	—	**0.07320**	**17.7**	—	**3.20**	—	—	—
09/19/2022	--	--	0.0016300	0.000709000	0.000136000	**3.40**	0.000494000	0.226	0.000355000	0.002600	0.0032700
10/05/2023	--	--	0.04340	0.01160	0.0034200	**3.39**	**0.02880**	0.285	U(0.000250)	0.0011200	0.186
OMW-3											
10/05/2023	--	--	U(0.00100)	U(0.00100)	U(0.00100)	0.766	U(0.00100)	U(0.100)	U(0.000250)	U(0.00100)	U(0.00300)
WRW2020											
07/16/2020	--	--	—	—	**10.6**	—	—	—	—	—	—
10/22/2020	--	--	—	—	0.0033900	1.05	—	0.588	—	—	—
09/19/2022	--	--	**0.07150**	0.0220	0.0021700	0.237	**0.03970**	0.563	**0.01590**	U(0.00100)	0.171
10/05/2023	--	--	**0.06620**	0.01990	0.0011200	1.22	**0.02880**	0.11	0.000201000	U(0.00100)	0.13

APPENDIX D

Laboratory Analytical Report and ADEC Laboratory Data Review Checklist

ANALYTICAL REPORT

October 20, 2023

Stantec - Anchorage, AK

Sample Delivery Group:	L1664659
Samples Received:	10/10/2023
Project Number:	
Description:	Fairbanks Marathon Site MPC 157575

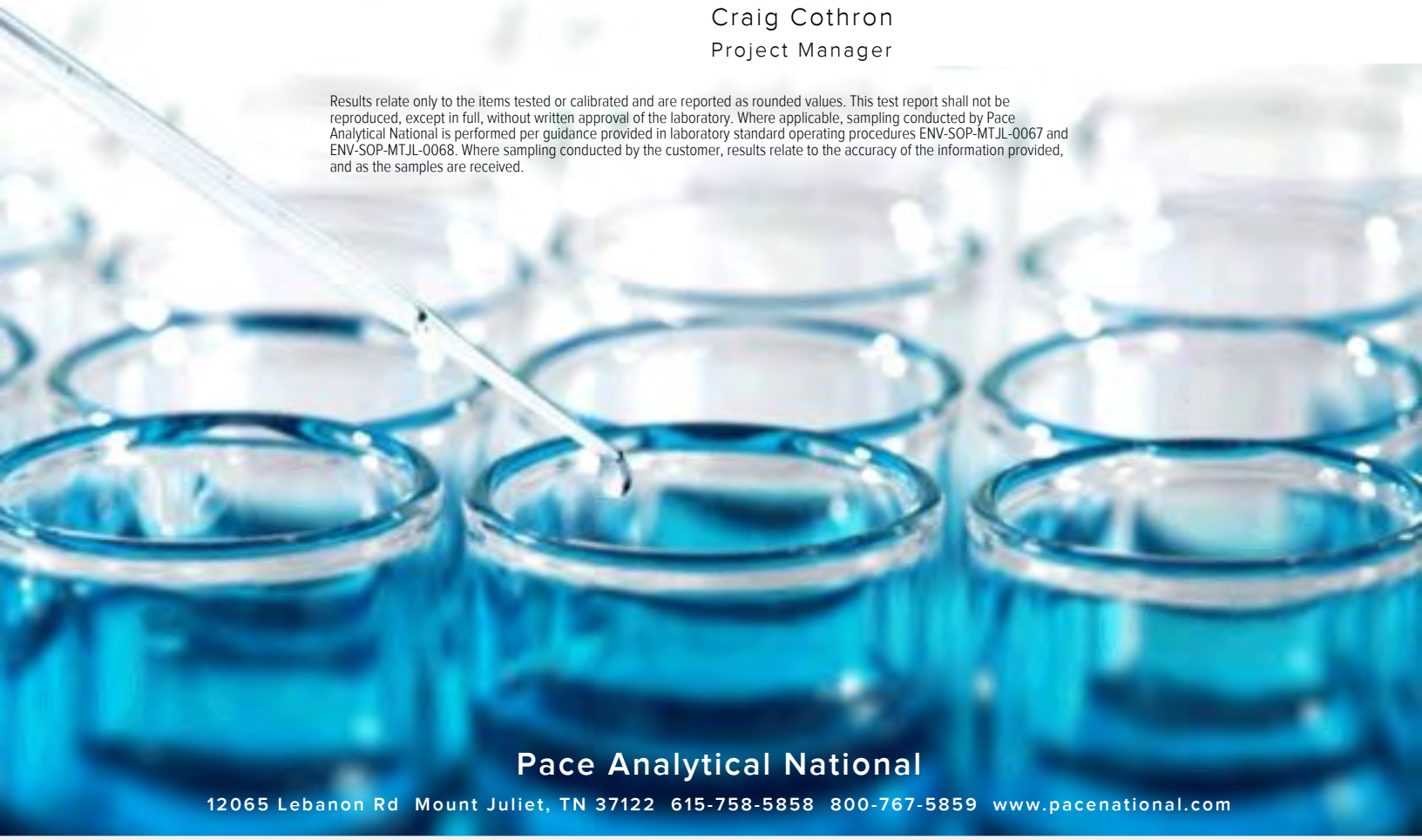
Report To:

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

TABLE OF CONTENTS

MW-3 L1664659-01 GW

Collected by: Leslie P | Collected date/time: 10/05/23 15:57 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2153428	5	10/18/23 23:58	10/18/23 23:58	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	10	10/13/23 19:06	10/13/23 19:06	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1	10/14/23 14:53	10/15/23 04:39	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	10.5	10/12/23 07:51	10/16/23 15:56	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	2	10/12/23 12:38	10/13/23 00:07	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	40	10/12/23 12:38	10/18/23 04:41	AMM	Mt. Juliet, TN

CRW-2 L1664659-02 GW

Collected by: Leslie P | Collected date/time: 10/05/23 16:50 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 18:47	10/13/23 18:47	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 19:28	10/12/23 19:28	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.07	10/14/23 14:53	10/15/23 04:53	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.05	10/12/23 07:51	10/14/23 22:49	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 21:26	AMM	Mt. Juliet, TN

WRW-2020 L1664659-03 GW

Collected by: Leslie P | Collected date/time: 10/05/23 16:40 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 19:14	10/13/23 19:14	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 19:48	10/12/23 19:48	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1	10/14/23 14:53	10/15/23 05:07	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.05	10/12/23 07:51	10/14/23 23:09	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 21:44	AMM	Mt. Juliet, TN

ERW L1664659-04 GW

Collected by: Leslie P | Collected date/time: 10/04/23 15:46 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:25	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 19:40	10/13/23 19:40	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 20:09	10/12/23 20:09	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1	10/14/23 14:53	10/15/23 05:34	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.11	10/12/23 07:51	10/14/23 23:29	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2147661	1	10/11/23 08:05	10/11/23 19:18	DSH	Mt. Juliet, TN

OMW-3 L1664659-05 GW

Collected by: Leslie P | Collected date/time: 10/04/23 14:34 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:35	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 20:07	10/13/23 20:07	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 20:29	10/12/23 20:29	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.02	10/14/23 14:53	10/15/23 05:47	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.05	10/12/23 07:51	10/14/23 23:49	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2147661	1	10/11/23 08:05	10/11/23 19:36	DSH	Mt. Juliet, TN

EFFLUENT L1664659-06 GW

Collected by: Leslie P | Collected date/time: 10/05/23 13:38 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:38	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 21:17	10/18/23 21:17	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	1	10/13/23 19:29	10/13/23 19:29	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.02	10/14/23 14:53	10/15/23 06:01	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.11	10/12/23 07:51	10/15/23 00:10	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 22:02	AMM	Mt. Juliet, TN

DUP-1 L1664659-07 GW

Collected by: Leslie P | Collected date/time: 10/05/23 00:00 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:41	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 21:43	10/18/23 21:43	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	10	10/13/23 19:50	10/13/23 19:50	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.07	10/14/23 14:53	10/15/23 06:14	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1.11	10/12/23 07:51	10/15/23 00:30	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 22:20	AMM	Mt. Juliet, TN

DUP-2 L1664659-08 GW

Collected by: Leslie P | Collected date/time: 10/05/23 00:00 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:43	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 22:11	10/18/23 22:11	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	5	10/13/23 20:11	10/13/23 20:11	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.06	10/14/23 14:53	10/15/23 06:28	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1	10/12/23 07:51	10/15/23 00:50	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	2	10/12/23 12:38	10/13/23 00:25	AMM	Mt. Juliet, TN

MW-4 L1664659-09 GW

Collected by: Leslie P | Collected date/time: 10/04/23 15:17 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 20:34	10/13/23 20:34	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 20:49	10/12/23 20:49	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.03	10/14/23 14:53	10/15/23 06:42	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2148875	1	10/12/23 07:51	10/16/23 11:34	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2147661	3	10/11/23 08:05	10/11/23 20:11	DSH	Mt. Juliet, TN

MW-8 L1664659-10 GW

Collected by: Leslie P | Collected date/time: 10/05/23 15:10 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:51	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 22:38	10/18/23 22:38	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	5	10/13/23 20:33	10/13/23 20:33	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.07	10/14/23 14:53	10/15/23 06:55	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152416	1	10/17/23 05:51	10/17/23 22:57	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	2	10/12/23 12:38	10/13/23 01:01	AMM	Mt. Juliet, TN

MW-14 L1664659-11 GW

Collected by: Leslie P | Collected date/time: 10/05/23 11:48 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 21:01	10/13/23 21:01	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 21:09	10/12/23 21:09	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	50	10/13/23 20:54	10/13/23 20:54	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.07	10/14/23 14:53	10/15/23 07:09	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152416	1	10/17/23 05:51	10/17/23 23:23	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 22:38	AMM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	10	10/12/23 12:38	10/18/23 03:23	AMM	Mt. Juliet, TN

MW-17 L1664659-12 GW

Collected by: Leslie P | Collected date/time: 10/05/23 15:56 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 23:04	10/18/23 23:04	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	1	10/13/23 21:16	10/13/23 21:16	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151052	1.04	10/14/23 14:53	10/15/23 07:23	NWH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152416	1	10/17/23 05:51	10/17/23 23:48	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/13/23 01:19	AMM	Mt. Juliet, TN

MW-19-2 L1664659-13 GW

Collected by: Leslie P | Collected date/time: 10/05/23 12:24 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:54	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2153428	1	10/18/23 23:31	10/18/23 23:31	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2151082	10	10/13/23 21:37	10/13/23 21:37	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151054	1.03	10/14/23 14:55	10/15/23 05:49	MEW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152416	1	10/17/23 05:51	10/18/23 00:14	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 22:56	AMM	Mt. Juliet, TN

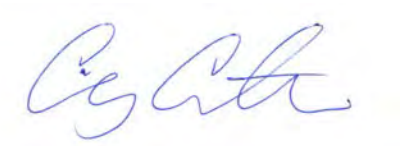
CRW L1664659-14 GW

Collected by: Leslie P | Collected date/time: 10/05/23 13:33 | Received date/time: 10/10/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010D	WG2149704	1	10/12/23 23:43	10/17/23 16:56	ZSA	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2150791	1	10/13/23 21:27	10/13/23 21:27	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2150379	1	10/12/23 21:30	10/12/23 21:30	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG2151054	1.06	10/14/23 14:55	10/15/23 06:06	MEW	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152416	1	10/17/23 05:51	10/17/23 16:38	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2148881	1	10/12/23 12:38	10/12/23 23:14	AMM	Mt. Juliet, TN

CASE NARRATIVE

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



Craig Cothron
Project Manager

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	5.24		0.143	0.500	5	10/18/2023 23:58	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*94.3*			*50.0-150*		*10/18/2023 23:58*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 23:58*	WG2153428

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	0.0106		0.000941	0.0100	10	10/13/2023 19:06	WG2151082
n-Butylbenzene	U		0.00157	0.0100	10	10/13/2023 19:06	WG2151082
sec-Butylbenzene	0.0498		0.00125	0.0100	10	10/13/2023 19:06	WG2151082
tert-Butylbenzene	U		0.00127	0.0100	10	10/13/2023 19:06	WG2151082
Ethylbenzene	0.120		0.00137	0.0100	10	10/13/2023 19:06	WG2151082
Isopropylbenzene	0.0488		0.00105	0.0100	10	10/13/2023 19:06	WG2151082
Naphthalene	0.292	C3	0.0100	0.0500	10	10/13/2023 19:06	WG2151082
Toluene	0.0311		0.00278	0.0100	10	10/13/2023 19:06	WG2151082
1,2,4-Trimethylbenzene	0.901		0.00322	0.0100	10	10/13/2023 19:06	WG2151082
1,3,5-Trimethylbenzene	0.418		0.00104	0.0100	10	10/13/2023 19:06	WG2151082
Total Xylenes	1.90		0.00174	0.0300	10	10/13/2023 19:06	WG2151082
(S) Toluene-d8	*86.1*			*80.0-120*		*10/13/2023 19:06*	WG2151082
(S) 4-Bromofluorobenzene	*119*			*77.0-126*		*10/13/2023 19:06*	WG2151082
(S) 1,2-Dichloroethane-d4	*119*			*70.0-130*		*10/13/2023 19:06*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000536	0.0000200	1	10/15/2023 04:39	WG2151052

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	215		1.79	8.40	10.5	10/16/2023 15:56	WG2148875
(S) o-Terphenyl	*57.8*			*50.0-150*		*10/16/2023 15:56*	WG2148875

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
Anthracene	0.00769		0.0000380	0.000100	2	10/13/2023 00:07	WG2148881
Acenaphthene	0.0260		0.000760	0.00200	40	10/18/2023 04:41	WG2148881
Acenaphthylene	U		0.000684	0.00200	40	10/18/2023 04:41	WG2148881
Benzo(a)anthracene	0.0000461	J	0.0000406	0.000100	2	10/13/2023 00:07	WG2148881
Benzo(a)pyrene	U		0.0000368	0.000100	2	10/13/2023 00:07	WG2148881
Benzo(b)fluoranthene	0.0000514	J	0.0000336	0.000100	2	10/13/2023 00:07	WG2148881
Benzo(g,h,i)perylene	U		0.0000368	0.000100	2	10/13/2023 00:07	WG2148881
Benzo(k)fluoranthene	U		0.0000404	0.000100	2	10/13/2023 00:07	WG2148881
Chrysene	0.0000534	J	0.0000358	0.000100	2	10/13/2023 00:07	WG2148881
Dibenz(a,h)anthracene	U		0.0000320	0.000100	2	10/13/2023 00:07	WG2148881
Fluoranthene	0.000273		0.0000540	0.000200	2	10/13/2023 00:07	WG2148881
Fluorene	0.0366		0.000676	0.00200	40	10/18/2023 04:41	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000316	0.000100	2	10/13/2023 00:07	WG2148881
Naphthalene	0.380		0.00367	0.0100	40	10/18/2023 04:41	WG2148881
Phenanthrene	0.0461		0.0000360	0.000100	2	10/13/2023 00:07	WG2148881
Pyrene	0.000182		0.0000338	0.000100	2	10/13/2023 00:07	WG2148881
1-Methylnaphthalene	0.733		0.00275	0.0100	40	10/18/2023 04:41	WG2148881

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
2-Methylnaphthalene	0.896		0.00270	0.0100	40	10/18/2023 04:41	WG2148881
(S) Nitrobenzene-d5	*0.000*	J7		*31.0-160*		*10/18/2023 04:41*	WG2148881
(S) Nitrobenzene-d5	*0.000*	J2		*31.0-160*		*10/13/2023 00:07*	WG2148881
(S) 2-Fluorobiphenyl	*93.2*	J7		*48.0-148*		*10/18/2023 04:41*	WG2148881
(S) 2-Fluorobiphenyl	*0.000*	J2		*48.0-148*		*10/13/2023 00:07*	WG2148881
(S) p-Terphenyl-d14	*73.2*			*37.0-146*		*10/13/2023 00:07*	WG2148881
(S) p-Terphenyl-d14	*87.4*	J7		*37.0-146*		*10/18/2023 04:41*	WG2148881

Sample Narrative:

L1664659-01 WG2148881: Surrogate failure due to matrix interference.

L1664659-01 WG2148881: IS/SURR failed on lower dilution.

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	0.374		0.0287	0.100	1	10/13/2023 18:47	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*96.4*			*50.0-150*		*10/13/2023 18:47*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 18:47*	WG2150791

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	0.00201		0.0000941	0.00100	1	10/12/2023 19:28	WG2150379
n-Butylbenzene	0.00191		0.000157	0.00100	1	10/12/2023 19:28	WG2150379
sec-Butylbenzene	0.00238		0.000125	0.00100	1	10/12/2023 19:28	WG2150379
tert-Butylbenzene	0.000540	J	0.000127	0.00100	1	10/12/2023 19:28	WG2150379
Ethylbenzene	0.0170		0.000137	0.00100	1	10/12/2023 19:28	WG2150379
Isopropylbenzene	0.00564		0.000105	0.00100	1	10/12/2023 19:28	WG2150379
Naphthalene	0.0204	C3	0.00100	0.00500	1	10/12/2023 19:28	WG2150379
Toluene	0.00259		0.000278	0.00100	1	10/12/2023 19:28	WG2150379
1,2,4-Trimethylbenzene	0.0470		0.000322	0.00100	1	10/12/2023 19:28	WG2150379
1,3,5-Trimethylbenzene	0.0158		0.000104	0.00100	1	10/12/2023 19:28	WG2150379
Total Xylenes	0.145		0.000174	0.00300	1	10/12/2023 19:28	WG2150379
(S) Toluene-d8	*102*			*80.0-120*		*10/12/2023 19:28*	WG2150379
(S) 4-Bromofluorobenzene	*104*			*77.0-126*		*10/12/2023 19:28*	WG2150379
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*		*10/12/2023 19:28*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000574	0.0000214	1.07	10/15/2023 04:53	WG2151052

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	0.736	B J	0.179	0.840	1.05	10/14/2023 22:49	WG2148875
(S) o-Terphenyl	*73.2*			*50.0-150*		*10/14/2023 22:49*	WG2148875

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
Anthracene	U		0.0000190	0.0000500	1	10/12/2023 21:26	WG2148881
Acenaphthene	0.000157		0.0000190	0.0000500	1	10/12/2023 21:26	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 21:26	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 21:26	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 21:26	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 21:26	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 21:26	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 21:26	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 21:26	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 21:26	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 21:26	WG2148881
Fluorene	0.000380		0.0000169	0.0000500	1	10/12/2023 21:26	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 21:26	WG2148881
Naphthalene	0.000628		0.0000917	0.000250	1	10/12/2023 21:26	WG2148881
Phenanthrene	0.0000405	J	0.0000180	0.0000500	1	10/12/2023 21:26	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 21:26	WG2148881
1-Methylnaphthalene	0.00344		0.0000687	0.000250	1	10/12/2023 21:26	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
2-Methylnaphthalene	0.000119	J	0.0000674	0.000250	1	10/12/2023 21:26	WG2148881
(S) Nitrobenzene-d5	*111*			*31.0-160*		*10/12/2023 21:26*	WG2148881
(S) 2-Fluorobiphenyl	*100*			*48.0-148*		*10/12/2023 21:26*	WG2148881
(S) p-Terphenyl-d14	*77.4*			*37.0-146*		*10/12/2023 21:26*	WG2148881

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	0.110		0.0287	0.100	1	10/13/2023 19:14	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*100*			*50.0-150*		*10/13/2023 19:14*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 19:14*	WG2150791

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	0.00112		0.0000941	0.00100	1	10/12/2023 19:48	WG2150379
n-Butylbenzene	0.00424		0.000157	0.00100	1	10/12/2023 19:48	WG2150379
sec-Butylbenzene	0.00956		0.000125	0.00100	1	10/12/2023 19:48	WG2150379
tert-Butylbenzene	0.00100	J	0.000127	0.00100	1	10/12/2023 19:48	WG2150379
Ethylbenzene	0.0288		0.000137	0.00100	1	10/12/2023 19:48	WG2150379
Isopropylbenzene	0.0141		0.000105	0.00100	1	10/12/2023 19:48	WG2150379
Naphthalene	0.0316	C3	0.00100	0.00500	1	10/12/2023 19:48	WG2150379
Toluene	U		0.000278	0.00100	1	10/12/2023 19:48	WG2150379
1,2,4-Trimethylbenzene	0.0662		0.000322	0.00100	1	10/12/2023 19:48	WG2150379
1,3,5-Trimethylbenzene	0.0199		0.000104	0.00100	1	10/12/2023 19:48	WG2150379
Total Xylenes	0.130		0.000174	0.00300	1	10/12/2023 19:48	WG2150379
(S) Toluene-d8	*103*			*80.0-120*		*10/12/2023 19:48*	WG2150379
(S) 4-Bromofluorobenzene	*107*			*77.0-126*		*10/12/2023 19:48*	WG2150379
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*10/12/2023 19:48*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000536	0.0000200	1	10/15/2023 05:07	WG2151052

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	1.22	B	0.179	0.840	1.05	10/14/2023 23:09	WG2148875
(S) o-Terphenyl	*64.8*			*50.0-150*		*10/14/2023 23:09*	WG2148875

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
Anthracene	U		0.0000190	0.0000500	1	10/12/2023 21:44	WG2148881
Acenaphthene	U		0.0000190	0.0000500	1	10/12/2023 21:44	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 21:44	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 21:44	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 21:44	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 21:44	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 21:44	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 21:44	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 21:44	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 21:44	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 21:44	WG2148881
Fluorene	U		0.0000169	0.0000500	1	10/12/2023 21:44	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 21:44	WG2148881
Naphthalene	0.000201	J	0.0000917	0.000250	1	10/12/2023 21:44	WG2148881
Phenanthrene	U		0.0000180	0.0000500	1	10/12/2023 21:44	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 21:44	WG2148881
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/12/2023 21:44	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/12/2023 21:44	WG2148881
(S) Nitrobenzene-d5	*66.8*			*31.0-160*		*10/12/2023 21:44*	WG2148881
(S) 2-Fluorobiphenyl	*101*			*48.0-148*		*10/12/2023 21:44*	WG2148881
(S) p-Terphenyl-d14	*82.6*			*37.0-146*		*10/12/2023 21:44*	WG2148881

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	9.35		0.504	3.00	1	10/17/2023 16:25	WG2149704

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	10/13/2023 19:40	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*99.9*			*50.0-150*		*10/13/2023 19:40*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 19:40*	WG2150791

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	10/12/2023 20:09	WG2150379
n-Butylbenzene	U		0.000157	0.00100	1	10/12/2023 20:09	WG2150379
sec-Butylbenzene	U		0.000125	0.00100	1	10/12/2023 20:09	WG2150379
tert-Butylbenzene	U		0.000127	0.00100	1	10/12/2023 20:09	WG2150379
Ethylbenzene	U		0.000137	0.00100	1	10/12/2023 20:09	WG2150379
Isopropylbenzene	U		0.000105	0.00100	1	10/12/2023 20:09	WG2150379
Naphthalene	U	C3	0.00100	0.00500	1	10/12/2023 20:09	WG2150379
Toluene	U		0.000278	0.00100	1	10/12/2023 20:09	WG2150379
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/12/2023 20:09	WG2150379
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/12/2023 20:09	WG2150379
Total Xylenes	0.000521	J	0.000174	0.00300	1	10/12/2023 20:09	WG2150379
(S) Toluene-d8	*109*			*80.0-120*		*10/12/2023 20:09*	WG2150379
(S) 4-Bromofluorobenzene	*105*			*77.0-126*		*10/12/2023 20:09*	WG2150379
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*10/12/2023 20:09*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000536	0.0000200	1	10/15/2023 05:34	WG2151052

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	0.398	B J	0.189	0.888	1.11	10/14/2023 23:29	WG2148875
(S) o-Terphenyl	*75.0*			*50.0-150*		*10/14/2023 23:29*	WG2148875

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
Anthracene	U		0.0000190	0.0000500	1	10/11/2023 19:18	WG2147661
Acenaphthene	U		0.0000190	0.0000500	1	10/11/2023 19:18	WG2147661
Acenaphthylene	U		0.0000171	0.0000500	1	10/11/2023 19:18	WG2147661
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/11/2023 19:18	WG2147661
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/11/2023 19:18	WG2147661
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/11/2023 19:18	WG2147661
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/11/2023 19:18	WG2147661
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/11/2023 19:18	WG2147661
Chrysene	U		0.0000179	0.0000500	1	10/11/2023 19:18	WG2147661
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/11/2023 19:18	WG2147661
Fluoranthene	U		0.0000270	0.000100	1	10/11/2023 19:18	WG2147661

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	U		0.0000169	0.0000500	1	10/11/2023 19:18	WG2147661
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/11/2023 19:18	WG2147661
Naphthalene	U		0.0000917	0.000250	1	10/11/2023 19:18	WG2147661
Phenanthrene	U		0.0000180	0.0000500	1	10/11/2023 19:18	WG2147661
Pyrene	U		0.0000169	0.0000500	1	10/11/2023 19:18	WG2147661
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/11/2023 19:18	WG2147661
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/11/2023 19:18	WG2147661
(S) Nitrobenzene-d5	*122*			*31.0-160*		*10/11/2023 19:18*	WG2147661
(S) 2-Fluorobiphenyl	*102*			*48.0-148*		*10/11/2023 19:18*	WG2147661
(S) p-Terphenyl-d14	*92.6*			*37.0-146*		*10/11/2023 19:18*	WG2147661

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	9.85		0.504	3.00	1	10/17/2023 16:35	WG2149704

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	10/13/2023 20:07	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*97.8*			*50.0-150*		*10/13/2023 20:07*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 20:07*	WG2150791

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	10/12/2023 20:29	WG2150379
n-Butylbenzene	U		0.000157	0.00100	1	10/12/2023 20:29	WG2150379
sec-Butylbenzene	U		0.000125	0.00100	1	10/12/2023 20:29	WG2150379
tert-Butylbenzene	U		0.000127	0.00100	1	10/12/2023 20:29	WG2150379
Ethylbenzene	U		0.000137	0.00100	1	10/12/2023 20:29	WG2150379
Isopropylbenzene	U		0.000105	0.00100	1	10/12/2023 20:29	WG2150379
Naphthalene	U	C3	0.00100	0.00500	1	10/12/2023 20:29	WG2150379
Toluene	U		0.000278	0.00100	1	10/12/2023 20:29	WG2150379
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/12/2023 20:29	WG2150379
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/12/2023 20:29	WG2150379
Total Xylenes	U		0.000174	0.00300	1	10/12/2023 20:29	WG2150379
(S) Toluene-d8	*110*			*80.0-120*		*10/12/2023 20:29*	WG2150379
(S) 4-Bromofluorobenzene	*105*			*77.0-126*		*10/12/2023 20:29*	WG2150379
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*10/12/2023 20:29*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000547	0.0000204	1.02	10/15/2023 05:47	WG2151052

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	0.766	B J	0.179	0.840	1.05	10/14/2023 23:49	WG2148875
(S) o-Terphenyl	*79.4*			*50.0-150*		*10/14/2023 23:49*	WG2148875

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
Anthracene	U		0.0000190	0.0000500	1	10/11/2023 19:36	WG2147661
Acenaphthene	U		0.0000190	0.0000500	1	10/11/2023 19:36	WG2147661
Acenaphthylene	U		0.0000171	0.0000500	1	10/11/2023 19:36	WG2147661
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/11/2023 19:36	WG2147661
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/11/2023 19:36	WG2147661
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/11/2023 19:36	WG2147661
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/11/2023 19:36	WG2147661
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/11/2023 19:36	WG2147661
Chrysene	U		0.0000179	0.0000500	1	10/11/2023 19:36	WG2147661
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/11/2023 19:36	WG2147661
Fluoranthene	U		0.0000270	0.000100	1	10/11/2023 19:36	WG2147661

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	U		0.0000169	0.0000500	1	10/11/2023 19:36	WG2147661
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/11/2023 19:36	WG2147661
Naphthalene	U		0.0000917	0.000250	1	10/11/2023 19:36	WG2147661
Phenanthrene	U		0.0000180	0.0000500	1	10/11/2023 19:36	WG2147661
Pyrene	0.0000189	J	0.0000169	0.0000500	1	10/11/2023 19:36	WG2147661
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/11/2023 19:36	WG2147661
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/11/2023 19:36	WG2147661
(S) Nitrobenzene-d5	*134*			*31.0-160*		*10/11/2023 19:36*	WG2147661
(S) 2-Fluorobiphenyl	*109*			*48.0-148*		*10/11/2023 19:36*	WG2147661
(S) p-Terphenyl-d14	*97.9*			*37.0-146*		*10/11/2023 19:36*	WG2147661

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Sodium	10.8		0.504	3.00	1	10/17/2023 16:38	WG2149704

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
TPHGAK C6 to C10	0.0774	J	0.0287	0.100	1	10/18/2023 21:17	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*94.2*			*50.0-150*		*10/18/2023 21:17*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 21:17*	WG2153428

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Benzene	0.000175	J	0.0000941	0.00100	1	10/13/2023 19:29	WG2151082
n-Butylbenzene	U		0.000157	0.00100	1	10/13/2023 19:29	WG2151082
sec-Butylbenzene	0.000443	J	0.000125	0.00100	1	10/13/2023 19:29	WG2151082
tert-Butylbenzene	U		0.000127	0.00100	1	10/13/2023 19:29	WG2151082
Ethylbenzene	0.00151		0.000137	0.00100	1	10/13/2023 19:29	WG2151082
Isopropylbenzene	0.000553	J	0.000105	0.00100	1	10/13/2023 19:29	WG2151082
Naphthalene	0.00834	C3	0.00100	0.00500	1	10/13/2023 19:29	WG2151082
Toluene	0.000358	J	0.000278	0.00100	1	10/13/2023 19:29	WG2151082
1,2,4-Trimethylbenzene	0.00657		0.000322	0.00100	1	10/13/2023 19:29	WG2151082
1,3,5-Trimethylbenzene	0.00278		0.000104	0.00100	1	10/13/2023 19:29	WG2151082
Total Xylenes	0.0121		0.000174	0.00300	1	10/13/2023 19:29	WG2151082
(S) Toluene-d8	*94.7*			*80.0-120*		*10/13/2023 19:29*	WG2151082
(S) 4-Bromofluorobenzene	*104*			*77.0-126*		*10/13/2023 19:29*	WG2151082
(S) 1,2-Dichloroethane-d4	*115*			*70.0-130*		*10/13/2023 19:29*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Ethylene Dibromide	U		0.00000547	0.0000204	1.02	10/15/2023 06:01	WG2151052

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
AK102 DRO C10-C25	5.52		0.189	0.888	1.11	10/15/2023 00:10	WG2148875
(S) o-Terphenyl	*76.7*			*50.0-150*		*10/15/2023 00:10*	WG2148875

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Anthracene	U		0.0000190	0.0000500	1	10/12/2023 22:02	WG2148881
Acenaphthene	U		0.0000190	0.0000500	1	10/12/2023 22:02	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 22:02	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 22:02	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 22:02	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 22:02	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 22:02	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 22:02	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 22:02	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 22:02	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 22:02	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	U		0.0000169	0.0000500	1	10/12/2023 22:02	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 22:02	WG2148881
Naphthalene	U		0.0000917	0.000250	1	10/12/2023 22:02	WG2148881
Phenanthrene	U		0.0000180	0.0000500	1	10/12/2023 22:02	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 22:02	WG2148881
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/12/2023 22:02	WG2148881
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/12/2023 22:02	WG2148881
(S) Nitrobenzene-d5	*193*	J1		*31.0-160*		*10/12/2023 22:02*	WG2148881
(S) 2-Fluorobiphenyl	*95.8*			*48.0-148*		*10/12/2023 22:02*	WG2148881
(S) p-Terphenyl-d14	*84.2*			*37.0-146*		*10/12/2023 22:02*	WG2148881

Sample Narrative:

L1664659-06 WG2148881: Surrogate failure due to matrix interference.

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	14.6		0.504	3.00	1	10/17/2023 16:41	WG2149704

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	2.83		0.0287	0.100	1	10/18/2023 21:43	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*95.5*			*50.0-150*		*10/18/2023 21:43*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 21:43*	WG2153428

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	0.00486	J	0.000941	0.0100	10	10/13/2023 19:50	WG2151082
n-Butylbenzene	U		0.00157	0.0100	10	10/13/2023 19:50	WG2151082
sec-Butylbenzene	0.0256		0.00125	0.0100	10	10/13/2023 19:50	WG2151082
tert-Butylbenzene	U		0.00127	0.0100	10	10/13/2023 19:50	WG2151082
Ethylbenzene	0.120		0.00137	0.0100	10	10/13/2023 19:50	WG2151082
Isopropylbenzene	0.0521		0.00105	0.0100	10	10/13/2023 19:50	WG2151082
Naphthalene	0.194	C3	0.0100	0.0500	10	10/13/2023 19:50	WG2151082
Toluene	U		0.00278	0.0100	10	10/13/2023 19:50	WG2151082
1,2,4-Trimethylbenzene	0.428		0.00322	0.0100	10	10/13/2023 19:50	WG2151082
1,3,5-Trimethylbenzene	0.148		0.00104	0.0100	10	10/13/2023 19:50	WG2151082
Total Xylenes	0.817		0.00174	0.0300	10	10/13/2023 19:50	WG2151082
(S) Toluene-d8	*99.8*			*80.0-120*		*10/13/2023 19:50*	WG2151082
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*10/13/2023 19:50*	WG2151082
(S) 1,2-Dichloroethane-d4	*111*			*70.0-130*		*10/13/2023 19:50*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000574	0.0000214	1.07	10/15/2023 06:14	WG2151052

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	16.4		0.189	0.888	1.11	10/15/2023 00:30	WG2148875
(S) o-Terphenyl	*80.1*			*50.0-150*		*10/15/2023 00:30*	WG2148875

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
Anthracene	0.000211		0.0000190	0.0000500	1	10/12/2023 22:20	WG2148881
Acenaphthene	0.00162		0.0000190	0.0000500	1	10/12/2023 22:20	WG2148881
Acenaphthylene	0.000408		0.0000171	0.0000500	1	10/12/2023 22:20	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 22:20	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 22:20	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 22:20	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 22:20	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 22:20	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 22:20	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 22:20	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 22:20	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	0.00254		0.0000169	0.0000500	1	10/12/2023 22:20	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 22:20	WG2148881
Naphthalene	0.0441		0.0000917	0.000250	1	10/12/2023 22:20	WG2148881
Phenanthrene	0.00152		0.0000180	0.0000500	1	10/12/2023 22:20	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 22:20	WG2148881
1-Methylnaphthalene	0.0772		0.0000687	0.000250	1	10/12/2023 22:20	WG2148881
2-Methylnaphthalene	0.0256		0.0000674	0.000250	1	10/12/2023 22:20	WG2148881
(S) Nitrobenzene-d5	*443*	J1		*31.0-160*		*10/12/2023 22:20*	WG2148881
(S) 2-Fluorobiphenyl	*93.2*			*48.0-148*		*10/12/2023 22:20*	WG2148881
(S) p-Terphenyl-d14	*84.2*			*37.0-146*		*10/12/2023 22:20*	WG2148881

Sample Narrative:

L1664659-07 WG2148881: Surrogate failure due to matrix interference.

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	11.5		0.504	3.00	1	10/17/2023 16:43	WG2149704

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	1.49		0.0287	0.100	1	10/18/2023 22:11	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*96.5*			*50.0-150*		*10/18/2023 22:11*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 22:11*	WG2153428

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		0.000471	0.00500	5	10/13/2023 20:11	WG2151082
n-Butylbenzene	U		0.000785	0.00500	5	10/13/2023 20:11	WG2151082
sec-Butylbenzene	0.00955		0.000625	0.00500	5	10/13/2023 20:11	WG2151082
tert-Butylbenzene	0.00165	J	0.000635	0.00500	5	10/13/2023 20:11	WG2151082
Ethylbenzene	0.0128		0.000685	0.00500	5	10/13/2023 20:11	WG2151082
Isopropylbenzene	0.0111		0.000525	0.00500	5	10/13/2023 20:11	WG2151082
Naphthalene	0.0840	C3	0.00500	0.0250	5	10/13/2023 20:11	WG2151082
Toluene	0.0283		0.00139	0.00500	5	10/13/2023 20:11	WG2151082
1,2,4-Trimethylbenzene	0.247		0.00161	0.00500	5	10/13/2023 20:11	WG2151082
1,3,5-Trimethylbenzene	0.120		0.000520	0.00500	5	10/13/2023 20:11	WG2151082
Total Xylenes	0.305		0.000870	0.0150	5	10/13/2023 20:11	WG2151082
(S) Toluene-d8	*93.3*			*80.0-120*		*10/13/2023 20:11*	WG2151082
(S) 4-Bromofluorobenzene	*111*			*77.0-126*		*10/13/2023 20:11*	WG2151082
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*10/13/2023 20:11*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000568	0.0000212	1.06	10/15/2023 06:28	WG2151052

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	38.3		0.170	0.800	1	10/15/2023 00:50	WG2148875
(S) o-Terphenyl	*85.9*			*50.0-150*		*10/15/2023 00:50*	WG2148875

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
Anthracene	0.000537		0.0000380	0.000100	2	10/13/2023 00:25	WG2148881
Acenaphthene	0.00154		0.0000380	0.000100	2	10/13/2023 00:25	WG2148881
Acenaphthylene	U		0.0000342	0.000100	2	10/13/2023 00:25	WG2148881
Benzo(a)anthracene	U		0.0000406	0.000100	2	10/13/2023 00:25	WG2148881
Benzo(a)pyrene	U		0.0000368	0.000100	2	10/13/2023 00:25	WG2148881
Benzo(b)fluoranthene	U		0.0000336	0.000100	2	10/13/2023 00:25	WG2148881
Benzo(g,h,i)perylene	U		0.0000368	0.000100	2	10/13/2023 00:25	WG2148881
Benzo(k)fluoranthene	U		0.0000404	0.000100	2	10/13/2023 00:25	WG2148881
Chrysene	U		0.0000358	0.000100	2	10/13/2023 00:25	WG2148881
Dibenz(a,h)anthracene	U		0.0000320	0.000100	2	10/13/2023 00:25	WG2148881
Fluoranthene	U		0.0000540	0.000200	2	10/13/2023 00:25	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	0.00231		0.0000338	0.000100	2	10/13/2023 00:25	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000316	0.000100	2	10/13/2023 00:25	WG2148881
Naphthalene	0.0531		0.000183	0.000500	2	10/13/2023 00:25	WG2148881
Phenanthrene	0.00280		0.0000360	0.000100	2	10/13/2023 00:25	WG2148881
Pyrene	0.0000397	J	0.0000338	0.000100	2	10/13/2023 00:25	WG2148881
1-Methylnaphthalene	0.0696		0.000137	0.000500	2	10/13/2023 00:25	WG2148881
2-Methylnaphthalene	0.0732		0.000135	0.000500	2	10/13/2023 00:25	WG2148881
(S) Nitrobenzene-d5	*386*	J1		*31.0-160*		*10/13/2023 00:25*	WG2148881
(S) 2-Fluorobiphenyl	*59.5*			*48.0-148*		*10/13/2023 00:25*	WG2148881
(S) p-Terphenyl-d14	*64.7*			*37.0-146*		*10/13/2023 00:25*	WG2148881

Sample Narrative:

L1664659-08 WG2148881: Surrogate failure due to matrix interference.

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	10/13/2023 20:34	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*98.4*			*50.0-150*		*10/13/2023 20:34*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 20:34*	WG2150791

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	10/12/2023 20:49	WG2150379
n-Butylbenzene	U		0.000157	0.00100	1	10/12/2023 20:49	WG2150379
sec-Butylbenzene	U		0.000125	0.00100	1	10/12/2023 20:49	WG2150379
tert-Butylbenzene	U		0.000127	0.00100	1	10/12/2023 20:49	WG2150379
Ethylbenzene	U		0.000137	0.00100	1	10/12/2023 20:49	WG2150379
Isopropylbenzene	U		0.000105	0.00100	1	10/12/2023 20:49	WG2150379
Naphthalene	U	C3	0.00100	0.00500	1	10/12/2023 20:49	WG2150379
Toluene	0.000797	J	0.000278	0.00100	1	10/12/2023 20:49	WG2150379
1,2,4-Trimethylbenzene	U		0.000322	0.00100	1	10/12/2023 20:49	WG2150379
1,3,5-Trimethylbenzene	U		0.000104	0.00100	1	10/12/2023 20:49	WG2150379
Total Xylenes	U		0.000174	0.00300	1	10/12/2023 20:49	WG2150379
(S) Toluene-d8	*108*			*80.0-120*		*10/12/2023 20:49*	WG2150379
(S) 4-Bromofluorobenzene	*103*			*77.0-126*		*10/12/2023 20:49*	WG2150379
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*10/12/2023 20:49*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000552	0.0000206	1.03	10/15/2023 06:42	WG2151052

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	0.905	B	0.170	0.800	1	10/16/2023 11:34	WG2148875
(S) o-Terphenyl	*62.6*			*50.0-150*		*10/16/2023 11:34*	WG2148875

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
Anthracene	U		0.0000570	0.000150	3	10/11/2023 20:11	WG2147661
Acenaphthene	U		0.0000570	0.000150	3	10/11/2023 20:11	WG2147661
Acenaphthylene	U		0.0000513	0.000150	3	10/11/2023 20:11	WG2147661
Benzo(a)anthracene	U		0.0000609	0.000150	3	10/11/2023 20:11	WG2147661
Benzo(a)pyrene	U		0.0000552	0.000150	3	10/11/2023 20:11	WG2147661
Benzo(b)fluoranthene	U		0.0000504	0.000150	3	10/11/2023 20:11	WG2147661
Benzo(g,h,i)perylene	U		0.0000552	0.000150	3	10/11/2023 20:11	WG2147661
Benzo(k)fluoranthene	U		0.0000606	0.000150	3	10/11/2023 20:11	WG2147661
Chrysene	U		0.0000537	0.000150	3	10/11/2023 20:11	WG2147661
Dibenz(a,h)anthracene	U		0.0000480	0.000150	3	10/11/2023 20:11	WG2147661
Fluoranthene	U		0.0000810	0.000300	3	10/11/2023 20:11	WG2147661
Fluorene	U		0.0000507	0.000150	3	10/11/2023 20:11	WG2147661
Indeno(1,2,3-cd)pyrene	U		0.0000474	0.000150	3	10/11/2023 20:11	WG2147661
Naphthalene	U		0.000275	0.000750	3	10/11/2023 20:11	WG2147661
Phenanthrene	U		0.0000540	0.000150	3	10/11/2023 20:11	WG2147661
Pyrene	U		0.0000507	0.000150	3	10/11/2023 20:11	WG2147661
1-Methylnaphthalene	U		0.000206	0.000750	3	10/11/2023 20:11	WG2147661

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
2-Methylnaphthalene	U		0.000202	0.000750	3	10/11/2023 20:11	WG2147661
(S) Nitrobenzene-d5	*104*			*31.0-160*		*10/11/2023 20:11*	WG2147661
(S) 2-Fluorobiphenyl	*69.6*			*48.0-148*		*10/11/2023 20:11*	WG2147661
(S) p-Terphenyl-d14	*51.0*			*37.0-146*		*10/11/2023 20:11*	WG2147661

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	11.5		0.504	3.00	1	10/17/2023 16:51	WG2149704

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	1.48		0.0287	0.100	1	10/18/2023 22:38	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*97.4*			*50.0-150*		*10/18/2023 22:38*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 22:38*	WG2153428

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		0.000471	0.00500	5	10/13/2023 20:33	WG2151082
n-Butylbenzene	U		0.000785	0.00500	5	10/13/2023 20:33	WG2151082
sec-Butylbenzene	0.00985		0.000625	0.00500	5	10/13/2023 20:33	WG2151082
tert-Butylbenzene	U		0.000635	0.00500	5	10/13/2023 20:33	WG2151082
Ethylbenzene	0.0131		0.000685	0.00500	5	10/13/2023 20:33	WG2151082
Isopropylbenzene	0.00851		0.000525	0.00500	5	10/13/2023 20:33	WG2151082
Naphthalene	0.0894	C3	0.00500	0.0250	5	10/13/2023 20:33	WG2151082
Toluene	0.0284		0.00139	0.00500	5	10/13/2023 20:33	WG2151082
1,2,4-Trimethylbenzene	0.257		0.00161	0.00500	5	10/13/2023 20:33	WG2151082
1,3,5-Trimethylbenzene	0.124		0.000520	0.00500	5	10/13/2023 20:33	WG2151082
Total Xylenes	0.310		0.000870	0.0150	5	10/13/2023 20:33	WG2151082
(S) Toluene-d8	*94.9*			*80.0-120*		*10/13/2023 20:33*	WG2151082
(S) 4-Bromofluorobenzene	*110*			*77.0-126*		*10/13/2023 20:33*	WG2151082
(S) 1,2-Dichloroethane-d4	*110*			*70.0-130*		*10/13/2023 20:33*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000574	0.0000214	1.07	10/15/2023 06:55	WG2151052

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	22.5		0.170	0.800	1	10/17/2023 22:57	WG2152416
(S) o-Terphenyl	*44.8*	J2		*50.0-150*		*10/17/2023 22:57*	WG2152416

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
Anthracene	0.000503		0.0000380	0.000100	2	10/13/2023 01:01	WG2148881
Acenaphthene	0.00142		0.0000380	0.000100	2	10/13/2023 01:01	WG2148881
Acenaphthylene	U		0.0000342	0.000100	2	10/13/2023 01:01	WG2148881
Benzo(a)anthracene	U		0.0000406	0.000100	2	10/13/2023 01:01	WG2148881
Benzo(a)pyrene	U		0.0000368	0.000100	2	10/13/2023 01:01	WG2148881
Benzo(b)fluoranthene	0.0000343	J	0.0000336	0.000100	2	10/13/2023 01:01	WG2148881
Benzo(g,h,i)perylene	U		0.0000368	0.000100	2	10/13/2023 01:01	WG2148881
Benzo(k)fluoranthene	U		0.0000404	0.000100	2	10/13/2023 01:01	WG2148881
Chrysene	U		0.0000358	0.000100	2	10/13/2023 01:01	WG2148881
Dibenz(a,h)anthracene	U		0.0000320	0.000100	2	10/13/2023 01:01	WG2148881
Fluoranthene	0.0000678	J	0.0000540	0.000200	2	10/13/2023 01:01	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Fluorene	0.00225		0.0000338	0.000100	2	10/13/2023 01:01	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000316	0.000100	2	10/13/2023 01:01	WG2148881
Naphthalene	0.0567		0.000183	0.000500	2	10/13/2023 01:01	WG2148881
Phenanthrene	0.00264		0.0000360	0.000100	2	10/13/2023 01:01	WG2148881
Pyrene	0.0000579	J	0.0000338	0.000100	2	10/13/2023 01:01	WG2148881
1-Methylnaphthalene	0.0739		0.000137	0.000500	2	10/13/2023 01:01	WG2148881
2-Methylnaphthalene	0.0798		0.000135	0.000500	2	10/13/2023 01:01	WG2148881
(S) Nitrobenzene-d5	*341*	J1		*31.0-160*		*10/13/2023 01:01*	WG2148881
(S) 2-Fluorobiphenyl	*56.3*			*48.0-148*		*10/13/2023 01:01*	WG2148881
(S) p-Terphenyl-d14	*60.0*			*37.0-146*		*10/13/2023 01:01*	WG2148881

Sample Narrative:

L1664659-10 WG2148881: Surrogate failure due to matrix interference.

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	6.26		0.0287	0.100	1	10/13/2023 21:01	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*101*			*50.0-150*		*10/13/2023 21:01*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 21:01*	WG2150791

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	0.0493		0.0000941	0.00100	1	10/12/2023 21:09	WG2150379
n-Butylbenzene	0.0127		0.000157	0.00100	1	10/12/2023 21:09	WG2150379
sec-Butylbenzene	0.0217		0.000125	0.00100	1	10/12/2023 21:09	WG2150379
tert-Butylbenzene	0.00229		0.000127	0.00100	1	10/12/2023 21:09	WG2150379
Ethylbenzene	0.384		0.00685	0.0500	50	10/13/2023 20:54	WG2151082
Isopropylbenzene	0.0990		0.000105	0.00100	1	10/12/2023 21:09	WG2150379
Naphthalene	0.435	C3	0.0500	0.250	50	10/13/2023 20:54	WG2151082
Toluene	0.0269		0.000278	0.00100	1	10/12/2023 21:09	WG2150379
1,2,4-Trimethylbenzene	0.555		0.0161	0.0500	50	10/13/2023 20:54	WG2151082
1,3,5-Trimethylbenzene	0.185		0.000104	0.00100	1	10/12/2023 21:09	WG2150379
Total Xylenes	2.68		0.00870	0.150	50	10/13/2023 20:54	WG2151082
(S) Toluene-d8	*90.4*			*80.0-120*		*10/12/2023 21:09*	WG2150379
(S) Toluene-d8	*98.0*			*80.0-120*		*10/13/2023 20:54*	WG2151082
(S) 4-Bromofluorobenzene	*94.2*			*77.0-126*		*10/12/2023 21:09*	WG2150379
(S) 4-Bromofluorobenzene	*100*			*77.0-126*		*10/13/2023 20:54*	WG2151082
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*		*10/12/2023 21:09*	WG2150379
(S) 1,2-Dichloroethane-d4	*114*			*70.0-130*		*10/13/2023 20:54*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000574	0.0000214	1.07	10/15/2023 07:09	WG2151052

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	3.04		0.170	0.800	1	10/17/2023 23:23	WG2152416
(S) o-Terphenyl	*71.5*			*50.0-150*		*10/17/2023 23:23*	WG2152416

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
Anthracene	0.0000237	J	0.0000190	0.0000500	1	10/12/2023 22:38	WG2148881
Acenaphthene	0.000468		0.0000190	0.0000500	1	10/12/2023 22:38	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 22:38	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 22:38	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 22:38	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 22:38	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 22:38	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 22:38	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 22:38	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 22:38	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 22:38	WG2148881
Fluorene	0.000593		0.0000169	0.0000500	1	10/12/2023 22:38	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 22:38	WG2148881
Naphthalene	0.219		0.000917	0.00250	10	10/18/2023 03:23	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Phenanthrene	0.000150		0.0000180	0.0000500	1	10/12/2023 22:38	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 22:38	WG2148881
1-Methylnaphthalene	0.0802		0.0000687	0.000250	1	10/12/2023 22:38	WG2148881
2-Methylnaphthalene	0.0871		0.0000674	0.000250	1	10/12/2023 22:38	WG2148881
(S) Nitrobenzene-d5	*132*			*31.0-160*		*10/12/2023 22:38*	WG2148881
(S) Nitrobenzene-d5	*113*			*31.0-160*		*10/18/2023 03:23*	WG2148881
(S) 2-Fluorobiphenyl	*91.1*			*48.0-148*		*10/18/2023 03:23*	WG2148881
(S) 2-Fluorobiphenyl	*96.3*			*48.0-148*		*10/12/2023 22:38*	WG2148881
(S) p-Terphenyl-d14	*77.9*			*37.0-146*		*10/12/2023 22:38*	WG2148881
(S) p-Terphenyl-d14	*90.5*			*37.0-146*		*10/18/2023 03:23*	WG2148881

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	0.285		0.0287	0.100	1	10/18/2023 23:04	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*50.0-150*		*10/18/2023 23:04*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 23:04*	WG2153428

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	0.00342		0.0000941	0.00100	1	10/13/2023 21:16	WG2151082
n-Butylbenzene	U		0.000157	0.00100	1	10/13/2023 21:16	WG2151082
sec-Butylbenzene	0.000871	J	0.000125	0.00100	1	10/13/2023 21:16	WG2151082
tert-Butylbenzene	0.000194	J	0.000127	0.00100	1	10/13/2023 21:16	WG2151082
Ethylbenzene	0.0288		0.000137	0.00100	1	10/13/2023 21:16	WG2151082
Isopropylbenzene	0.0126		0.000105	0.00100	1	10/13/2023 21:16	WG2151082
Naphthalene	0.0174	C3	0.00100	0.00500	1	10/13/2023 21:16	WG2151082
Toluene	0.00112		0.000278	0.00100	1	10/13/2023 21:16	WG2151082
1,2,4-Trimethylbenzene	0.0434		0.000322	0.00100	1	10/13/2023 21:16	WG2151082
1,3,5-Trimethylbenzene	0.0116		0.000104	0.00100	1	10/13/2023 21:16	WG2151082
Total Xylenes	0.186		0.000174	0.00300	1	10/13/2023 21:16	WG2151082
(S) Toluene-d8	*96.8*			*80.0-120*		*10/13/2023 21:16*	WG2151082
(S) 4-Bromofluorobenzene	*108*			*77.0-126*		*10/13/2023 21:16*	WG2151082
(S) 1,2-Dichloroethane-d4	*113*			*70.0-130*		*10/13/2023 21:16*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000557	0.0000208	1.04	10/15/2023 07:23	WG2151052

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	3.39		0.170	0.800	1	10/17/2023 23:48	WG2152416
(S) o-Terphenyl	*53.4*			*50.0-150*		*10/17/2023 23:48*	WG2152416

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
Anthracene	U		0.0000190	0.0000500	1	10/13/2023 01:19	WG2148881
Acenaphthene	U		0.0000190	0.0000500	1	10/13/2023 01:19	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/13/2023 01:19	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/13/2023 01:19	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/13/2023 01:19	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/13/2023 01:19	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/13/2023 01:19	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/13/2023 01:19	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/13/2023 01:19	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/13/2023 01:19	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/13/2023 01:19	WG2148881
Fluorene	U		0.0000169	0.0000500	1	10/13/2023 01:19	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/13/2023 01:19	WG2148881
Naphthalene	U		0.0000917	0.000250	1	10/13/2023 01:19	WG2148881
Phenanthrene	U		0.0000180	0.0000500	1	10/13/2023 01:19	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/13/2023 01:19	WG2148881
1-Methylnaphthalene	U		0.0000687	0.000250	1	10/13/2023 01:19	WG2148881

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
2-Methylnaphthalene	U		0.0000674	0.000250	1	10/13/2023 01:19	WG2148881
(S) Nitrobenzene-d5	*45.7*			*31.0-160*		*10/13/2023 01:19*	WG2148881
(S) 2-Fluorobiphenyl	*44.6*	J2		*48.0-148*		*10/13/2023 01:19*	WG2148881
(S) p-Terphenyl-d14	*29.3*	J2		*37.0-146*		*10/13/2023 01:19*	WG2148881

Sample Narrative:

L1664659-12 WG2148881: Surrogate failure due to matrix interference during extraction procedure.

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	14.7		0.504	3.00	1	10/17/2023 16:54	WG2149704

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	2.80		0.0287	0.100	1	10/18/2023 23:31	WG2153428
(S) a,a,a-Trifluorotoluene(FID)	*94.4*			*50.0-150*		*10/18/2023 23:31*	WG2153428
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/18/2023 23:31*	WG2153428

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	0.00389	J	0.000941	0.0100	10	10/13/2023 21:37	WG2151082
n-Butylbenzene	U		0.00157	0.0100	10	10/13/2023 21:37	WG2151082
sec-Butylbenzene	0.0297		0.00125	0.0100	10	10/13/2023 21:37	WG2151082
tert-Butylbenzene	U		0.00127	0.0100	10	10/13/2023 21:37	WG2151082
Ethylbenzene	0.0988		0.00137	0.0100	10	10/13/2023 21:37	WG2151082
Isopropylbenzene	0.0499		0.00105	0.0100	10	10/13/2023 21:37	WG2151082
Naphthalene	0.178	C3	0.0100	0.0500	10	10/13/2023 21:37	WG2151082
Toluene	U		0.00278	0.0100	10	10/13/2023 21:37	WG2151082
1,2,4-Trimethylbenzene	0.398		0.00322	0.0100	10	10/13/2023 21:37	WG2151082
1,3,5-Trimethylbenzene	0.140		0.00104	0.0100	10	10/13/2023 21:37	WG2151082
Total Xylenes	0.669		0.00174	0.0300	10	10/13/2023 21:37	WG2151082
(S) Toluene-d8	*97.3*			*80.0-120*		*10/13/2023 21:37*	WG2151082
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*10/13/2023 21:37*	WG2151082
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*		*10/13/2023 21:37*	WG2151082

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000552	0.0000206	1.03	10/15/2023 05:49	WG2151054

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	7.74		0.170	0.800	1	10/18/2023 00:14	WG2152416
(S) o-Terphenyl	*67.9*			*50.0-150*		*10/18/2023 00:14*	WG2152416

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
Anthracene	0.000131		0.0000190	0.0000500	1	10/12/2023 22:56	WG2148881
Acenaphthene	0.000912		0.0000190	0.0000500	1	10/12/2023 22:56	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 22:56	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 22:56	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 22:56	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 22:56	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 22:56	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 22:56	WG2148881
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 22:56	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 22:56	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 22:56	WG2148881

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Fluorene	0.000849		0.0000169	0.0000500	1	10/12/2023 22:56	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 22:56	WG2148881
Naphthalene	0.00239		0.0000917	0.000250	1	10/12/2023 22:56	WG2148881
Phenanthrene	0.000426		0.0000180	0.0000500	1	10/12/2023 22:56	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 22:56	WG2148881
1-Methylnaphthalene	0.00515		0.0000687	0.000250	1	10/12/2023 22:56	WG2148881
2-Methylnaphthalene	0.00222		0.0000674	0.000250	1	10/12/2023 22:56	WG2148881
(S) Nitrobenzene-d5	*391*	J1		*31.0-160*		*10/12/2023 22:56*	WG2148881
(S) 2-Fluorobiphenyl	*86.8*			*48.0-148*		*10/12/2023 22:56*	WG2148881
(S) p-Terphenyl-d14	*73.7*			*37.0-146*		*10/12/2023 22:56*	WG2148881

Sample Narrative:

L1664659-13 WG2148881: Surrogate failure due to matrix interference.

Metals (ICP) by Method 6010D

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Sodium	10.5		0.504	3.00	1	10/17/2023 16:56	WG2149704

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	0.541		0.0287	0.100	1	10/13/2023 21:27	WG2150791
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*50.0-150*		*10/13/2023 21:27*	WG2150791
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*		*10/13/2023 21:27*	WG2150791

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	0.00515		0.0000941	0.00100	1	10/12/2023 21:30	WG2150379
n-Butylbenzene	0.00216		0.000157	0.00100	1	10/12/2023 21:30	WG2150379
sec-Butylbenzene	0.00368		0.000125	0.00100	1	10/12/2023 21:30	WG2150379
tert-Butylbenzene	0.000482	J	0.000127	0.00100	1	10/12/2023 21:30	WG2150379
Ethylbenzene	0.0295		0.000137	0.00100	1	10/12/2023 21:30	WG2150379
Isopropylbenzene	0.0136		0.000105	0.00100	1	10/12/2023 21:30	WG2150379
Naphthalene	0.0547	C3	0.00100	0.00500	1	10/12/2023 21:30	WG2150379
Toluene	0.000488	J	0.000278	0.00100	1	10/12/2023 21:30	WG2150379
1,2,4-Trimethylbenzene	0.0773		0.000322	0.00100	1	10/12/2023 21:30	WG2150379
1,3,5-Trimethylbenzene	0.0220		0.000104	0.00100	1	10/12/2023 21:30	WG2150379
Total Xylenes	0.176		0.000174	0.00300	1	10/12/2023 21:30	WG2150379
(S) Toluene-d8	*99.9*			*80.0-120*		*10/12/2023 21:30*	WG2150379
(S) 4-Bromofluorobenzene	*101*			*77.0-126*		*10/12/2023 21:30*	WG2150379
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*		*10/12/2023 21:30*	WG2150379

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	U		0.00000568	0.0000212	1.06	10/15/2023 06:06	WG2151054

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	2.01	B	0.170	0.800	1	10/17/2023 16:38	WG2152416
(S) o-Terphenyl	*48.3*	J2		*50.0-150*		*10/17/2023 16:38*	WG2152416

Sample Narrative:

L1664659-14 WG2152416: Sample produced emulsion during Extraction process, low surr/spike recoveries due to matrix.

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
Anthracene	U		0.0000190	0.0000500	1	10/12/2023 23:14	WG2148881
Acenaphthene	0.000143		0.0000190	0.0000500	1	10/12/2023 23:14	WG2148881
Acenaphthylene	U		0.0000171	0.0000500	1	10/12/2023 23:14	WG2148881
Benzo(a)anthracene	U		0.0000203	0.0000500	1	10/12/2023 23:14	WG2148881
Benzo(a)pyrene	U		0.0000184	0.0000500	1	10/12/2023 23:14	WG2148881
Benzo(b)fluoranthene	U		0.0000168	0.0000500	1	10/12/2023 23:14	WG2148881
Benzo(g,h,i)perylene	U		0.0000184	0.0000500	1	10/12/2023 23:14	WG2148881
Benzo(k)fluoranthene	U		0.0000202	0.0000500	1	10/12/2023 23:14	WG2148881

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chrysene	U		0.0000179	0.0000500	1	10/12/2023 23:14	WG2148881
Dibenz(a,h)anthracene	U		0.0000160	0.0000500	1	10/12/2023 23:14	WG2148881
Fluoranthene	U		0.0000270	0.000100	1	10/12/2023 23:14	WG2148881
Fluorene	0.000256		0.0000169	0.0000500	1	10/12/2023 23:14	WG2148881
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500	1	10/12/2023 23:14	WG2148881
Naphthalene	0.0151		0.0000917	0.000250	1	10/12/2023 23:14	WG2148881
Phenanthrene	0.0000520		0.0000180	0.0000500	1	10/12/2023 23:14	WG2148881
Pyrene	U		0.0000169	0.0000500	1	10/12/2023 23:14	WG2148881
1-Methylnaphthalene	0.0126		0.0000687	0.000250	1	10/12/2023 23:14	WG2148881
2-Methylnaphthalene	0.00908		0.0000674	0.000250	1	10/12/2023 23:14	WG2148881
(S) Nitrobenzene-d5	*95.3*			*31.0-160*		*10/12/2023 23:14*	WG2148881
(S) 2-Fluorobiphenyl	*94.2*			*48.0-148*		*10/12/2023 23:14*	WG2148881
(S) p-Terphenyl-d14	*77.4*			*37.0-146*		*10/12/2023 23:14*	WG2148881

Method Blank (MB)

(MB) R3987555-1 10/17/23 16:20

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) R3987555-2 10/17/23 16:22

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

L1664659-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1664659-04 10/17/23 16:25 • (MS) R3987555-4 10/17/23 16:30 • (MSD) R3987555-5 10/17/23 16:33

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	9.35	19.2	19.3	98.9	99.9	1	75.0-125			0.492	20

Method Blank (MB)

(MB) R3987642-3 10/13/23 16:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0287	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*60.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*

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

(LCS) R3987642-1 10/13/23 14:19 • (LCSD) R3987642-2 10/13/23 14:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	5.00	4.52	4.49	90.4	89.8	60.0-120			0.666	20
(S) a,a,a-Trifluorotoluene(FID)				*99.9*	*101*	*60.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*0.000*	*0.000*	*79.0-125*	J2	J2		

L1664697-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1664697-01 10/13/23 21:54 • (MS) R3987642-4 10/14/23 03:17 • (MSD) R3987642-5 10/14/23 03:43

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	5.00	1.33	5.78	5.69	89.0	87.2	1	70.0-130			1.57	20
(S) a,a,a-Trifluorotoluene(FID)					*103*	*103*		*50.0-150*				
(S) a,a,a-Trifluorotoluene(PID)					*0.000*	*0.000*		*79.0-125*	J2	J2		

Method Blank (MB)

(MB) R3988406-3 10/18/23 20:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPHGAK C6 to C10	U		0.0287	0.100
(S) a,a,a-Trifluorotoluene(FID)	*97.8*			*60.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*0.000*	J2		*79.0-125*

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

(LCS) R3988406-1 10/18/23 19:22 • (LCSD) R3988406-2 10/18/23 19:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	5.00	5.22	5.21	104	104	60.0-120			0.192	20
(S) a,a,a-Trifluorotoluene(FID)				*97.7*	*99.6*	*60.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*0.000*	*0.000*	*79.0-125*	J2	J2		

Method Blank (MB)

(MB) R3986029-3 10/12/23 16:08

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
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*112*			*80.0-120*
(S) 4-Bromofluorobenzene	*104*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*

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

(LCS) R3986029-1 10/12/23 15:07 • (LCSD) R3986029-2 10/12/23 15:27

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	0.00571	0.00567	114	113	70.0-123			0.703	20
n-Butylbenzene	0.00500	0.00513	0.00532	103	106	73.0-125			3.64	20
sec-Butylbenzene	0.00500	0.00558	0.00565	112	113	75.0-125			1.25	20
tert-Butylbenzene	0.00500	0.00560	0.00563	112	113	76.0-124			0.534	20
Ethylbenzene	0.00500	0.00552	0.00533	110	107	79.0-123			3.50	20
Isopropylbenzene	0.00500	0.00578	0.00566	116	113	76.0-127			2.10	20
Naphthalene	0.00500	0.00351	0.00365	70.2	73.0	54.0-135			3.91	20
Toluene	0.00500	0.00557	0.00534	111	107	79.0-120			4.22	20
1,2,4-Trimethylbenzene	0.00500	0.00551	0.00548	110	110	76.0-121			0.546	20
1,3,5-Trimethylbenzene	0.00500	0.00538	0.00533	108	107	76.0-122			0.934	20
Total Xylenes	0.0150	0.0167	0.0162	111	108	79.0-123			3.04	20
(S) Toluene-d8				*107*	*107*	*80.0-120*				
(S) 4-Bromofluorobenzene				*104*	*104*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*108*	*109*	*70.0-130*				

Method Blank (MB)

(MB) R3987359-3 10/13/23 17:13

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
Total Xylenes	U		0.000174	0.00300
(S) Toluene-d8	*99.3*			*80.0-120*
(S) 4-Bromofluorobenzene	*92.2*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*

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

(LCS) R3987359-1 10/13/23 15:25 • (LCSD) R3987359-2 10/13/23 15:47

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	0.00524	0.00521	105	104	70.0-123			0.574	20
n-Butylbenzene	0.00500	0.00439	0.00409	87.8	81.8	73.0-125			7.08	20
sec-Butylbenzene	0.00500	0.00458	0.00473	91.6	94.6	75.0-125			3.22	20
tert-Butylbenzene	0.00500	0.00480	0.00469	96.0	93.8	76.0-124			2.32	20
Ethylbenzene	0.00500	0.00455	0.00487	91.0	97.4	79.0-123			6.79	20
Isopropylbenzene	0.00500	0.00444	0.00460	88.8	92.0	76.0-127			3.54	20
Naphthalene	0.00500	0.00351	0.00400	70.2	80.0	54.0-135			13.0	20
Toluene	0.00500	0.00479	0.00475	95.8	95.0	79.0-120			0.839	20
1,2,4-Trimethylbenzene	0.00500	0.00459	0.00456	91.8	91.2	76.0-121			0.656	20
1,3,5-Trimethylbenzene	0.00500	0.00463	0.00478	92.6	95.6	76.0-122			3.19	20
Total Xylenes	0.0150	0.0141	0.0141	94.0	94.0	79.0-123			0.000	20
(S) Toluene-d8				*95.4*	*97.6*	*80.0-120*				
(S) 4-Bromofluorobenzene				*90.9*	*94.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*114*	*112*	*70.0-130*				

Method Blank (MB)

(MB) R3986422-1 10/15/23 02:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200

L1664534-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1664534-01 10/15/23 03:18 • (DUP) R3986422-3 10/15/23 03:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	U	U	1.04	0.000		20

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

(LCS) R3986422-4 10/15/23 05:20 • (LCSD) R3986422-5 10/15/23 07:50

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 %
Ethylene Dibromide	0.000250	0.000232	0.000272	92.8	109	60.0-140			15.9	20

L1664534-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1664534-02 10/15/23 02:50 • (MS) R3986422-2 10/15/23 02:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.0000995	U	0.000119	120	1	64.0-159	

Method Blank (MB)

(MB) R3986433-1 10/15/23 02:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200

L1664474-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1664474-01 10/15/23 03:54 • (DUP) R3986433-3 10/15/23 03:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ethylene Dibromide	U	U	1.04	0.000		20

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

(LCS) R3986433-4 10/15/23 06:38 • (LCSD) R3986433-5 10/15/23 09:41

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 %
Ethylene Dibromide	0.000250	0.000232	0.000232	92.8	92.8	60.0-140			0.000	20

L1664766-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1664766-01 10/15/23 03:21 • (MS) R3986433-2 10/15/23 03:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000101	U	0.000105	104	1.01	64.0-159	

Method Blank (MB)

(MB) R3986568-1 10/14/23 15:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
AK102 DRO C10-C25	0.177	J	0.170	0.800
(S) o-Terphenyl	*95.0*			*60.0-120*

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

(LCS) R3986568-2 10/14/23 15:32 • (LCSD) R3986568-3 10/14/23 15:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
AK102 DRO C10-C25	6.00	5.55	5.62	92.5	93.7	75.0-125			1.25	20
(S) o-Terphenyl				*81.6*	*88.6*	*60.0-120*				

L1663750-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663750-01 10/14/23 16:12 • (MS) R3986568-4 10/14/23 16:32 • (MSD) R3986568-5 10/14/23 16:52

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 %
AK102 DRO C10-C25	5.46	2.04	5.09	6.18	55.9	75.8	1	75.0-125	J6		19.3	20
(S) o-Terphenyl					*53.5*	*82.9*		*50.0-150*				

L1663768-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1663768-15 10/14/23 17:12 • (MS) R3986568-6 10/14/23 17:32 • (MSD) R3986568-7 10/14/23 17:53

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 %
AK102 DRO C10-C25	5.72	3.98	7.55	6.44	62.4	43.0	1	75.0-125	J6	J6	15.9	20
(S) o-Terphenyl					*88.9*	*67.8*		*50.0-150*				

Method Blank (MB)

(MB) R3987553-1 10/17/23 13:14

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
AK102 DRO C10-C25	0.263	J	0.170	0.800
(S) o-Terphenyl	*73.8*			*60.0-120*

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

(LCS) R3987553-2 10/17/23 13:39 • (LCSD) R3987553-3 10/17/23 14:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
AK102 DRO C10-C25	6.00	4.84	5.72	80.7	95.3	75.0-125			16.7	20
(S) o-Terphenyl				*80.1*	*77.0*	*60.0-120*				

Method Blank (MB)

(MB) R3984860-3 10/11/23 14:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	*139*			*31.0-160*
(S) 2-Fluorobiphenyl	*114*			*48.0-148*
(S) p-Terphenyl-d14	*108*			*37.0-146*

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

(LCS) R3984860-1 10/11/23 13:31 • (LCSD) R3984860-2 10/11/23 13:48

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 %
Anthracene	0.00200	0.00194	0.00189	97.0	94.5	67.0-150			2.61	20
Acenaphthene	0.00200	0.00186	0.00181	93.0	90.5	65.0-138			2.72	20
Acenaphthylene	0.00200	0.00192	0.00188	96.0	94.0	66.0-140			2.11	20
Benzo(a)anthracene	0.00200	0.00212	0.00205	106	103	61.0-140			3.36	20
Benzo(a)pyrene	0.00200	0.00208	0.00201	104	100	60.0-143			3.42	20
Benzo(b)fluoranthene	0.00200	0.00207	0.00205	104	103	58.0-141			0.971	20
Benzo(g,h,i)perylene	0.00200	0.00198	0.00191	99.0	95.5	52.0-153			3.60	20
Benzo(k)fluoranthene	0.00200	0.00205	0.00197	103	98.5	58.0-148			3.98	20
Chrysene	0.00200	0.00203	0.00201	102	100	64.0-144			0.990	20
Dibenz(a,h)anthracene	0.00200	0.00209	0.00203	104	102	52.0-155			2.91	20
Fluoranthene	0.00200	0.00195	0.00195	97.5	97.5	69.0-153			0.000	20
Fluorene	0.00200	0.00205	0.00199	103	99.5	64.0-136			2.97	20

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

(LCS) R3984860-1 10/11/23 13:31 • (LCSD) R3984860-2 10/11/23 13:48

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 %
Indeno(1,2,3-cd)pyrene	0.00200	0.00220	0.00213	110	106	54.0-153			3.23	20
Naphthalene	0.00200	0.00191	0.00193	95.5	96.5	61.0-137			1.04	20
Phenanthrene	0.00200	0.00195	0.00193	97.5	96.5	62.0-137			1.03	20
Pyrene	0.00200	0.00200	0.00196	100	98.0	60.0-142			2.02	20
1-Methylnaphthalene	0.00200	0.00190	0.00193	95.0	96.5	66.0-142			1.57	20
2-Methylnaphthalene	0.00200	0.00207	0.00207	104	104	62.0-136			0.000	20
(S) Nitrobenzene-d5				*132*	*122*	*31.0-160*				
(S) 2-Fluorobiphenyl				*110*	*102*	*48.0-148*				
(S) p-Terphenyl-d14				*99.5*	*94.0*	*37.0-146*				

Method Blank (MB)

(MB) R3987113-3 10/12/23 19:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000190	0.0000500
Acenaphthene	U		0.0000190	0.0000500
Acenaphthylene	U		0.0000171	0.0000500
Benzo(a)anthracene	U		0.0000203	0.0000500
Benzo(a)pyrene	U		0.0000184	0.0000500
Benzo(b)fluoranthene	U		0.0000168	0.0000500
Benzo(g,h,i)perylene	U		0.0000184	0.0000500
Benzo(k)fluoranthene	U		0.0000202	0.0000500
Chrysene	U		0.0000179	0.0000500
Dibenz(a,h)anthracene	U		0.0000160	0.0000500
Fluoranthene	U		0.0000270	0.000100
Fluorene	U		0.0000169	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000158	0.0000500
Naphthalene	U		0.0000917	0.000250
Phenanthrene	U		0.0000180	0.0000500
Pyrene	U		0.0000169	0.0000500
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	*86.0*			*31.0-160*
(S) 2-Fluorobiphenyl	*96.5*			*48.0-148*
(S) p-Terphenyl-d14	*75.5*			*37.0-146*

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

(LCS) R3987113-1 10/12/23 18:43 • (LCSD) R3987113-2 10/12/23 19:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00212	0.00192	106	96.0	67.0-150			9.90	20
Acenaphthene	0.00200	0.00206	0.00187	103	93.5	65.0-138			9.67	20
Acenaphthylene	0.00200	0.00205	0.00186	103	93.0	66.0-140			9.72	20
Benzo(a)anthracene	0.00200	0.00210	0.00191	105	95.5	61.0-140			9.48	20
Benzo(a)pyrene	0.00200	0.00192	0.00175	96.0	87.5	60.0-143			9.26	20
Benzo(b)fluoranthene	0.00200	0.00190	0.00173	95.0	86.5	58.0-141			9.37	20
Benzo(g,h,i)perylene	0.00200	0.00174	0.00158	87.0	79.0	52.0-153			9.64	20
Benzo(k)fluoranthene	0.00200	0.00182	0.00166	91.0	83.0	58.0-148			9.20	20
Chrysene	0.00200	0.00206	0.00185	103	92.5	64.0-144			10.7	20
Dibenz(a,h)anthracene	0.00200	0.00211	0.00194	105	97.0	52.0-155			8.40	20
Fluoranthene	0.00200	0.00212	0.00189	106	94.5	69.0-153			11.5	20
Fluorene	0.00200	0.00214	0.00191	107	95.5	64.0-136			11.4	20

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

(LCS) R3987113-1 10/12/23 18:43 • (LCSD) R3987113-2 10/12/23 19:01

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 %
Indeno(1,2,3-cd)pyrene	0.00200	0.00208	0.00192	104	96.0	54.0-153			8.00	20
Naphthalene	0.00200	0.00180	0.00164	90.0	82.0	61.0-137			9.30	20
Phenanthrene	0.00200	0.00223	0.00202	111	101	62.0-137			9.88	20
Pyrene	0.00200	0.00198	0.00179	99.0	89.5	60.0-142			10.1	20
1-Methylnaphthalene	0.00200	0.00187	0.00169	93.5	84.5	66.0-142			10.1	20
2-Methylnaphthalene	0.00200	0.00195	0.00177	97.5	88.5	62.0-136			9.68	20
(S) Nitrobenzene-d5				*97.0*	*86.0*	*31.0-160*				
(S) 2-Fluorobiphenyl				*112*	*99.0*	*48.0-148*				
(S) p-Terphenyl-d14				*86.5*	*76.5*	*37.0-146*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

Company Name/Address:
Stantec - Anchorage, AK

725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Billing Information:
Accounts Payable
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Pres Chk

Report to: ~~Mr. Mike Zidek~~ Leslie Petre

Email To: craig.cothron@pacelabs.com

Project Description: Fairbanks Marathon Site MPC 157575

City/State Collected: Fairbanks/AK

Please Circle: PT MT CT ET

Phone: 907-266-1108

Client Project #

Lab Project # STAAAKSSA-157575

Collected by (print): Leslie Petre

Site/Facility ID # ~~FMS~~ MPC 157575

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed 10/18/23

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

Pace PEOPLE ADVANCING SCIENCE

MT JULIET, TN

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

SDG # L [illegible] 59

F078

Acctnum: STAAAKSSA
Template: T234824
Prelogin: P1014674
PM: 034 - Craig Cothron
PB: 08 7/27/23
Shipped Via: FedEx 2nd Day

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	PAHSIMLVID 40mlAmb-NoPres-WT	SV8011 40mlClr-NaThio	V8260C 40mlAmb-HCl	42					Remarks	Sample # (lab only)
MW-3	G	GW		10/5/23	1557	13	X	X	X	X	X							-01
CRW-2	G	GW		10/5/23	1650	13	X	X	X	X	X							-02
WRW-2020	G	GW		10/5/23	1640	~~13~~ 12	X	X	X	X	X							-03
ERW	G	GW		10/4/23	1546	~~13~~ 12	X	X	X	X	X	X						-04
OMW-3	G	GW		10/4/22	1434	~~13~~ 12	X	X	X	X	X	X						-05
~~OMW-4~~		~~GW~~		~~10/4/23~~		~~13~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~							~~-06~~
EFFLUENT	G	GW		10/5/23	1338	~~13~~ 12	X	X	X	X	X	X						-06
DUP-1	G	GW		10/5/23		~~13~~ 12	X	X	X	X	X	X						-07
DUP-2	G	GW		10/5/23		~~13~~ 12	X	X	X	X	X	X						-08
MW-4	G	GW		10/4/2023	1517	13	X	X	X	X	X							-09

* 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 # PH-10BDH4321 TRC 235152
CR6-20221V
PH-10BDH4321 TRC 235152
CR6-20221V

Sample Receipt Checklist

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received:	If preservation required by Login: Date/Time
	10/9/23	11:45a		Yes / No HCL / MeoH TBR 2	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.4 °C Bottles Received: 2.040 167	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Christoph L. Gellin	Date: 10/10/23 Time: 0900	Hold: Condition: NCF / OK

Company Name/Address:
Stantec - Anchorage, AK

725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Billing Information:
Accounts Payable
725 E Fireweed Lane
Suite 200
Anchorage, AK 99503

Pres Chk

Report to: ~~Mr. Mike Zidek~~ Leslie Petre

Email To: craig.cothron@pacelabs.com

Project Description: Fairbanks Marathon Site MPC 157575

City/State Collected: Fairbanks, AK

Please Circle: ~~AK~~ MT CT ET

Phone: 907-~~266-1108~~

Client Project #

Lab Project # STAAAKSSA-157575

Collected by (print): Leslie Petre

Site/Facility ID # MPC 157575

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

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

Quote #

Date Results Needed 10/18/23

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 40mlAmb HCl	AK102 100ml Amb HCl	PAHSIMLVID 40mlAmb-NoPres-WT	SV8011 40mlClr-NaThio	V8260C 40mlAmb-HCl	Na (Sodium) 250mL Poly					Remarks	Sample # (lab only)
MW-8	G	GW		10/5/23	1510	~~13~~ 14	X	X	X	X	X	X						-10
MW-14	G	GW		10/5/23	1148	~~13~~ 14	X	X	X	X	X							-11
MW-17	G	GW		10/5/23	1556	13	X	X	X	X	X							-12
MW-19-1		GW				13	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~							
MW-19-2	G	GW		10/5/23	1224	~~13~~ 14	X	X	X	X	X	X						-13
CRW	G	GW		10/5/23	1333	~~13~~ 14	X	X	X	X	X	X						-14

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

Pace
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MT JULIET, TN

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

SDG # L1164454

Table #

Acctnum: STAAAKSSA
Template: T234824
Prelogin: P1014674
PM: 034 - Craig Cothron
PB: 08/30/23

Shipped Via: FedEX 2nd Day

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	10/9/23	11:45a			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: COR °C 2.0+0 Bottles Received:	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Christopher A. Bellar (14)	Date: 10/10/23	Time: 0900	Hold:	Condition: NCF / OK

L 1666659

Tracking Numbers	[redacted]	Temperature
6643 4307 7742		0.8+0=0.8 CCA
6841 83453584		20+0=20 CCA

Name

Date

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Sydney Souza	**CS Site Name:**	Tesoro North Store 101/IFC	**Lab Name:**	Pace Analytical
Title:	Environmental Scientist	**ADEC File No.:**	100.26.022	**Lab Report No.:**	L1664659
Consulting Firm:	Stantec Consulting Services Inc.	**Hazard ID No.:**	224	**Lab Report Date:**	October 20, 2023

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

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: Samples were not transferred

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: Click or tap here to enter text.
   Comments: Click or tap here to enter text.

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☐ No ☐ N/A ☒
   Cooler temperature(s): Click or tap here to enter text.
   Sample temperature(s): Click or tap here to enter text.

Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: Sample condition documented as OK

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: No discrepancies documented

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: No discrepancies documented

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☐ No ☒ N/A ☐
Comments: Case narrative documents no errors or discrepancies “unless qualified or notated within report”

c. Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: No corrective actions taken

d. What is the effect on data quality/usability according to the case narrative?
Comments: No effect on data quality/usability

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Click or tap here to enter text.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: Method blank had detections below LOQ for all analytes.

iii. If above LoQ or RL, what samples are affected?
Comments: Click or tap here to enter text.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

v. Data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Click or tap here to enter text.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☒ N/A ☐
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments:

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

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Click or tap here to enter text.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

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

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

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

Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

iii. If above LoQ or RL, what samples are affected?
Comments: None.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐
Comments: DRO and Naphthalene were above 30% for DUP 1.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Click or tap here to enter text.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Used disposable equipment

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Used disposable equipment

iii. If above LoQ or RL, specify what samples are affected.
Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

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

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.