

**Technical Memorandum  
Decommission of Air Sparge Wells  
and Installation of 4" Chemox  
Injection Wells at TNS 111**

**ADEC File #100.26.026**

**November 10, 2023**

## AUTHORIZATION TO SUBMIT REPORT

Stantec has been authorized by the client, 7-Eleven (representative Paula Sime, PG, Manager – Environmental Services) to submit the enclosed technical memorandum on the decommissioning of air sparge wells and installation of chemox injection wells to the Alaska Department of Environmental Conservation. If you have any questions or need additional information concerning this technical memorandum, please contact me at (907) 227-9883 or via email at [bob.gilfilian@stantec.com](mailto:bob.gilfilian@stantec.com).

Regards,

STANTEC CONSULTING SERVICES, INC.

A handwritten signature in cursive script that reads "Bob Gilfilian".

Robert (Bob) Gilfilian, P.E.

Project Technical Lead

Principal Senior Civil Engineer

To: Paula Sime, PG  
Manager, Environmental Services

7-Eleven, Inc.  
PO Box 1026  
Temecula, CA 92593

File: ADEC Facility ID #1112;  
ADEC File # 100.26.026

From: Bob Gilfilian, PE  
Principal Senior Engineer  
Sydney Souza  
Environmental Geologist

Stantec Consulting Services, Inc.  
725 E Fireweed Lane, Suite 200  
Anchorage, Alaska 99503

Date: November 10, 2023

**Reference: Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315) located at 3679 College Road, Fairbanks, Alaska.**

## 1 INTRODUCTION

On behalf of Tesoro Refining & Marketing Company (Tesoro), Stantec Consulting Inc. (Stantec) is pleased to submit this Technical Memorandum (TM) for the September 2023 decommissioning of 4 air sparge (AS) wells and installation of 4 chemox injection wells (IW). The AS wells were identified as AS-1, AS-3, AS-4, and AS-11. The chemox injection wells (IW) are identified as IW-2023-A, IW-2023-B, IW-2023-C, and IW-2023-D. The wells were drilled at the former Tesoro Northstore (TNS) #111 (current Speedway Store #5315) located at 3679 College Road in Fairbanks, Alaska (**Figure 1**).

This TM describes the implementation of the 2023 Corrective Action Work Plan (CAP) for the installation of four-inch diameter chemical oxidation (chemox) injection wells in manholes at former air sparge (AS) wells, as proposed in Task 4. This workplan was approved by Pete Campbell, PE, with the Alaska Department of Environmental Conservation (ADEC). Upon 7-Eleven's acceptance of this TM, Stantec will submit the TM to the ADEC, attention Pete Campbell, PE.

## 2 BACKGROUND

On September 19 and 20, 2023, Stantec implemented the 2023 CAP work plan for Task 4 at the subject TNS store. The Stantec field staff consisted of Bob Gilfilian, PE, (Principal Civil Engineer), Sydney Souza (Environmental Geologist), Geoff Moorehead, EIT (Staff Engineer), and Leslie Petre, EIT (Staff Engineer). On September 19, 2023, Stantec met the field crew for Discovery Drilling on the property and conducted a site safety tailgate meeting. Stantec explained the scope of work that was to be completed on the Tesoro property. All Stantec staff remained on-site during the drilling. Sydney Souza logged the soil borings and collected representative soil samples while Geoff Moorehead performed "Firewatch" services.

The intent of the IWs was to replace the existing AS wells with new, shallow (18-foot deep) 4-inch diameter poly vinyl chloride (PVC) casing with 10-feet of 200 slot well screen. This larger PVC casing will improve the injection of a chemox solution into the groundwater table and allow for recirculation of groundwater discharged from RM-2. The four AS wells were successfully pulled from the formation with the drill rig and replaced in the same borehole with the IW wells (see **Figure 2** for well locations). Based on underground utility locates and original construction record drawings, there were no buried utilities in the immediate vicinity of the drilling areas. The fuel dispensers were deactivated by store personnel during the drilling IW-2023-C and IW-2023-D.

The approved work plan for this scope of work included field screening of representative grab soil samples collected from auger flights. Representative soil samples were field screened with a calibrated photoionization detector (PID) and

analyzed by an ADEC qualified laboratory for gasoline range organics (GRO), diesel range organics (DRO), polynuclear aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). Summaries of analytical results from these soil samples are included in **Table 1**.

Based on elevated PID measurements and physical (olfactory and visual) features, the borehole cuttings from IW-2023-C were stored on-site in a 55-gallon steel drum for subsequent treatment and disposal subject to receipt of confirmation laboratory soil test results. Representative soil samples were selected from the soil cuttings from IW-2023-C and placed in laboratory supplied jars and shipped via approved chain of custody procedures for analyses by PACE Laboratory. The laboratory test results (see **Attachment 3**) found the soil cuttings were contaminated with diesel fuel. The drum of contaminated soil will be transported to US Ecology in Moose Creek, Alaska, for thermal treatment and disposal in accordance with the ADEC Approval to Transport and Treatment Contaminated Media dated October 27, 2023 (see **Attachment 4**).

### 3 SOIL BORING AND SAMPLING METHODOLOGY

Drilling and sampling for the September 2023 injection wells was completed by Discovery Drilling, Inc. with an auger and Geoprobe® 7822 DT drilling rig. Sampling was conducted by Stantec staff. A descriptive summary of field boring notes from soil borings IW-2023-A, IW-2023-B, IW-2023-C, and IW-2023-D is provided below. The boreholes were drilled to 20 feet below ground surface (bgs) and the 4-inch PVC well casing was placed at 18 feet bgs. Groundwater was not observed in any of the wells, likely due to disturbance from the auger. Groundwater levels are determined based on surrounding monitoring wells which were noted on the soil boring logs. See **Attachment 1** for detailed boring logs.

- IW-2023-A – As shown on Figure 2, this IW replaced AS-1, located near the entrance of the store.
  - From 0 to 2 feet bgs, the auger returned brown poorly graded sand with little silt. No petroleum odor was detected.
  - From 2 to 20 feet bgs, the auger returned brown, gravelly, poorly graded sand with trace silt. No petroleum odor was detected. PID readings ranged from 0.0 ppm to 35.0 ppm.
  - No samples were taken from this borehole.
  - Drilling ended at 20 feet bgs. PVC was inserted to 18 feet bgs with a 0.02-inch slotted screen from 10 to 18 feet bgs. The whole was backfilled with pre-washed quartz filter pack sand, bentonite chips, pea gravel, then gravel backfill.
- IW-2023-B – As shown on Figure 2, this IW replaced AS-3, located near the south horizontal IW.
  - From 0 to 6 feet bgs, drilling proceeded through dark brown, poorly graded sand with little silt, with a PID reading of 7.0 ppm. No petroleum odor was detected.
  - From 6 to 20 feet bgs, drilling proceeded through brown, moist, poorly graded sand with little gravel and trace silt. No petroleum odor was detected. PID readings ranged from 1.0 ppm to 6.0 ppm.
  - No samples were taken from this borehole.
  - Drilling ended at 20 feet bgs. PVC was inserted to 18 feet bgs with a 0.02-inch slotted screen from 10 to 18 feet bgs. The whole was backfilled with pre-washed quartz filter pack sand, bentonite chips, pea gravel, then gravel backfill.
- IW-2023-C – As shown on Figure 2, this IW replaced AS-4, located next to soil vapor extraction (SVE) 2.

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**Reference:** **Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)**

- From 0 to 4 feet bgs, drilling proceeded through dry, brown, poorly graded sand with little gravel and trace silt. No petroleum odor was detected. The PID reading was 18.0 ppm.
- From 4 to 9.5 feet bgs, drilling proceeded through moist, brown, sandy silt with trace gravel. No petroleum odor was detected.
- From 9.5 to 12 feet bgs, the auger returned dry, brown, poorly graded sand with little gravel and trace silt. A field screening sample showed a PID reading of 1.7 ppm. No petroleum odor was detected.
- From 12 to 20 feet bgs, drilling showed dry, brown, poorly graded gravel with trace gravel and silt. A moderate petroleum odor was detected, with PID readings as high as 185.7 ppm.
- Sample IW-2023-C was taken from auger cuttings from roughly 15 feet bgs.
- Drilling ended at 20 feet bgs. PVC was inserted to 18 feet bgs with a 0.02-inch slotted screen from 10 to 18 feet bgs. The whole was backfilled with pre-washed quartz filter pack sand, bentonite chips, pea gravel, then gravel backfill.
- IW-2023-D – As shown on Figure 2, this IW replaced AS-11, located just southwest of the concrete fuel pad.
  - From 0 to 2.5 feet bgs, drilling proceeded through dry, brown, poorly graded sand with little gravel and trace silt. No petroleum odor was detected.
  - From 2.5 to 3.5 feet bgs, the auger returned dry, brown, sandy gravel. No petroleum odor was detected.
  - From 3.5 to 6 feet bgs, drilling proceeded through dry, brown poorly graded sand with little gravel and trace silt (same as above) with a PID reading of 1.3 ppm. No petroleum odor was detected.
  - From 6 to 8 feet bgs, drilling proceeded through dry, brown, gravel, which became sandier as the auger went deeper into the ground. No petroleum odor was detected.
  - From 8 to 11 feet bgs, the auger returned dry, brown, silty, poorly graded sand with trace gravel. PID readings were between 1.0 and 1.5 ppm. No petroleum odor was detected.
  - From 11 to 20 feet bgs, the auger returned brown, poorly graded sand with trace silt and gravel. The sand became wet at 16.5 feet bgs. PID readings were between 1.0 and 4.8 ppm. No petroleum odor was detected.
  - No samples were taken from this borehole.
  - Drilling ended at 20 feet bgs. PVC was inserted to 18 feet bgs with a 0.02-inch slotted screen from 10 to 18.5 feet bgs. The whole was backfilled with pre-washed quartz filter pack sand, bentonite chips, pea gravel, then gravel backfill.

**Attachment 2** provides photos taken during the removal of the AS wells and installation of the chemox injection wells. The removed wells were 2-inch diameter PVC threaded casing. The drill crew was able to gradually pull the entire well casing (approximately 20-foot long) vertically up out of the borehole. Prior to pulling the AS well casing, the bottom section of the well casing was knocked out and hydrated bentonite pellets were added to the casing up to 18-foot bgs.

### 3.1 FIELD SCREENING METHODOLOGY AND RESULTS

Field screening head space samples were collected every 2.5 feet during the drilling of the boreholes. A soil sample was gathered into a re-sealable polyethylene bag for screening by PID. Calibration of the PID was conducted with a 100-ppm calibration standard. Samples were warmed inside the company vehicle and allowed to volatilize for several minutes prior to screening. Field screening results, along with the location of the analytical sample from IW02023-C, are summarized on the four soil boring logs that are provided in **Attachment 1**.

#### 3.1.1 Analytical Sampling Methodology and Results

Soil analytical samples were submitted to Pace Analytical Laboratory located in Mount Juliet, Tennessee for analysis of the Alaska list of volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260C, the standard list of polynuclear aromatic hydrocarbons (PAHs), to include naphthalene, by EPA Method 8270D with selective ion monitoring (SIM), gasoline range organics (GRO) by Alaska State test method (AK) 101, diesel range organics (DRO) by AK102, total solids by method 2540 G-2011, and total lead by EPA 6020. The laboratory analytical report is provided in **Attachment 3**.

Soil analytical results were compared to 18 Alaska Administrative Code (AAC) 75 Method Two Migration-to-Groundwater Soil Cleanup Levels (SCLs). A summary of soil analytical detections and exceedances are provided in **Table 1**. DRO was detected in exceedance of SCLs in this sample (**Table 1**).

**Table 1 : Soil Sample Analytical Results**  
*Samples collected September 20, 2023*

Sample ID	PID (ppm)	Benzene <sup>1</sup> (mg/kg)	Toluene <sup>1</sup> (mg/kg)	Ethlybenzene <sup>1</sup> (mg/kg)	Total Xylenes <sup>1</sup> (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	Naphthalene <sup>2</sup> (mg/kg)	Lead (mg/kg)
IW-2023-C	185.7	0.00141	0.00612 J	0.00728	0.0417	<b>675</b>	3.34 B	0.0166 J	9.68
SCL	-	<b>0.022</b>	<b>6.7</b>	<b>0.13</b>	<b>1.5</b>	<b>250</b>	<b>300</b>	<b>0.038</b>	<b>400</b>

- <sup>1</sup> Analyzed by US Environmental Protection Agency Test Method 8260C
- <sup>2</sup> Analyzed by US Environmental Protection Agency Test Method 8270D
- J The identification of the analyte is acceptable; the reported value is an estimate.
- B The same analyte is found in the associated blank.
- SCL Soil Cleanup Levels from 18 AAC 75, measured in mg/kg
- Bold** Indicates the listed value exceeds the associated Soil Cleanup Level for that contaminant.
- DRO Diesel Range Organics, analyzed by method AK102
- GRO Gasoline Range Organics, analyzed by AK101
- mg/kg milligrams per kilogram
- ppm parts per million
- PID photoionization detector

### 3.2 ANALYTICAL SAMPLING QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

No duplicate samples were sent to Pace Analytical for this event.

## 4 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this report was to provide on behalf of Tesoro (c/o 7/Eleven) a summary of the field and laboratory data collected during the September 2023 decommissioning of four AS wells (AS-1/3/4/11) and drilling of the four injection

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wells (IW-2023-A/B/C/D) at the subject site (Speedway Store 5315). As presented in **Table 1**, Stantec found DRO to be in exceedance of SCLs in sample IW-2023-C.

After the new injection wells were installed, Stantec employees Leslie Petre and Geoff Moorehead connected them to existing 1-inch air supply lines (see photos in **Attachment 2**). The new wells were then tested by injecting roughly 1 gallon per minute from the recirculation well RW-2 overnight into each well. The test was successful, and the wells accepted the water supply. The use of these new, larger diameter (4-inch) injection wells for future chemox injection events is expected to be more efficient in the application of the chemical oxidation treatment process and should result in a more effective method for the continued remediation of the residual petroleum contamination at this site.

Please feel free to contact me if you have any questions regarding the findings reported herein.

**STANTEC CONSULTING SERVICES INC.**



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Attachments:

- Figure 1 – Location and Vicinity Map
- Figure 2 – Injection Well Locations
- Attachment 1 – Injection Well Logs
- Attachment 2 – Photo Log of IW Installation and Plumbing Connections
- Attachment 3 - ADEC Laboratory Results and Data Review Checklist
- Attachment 4 - ADEC Approval to Transport and Treatment Contaminated Media

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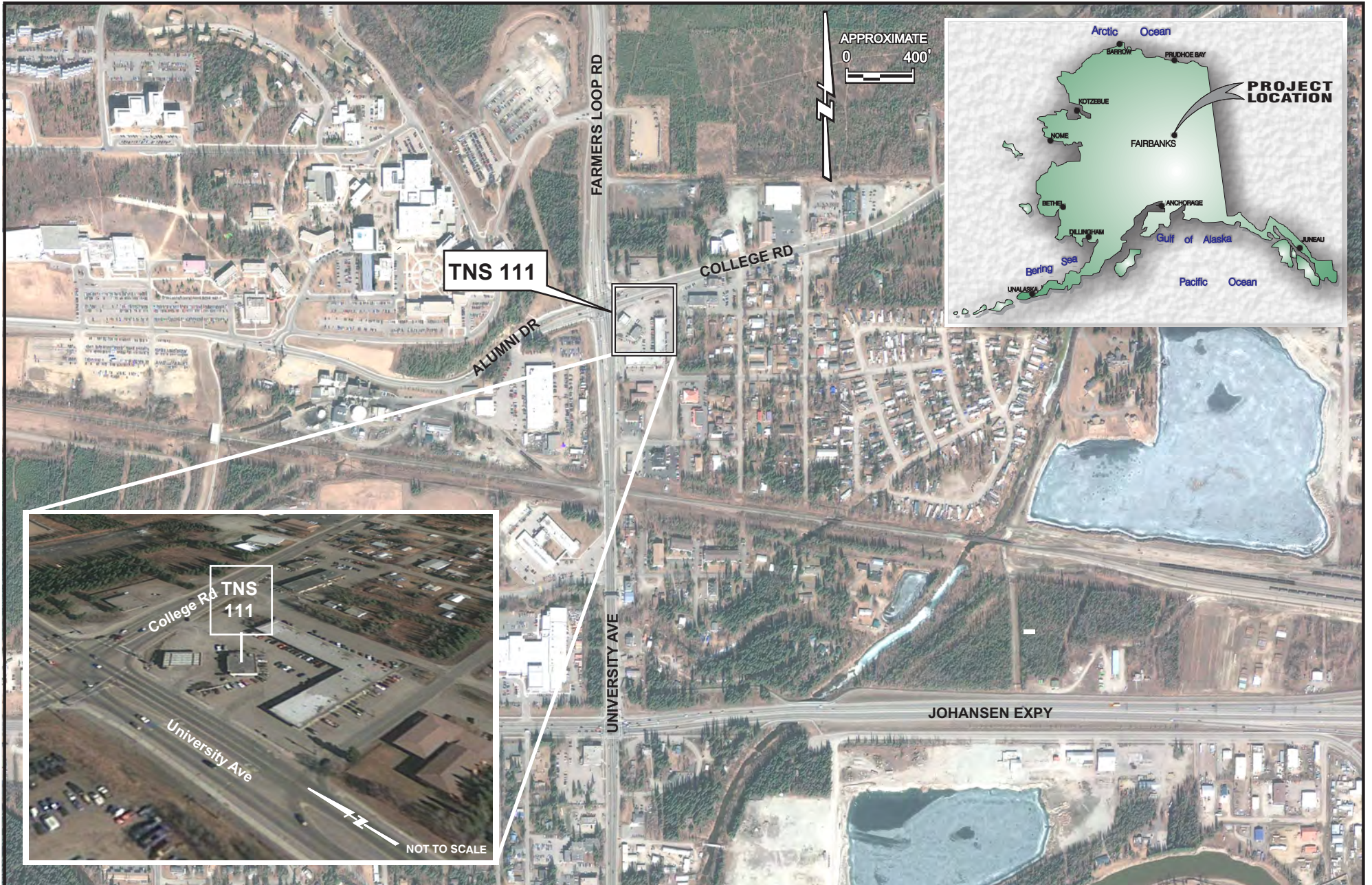
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## **Figure 1      Location and Vicinity Map**





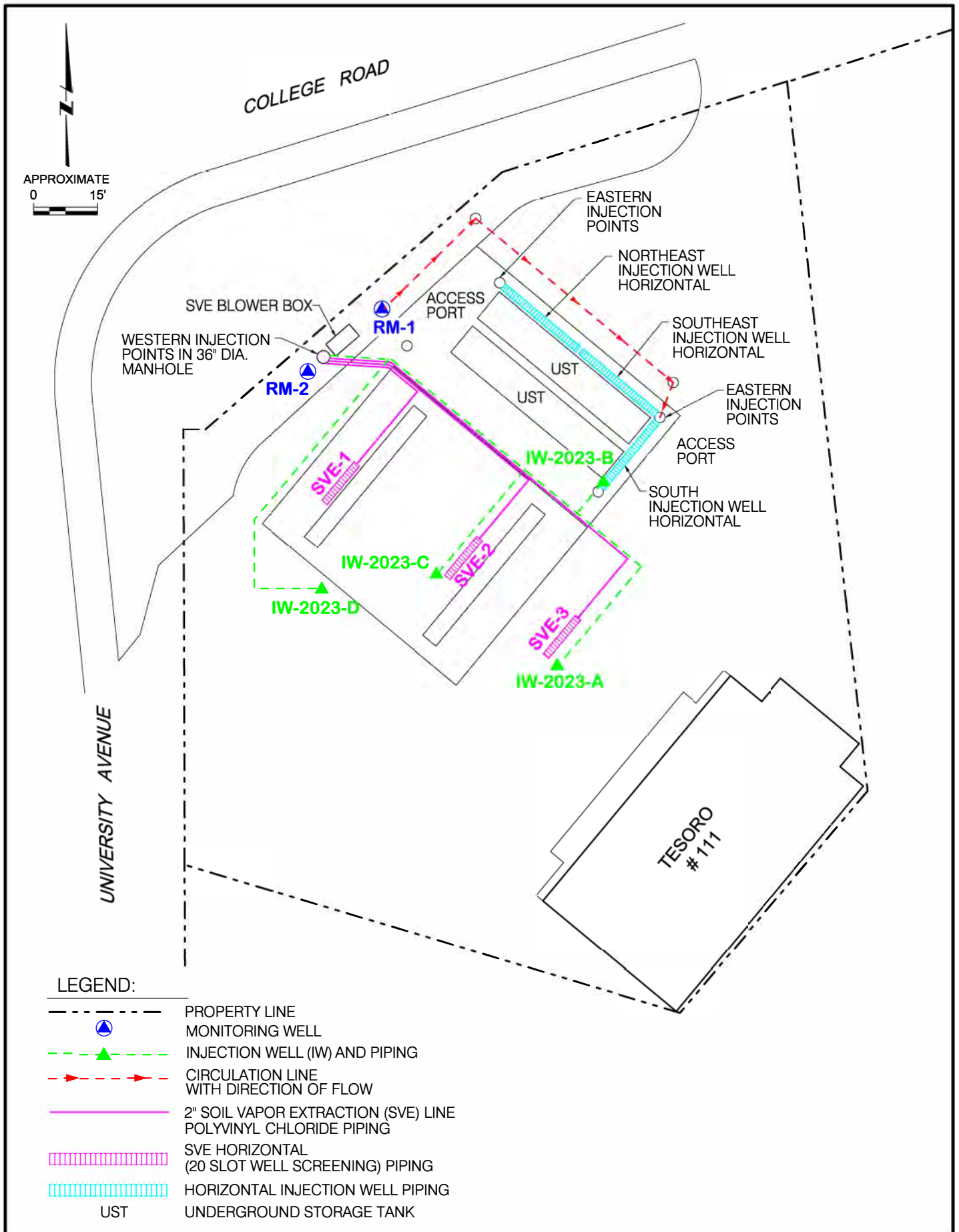
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## **Figure 2      Injection Well Locations**





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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)

## Attachment 1      Injection Well Logs

PROJECT: **Tesoro Northstore (TNS) 111**  
 LOCATION: **Fairbanks, AK**  
 PROJECT NUMBER: **203723075**

WELL / PROBEHOLE / BOREHOLE NO:



PAGE 1 OF 1 **IW-2023-A (AS-1)**

DRILLING: STARTED **9/19/23** COMPLETED: **9/19/23**  
 INSTALLATION: STARTED **9/19/23** COMPLETED: **9/19/23**  
 DRILLING COMPANY: **Discovery Drilling**  
 DRILLING EQUIPMENT: **Geoprobe 7822DT**  
 DRILLING METHOD: **Auger**  
 SAMPLING EQUIPMENT: **GRAB**

NORTHING (ft): EASTING (ft):  
 GROUND ELEV (ft): **0** TOC ELEV (ft bgs): **1**  
 INITIAL DTW (ft): **12.9** BOREHOLE DEPTH (ft bgs): **20**  
 STATIC DTW (ft): **Not Encountered** WELL DEPTH (ft bgs): **18**  
 WELL CASING DIA. (in): **4** BOREHOLE DIA.(in): **6.25**  
 LOGGED BY: **Sydney Souza** CHECKED BY: **Bob Gilfilian**

Depth (feet bgs)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	PID Reading (ppm)	Depth (feet)	Well Construction
0 - 2		SM	<b>POORLY GRADED SAND WITH LITTLE SILT</b> ; SM; brown; fine to medium-grained; dry; no petroleum odor						Well Cap
2 - 12		SPG	<b>GRAVELLY POORLY GRADED SAND WITH TRACE SILT</b> ; SPG; brown; fine to coarse-grained; dry; no petroleum odor; subrounded gravel up to 2"; did not see water, but water table should be at ~12.9'				0.0		Gravel Backfill
2 - 4									Pea Gravel from 2'-4'
4 - 6							2.2	5	Hydrated 3/8" Bentonite Chips from 4'-6'
6 - 10							2.9		
10 - 12							35.0	10	4" dia. Factory Threaded Schedule 40 PVC Riser
12 - 18			Did not encounter GW. GW level based on surrounding wells.				20.0		Pre-washed Quartz Filter Pack Sand from 6'-18'
18 - 20							3.0	15	4" dia. Factory Slotted 0.02" Schedule 40 PVC from 10'-18'
20							10		

GEO FORM 304 TNS111\_BORING\_LOGS\_10062023.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 10/27/23

Borehole terminated at 20 feet.

PROJECT: **Tesoro Northstore (TNS) 111**

LOCATION: **Fairbanks, AK**

PROJECT NUMBER: **203723075**

WELL / PROBEHOLE / BOREHOLE NO:

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**IW-2023-B (AS-3)**



DRILLING: STARTED **9/19/23** COMPLETED: **9/19/23**

INSTALLATION: STARTED **9/19/23** COMPLETED: **9/19/23**

DRILLING COMPANY: **Discovery Drilling**

DRILLING EQUIPMENT: **Geoprobe 7822DT**

DRILLING METHOD: **Auger**

SAMPLING EQUIPMENT: **GRAB**

NORTHING (ft):

EASTING (ft):

GROUND ELEV (ft): **0**

TOC ELEV (ft bgs): **1**

INITIAL DTW (ft): **12**

BOREHOLE DEPTH (ft bgs): **20**

STATIC DTW (ft): **Not Encountered**

WELL DEPTH (ft bgs): **18**

WELL CASING DIA. (in): **4**

BOREHOLE DIA.(in): **6.25**

LOGGED BY: **Sydney Souza**

CHECKED BY: **Bob Gilfilian**

Depth (feet bgs)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	PID Reading (ppm)	Depth (feet)	Well Construction
0 - 6		SM	<b>POORLY GRADED SAND WITH LITTLE SILT</b> ; SM; dark brown; fine to medium-grained; wet; no petroleum odor					0 - 6	Well Cap
6 - 10		SPG	<b>POORLY GRADED SAND WITH LITTLE GRAVEL AND TRACE SILT</b> ; SPG; brown; fine to medium-grained; moist; no petroleum odor; subrounded gravel up to 2"				7.0	6 - 10	Gravel Backfill
10 - 12			No observation of saturated samples below GWT.				6.0	10 - 12	Pea Gravel from 2'-4'
12 - 18			GW level based on surrounding wells.				5.0	12 - 18	Hydrated 3/8" Bentonite Chips from 4'-6'
18 - 20							4.5	18 - 20	4" dia. Factory Threaded Schedule 40 PVC Riser
							4.0		Pre-washed Quartz Filter Pack Sand from 6'-18'
							1.8		4" dia. Factory Slotted 0.02" Schedule 40 PVC from 10'-18'
							1.1		
							1.0		
							1.4		

GEO FORM 304 TNS111\_BORING\_LOGS\_10062023.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 10/27/23

Borehole terminated at 20 feet.

PROJECT: **Tesoro Northstore (TNS) 111**

LOCATION: **Fairbanks, AK**

PROJECT NUMBER: **203723075**

WELL / PROBEHOLE / BOREHOLE NO:

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DRILLING: **STARTED 9/20/23 COMPLETED: 9/20/23**

NORTHING (ft):

EASTING (ft):

INSTALLATION: **STARTED 9/20/23 COMPLETED: 9/20/23**

GROUND ELEV (ft): **0**

TOC ELEV (ft bgs): **1**

DRILLING COMPANY: **Discovery Drilling**

INITIAL DTW (ft): **12.5**

BOREHOLE DEPTH (ft bgs): **20**

DRILLING EQUIPMENT: **Geoprobe 7822DT**

STATIC DTW (ft): **Not Encountered**

WELL DEPTH (ft bgs): **18.5**

DRILLING METHOD: **Auger**

WELL CASING DIA. (in): **4**

BOREHOLE DIA.(in): **6.25**

SAMPLING EQUIPMENT: **GRAB**

LOGGED BY: **Sydney Souza**

CHECKED BY: **Bob Gilfilian**

Depth (feet bgs)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	PID Reading (ppm)	Depth (feet)	Well Construction
0 - 2		SPG	<b>POORLY GRADED SAND WITH LITTLE GRAVEL AND TRACE SILT ; SPG; brown; dry; no petroleum odor; subrounded gravel up to 2"</b>					0 - 2	Well Cap
2 - 4		MLS	<b>SANDY SILT WITH TRACE GRAVEL ; MLS; brown; moist; no petroleum odor; subrounded gravel up to 0.5"</b>				18.0	2 - 4	Gravel Backfill
4 - 6							9.0	4 - 6	Pea Gravel from 2'-4'
6 - 10							1.1	6 - 10	Hydrated 3/8" Bentonite Chips from 4'-6'
10 - 12		SPG	<b>POORLY GRADED SAND WITH LITTLE GRAVEL AND TRACE SILT ; SPG; brown; dry; no petroleum odor; subrounded gravel up to 2"</b>				1.7	10 - 12	4" dia. Factory Threaded Schedule 40 PVC Riser
12 - 14		SP	<b>POORLY GRADED SAND WITH TRACE GRAVEL AND TRACE SILT ; SP; brown; dry; moderate petroleum odor; subrounded gravel up to 0.5"</b>				185.7	12 - 14	Pre-washed Quartz Filter Pack Sand from 6'-18'
14 - 16			Did not encounter GW. GW level based on surrounding wells.				115.4	14 - 16	4" dia. Factory Slotted 0.02" Schedule 40 PVC from 10'-18'
16 - 18							63.3	16 - 18	
18 - 20							43.0	18 - 20	

Sample IW-2023-C Collected at 11:38

GEO FORM 304 TNS111\_BORING\_LOGS\_10062023.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 10/27/23

Borehole terminated at 20 feet.

PROJECT: **Tesoro Northstore (TNS) 111**

LOCATION: **Fairbanks, AK**

PROJECT NUMBER: **203723075**

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1 **IW-2023-D (AS-11)**



DRILLING: STARTED **9/19/23** COMPLETED: **9/19/23**

INSTALLATION: STARTED **9/19/23** COMPLETED: **9/19/23**

DRILLING COMPANY: **Discovery Drilling**

DRILLING EQUIPMENT: **Geoprobe 7822DT**

DRILLING METHOD: **Auger**

SAMPLING EQUIPMENT: **GRAB**

NORTHING (ft):

EASTING (ft):

GROUND ELEV (ft): **0**

TOC ELEV (ft bgs): **1**

INITIAL DTW (ft): **16.5**

BOREHOLE DEPTH (ft bgs): **20**

STATIC DTW (ft): **Not Encountered**

WELL DEPTH (ft bgs): **18**

WELL CASING DIA. (in): **4**

BOREHOLE DIA.(in): **6.25**

LOGGED BY: **Sydney Souza**

CHECKED BY: **Bob Gilfilian**

Depth (feet bgs)	Graphic Log	USCS	Description	Sample	Soil Sample	Measured Recovery (feet)	PID Reading (ppm)	Depth (feet)	Well Construction
0		SPG	<b>POORLY GRADED SAND WITH LITTLE GRAVEL AND TRACE SILT ; SPG; brown; dry; no petroleum odor; subrounded gravel up to 4"</b>					0	Well Cap
2		GP	<b>SANDY GRAVEL ; GP; brown; dry; no petroleum odor; subrounded gravel up to 4"</b>				1.2	2	Gravel Backfill
4		SPG	<b>POORLY GRADED SAND WITH LITTLE GRAVEL AND TRACE SILT ; SPG; brown; dry; no petroleum odor; subrounded gravel up to 4"</b>					4	Pea Gravel from 2'-4'
6		GP	<b>GRAVEL WITH FEW FINE TO COARSE SAND ; GP; brown; dry; no petroleum odor; subrounded gravel up to 6"</b>					6	
8		GP	<b>SANDY GRAVEL ; GP; brown; dry; no petroleum odor; subrounded gravel up to 4"</b>					8	
10		SM	<b>SILTY POORLY GRADED SAND WITH TRACE GRAVEL ; SM; brown; dry; no petroleum odor; subrounded gravel up to 2"</b>				1.3	10	Hydrated 3/8" Bentonite Chips from 4'-6'
12		SP	<b>POORLY GRADED SAND WITH TRACE GRAVEL AND TRACE SILT ; SP; brown; dry; no petroleum odor; subrounded gravel up to 2"</b>				1.0	12	4" dia. Factory Threaded Schedule 40 PVC Riser
14							1.3	14	Pre-washed Quartz Filter Pack Sand from 6'-18.5'
16							1.0	16	4" dia. Factory Slotted 0.02" Schedule 40 PVC from 10'-18.5'
18		SP	<b>POORLY GRADED SAND WITH TRACE GRAVEL AND TRACE SILT ; SP; brown; wet; no petroleum odor; subrounded gravel up to 2"</b>				1.1	18	
20							4.8		

GEO FORM 304 TNS111\_BORING\_LOGS\_10062023.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 10/27/23

Borehole terminated at 20 feet.





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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)

## **Attachment 2      Photo Log of IW Installation and Plumbing Connections**

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 1: Drillers removing AS-1 to replace with IW-2023-A.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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Reference: **Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)**



Photo 2: Installing 4" IW-2023-A PVC.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 3: Drillers removing AS-3 to replace with IW-2023-B.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 4: Drillers jackhammering through cement in order to make room for a larger manhole for IW-2023-D.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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**Reference: Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)**



Photo 5: Drilling IW-2023-C.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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Reference: **Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)**



Photo 6: Taking soil samples of IW-2023-C.

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Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 7: IW-2023-A hooked up to the recirculation system.



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Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 8: IW-2023-B hooked up to the recirculation system.

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Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 9: IW-2023-C hooked up to the recirculation system.

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Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)



Photo 10: IW-2023-D hooked up to the recirculation system. The area surrounding the manhole was resealed with asphalt after drilling.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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**Reference:** **Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store (TNS) #111 (Speedway #5315)**

## **Attachment 3      ADEC Laboratory Results and Data Review Checklist**



# ANALYTICAL REPORT

October 23, 2023

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

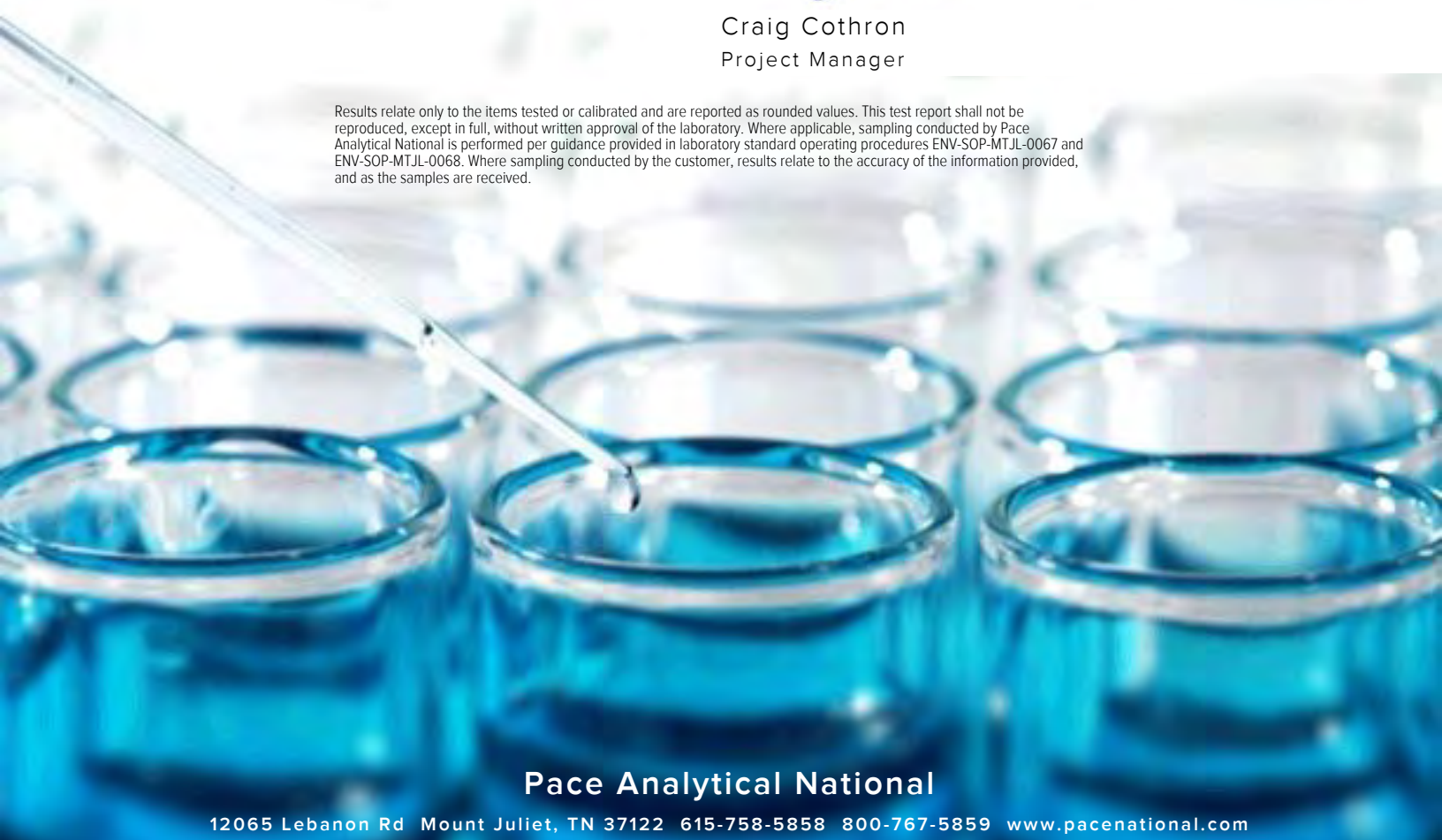
## Stantec - Anchorage, AK

Sample Delivery Group: L1665853  
Samples Received: 10/12/2023  
Project Number:  
Description: Speedway 5315 - Fairbanks, AK  
Site: SPEEDWAY 5315/TNS111  
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.

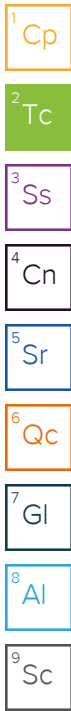


**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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# SAMPLE SUMMARY

IW2023C L1665853-01 Solid

Collected by: Leslie Petre  
 Collected date/time: 10/10/23 11:38  
 Received date/time: 10/12/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG2151895	1	10/17/23 10:48	10/17/23 11:02	KDW	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2151675	5	10/16/23 21:58	10/22/23 20:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method AK101	WG2152595	1	10/10/23 11:38	10/17/23 13:06	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG2154251	1	10/10/23 11:38	10/19/23 11:06	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method AK102	WG2152130	1	10/19/23 06:24	10/20/23 13:48	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG2153600	1	10/18/23 20:27	10/19/23 09:47	ALM	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

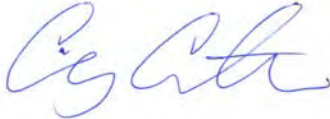
<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# 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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	90.6		1	10/17/2023 11:02	<a href="#">WG2151895</a>

Metals (ICPMS) by Method 6020

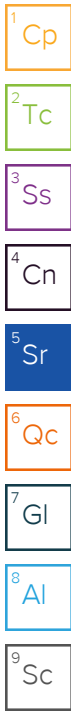
Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Lead	9.68		0.109	2.21	5	10/22/2023 20:05	<a href="#">WG2151675</a>

Volatile Organic Compounds (GC) by Method AK101

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
TPHGAK C6 to C10	3.34	<u>B</u>	1.05	2.76	1	10/17/2023 13:06	<a href="#">WG2152595</a>
(S) a,a,a-Trifluorotoluene(FID)	90.0			50.0-150		10/17/2023 13:06	<a href="#">WG2152595</a>
(S) a,a,a-Trifluorotoluene(PID)	105			72.0-128		10/17/2023 13:06	<a href="#">WG2152595</a>

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Acetone	U		0.0450	0.0617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Acrylonitrile	U		0.00445	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Benzene	0.00141		0.000576	0.00123	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Bromobenzene	U		0.00111	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Bromodichloromethane	U		0.000894	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Bromoform	U		0.00144	0.0308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Bromomethane	U		0.00243	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
n-Butylbenzene	U		0.00648	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
sec-Butylbenzene	0.0229		0.00355	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
tert-Butylbenzene	U		0.00241	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Carbon tetrachloride	U	<u>J4</u>	0.00111	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Chlorobenzene	U		0.000259	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Chlorodibromomethane	U		0.000755	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Chloroethane	U		0.00210	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Chloroform	U		0.00127	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Chloromethane	U		0.00537	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
2-Chlorotoluene	U		0.00107	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
4-Chlorotoluene	U		0.000555	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2-Dibromo-3-Chloropropane	U		0.00481	0.0308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2-Dibromoethane	U		0.000799	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Dibromomethane	U		0.000925	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2-Dichlorobenzene	U		0.000524	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,3-Dichlorobenzene	U		0.000740	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,4-Dichlorobenzene	U		0.000863	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Dichlorodifluoromethane	U		0.00199	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1-Dichloroethane	U		0.000606	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2-Dichloroethane	U		0.000800	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1-Dichloroethene	U		0.000747	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
cis-1,2-Dichloroethene	U		0.000905	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
trans-1,2-Dichloroethene	U		0.00128	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2-Dichloropropane	U		0.00175	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1-Dichloropropene	U		0.000998	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,3-Dichloropropane	U		0.000618	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
cis-1,3-Dichloropropene	U		0.000934	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
trans-1,3-Dichloropropene	U		0.00141	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
2,2-Dichloropropane	U		0.00170	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>



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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Di-isopropyl ether	U		0.000506	0.00123	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Ethylbenzene	0.00728		0.000909	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Hexachloro-1,3-butadiene	U		0.00740	0.0308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Isopropylbenzene	0.00493		0.000524	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
p-Isopropyltoluene	U		0.00315	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
2-Butanone (MEK)	U		0.0783	0.123	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Methylene Chloride	U		0.00819	0.0308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
4-Methyl-2-pentanone (MIBK)	U		0.00281	0.0308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Methyl tert-butyl ether	U		0.000432	0.00123	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Naphthalene	0.0241		0.00602	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
n-Propylbenzene	0.00969		0.00117	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Styrene	U		0.000282	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1,1,2-Tetrachloroethane	U		0.00117	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1,2,2-Tetrachloroethane	U	<a href="#">C3</a>	0.000857	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1,2-Trichlorotrifluoroethane	U		0.000930	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Tetrachloroethene	U		0.00111	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Toluene	0.00612	<a href="#">J</a>	0.00160	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2,3-Trichlorobenzene	U		0.00904	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2,4-Trichlorobenzene	U		0.00543	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1,1-Trichloroethane	U		0.00114	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,1,2-Trichloroethane	U		0.000736	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Trichloroethene	U	<a href="#">J4</a>	0.000720	0.00123	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Trichlorofluoromethane	U		0.00102	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2,3-Trichloropropane	U		0.00200	0.0154	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2,4-Trimethylbenzene	0.0532		0.00195	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,2,3-Trimethylbenzene	0.0255		0.00195	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Vinyl chloride	U		0.00143	0.00308	1	10/19/2023 11:06	<a href="#">WG2154251</a>
1,3,5-Trimethylbenzene	0.0247		0.00247	0.00617	1	10/19/2023 11:06	<a href="#">WG2154251</a>
Xylenes, Total	0.0417		0.00109	0.00802	1	10/19/2023 11:06	<a href="#">WG2154251</a>
(S) Toluene-d8	109			75.0-131		10/19/2023 11:06	<a href="#">WG2154251</a>
(S) 4-Bromofluorobenzene	95.6			67.0-138		10/19/2023 11:06	<a href="#">WG2154251</a>
(S) 1,2-Dichloroethane-d4	97.6			70.0-130		10/19/2023 11:06	<a href="#">WG2154251</a>

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Semi-Volatile Organic Compounds (GC) by Method AK102

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
AK102 DRO C10-C25	675		57.5	166	1	10/20/2023 13:48	<a href="#">WG2152130</a>
(S) o-Terphenyl	88.5			50.0-150		10/20/2023 13:48	<a href="#">WG2152130</a>

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00254	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Acenaphthene	U		0.00231	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Acenaphthylene	U		0.00238	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Benzo(a)anthracene	U		0.00191	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Benzo(a)pyrene	U		0.00198	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Benzo(b)fluoranthene	U		0.00169	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Benzo(g,h,i)perylene	U		0.00195	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Benzo(k)fluoranthene	U		0.00237	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Chrysene	U		0.00256	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Dibenz(a,h)anthracene	U		0.00190	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Fluoranthene	U		0.00250	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Fluorene	U		0.00226	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Indeno(1,2,3-cd)pyrene	U		0.00200	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>

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

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Naphthalene	0.0166	J	0.00450	0.0221	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Phenanthrene	0.0115		0.00255	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
Pyrene	U		0.00221	0.00662	1	10/19/2023 09:47	<a href="#">WG2153600</a>
1-Methylnaphthalene	0.0132	J	0.00495	0.0221	1	10/19/2023 09:47	<a href="#">WG2153600</a>
2-Methylnaphthalene	0.0134	J	0.00471	0.0221	1	10/19/2023 09:47	<a href="#">WG2153600</a>
2-Chloronaphthalene	U		0.00514	0.0221	1	10/19/2023 09:47	<a href="#">WG2153600</a>
(S) Nitrobenzene-d5	86.3			14.0-149		10/19/2023 09:47	<a href="#">WG2153600</a>
(S) 2-Fluorobiphenyl	64.8			34.0-125		10/19/2023 09:47	<a href="#">WG2153600</a>
(S) p-Terphenyl-d14	76.9			23.0-120		10/19/2023 09:47	<a href="#">WG2153600</a>

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

Method Blank (MB)

(MB) R3987548-1 10/17/23 11:02

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

1 Cp

2 Tc

3 Ss

L1665802-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1665802-02 10/17/23 11:02 • (DUP) R3987548-3 10/17/23 11:02

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Total Solids	97.2	96.8	1	0.391		10

4 Cn

5 Sr

Laboratory Control Sample (LCS)

(LCS) R3987548-2 10/17/23 11:02

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

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3989525-1 10/22/23 18:27

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3989525-2 10/22/23 18:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead	100	107	107	80.0-120	

4 Cn

5 Sr

L1665406-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665406-02 10/22/23 18:33 • (MS) R3989525-5 10/22/23 18:43 • (MSD) R3989525-6 10/22/23 18:46

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	111	67.9	194	186	114	107	5	75.0-125			4.29	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3987707-3 10/17/23 11:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPHGAK C6 to C10	1.18	↓	0.950	2.50
(S) a,a,a-Trifluorotoluene(FID)	92.3			60.0-120
(S) a,a,a-Trifluorotoluene(PID)	113			72.0-128

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

(LCS) R3987707-1 10/17/23 10:13 • (LCSD) R3987707-2 10/17/23 10:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPHGAK C6 to C10	125	124	121	99.2	96.8	60.0-120			2.45	20
(S) a,a,a-Trifluorotoluene(FID)				99.9	95.9	60.0-120				
(S) a,a,a-Trifluorotoluene(PID)				118	123	72.0-128				

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3988309-2 10/19/23 08:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0365	0.0500
Acrylonitrile	U		0.00361	0.0125
Benzene	U		0.000467	0.00100
Bromobenzene	U		0.000900	0.0125
Bromodichloromethane	U		0.000725	0.00250
Bromoform	U		0.00117	0.0250
Bromomethane	U		0.00197	0.0125
n-Butylbenzene	U		0.00525	0.0125
sec-Butylbenzene	U		0.00288	0.0125
tert-Butylbenzene	U		0.00195	0.00500
Carbon tetrachloride	U		0.000898	0.00500
Chlorobenzene	U		0.000210	0.00250
Chlorodibromomethane	U		0.000612	0.00250
Chloroethane	U		0.00170	0.00500
Chloroform	U		0.00103	0.00250
Chloromethane	U		0.00435	0.0125
2-Chlorotoluene	U		0.000865	0.00250
4-Chlorotoluene	U		0.000450	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00390	0.0250
1,2-Dibromoethane	U		0.000648	0.00250
Dibromomethane	U		0.000750	0.00500
1,2-Dichlorobenzene	U		0.000425	0.00500
1,3-Dichlorobenzene	U		0.000600	0.00500
1,4-Dichlorobenzene	U		0.000700	0.00500
Dichlorodifluoromethane	U		0.00161	0.00250
1,1-Dichloroethane	U		0.000491	0.00250
1,2-Dichloroethane	U		0.000649	0.00250
1,1-Dichloroethene	U		0.000606	0.00250
cis-1,2-Dichloroethene	U		0.000734	0.00250
trans-1,2-Dichloroethene	U		0.00104	0.00500
1,2-Dichloropropane	U		0.00142	0.00500
1,1-Dichloropropene	U		0.000809	0.00250
1,3-Dichloropropane	U		0.000501	0.00500
cis-1,3-Dichloropropene	U		0.000757	0.00250
trans-1,3-Dichloropropene	U		0.00114	0.00500
2,2-Dichloropropane	U		0.00138	0.00250
Di-isopropyl ether	U		0.000410	0.00100
Ethylbenzene	U		0.000737	0.00250
Hexachloro-1,3-butadiene	U		0.00600	0.0250
Isopropylbenzene	U		0.000425	0.00250

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3988309-2 10/19/23 08:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.00255	0.00500
2-Butanone (MEK)	U		0.0635	0.100
Methylene Chloride	U		0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.00228	0.0250
Methyl tert-butyl ether	U		0.000350	0.00100
Naphthalene	U		0.00488	0.0125
n-Propylbenzene	U		0.000950	0.00500
Styrene	U		0.000229	0.0125
1,1,1,2-Tetrachloroethane	U		0.000948	0.00250
1,1,2,2-Tetrachloroethane	U		0.000695	0.00250
1,1,2-Trichlorotrifluoroethane	U		0.000754	0.00250
Tetrachloroethene	U		0.000896	0.00250
Toluene	U		0.00130	0.00500
1,2,3-Trichlorobenzene	U		0.00733	0.0125
1,2,4-Trichlorobenzene	U		0.00440	0.0125
1,1,1-Trichloroethane	U		0.000923	0.00250
1,1,2-Trichloroethane	U		0.000597	0.00250
Trichloroethene	U		0.000584	0.00100
Trichlorofluoromethane	U		0.000827	0.00250
1,2,3-Trichloropropane	U		0.00162	0.0125
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,2,3-Trimethylbenzene	U		0.00158	0.00500
Vinyl chloride	U		0.00116	0.00250
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	101			75.0-131
(S) 4-Bromofluorobenzene	94.9			67.0-138
(S) 1,2-Dichloroethane-d4	86.4			70.0-130

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3988309-1 10/19/23 07:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.625	0.601	96.2	10.0-160	
Acrylonitrile	0.625	0.552	88.3	45.0-153	
Benzene	0.125	0.143	114	70.0-123	
Bromobenzene	0.125	0.140	112	73.0-121	
Bromodichloromethane	0.125	0.128	102	73.0-121	



Laboratory Control Sample (LCS)

(LCS) R3988309-1 10/19/23 07:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromoform	0.125	0.133	106	64.0-132	
Bromomethane	0.125	0.173	138	56.0-147	
n-Butylbenzene	0.125	0.114	91.2	68.0-135	
sec-Butylbenzene	0.125	0.112	89.6	74.0-130	
tert-Butylbenzene	0.125	0.109	87.2	75.0-127	
Carbon tetrachloride	0.125	0.167	134	66.0-128	J4
Chlorobenzene	0.125	0.126	101	76.0-128	
Chlorodibromomethane	0.125	0.136	109	74.0-127	
Chloroethane	0.125	0.165	132	61.0-134	
Chloroform	0.125	0.146	117	72.0-123	
Chloromethane	0.125	0.114	91.2	51.0-138	
2-Chlorotoluene	0.125	0.129	103	75.0-124	
4-Chlorotoluene	0.125	0.122	97.6	75.0-124	
1,2-Dibromo-3-Chloropropane	0.125	0.117	93.6	59.0-130	
1,2-Dibromoethane	0.125	0.132	106	74.0-128	
Dibromomethane	0.125	0.130	104	75.0-122	
1,2-Dichlorobenzene	0.125	0.126	101	76.0-124	
1,3-Dichlorobenzene	0.125	0.130	104	76.0-125	
1,4-Dichlorobenzene	0.125	0.133	106	77.0-121	
Dichlorodifluoromethane	0.125	0.123	98.4	43.0-156	
1,1-Dichloroethane	0.125	0.132	106	70.0-127	
1,2-Dichloroethane	0.125	0.130	104	65.0-131	
1,1-Dichloroethene	0.125	0.127	102	65.0-131	
cis-1,2-Dichloroethene	0.125	0.145	116	73.0-125	
trans-1,2-Dichloroethene	0.125	0.148	118	71.0-125	
1,2-Dichloropropane	0.125	0.109	87.2	74.0-125	
1,1-Dichloropropene	0.125	0.150	120	73.0-125	
1,3-Dichloropropane	0.125	0.131	105	80.0-125	
cis-1,3-Dichloropropene	0.125	0.118	94.4	76.0-127	
trans-1,3-Dichloropropene	0.125	0.135	108	73.0-127	
2,2-Dichloropropane	0.125	0.124	99.2	59.0-135	
Di-isopropyl ether	0.125	0.110	88.0	60.0-136	
Ethylbenzene	0.125	0.130	104	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.118	94.4	57.0-150	
Isopropylbenzene	0.125	0.107	85.6	72.0-127	
p-Isopropyltoluene	0.125	0.111	88.8	72.0-133	
2-Butanone (MEK)	0.625	0.711	114	30.0-160	
Methylene Chloride	0.125	0.140	112	68.0-123	
4-Methyl-2-pentanone (MIBK)	0.625	0.520	83.2	56.0-143	
Methyl tert-butyl ether	0.125	0.135	108	66.0-132	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3988309-1 10/19/23 07:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Naphthalene	0.125	0.112	89.6	59.0-130	
n-Propylbenzene	0.125	0.118	94.4	74.0-126	
Styrene	0.125	0.113	90.4	72.0-127	
1,1,1,2-Tetrachloroethane	0.125	0.129	103	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.0986	78.9	68.0-128	
1,1,2-Trichlorotrifluoroethane	0.125	0.135	108	61.0-139	
Tetrachloroethene	0.125	0.148	118	70.0-136	
Toluene	0.125	0.117	93.6	75.0-121	
1,2,3-Trichlorobenzene	0.125	0.126	101	59.0-139	
1,2,4-Trichlorobenzene	0.125	0.116	92.8	62.0-137	
1,1,1-Trichloroethane	0.125	0.155	124	69.0-126	
1,1,2-Trichloroethane	0.125	0.130	104	78.0-123	
Trichloroethene	0.125	0.165	132	76.0-126	J4
Trichlorofluoromethane	0.125	0.169	135	61.0-142	
1,2,3-Trichloropropane	0.125	0.128	102	67.0-129	
1,2,4-Trimethylbenzene	0.125	0.109	87.2	70.0-126	
1,2,3-Trimethylbenzene	0.125	0.111	88.8	74.0-124	
Vinyl chloride	0.125	0.122	97.6	63.0-134	
1,3,5-Trimethylbenzene	0.125	0.110	88.0	73.0-127	
Xylenes, Total	0.375	0.395	105	72.0-127	
(S) Toluene-d8			89.3	75.0-131	
(S) 4-Bromofluorobenzene			81.2	67.0-138	
(S) 1,2-Dichloroethane-d4			113	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1666830-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1666830-21 10/19/23 12:32 • (MS) R3988309-3 10/19/23 18:20 • (MSD) R3988309-4 10/19/23 18:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acetone	0.525	U	0.195	0.162	37.1	30.9	1	10.0-160			18.5	40
Acrylonitrile	0.525	U	0.472	0.359	89.9	68.4	1	10.0-160			27.2	40
Benzene	0.105	U	0.0546	0.113	52.0	108	1	10.0-149		J3	69.7	37
Bromobenzene	0.105	U	0.0801	0.126	76.3	120	1	10.0-156		J3	44.5	38
Bromodichloromethane	0.105	U	0.0713	0.102	67.9	97.1	1	10.0-143			35.4	37
Bromoform	0.105	U	0.0968	0.116	92.2	110	1	10.0-146			18.0	36
Bromomethane	0.105	U	0.0465	0.0793	44.3	75.5	1	10.0-149		J3	52.1	38
n-Butylbenzene	0.105	U	0.0474	0.109	45.1	104	1	10.0-160		J3	78.8	40
sec-Butylbenzene	0.105	U	0.0471	0.109	44.9	104	1	10.0-159		J3	79.3	39
tert-Butylbenzene	0.105	U	0.0493	0.116	47.0	110	1	10.0-156		J3	80.7	39

L1666830-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1666830-21 10/19/23 12:32 • (MS) R3988309-3 10/19/23 18:20 • (MSD) R3988309-4 10/19/23 18:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon tetrachloride	0.105	U	0.0447	0.119	42.6	113	1	10.0-145		100	90.8	37
Chlorobenzene	0.105	U	0.0663	0.119	63.1	113	1	10.0-152		100	56.9	39
Chlorodibromomethane	0.105	U	0.0905	0.127	86.2	121	1	10.0-146		100	33.6	37
Chloroethane	0.105	U	0.0412	0.0805	39.2	76.7	1	10.0-146		100	64.6	40
Chloroform	0.105	U	0.0580	0.106	55.2	101	1	10.0-146		100	58.5	37
Chloromethane	0.105	U	0.0346	0.0472	33.0	45.0	1	10.0-159		100	30.8	37
2-Chlorotoluene	0.105	U	0.0577	0.115	55.0	110	1	10.0-159		100	66.4	38
4-Chlorotoluene	0.105	U	0.0588	0.110	56.0	105	1	10.0-155		100	60.7	39
1,2-Dibromo-3-Chloropropane	0.105	U	0.0940	0.0847	89.5	80.7	1	10.0-151		100	10.4	39
1,2-Dibromoethane	0.105	U	0.0949	0.120	90.4	114	1	10.0-148		100	23.4	34
Dibromomethane	0.105	U	0.0921	0.108	87.7	103	1	10.0-147		100	15.9	35
1,2-Dichlorobenzene	0.105	U	0.0768	0.112	73.1	107	1	10.0-155		100	37.3	37
1,3-Dichlorobenzene	0.105	U	0.0727	0.117	69.2	111	1	10.0-153		100	46.7	38
1,4-Dichlorobenzene	0.105	U	0.0759	0.109	72.3	104	1	10.0-151		100	35.8	38
Dichlorodifluoromethane	0.105	U	0.0368	0.101	35.0	96.2	1	10.0-160		100	93.2	35
1,1-Dichloroethane	0.105	U	0.0555	0.0813	52.9	77.4	1	10.0-147		100	37.7	37
1,2-Dichloroethane	0.105	U	0.0662	0.0981	63.0	93.4	1	10.0-148		100	38.8	35
1,1-Dichloroethene	0.105	U	0.0446	0.0996	42.5	94.9	1	10.0-155		100	76.3	37
cis-1,2-Dichloroethene	0.105	U	0.0549	0.100	52.3	95.2	1	10.0-149		100	58.2	37
trans-1,2-Dichloroethene	0.105	U	0.0549	0.103	52.3	98.1	1	10.0-150		100	60.9	37
1,2-Dichloropropane	0.105	U	0.0595	0.0913	56.7	87.0	1	10.0-148		100	42.2	37
1,1-Dichloropropene	0.105	U	0.0440	0.130	41.9	124	1	10.0-153		100	98.9	35
1,3-Dichloropropane	0.105	U	0.0963	0.129	91.7	123	1	10.0-154		100	29.0	35
cis-1,3-Dichloropropene	0.105	U	0.0830	0.111	79.0	106	1	10.0-151		100	28.9	37
trans-1,3-Dichloropropene	0.105	U	0.0962	0.142	91.6	135	1	10.0-148		100	38.5	37
2,2-Dichloropropane	0.105	U	0.0439	0.0984	41.8	93.7	1	10.0-138		100	76.6	36
Di-isopropyl ether	0.105	U	0.0668	0.0737	63.6	70.2	1	10.0-147		100	9.82	36
Ethylbenzene	0.105	U	0.0527	0.119	50.2	113	1	10.0-160		100	77.2	38
Hexachloro-1,3-butadiene	0.105	U	0.0537	0.119	51.1	113	1	10.0-160		100	75.6	40
Isopropylbenzene	0.105	U	0.0491	0.113	46.8	108	1	10.0-155		100	78.8	38
p-Isopropyltoluene	0.105	U	0.0494	0.106	47.0	101	1	10.0-160		100	72.8	40
2-Butanone (MEK)	0.525	U	0.636	0.397	121	75.6	1	10.0-160		100	46.3	40
Methylene Chloride	0.105	U	0.0727	0.0932	69.2	88.8	1	10.0-141		100	24.7	37
4-Methyl-2-pentanone (MIBK)	0.525	U	0.398	0.462	75.8	88.0	1	10.0-160		100	14.9	35
Methyl tert-butyl ether	0.105	U	0.0897	0.0889	85.4	84.7	1	11.0-147		100	0.896	35
Naphthalene	0.105	U	0.0780	0.0958	74.3	91.2	1	10.0-160		100	20.5	36
n-Propylbenzene	0.105	U	0.0508	0.112	48.4	107	1	10.0-158		100	75.2	38
Styrene	0.105	U	0.0597	0.108	56.9	103	1	10.0-160		100	57.6	40
1,1,1,2-Tetrachloroethane	0.105	U	0.0699	0.115	66.6	110	1	10.0-149		100	48.8	39
1,1,2,2-Tetrachloroethane	0.105	U	0.0867	0.0999	82.6	95.1	1	10.0-160		100	14.1	35

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1666830-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1666830-21 10/19/23 12:32 • (MS) R3988309-3 10/19/23 18:20 • (MSD) R3988309-4 10/19/23 18:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,1,2-Trichlorotrifluoroethane	0.105	U	0.0476	0.114	45.3	109	1	10.0-160		UB	82.2	36
Tetrachloroethene	0.105	U	0.0538	0.144	51.2	137	1	10.0-156		UB	91.2	39
Toluene	0.105	U	0.0571	0.120	54.4	114	1	10.0-156		UB	71.0	38
1,2,3-Trichlorobenzene	0.105	U	0.0748	0.104	71.2	99.0	1	10.0-160			32.7	40
1,2,4-Trichlorobenzene	0.105	U	0.0784	0.114	74.7	109	1	10.0-160			37.0	40
1,1,1-Trichloroethane	0.105	U	0.0467	0.122	44.5	116	1	10.0-144		UB	89.3	35
1,1,2-Trichloroethane	0.105	U	0.0958	0.126	91.2	120	1	10.0-160			27.2	35
Trichloroethene	0.105	0.00550	0.0658	0.137	57.4	125	1	10.0-156		UB	70.2	38
Trichlorofluoromethane	0.105	U	0.0333	0.0867	31.7	82.6	1	10.0-160		UB	89.0	40
1,2,3-Trichloropropane	0.105	U	0.0979	0.110	93.2	105	1	10.0-156			11.6	35
1,2,4-Trimethylbenzene	0.105	U	0.0516	0.104	49.1	99.0	1	10.0-160		UB	67.4	36
1,2,3-Trimethylbenzene	0.105	U	0.0593	0.102	56.5	97.1	1	10.0-160		UB	52.9	36
Vinyl chloride	0.105	U	0.0339	0.0777	32.3	74.0	1	10.0-160		UB	78.5	37
1,3,5-Trimethylbenzene	0.105	U	0.0482	0.107	45.9	102	1	10.0-160		UB	75.8	38
Xylenes, Total	0.315	U	0.172	0.349	54.6	111	1	10.0-160		UB	67.9	38
(S) Toluene-d8					102	103		75.0-131				
(S) 4-Bromofluorobenzene					94.8	93.9		67.0-138				
(S) 1,2-Dichloroethane-d4					93.2	96.8		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3989034-1 10/20/23 10:59

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
AK102 DRO C10-C25	U		52.1	150
<i>(S) o-Terphenyl</i>	62.5			60.0-120

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

(LCS) R3989034-2 10/20/23 11:13 • (LCSD) R3989034-3 10/20/23 11:27

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
AK102 DRO C10-C25	200	175	181	87.5	90.5	75.0-125			3.37	20
<i>(S) o-Terphenyl</i>				80.9	82.8	60.0-120				

L1664714-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1664714-14 10/20/23 12:30 • (MS) R3989076-1 10/20/23 12:43 • (MSD) R3989076-2 10/20/23 12:56

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
AK102 DRO C10-C25	195	U	188	208	96.3	104	1	75.0-125			10.4	20
<i>(S) o-Terphenyl</i>					87.8	96.2		50.0-150				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3989042-2 10/19/23 03:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	83.0			14.0-149
(S) 2-Fluorobiphenyl	76.3			34.0-125
(S) p-Terphenyl-d14	88.4			23.0-120

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3989042-1 10/19/23 03:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0643	80.4	50.0-126	
Acenaphthene	0.0800	0.0660	82.5	50.0-120	
Acenaphthylene	0.0800	0.0666	83.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0701	87.6	45.0-120	
Benzo(a)pyrene	0.0800	0.0732	91.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0669	83.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0734	91.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0668	83.5	49.0-125	
Chrysene	0.0800	0.0706	88.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0808	101	47.0-125	
Fluoranthene	0.0800	0.0708	88.5	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3989042-1 10/19/23 03:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0708	88.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0794	99.3	46.0-125	
Naphthalene	0.0800	0.0607	75.9	50.0-120	
Phenanthrene	0.0800	0.0635	79.4	47.0-120	
Pyrene	0.0800	0.0666	83.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0668	83.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0668	83.5	50.0-120	
2-Chloronaphthalene	0.0800	0.0613	76.6	50.0-120	
<i>(S) Nitrobenzene-d5</i>			85.4	14.0-149	
<i>(S) 2-Fluorobiphenyl</i>			86.6	34.0-125	
<i>(S) p-Terphenyl-d14</i>			85.6	23.0-120	

L1665775-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1665775-04 10/19/23 07:11 • (MS) R3989042-3 10/19/23 07:28 • (MSD) R3989042-4 10/19/23 07:45

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0852	U	0.0536	0.0610	62.9	71.6	1	10.0-145			13.0	30
Acenaphthene	0.0852	U	0.0529	0.0598	62.1	70.1	1	14.0-127			12.1	27
Acenaphthylene	0.0852	U	0.0581	0.0647	68.1	75.9	1	21.0-124			10.8	25
Benzo(a)anthracene	0.0852	U	0.0563	0.0645	66.0	75.6	1	10.0-139			13.6	30
Benzo(a)pyrene	0.0852	U	0.0563	0.0672	66.0	78.9	1	10.0-141			17.8	31
Benzo(b)fluoranthene	0.0852	U	0.0490	0.0584	57.5	68.5	1	10.0-140			17.5	36
Benzo(g,h,i)perylene	0.0852	U	0.0449	0.0533	52.6	62.5	1	10.0-140			17.2	33
Benzo(k)fluoranthene	0.0852	U	0.0469	0.0566	55.0	66.4	1	10.0-137			18.7	31
Chrysene	0.0852	U	0.0539	0.0641	63.3	75.3	1	10.0-145			17.3	30
Dibenz(a,h)anthracene	0.0852	U	0.0507	0.0599	59.5	70.3	1	10.0-132			16.6	31
Fluoranthene	0.0852	U	0.0590	0.0682	69.3	80.0	1	10.0-153			14.4	33
Fluorene	0.0852	U	0.0542	0.0642	63.6	75.4	1	11.0-130			16.9	29
Indeno(1,2,3-cd)pyrene	0.0852	U	0.0521	0.0614	61.1	72.0	1	10.0-137			16.3	32
Naphthalene	0.0852	U	0.0525	0.0575	61.6	67.5	1	10.0-135			9.10	27
Phenanthrene	0.0852	0.00294	0.0523	0.0602	57.9	67.2	1	10.0-144			14.0	31
Pyrene	0.0852	U	0.0566	0.0650	66.4	76.3	1	10.0-148			13.8	35
1-Methylnaphthalene	0.0852	U	0.0551	0.0633	64.6	74.3	1	10.0-142			13.9	28
2-Methylnaphthalene	0.0852	U	0.0553	0.0633	64.9	74.3	1	10.0-137			13.5	28
2-Chloronaphthalene	0.0852	U	0.0500	0.0540	58.6	63.4	1	29.0-120			7.79	24
<i>(S) Nitrobenzene-d5</i>					73.4	73.4		14.0-149				
<i>(S) 2-Fluorobiphenyl</i>					62.0	66.7		34.0-125				
<i>(S) p-Terphenyl-d14</i>					65.5	71.8		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

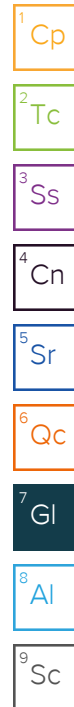
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

### Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.





# ACCREDITATIONS & LOCATIONS

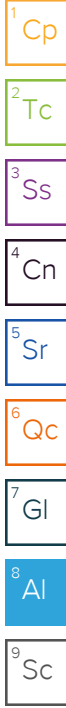
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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  
 Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_  
  
 PEOPLE ADVANCING SCIENCE  
**MT JULIET, TN**  
 12065 Lebanon Rd Mount Juliet, TN 37122  
 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

Report to:  
**Ms. Leslie Petre**

Email To: [craig.cothron@pacelabs.com](mailto:craig.cothron@pacelabs.com)

Project Description:  
**Speedway 5315 - Fairbanks, AK**

City/State Collected: **Fairbanks, AK**

Please Circle:  
 PT MT CT ET

Phone: **907-266-1108**  
**343-5108**

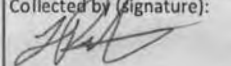
Client Project #

Lab Project #  
**STAAAKSSA-5315**

Collected by (print):  
**Leslie Petre**

Site/Facility ID #  
**Speedway 5315 / TNS 111**

P.O. #

Collected by (signature):  


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

Quote #

Immediately Packed on Ice N \_\_\_ Y \_\_\_

Date Results Needed

No. of Cntrs

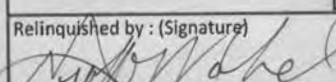
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	AK101 60mlAmb/MeOH/Syr	AK102,SV8270PAHSIMD 4ozClr-NoPres	PBG 2ozClr-NoPres	TS 4ozClr-NoPres	V8260BTEXMED 40mlAmb/MeOH10ml/Syr
IW2023C	G	SS		10/10/23	11:38a	5	X	X	X	X	X
		SS				5	X	X	X	X	X
		SS				5	X	X	X	X	X
		SS				5	X	X	X	X	X
		SS				5	X	X	X	X	X

SDG # **1665853**  
**H026**  
 Acctnum: **STAAAKSSA**  
 Template: **T239129**  
 Prelogin: **P1028756**  
 PM: **034 - Craig Cothron**  
 PB: **10/3/23 TJS**  
 Shipped Via: **FedEX 2nd Day**  
 Remarks Sample # (lab only)

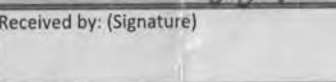
\* Matrix:  
 SS - Soil AIR - Air F - Filter  
 GW - Groundwater B - Bioassay  
 WW - WasteWater  
 DW - Drinking Water  
 OT - Other

Remarks:  
 pH \_\_\_\_\_ Temp \_\_\_\_\_  
 Flow \_\_\_\_\_ Other \_\_\_\_\_  
 Samples returned via:  
 UPS \_\_\_ FedEx \_\_\_ Courier \_\_\_\_\_  
 Tracking # **6643 4307 7753**

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

Relinquished by: (Signature)  


Date: **10/11/23**  
 Time: **10:45a**

Received by: (Signature)  


Trip Blank Received:  Yes  No  
 HCl / MeOH TBR  
**160ml**

Relinquished by: (Signature)

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Received by: (Signature)

Temp: **14.8°C**  
 Bottles Received: **5**  
**4.0+0=4.0**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Received for lab by: (Signature)  
**Eli Davis 17**

Date: **10-12-23**  
 Time: **900**

Hold: \_\_\_\_\_  
 Condition: **NCF 10**

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Sydney Souza	<b>CS Site Name:</b>	Tesoro North Store 111	<b>Lab Name:</b>	Pace Analytical
<b>Title:</b>	Environmental Scientist	<b>ADEC File No.:</b>	100.26.026	<b>Lab Report No.:</b>	L1665853
<b>Consulting Firm:</b>	Stantec Consulting Services Inc.	<b>Hazard ID No.:</b>	24247	<b>Lab Report Date:</b>	October 23, 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): 4.0° C

Comments: Click or tap here to enter text.

**CS Site Name:** Tesoro North Store 111

**Lab Report No.:** L1665853

- 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:

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: Click or tap here to enter text.

#### **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: The tests were done as requested.

- b. Are all applicable holding times met?

Yes  No  N/A

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Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: 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: Click or tap here to enter text.

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

Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Data flags are clearly defined

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Click or tap here to enter text.

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

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

Yes  No  N/A

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Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Comments:

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

Yes  No  N/A

Comments: Click or tap here to enter text.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: Click or tap here to enter text.

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

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - v. If %R or RPD is outside of acceptable limits, what samples are affected?  
Comments: Click or tap here to enter text.
  - vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - vii. Is the data quality or usability affected?  
Yes  No  N/A   
Comments: Click or tap here to enter text.
- d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only
- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?  
Yes  No  N/A   
Comments: Click or tap here to enter text.
  - iv. Is the data quality or usability affected?  
Yes  No  N/A

Comments: Click or tap here to enter text.

e. Trip Blanks

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

Comments: No trip blanks documented on the CoC or in the lab report

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

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Comments: None.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: No affected samples.

f. Field Duplicate

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

Yes  No  N/A

Comments: No field duplicates sent to the lab

- ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments: Click or tap here to enter text.

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

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

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: Click or tap here to enter text.

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

Yes  No  N/A

Comments: Click or tap here to enter text.



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g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: Used disposable equipment

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: Used disposable equipment

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

Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: Click or tap here to enter text.

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

a. Are they defined and appropriate?

Yes  No  N/A

Comments: Click or tap here to enter text.

November 10, 2023

Paula Sime, PG Manager, Environmental Services

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**Reference:** Decommission Air Sparge Wells and Installation of Chemox Injection Wells at former Tesoro North Store  
(TNS) #111 (Speedway #5315)

## **Attachment 4      ADEC Approval to Transport and Treatment Contaminated Media**



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Sites and Prevention Preparedness and Response Programs**

**Contaminated Media Transport and Treatment or Disposal Approval Form**

<b>HAZARD ID # or SPILL ID #</b>		<b>NAME OF CONTAMINATED SITE OR SPILL</b>	
DEC Hazard ID 242		y Store 5315 (7/Eleven Store 46746 - former Tesoro 2Go	
<b>CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION</b>			
3679 College Road, Fairbanks, AK			
<b>CURRENT PHYSICAL LOCATION OF MEDIA</b>		<b>SOURCE OF THE CONTAMINATION (DAY TANK, FIRE TRAINING PIT, LUST, ETC.)</b>	
3679 College Road, Fairbanks, AK		soil boring drill cuttings	
<b>CONTAMINANTS OF CONCERN</b>		<b>ESTIMATED VOLUME</b>	<b>DATE(S) GENERATED</b>
DRO		50 gallons	09/18/2023
<b>POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)</b>			
DRO			
<b>COMMENTS OR OTHER IMPORTANT INFORMATION</b>			
Soil contained on site in 1-55 gallon steel drum that is clearly labeled.			

<b>TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA</b>	<b>PHYSICAL ADDRESS/PHONE NUMBER</b>
Ecology (Republic) Moose Cr,	22 Give Away St, Moose Creek, AK 907.258.15
<b>RESPONSIBLE PARTY</b>	<b>ADDRESS/PHONE NUMBER</b>
7/eleven (Speedway Express)	Sime 7/11, PO Box 1026, Temecula, CA 99510
<b>WASTE MANAGEMENT CO. / ORGANIZER</b>	<b>ADDRESS/PHONE NUMBER</b>
Stantec Consulting Service, Inc)	, 724 E Fireweed Lane, Anchorage, AK (907) 2

\*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

**Robert (Bob) Gilfilian, PE**  
 Name of the Person Requesting Approval (printed)  
**Gilfilian, Bob** Digitally signed by Gilfilian, Bob  
 Date: 2023.10.27 14:28:49 -04'00'  
 Signature

**Principal Engineer, Stantec**  
 Title/Association  
**Oct 27, 2023** **907-227-9883**  
 Date Phone Number

**-----DEC USE ONLY-----**

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

**Peter Campbell**  
 DEC Project Manager Name (printed)  
**Peter Campbell** Digitally signed by Peter Campbell  
 Date: 2023.10.27 15:04:30 -08'00'  
 Signature

**EPS III**  
 Project Manager Title  
**9072623412**  
 Date Phone Number

## **Instructions to Complete**

### ***Contaminated Media Transport and Treatment or Disposal Approval Form***

The Alaska Department of Environmental Conservation (DEC) must approve the movement or disposal of contaminated soil and water from a site in accordance with 18 Alaska Administrative Code (AAC) 75.325(i), 18 AAC 75.370(b), and 18 AAC 78.274(b). The *Contaminated Media Transport and Treatment or Disposal Approval Form* should be used to document this approval. Soil treatment facilities regulated under 18 AAC 75.365 are required by their Operations Plans to only accept contaminated soil for which an approval form has been signed by a DEC project manager.

Site information can be found on the Contaminated Site Database ([www.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search/](http://www.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search/)) or the Spills Database (<http://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch>).

#### **Instructions to Complete:**

1. **Hazard ID or Spill ID #:** For a contaminated site, the Hazard ID can be found on the Contaminated Sites Database. For a spill, the Spill ID can be found in the subject line of letters from DEC or the Spills Database. If the waste originates from multiple sites, all Hazard IDs or Spill IDs must be listed.
2. **Name of Contaminated Site or Spill:** For a contaminated site, the official site name can be found on the Contaminated Sites Database. For a spill, the official name of the spill is found in the subject line of letters from DEC or the Spills Database.
3. **Contaminated Site or Spill Location – Address or Other Appropriate Description:** This address or description captures the origin of the contaminated media or the location of the spill. For a contaminated site, the address or other appropriate description can be found on the Contaminated Sites Database. For a spill, this can be found on the Spill Report or the Spills Database.
4. **Current Physical Location of the Media:** Provide the physical location where the contaminated media (soil, water, etc.) is currently stored. This location may be the same as location provided in the “Contaminated Site or Spill Location”, or it could be a hazardous waste facility or other location/staging area agreed upon in the DEC-approved work plan.
5. **Source of Contamination (Day Tank, Fire Training Pit, LUST, etc.):** List all sources which contributed to the contamination in the media being transported. Sources can include previous releases that have comeled. If the source is unknown, state “Unknown”.
6. **Contaminants of Concern (CoCs):** List all contaminants detected above the most stringent Method 2 Tables B1 and B2 soil cleanup levels in 18 AAC 75.341(c) and (d), the Table C groundwater cleanup levels in 18 AAC 75.345, and other applicable action levels (e.g., TCLP results). Attach the laboratory data package for the contaminated media that is being disposed of and, if applicable, a data summary table or narrative to this form. Data gathered during site characterization activities may be sufficient to determine the CoCs. There are situations in which generator knowledge of the contaminant source may be accepted by a treatment or disposal facility in lieu of analytical sample results, such as, diesel-impacted media from a heating oil tank. If you are using generator knowledge in lieu of analytical sample results, include a statement which documents this knowledge in the Comments section.

7. **Estimated Volume:** Include the total volume of contaminated media to be transported; for instance, “Nine 55-gallon drums” or “25 cubic yards of soil.”
8. **Date(s) Generated:** Provide the date the media was generated (e.g., excavated, pumped out of the ground, etc.). If the media was generated over multiple days, list the range of dates.
9. **Post Treatment Analysis Required (such as GRO, DRO, RRO, VOCs, PAHs, metals, PFAS, chlorinated solvents, etc.):** Provide the list of all contaminants that exceed the most stringent Method 2 cleanup levels. For DEC-approved soil treatment facilities in Alaska, specific post treatment analyses will be determined by the facility based upon the contaminants and requirements of their Operations Plan. If the media are being transported to a landfill or permitted liquid waste facility without off-site treatment, include “Not Applicable”.
10. **Comments or Other Important Information:** Provide any other information which needs to be conveyed.
  - a. If generator knowledge of the CoCs is being used in lieu of sample analytical results, an explanation needs to be provided in this field.
  - b. If the material is going to be placed in a landfill in Alaska, include a statement that the landfill has agreed to accept the material and provide the contact information for the landfill point of contact. If the material is going to be placed in a Class 2 or 3 landfill, attach the DEC Solid Waste Program’s approval letter to this form.
  - c. If the media is going to an intermediate location or facility prior to its final destination, describe the complete transportation route with intermediate locations in this field.
11. **Treatment Facility, Landfill, and/or Final Destination of Media:** Include the name of the facility, landfill, or the final destination of the media. A list of DEC-approved Alaskan soil treatment facilities is available at [www.dec.alaska.gov/spar/csp/offsite-remediation/](http://www.dec.alaska.gov/spar/csp/offsite-remediation/). If multiple treatment facilities will be used, use separate forms to document what media will go to which facility. For material that will go to a waste transfer facility prior to disposal at another facility, the final destination should be listed.
  - a. **Physical Address/Phone Number:** Provide the physical location and telephone number of the facility, landfill, or the final destination of the media.
12. **Responsible Party:** Provide the name of the party responsible for the contaminated site or spill.
  - a. **Address/Phone Number:** Provide the mailing address and telephone number of the responsible party.
13. **Waste Management Co./Organizer:** Provide the name of company or person shipping and/or organizing the shipment of the media.
  - a. **Address/Phone Number:** Provide the mailing address and telephone number of the waste management company or organizer.

Submit this completed form along with all necessary attachments to the assigned DEC project manager for approval, or contact the Contaminated Sites Program at (907) 269-7558 or the Prevention, Preparedness and Response Program at (907) 269-7557.