

Spill Volume(Bbls) Calculator		
<i>Inputs in blue, Outputs in red</i>		
Length(Ft)	Width(Ft)	Depth(In)
<u>100.000</u>	<u>50.000</u>	<u>2.750</u>
Cubic Feet Impacted		<u>1145.833</u>
Barrels		<u>204.07</u>
Soil Type		Clay
Bbls Assuming 100% Saturation		<u>20.41</u>
Saturation	Fluid present with shovel/backhoe	
Estimated Barrels Released		20.50000

Instructions
1. Input spill measurements below. Length and width need to be input in feet and depth in inches.
2. Select a soil type from the drop down menu.
3. Select a saturation level from the drop down menu.
(For data gathering instructions see appendix tab)

Measurements	
Length (ft)	100
Width (ft)	50
Depth (in)	2.750









Attn: New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: **Amended Closure Report**
Osage Boyd Yeso
Unit E, Section 15, Township 19 South, Range 25 East
32.66276°, -104.47901°
Eddy County, New Mexico
Terracon Project No. KH227019

To Whom it May Concern:

Terracon Consultants, Inc. (Terracon) is pleased to submit our Release Investigation and Closure Report for the site referenced above. The scope of services was developed in accordance with the New Mexico Oil Conservation Division (NMOCD) regulations concerning clean-up actions required for releases of crude oil and produced water. The response actions were taken as the result of a crude oil and produced water release from a corrosion of a circulating line. The below sections detail Terracon's assessment and remedial actions in response to the noted release.

Action Items

NMOCD Identified Deficiencies

- 1) Samples did not meet Table I Closure requirements for GRO+DRO (1,000 mg/kg)
- 2) Western Horizontal of the release was insufficient.
- 3) Photographic log show impacts outside of berm.
- 4) Samples listed in table 1 are not listed on maps

Terracon Corrections

- 1) Areas that previously exhibited elevated TPH concentrations, were resampled and subsequent analytical results were below Table I Closure criteria.
- 2) Additional delineation samples were collected to verify the western extent of the inferred release area.
- 3) The area that was seen in photo 1 was utilized as our access point to perform the remediation within the bermed area. Following the conclusion of our remediation activities that area was scrapped and sampled to identify if any elevated constituents of concern were present. The results from the N-Entrance sample were below NMOCD RALs.
- 4) All samples that are listed in Table 1 have been properly identified on the attached sampling maps.

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019



Anticipated Actions

1) Approval by the NMOCD.

We at Terracon are deeply grateful for the opportunity to offer our environmental services to Spur Energy Partners, LLC. We are committed to providing the highest level of service and support. Should you need further information or have any queries, we encourage you to reach out to our office at your earliest convenience.

Sincerely,



Travis Casey

Senior Staff Scientist

Carlsbad

John Grams, P.G. (TX)

Environmental Department Manager

Lubbock

TABLE OF CONTENTS

Table of Contents

Section 1 – Incident Information 1

Section 2 – General Site Characteristics 2

Section 3 – Regulatory Framework and Response Action Levels..... 2

Section 4 – Remediation Activities 4

Section 5 – Remediation Confirmation Assessment 4

Section 6 – Confirmation Assessment Data Evaluation 4

Section 7 – Closure Report 5

Attachments:

Appendix A – Exhibits

- Exhibit 1 – Topographic Map
- Exhibit 2 – Site Location Map
- Exhibit 3 – USGS Groundwater Location Map
- Exhibit 4 – Designated Wetland Area Map
- Exhibit 5 – Cave Karst Public UCP Map
- Exhibit 6.1 – Confirmation Map (Floor Samples)
- Exhibit 6.2 – Confirmation Map (Wall Samples)

Appendix B – Tables and Well Data

- Table 1 – Soil Sample Analytical Results – Release Assessment
- Table 2 – Soil Sample Analytical Results – Confirmation Floors
- Table 3 – Soil Sample Analytical Results – Confirmation Walls
- Table 1 Closure Criteria for Soils Impacted by a release

Appendix C – Photographic Log

Appendix D – Analytical Report and Chain of Custody

Appendix E – Terracon Standard of Care, Limitation, and Reliance

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019

**Section 1 – Incident Information**

The following table provides detailed information regarding the January 22, 2021 and November 02, 2022, crude oil and produced water release at the Osage Boyd Yeso site in Eddy County, New Mexico:

Required Information	Site and Release information	
Responsible party	The pipeline is operated by Spur Energy Partners, LLC.	
Local contact	Contact: Ms. Katherine Purvis	P: (575)441-8619 E: katherine.purvis@spurenergy.com
NMOCD Notification	Notice of the release was provided to the NMOCD District 2 Artesia Office by Ms. Katherine Purvis on January 22, 2021, and November 02, 2022. NMOCD Reference ID: nAPP2230731453 & nAPP2102253370	
Facility Description	Osage Boyd Yeso is in Eddy County, New Mexico. It is an area located within Unit E, Section 15, Township 19 South, Range 25 East, approximately 4.62 miles southwest of Atoka, New Mexico. The site is developed as an oil and gas production pad surrounded by native pastureland owned by a private individual.	
Time of incident	January 22, 2021, discovered during daily operations. November 02, 2022, discovered during daily operations.	
Discharge event	A circulating line corroded leading to a discharge of crude oil onto the unlined pad. The site is depicted in Appendix A's Exhibits 1 and 2.	
Type of discharge	The documented crude oil and produced water release occurred on a privately owned pad. Soils at the site are affected at the surface and within the containment.	
Quantity of spilled material	Total Fluids: 187 bbls	Produced Water: 21 bbls Crude Oil: 166 bbls
Remediated Excavation Area	Excavation Area: 6,000 sq. ft. / 1,000 cu. yds	Depth 0 – 6 ft. bgs
Site characteristics	Relatively flat with drainage following the natural ground surface.	
Immediate corrective actions	The leaking line was repaired preventing further release.	

Responsive ■ Resourceful ■ Reliable

Facilities | Environmental | Geotechnical | Materials 1

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019



Section 2 – General Site Characteristics

Physical Characteristic	Site Ranking Characteristics
Groundwater NMOSE POD Location Map – (Exhibit 4 in Appendix A)	<p><u>POD Number:</u> (324004104285801)</p> <p><u>Depth to Groundwater:</u> 95 ft. bgs</p> <p><u>Distance to Well:</u> 0.43 miles to the northwest</p> <p>NMOCD approved well (see Appendix B)</p> <p><u>Last Date Meter Reading:</u> January 5, 2012</p> <p><u>Groundwater Quality:</u> Groundwater at the site is predominately used for livestock production.</p>
Surface Water NM Wetland Map – (Exhibit 5 in Appendix A)	Brantley Lake, approximately 7.47 miles to the southeast.
100-Year Flood Plain	This site is located outside of the 100-year flood plain of the Pecos River.
Soil Characteristics	Soils at the site are mapped as Reagan-Upton fine association series soils, 0 to 9 percent slopes, well-drained; few fine roots; fine tubular pores; clear smooth boundary. The formation is categorized with a negligible runoff classification.
Karst Characterization Cave Karst Public UCP Map – (Exhibit 6 in Appendix A)	Terracon evaluated data from the NMOCD Public FTP Site, Karst map designations in reference to the site location. The site appears to be within a mid-level Karst risk area. Based on on-site observations within the extent of the release margins the potential for Karst formations in this specific area are of low potential. Restrictive features were not encountered from surface to 48 inches below grade surface (bgs) within the release margins. The full extent of release quantities and excavation activities did not extend greater than 48 inches bgs.

Section 3 – Regulatory Framework and Response Action Levels

Oil and gas exploration and production facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). The NMOCD has issued the *Closure Criteria for Soils Impacted by a Release, June 21, 2018*, and *Restoration, Reclamation, and Re-vegetation (19.15.29.13) NMAC – D (Reclamation of areas no longer in use)* as guidance

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019



documents for the remediation and reclamation of sites impacted by releases from oil and gas exploration and production activities. Sections detailed below present sections of the guidance document that are relevant to the release.

Section 3.1 – Reclamation Levels (Surface to 4 ft. bgs on pad)

The below Reclamation Limits for chlorides, TPH (GRO+DRO+MRO), BTEX (includes benzene, toluene, ethylbenzene, and xylenes), and benzene are defined within New Mexico Administration Code (NMAC) *Restoration, Reclamation, and Re-vegetation* (19.15.29.13) *New Mexico Administration Code (NMAC) – D (Reclamation of areas no longer in use)* for soils extending to 4 ft. bgs.:

Constituent	Remediation Limits
Chloride	10,000 mg/kg
TPH (GRO+DRO+MRO)	2,500 mg/kg
(GRO+DRO)	1,000 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

Section 3.2 – Remediation Levels (> 4 ft. bgs on pad)

Based on the site-specific characteristics, the applicable NMOCD remediation levels for Total BTEX, chloride, and TPH within soils, exclusive of the Reclamation Zone (surface to 4 ft. bgs), are as follows:

Constituent	Remediation Limit
Chloride	10,000 mg/kg
TPH (GRO+DRO+MRO)	2,500 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019

**Section 4 – Remediation Activities**

From November 09, through 11, 2022, Terracon conducted an initial release investigation and collected ten soil samples to delineate the extent of the release. The soil samples collected by Terracon were placed in laboratory-provided sample containers, preserved with ice, and transported under chain of custody to Eurofins Carlsbad located in Carlsbad, New Mexico. During excavation activities, an additional 39 confirmation samples were collected from November 10, 2022, through March 15, 2023. On February 08, 2024, mobilized to the site to collect further delineation samples. On February 08, 2024, mobilized to the site to collect release assessment sample W-1.2 and confirmation sample S-SW01.2. On April 25 and May 31, 2024, mobilized to site to collect 11 confirmation samples. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (collectively known as BTEX), total petroleum hydrocarbons (TPH), and chlorides. In total, 33 samples were collected from within the release margins.

Section 5 – Remediation Confirmation Assessment

A total of ten soil samples (N, E, S, W, W01.2, BH02 3', BH02 4', BH01 4', BH01 5', and BH03 3') were collected from throughout and surrounding the release extent. Samples were analyzed for the presence of BTEX, chloride, and/or TPH. One of the nine samples exhibited concentrations of BTEX or TPH constituents above applicable laboratory sample detection limits (SDLs). Total TPH was detected in soil sample S (surface to 0.5 ft bgs) at 77.1 mg/kg, as summarized in Table 1.

Each of the ten samples collected were analyzed for the presence of chloride. The detected chloride concentrations ranged from 58.3 mg/kg in soil sample S (surface to 0.5 ft bgs) to 3,340 mg/kg in soil sample W (surface to 0.5 ft bgs), as summarized in Table 1.

Section 6 – Confirmation Assessment Data Evaluation

A total of 33 soil samples were collected throughout the excavation extent. Samples were analyzed for BTEX, Benzene, chloride and/or TPH presence. None of the 33 confirmation samples exhibited Benzene concentrations above the NMOCD RALs of 10 mg/kg, as summarized in Table 1.

One of the 33 confirmation samples exhibited a concentration of BTEX above the NMOCD RAL of 50 mg/kg, SE-SW 01 (surface to 2 ft bgs) had a concentration of 53.9 mg/kg, subsequent remedial efforts resulted in a final confirmation sample listed as S-SW 01 that was below the NMOCD RALs for BTEX.

Eight of the 33 confirmation samples did exhibit concentrations of TPH above the NMOCD

Spur Energy Partners, LLC

Osage Boyd Yeso

32.66276°, -104.47901°

NMOCD Reference # nAPP2230731453 & nAPP2102253370

Terracon Project # KH227019



RALs. Concentrations ranged from 2,812 mg/kg in soil sample EM-FS 02 (2 ft bgs) to 8,592 mg/kg in soil sample SE-FS 01 (2 ft bgs). Following additional remediation efforts at those eight locations, the final confirmation samples did not exhibit concentrations of TPH above NMOCD RALs of 2,500 mg/kg, or a total of combined DRO and GRO of 1,000 mg/kg as summarized in Table 1.

Each of the 33 samples collected were analyzed for the presence of chloride. The detected chloride concentrations ranged from 34 mg/kg in soil sample W-FS 02 (2 ft bgs) to 9,900 in soil sample EN-SW 02 (surface to 2 ft bgs). Confirmation samples were below the NMOCD RALs of 10,000 mg/kg for chloride, as summarized in Table 1.

Section 7 – Closure Report

Based on the review of the above release investigation analytical results, the presence of petroleum hydrocarbon constituents (BTEX/TPH) that was detected at concentrations above applicable NMOCD Reclamation and/or Remediation Action Limits was remediated as shown in the final confirmation samples.

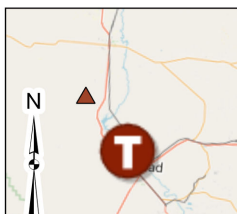
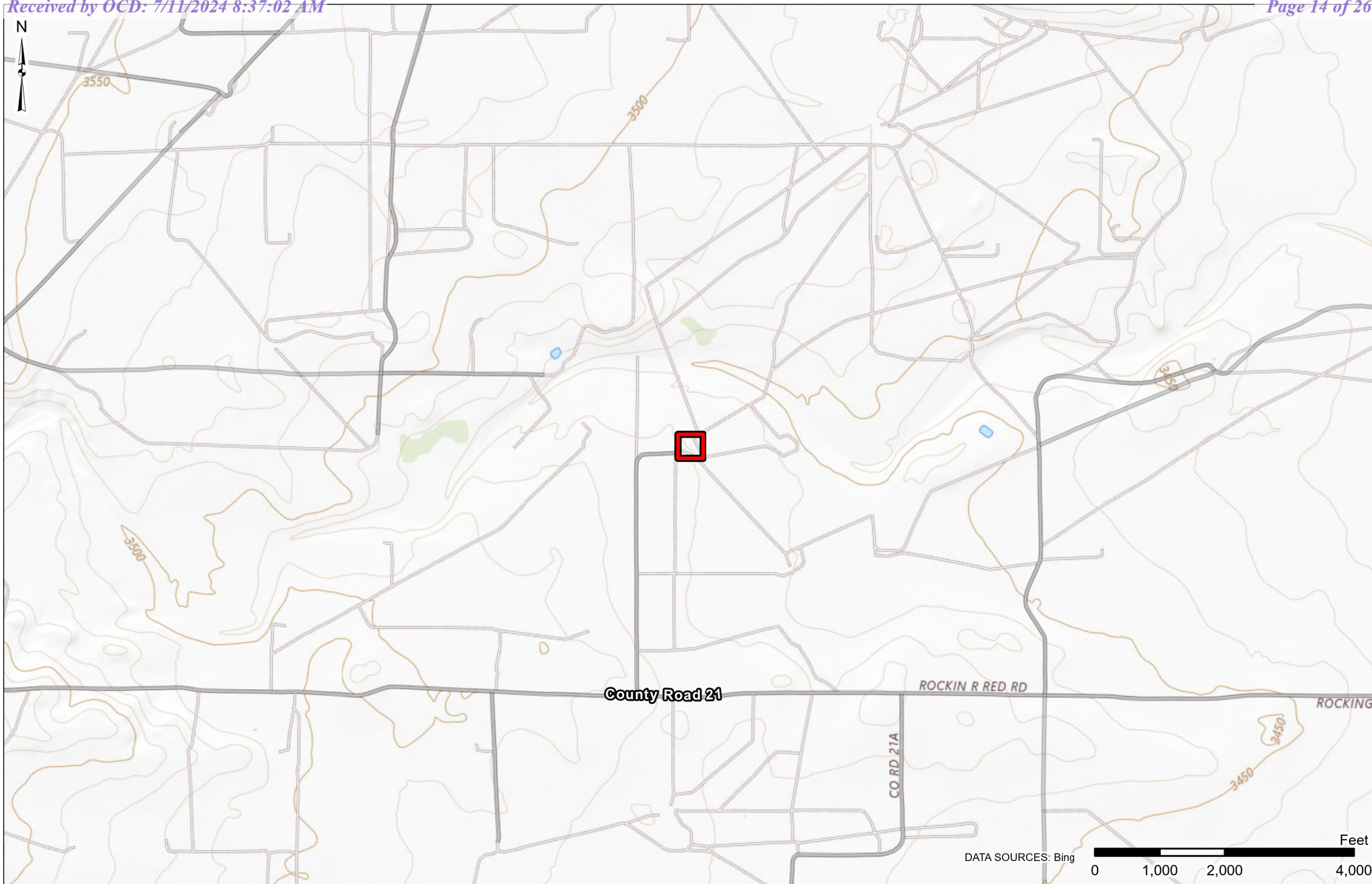
Of the 33 soil samples analyzed, none of the soil samples analyzed for chlorides exceeded the NMOCD Remediation Action Limit of 10,000 mg/kg and the excavation confirmation samples did not exhibit chloride concentrations above an actionable limit.

This closure request is being submitted under Spur Energy Partners OGRID number (328947). Spur Energy Partners respectfully requests the closure of nAPP2230731453 & nAPP2102253370.

Sincerely,



APPENDIX A – EXHIBITS



Site Location

Project No.:
KH227019Date:
Jun 21 2024Drawn By:
JWLReviewed By:
TLC4526 W Pierce St
Carlsbad, NM

PH. 806-300-0140

terracon.com

Topographic Map

Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico


Exhibit

1



 Excavation Boundary

Project No.:
KH227019
Date:
Jun 21 2024
Drawn By:
JWL
Reviewed By:
TLC

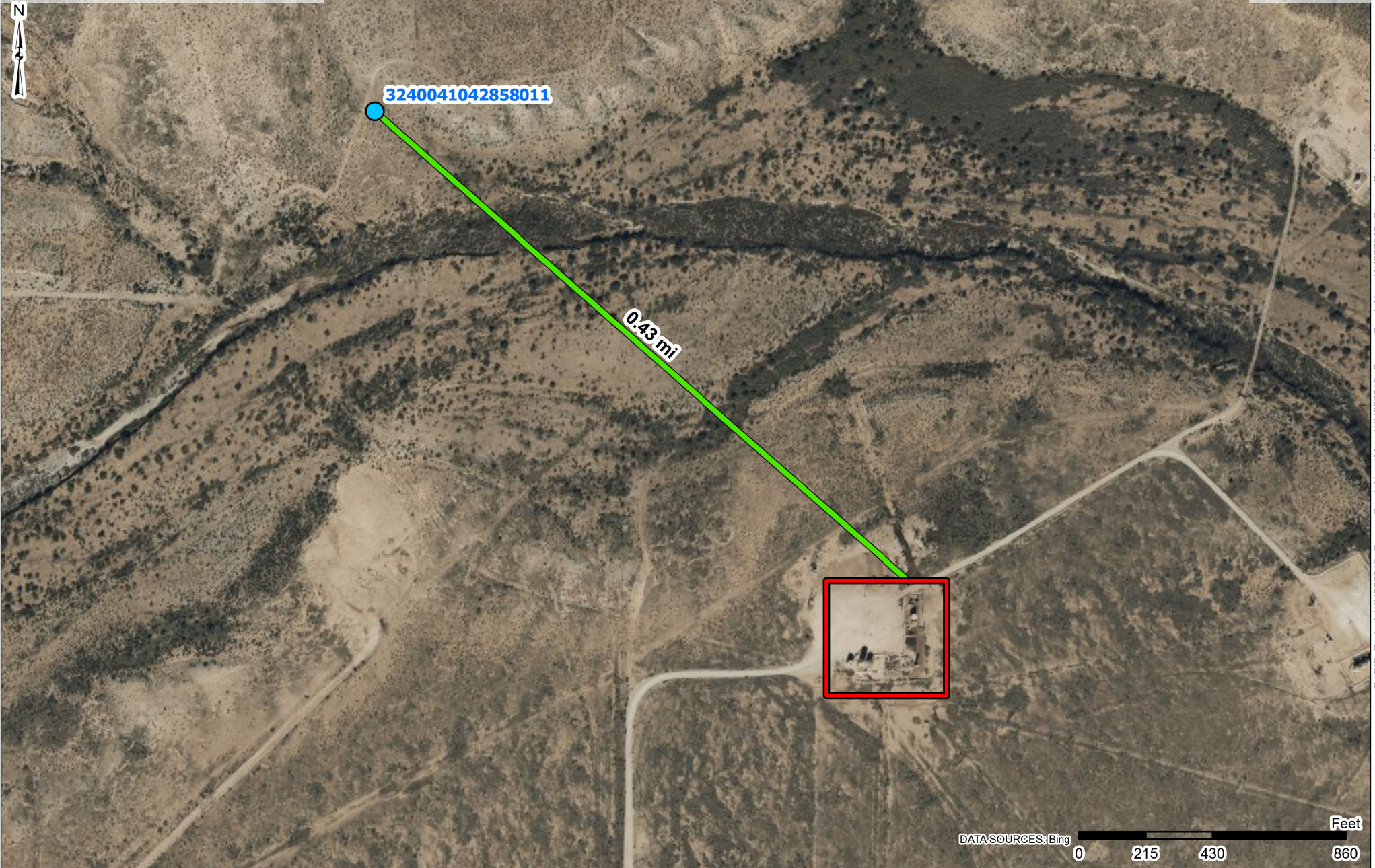


4526 W Pierce St
Carlsbad, NM

PH. 806-300-0140 terracon.com

Site Location Map
Osage Boyd Yeso 32.6625023° -104.4786280° Eddy County, New Mexico

Exhibit
2




-  Site Location
-  NMOSE POD Location

Project No.:
KH227019

Date:
Jun 21 2024

Drawn By:
JWL

Reviewed By:
TLC



4526 W Pierce St
Carlsbad, NM

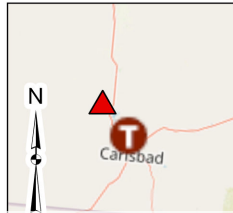
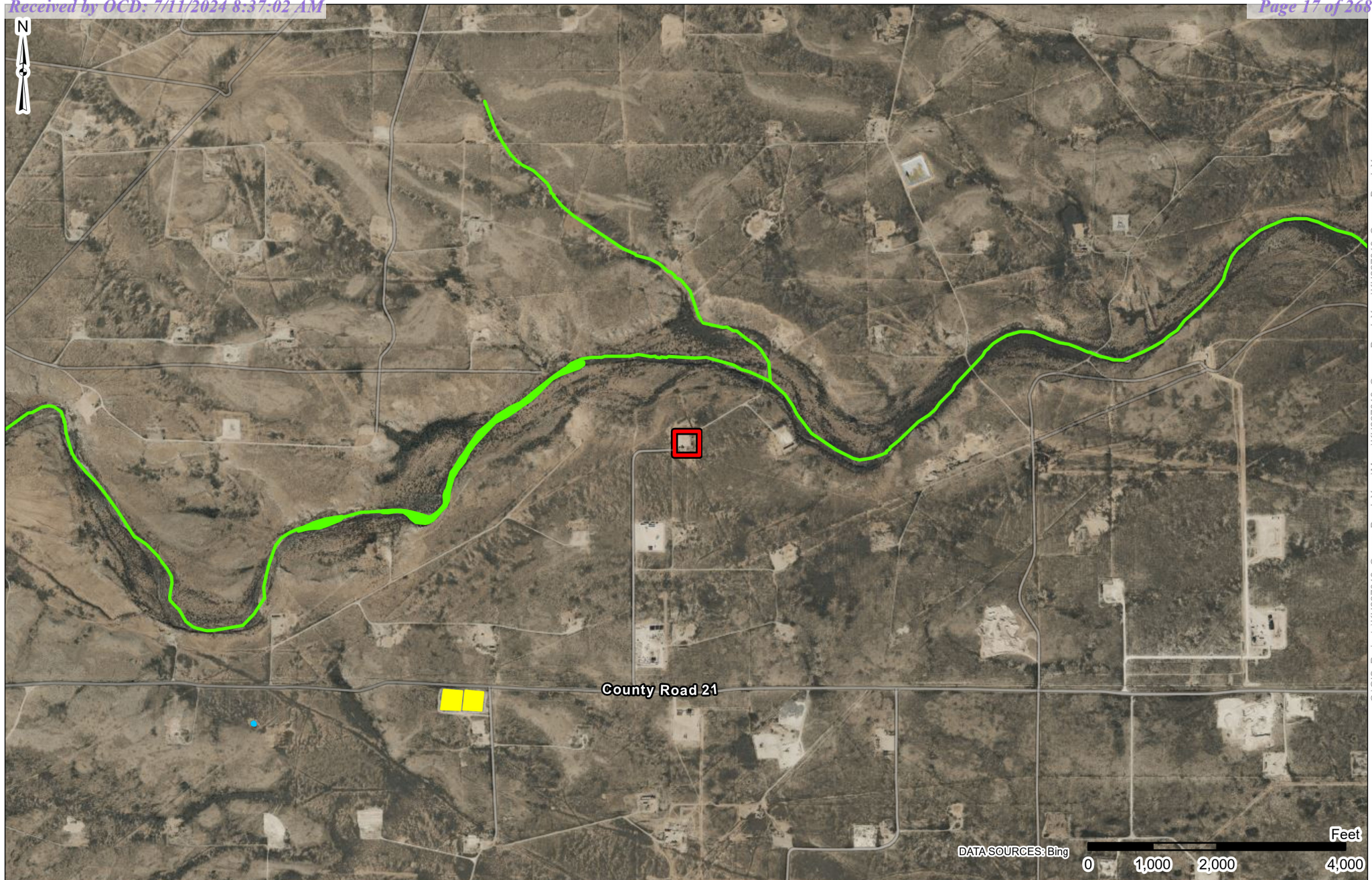
PH. 806-300-0140 terracon.com

USGS Groundwater Location Map

Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico

Exhibit

3



- Site Location
- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

Project No.: KH227019
Date: Jun 21 2024
Drawn By: JWL
Reviewed By: TLC

Terracon
4526 W Pierce St
Carlsbad, NM
PH. 806-300-0140 terracon.com

Designated Wetland Map
Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico

Exhibit
4



Site Location

Karst Potential


- Low
- Medium
- High

Project No.:
KH227019

Date:
Jun 21 2024

Drawn By:
JWL

Reviewed By:
TLC



4526 W Pierce St
Carlsbad, NM

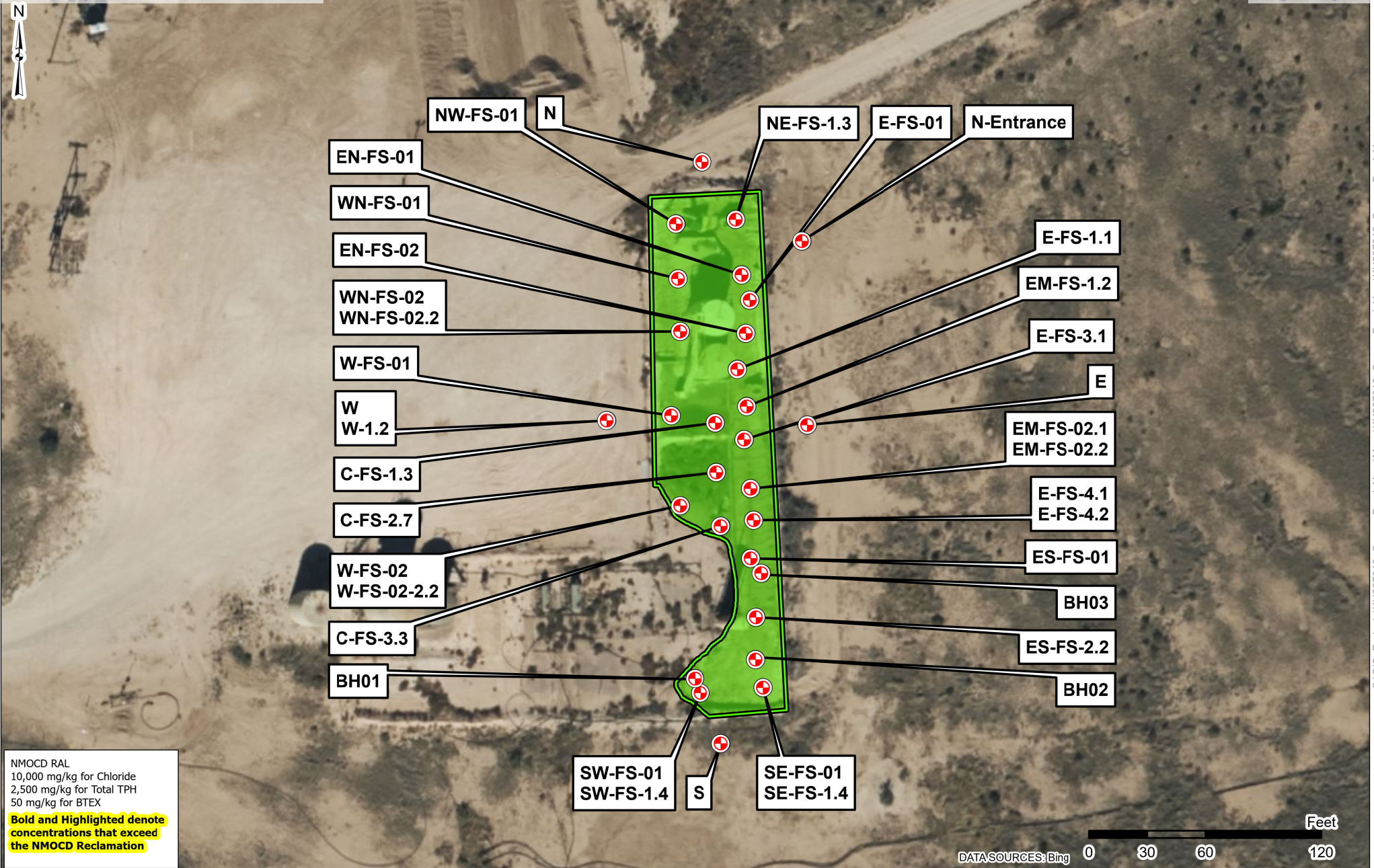
PH. 806-300-0140 terracon.com

Cave Karst Public UCP Map

Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico

Exhibit

5



- Excavation Boundary
- Floor Sample Location

Project No.:
KH227019

Date:
June 21 2024

Drawn By:
JWL

Reviewed By:
TLC

Terracon

4526 W Pierce St
Carlsbad, NM

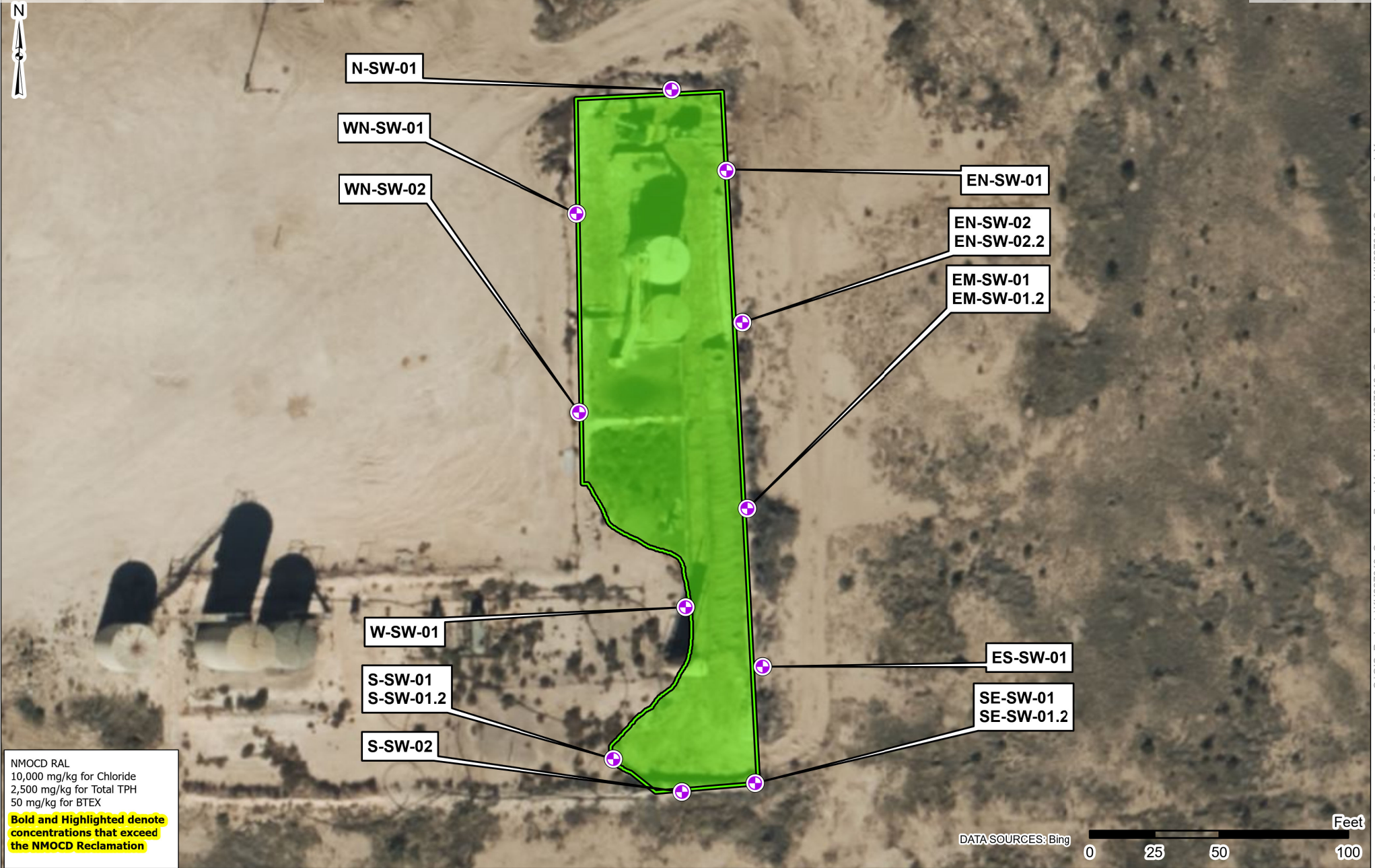
PH. 806-300-0140 terracon.com

Confirmation Map (Floor Samples)

Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico

Exhibit

6.1



- Excavation Boundary
- Wall Sample Location

Project No.:
KH227019

Date:
June 21 2024

Drawn By:
JWL

Reviewed By:
TLC

4526 W Pierce St
Carlsbad, NM

PH. 806-300-0140 terracon.com

Confirmation Map (Wall Samples)

Osage Boyd Yeso
32.6625023° -104.4786280°
Eddy County, New Mexico

Exhibit

6.2

C:\GIS\Projects\KH227019_Osage_Boyd_Yeso\Maps\KH227019_Osage_Boyd_Yeso.aprx

APPENDIX B – TABLES AND WELL DATA

Table 1 Soil Analytical Results Summary - Release Assessment Project Code: KH227019 NMOCD Reference No. nAPP2230731453 & nAPP2102253370											
Sample ID	Sample Date	Sample Depth (ft bgs)	Sample Type	Sample Status	Chloride (mg/Kg)	Benzene (mg/Kg)	Total BTEX ¹ (mg/Kg)	Total TPH ² (mg/Kg)	Gasoline Range Organics (C6-C10) (mg/Kg)	Diesel Range Organics (Over C10-C28) (mg/Kg)	Oil Range Organics (Over C28-C36) (mg/Kg)
					EPA Method 300	EPA Method 8021B	EPA Method 8021B	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M
Release Assessment											
N	11/9/2022	0'	0.5'	Grab	524	<0.00201	<0.00402	<50.0	<50.0	<50.0	<50.0
E	11/9/2022	0'	0.5'	Grab	496	<0.00201	<0.00402	<49.8	<49.8	<49.8	<49.8
S	11/9/2022	0'	0.5'	Grab	58	<0.00199	<0.00398	77	77	<49.9	<49.9
W	11/9/2022	0'	0.5'	Grab	3,340	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0
W - 1.2	2/9/2024	0'	0.5'	Grab	160	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
BH01	11/10/2022	4'	4.5'	Grab	329	0.00243	0.041	<49.9	<49.9	<49.9	<49.9
BH01	11/10/2022	5'	5.5'	Grab	326	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0
BH02	11/10/2022	3'	3.5'	Grab	207	<0.0502	0.378	<50.0	<50.0	<50.0	<50.0
BH02	11/10/2022	4'	4.5'	Grab	850	<0.00198	<0.00396	<49.8	<49.8	<49.8	<49.8
BH03	11/10/2022	3'	3.5'	Grab	2,030	<0.00200	<0.00399	<49.9	<49.9	<49.9	<49.9
NMOCD Reclamation Standards ³ (Surface to 4 ft bgs)					600	10	50	100	N/A		
NMOCD Remediation Standards ⁴ (Greater than Depths of 4 ft bgs)					10,000	10	50	2,500	1,000	N/A	
1. BTEX = Benzene, toluene, ethylbenzene, and total xylenes											
2. TPH = Total petroleum hydrocarbons											
3. New Mexico Administration Code (NMAC) Restoration, Reclamation and Re-vegetation (19.15.29.13), NMAC-D (Reclamation of Areas No Longer in Use) for Soils Extending to 4 ft. bgs											
4. New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards (19.15.29.12) NMAC-N, 8/14/2018											
< = Constituent was not detected above the indicated laboratory sample detection limit (SDL).											
NA = Not Analyzed											
Bold denotes concentrations above applicable laboratory SDLs.											
Bold and Highlighted denote concentrations that exceed the NMOCD Reclamation and/or Remediation and Delineation Standards.											
In-situ = Sample is representative of material which remains in-place at the site.											
Excavated = Sample is representative of materials which was excavated and disposed of at a permitted disposal facility.											

Table 2 Soil Analytical Results Summary - Confirmation Floors Project Code: KH227019 NMOCD Reference No. nAPP2230731453 & nAPP2102253370											
Sample ID	Sample Date	Sample Depth (ft bgs)	Sample Type	Sample Status	Chloride (mg/Kg)	Benzene (mg/Kg)	Total BTEX ¹ (mg/Kg)	Total TPH ² (mg/Kg)	Gasoline Range Organics (C6-C10) (mg/Kg)	Diesel Range Organics (Over C10-C28) (mg/Kg)	Oil Range Organics (Over C28-C36) (mg/Kg)
					EPA Method 300	EPA Method 8021B	EPA Method 8021B	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M
Confirmation Table											
E-FS 01	11/10/2022	2'	Composite	In-situ	511	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0
SW-FS 01	11/10/2022	2'	Composite	Excavated	288	<0.00199	5.18	4,001.0	3,420.0	145.0	436.0
SW-FS 1.4	12/6/2022	4'	Composite	In-situ	875	<0.00200	<0.00401	<49.8	<49.8	<49.8	<49.8
SE-FS 01	11/16/2022	2'	Composite	Excavated	791	<0.199	19.2	8,592.0	7,140.0	569.0	883.0
SE-FS 1.4	12/6/2022	4'	Composite	In-situ	2,940	<0.00199	0.0161	<49.9	<49.9	<49.9	<49.9
E-FS 1.1	11/11/2022	2'	Composite	In-situ	1,440	<0.0401	1.29	943.8	546.0	90.8	307.0
E-FS 3.1	11/11/2022	2'	Composite	In-situ	1,850	<0.0399	<0.0798	683.0	431.0	62.5	252.0
E-FS 4.1	11/11/2022	2'	Composite	Excavated	3,080	0.0444	7.4	3,253.0	1,900.0	303.0	1,050.0
E-FS 4.2	5/31/2024	4.5'	Composite	In-situ	16	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
ES-FS 01	11/11/2022	2'	Composite	In-situ	2,030	<0.00201	<0.00402	<49.9	<49.9	<49.9	<49.9
ES-FS 2.2	12/6/2022	4'	Composite	In-situ	696	<0.00199	<0.00398	62.3	62.3	<49.9	<49.9
EM-FS 1.2	12/6/2022	4'	Composite	In-situ	1,150	0.00237	0.316	461.0	298.0	<50.0	163.0
EM-FS 02	11/16/2022	2'	Composite	Excavated	1,110	<0.201	12.2	2,812.0	2,240.0	270.0	302.0
EM-FS 02.2	4/25/2024	4'	Composite	In-situ	192	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
EN-FS 01	11/16/2022	3'	Composite	Excavated	1,210	<0.200	6.8	3,547.0	3,000.0	166.0	381.0
EN-FS 01	11/30/2022	3'	Composite	In-situ	237	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9
EN-FS 02	11/30/2022	3'	Composite	In-situ	463	<0.00199	<0.00398	<49.8	<49.8	<49.8	<49.8
N Entrance	12/7/2022	3'	Composite	In-situ	334	0.00625	0.0615	<50.0	<50.0	<50.0	<50.0
NE-FS 1.3	12/7/2022	4'	Composite	In-situ	49	<0.0019	<0.00398	<50.0	<50.0	<50.0	<50.0
NW-FS 01	12/7/2022	4'	Composite	In-situ	493	<0.00200	<0.00401	<49.9	<49.9	<49.9	<49.9
WN-FS 01	11/16/2022	2'	Composite	Excavated	339	<0.199	1.25	1,500.0	1,230.0	102.0	168.0
WN-FS 01	4/25/2024	4'	Composite	In-situ	80	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
WN-FS 02	11/16/2022	2'	Composite	In-situ	523	<0.0398	<0.0795	998.0	861.0	<49.9	137.0
WN-FS 02	3/15/2022	2'	Composite	In-situ	75	<0.00201	<0.00402	<50.0	<50.0	<50.0	<50.0
W-FS 01	11/30/2022	2'	Composite	In-situ	291	<0.00200	<0.00401	69.1	69.1	<49.8	<49.8
W-FS 02	11/30/2022	2'	Composite	Excavated	34	0.245	0.71	1,267.0	1,150.0	<50.0	117.0
W-FS 02.2	4/25/2024	4'	Composite	In-situ	96	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
C-FS 1.3	12/7/2022	3'	Composite	In-situ	535	0.227	27.7	85.3	85.3	<50.0	<50.0
C-FS 2.7	12/7/2022	6'	Composite	In-situ	288	0.0072	0.0127	<49.8	<49.8	<49.8	<49.8
C-FS 3.3	12/7/2022	3'	Composite	In-situ	34	<0.00198	<0.00398	<49.8	<49.8	<49.8	<49.8
NMOCD Remediation Standards ⁴ (Greater than Depths of 4 ft bgs)					10,000	10	50	2,500	1,000	1,000	N/A
1. BTEX = Benzene, toluene, ethylbenzene, and total xylenes 2. TPH = Total petroleum hydrocarbons 3. New Mexico Administration Code (NMAC) Restoration, Reclamation and Re-vegetation (19.15.29.13), NMAC-D (Reclamation of Areas No Longer in Use) for Soils Extending to 4 ft. bgs 4. New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards (19.15.29.12) NMAC-N, 8/14/2018 < = Constituent was not detected above the indicated laboratory sample detection limit (SDL). NA = Not Analyzed Bold denotes concentrations above applicable laboratory SDLs. Bold and Highlighted denote concentrations that exceed the NMOCD Reclamation and/or Remediation and Delineation Standards. In-situ = Sample is representative of material which remains in-place at the site. Excavated = Sample is representative of materials which was excavated and disposed of at a permitted disposal facility.											

Table 3 Soil Analytical Results Summary - Confirmation Walls Project Code: KH227019 NMOCD Reference No. nAPP2230731453 & nAPP2102253370												
Sample ID	Sample Date	Sample Start Depth (ft bgs)	Sample End Depth (ft bgs)	Sample Type	Sample Status	Chloride (mg/Kg)	Benzene (mg/Kg)	Total BTEX ¹ (mg/Kg)	Total TPH ² (mg/Kg)	Gasoline Range Organics (C6-C10) (mg/Kg)	Diesel Range Organics (Over C10-C28) (mg/Kg)	Oil Range Organics (Over C28-C36) (mg/Kg)
						EPA Method 300	EPA Method 8021B	EPA Method 8021B	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M	EPA Method 8015M
Confirmation Wall Samples												
S-SW 01	11/16/2022	0'	2'	Composite	Excavated	159	<0.198	3.91	1,693.0	1,400.0	127.0	166.0
S-SW 01.2	2/8/2024	0'	2'	Composite	In-situ	592	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
S-SW 02	11/16/2022	0'	2'	Composite	Excavated	182	<0.201	2.98	4,633.0	3,900.0	<50.0	733.0
S-SW 02	4/25/2024	0'	4'	Composite	In-situ	208	<0.050	<0.300	<10.0			
SE-SW 01	11/15/2022	0'	2'	Composite	Excavated	345	<0.996	53.9	8,292.0	7,010.0	513.0	769.0
SE-SW 01.2	5/7/2024	0'	4'	Composite	In-situ	16	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
ES-SW 01	11/15/2022	0'	2'	Composite	In-situ	343	0.139	2.24	76.5	76.5	<49.9	<49.9
EM-SW 01	11/16/2022	0'	2'	Composite	Excavated	932	<0.200	5.08	1,616.0	1,270.0	172.0	174.0
EM-SW 01.2	4/25/2024	0'	4'	Composite	In-situ	320	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
EN-SW 01	11/16/2022	0'	2'	Composite	In-situ	1,260	<0.0398	<0.0795	230.0	230.0	<49.9	<49.9
EN-SW 02	11/16/2022	0'	2'	Composite	Excavated	9,900	<0.199	6.59	3,825.0	3,150.0	192.0	483.0
EN-SW 02.2	4/25/2024	0'	4'	Composite	In-situ	336	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
N-SW 01	11/16/2022	0'	2'	Composite	In-situ	1,640	<0.0398	0.472	375.0	375.0	<49.9	<49.9
WN-SW 01	11/16/2022	0'	2'	Composite	In-situ	1,410	<0.0402	<0.0803	857.0	747.0	<49.8	110.0
WN-SW 01	2/8/2024	0'	4'	Composite	In-situ	112	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
WN-SW 02	11/16/2022	0'	2'	Composite	Excavated	2,860	<0.00202	0.00796	2,617.0	2,130.0	<50.0	487.0
WN-SW 02	4/25/2024	0'	4'	Composite	In-situ	640	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0
W-SW 01	11/30/2022	0'	2'	Composite	In-situ	2,950	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9
NMOCD Remediation Standards ⁴ (Greater than Depths of 4 ft bgs)						10,000	10	50	2,500	1,000		N/A
1. BTEX = Benzene, toluene, ethylbenzene, and total xylenes 2. TPH = Total petroleum hydrocarbons 3. New Mexico Administration Code (NMAC) Restoration, Reclamation and Re-vegetation (19.15.29.13), NMAC-D (Reclamation of Areas No Longer in Use) for Soils Extending to 4 ft. bgs 4. New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards (19.15.29.12) NMAC-N, 8/14/2018 < = Constituent was not detected above the indicated laboratory sample detection limit (SDL). NA = Not Analyzed Bold denotes concentrations above applicable laboratory SDLs. Bold and Highlighted denote concentrations that exceed the NMOCD Reclamation and/or Remediation and Delineation Standards. In-situ = Sample is representative of material which remains in-place at the site. Excavated = Sample is representative of materials which was excavated and disposed of at a permitted disposal facility.												

Table 1 Closure Criteria for Soils Impacted by a Release					
Excavation Depth	Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/L TDS	Constituent	Method	Limit	Units
4	≤ 50 feet	Chloride	EPA 300 or SM4500 C1 B	600	mg/kg
		TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015	100	mg/kg
		BTEX	EPA SW-846 Method 8021B 8260B	50	mg/kg
		Benzene	EPA SW-846 Method 8021B 8260B	10	mg/kg
> 4	51 - 100 feet	Chloride	EPA 300 or SM4500 C1 B	10,000	mg/kg
		TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015	2,500	mg/kg
		(GRO + DRO)	EPA SW-846 Method 8015	1,000	mg/kg
		BTEX	EPA SW-846 Method 8021B 8260B	50	mg/kg
		Benzene	EPA SW-846 Method 8021B 8260B	10	mg/kg
> 4	> 100 feet	Chloride	EPA 300 or SM4500 C1 B	20,000	mg/kg
		TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015	2,500	mg/kg
		(GRO + DRO)	EPA SW-846 Method 8015	1,000	mg/kg
		BTEX	EPA SW-846 Method 8021B 8260B	50	mg/kg
		Benzene	EPA SW-846 Method 8021B 8260B	10	mg/kg
The data on this table was taken from 19.15.29.12 NMAC pg. 6 of 8					



[USGS Home](#)
[Contact USGS](#)
[Search USGS](#)

National Water Information System: Web Interface

USGS Water Resources

Data Category:

Groundwater

Geographic Area:

United States

GO

Click to hide News Bulletins

- Explore the *NEW* [USGS National Water Dashboard](#) interactive map to access real-time water data from over 13,500 stations nationwide.

Groundwater levels for the Nation



Important: [Next Generation Monitoring Location Page](#)

Search Results -- 1 sites found

site_no list =

- 324004104285801

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 324004104285801 19S.25E.16.22332

Available data for this site

Groundwater: Field measurements

GO

Eddy County, New Mexico

Hydrologic Unit Code 13060011

Latitude 32°40'04", Longitude 104°28'58" NAD27

Land-surface elevation 3,487 feet above NAVD88

This well is completed in the Roswell Basin aquifer system (S400RSWLBS) national aquifer.

This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

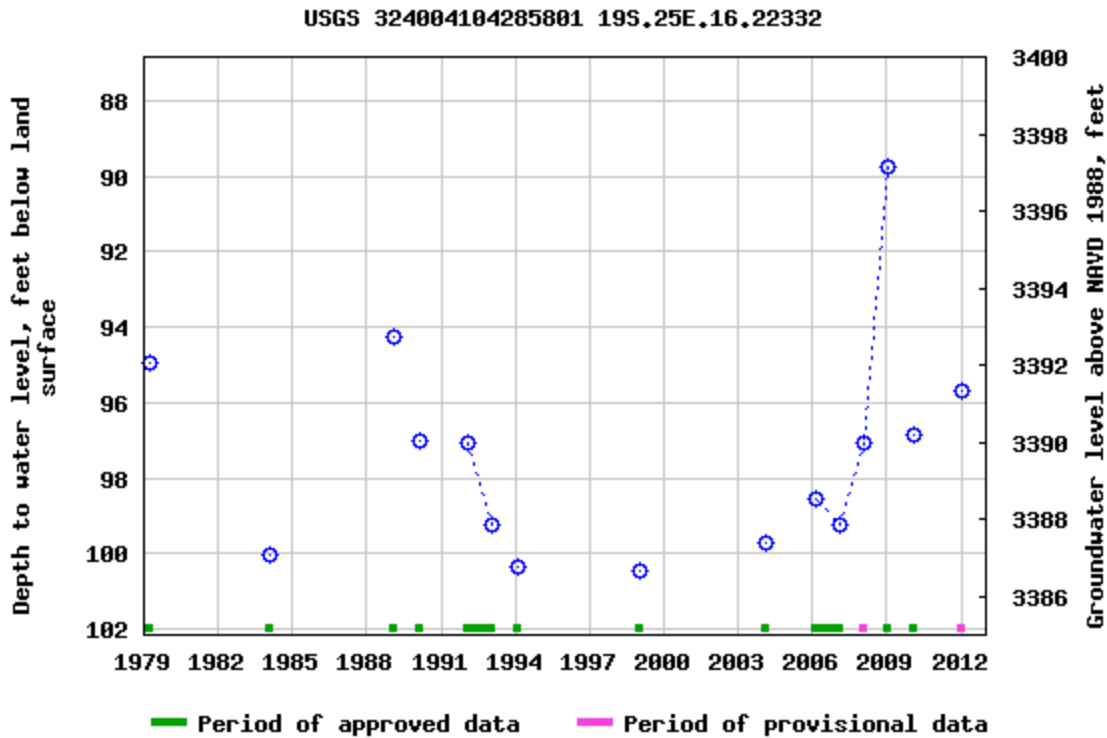
Output formats

[Table of data](#)

[Tab-separated data](#)

[Graph of data](#)

[Reselect period](#)



Breaks in the plot represent a gap of at least one year between field measurements. [Download a presentation-quality graph](#)

- [Questions or Comments](#)
- [Help](#)
- [Data Tips](#)
- [Explanation of terms](#)
- [Subscribe for system changes](#)

[Accessibility](#) [FOIA](#) [Privacy](#) [Policies and Notices](#)
[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)
Title: Groundwater for USA: Water Levels
URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



Page Contact Information: [USGS Water Data Support Team](#)
Page Last Modified: 2024-06-19 16:17:10 EDT
0.52 0.48 nadww01

APPENDIX C – PHOTOGRAPHIC LOG

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 1: View of the area prior to excavation toward the north entrance.



PHOTO 2: View of area prior to excavation toward the East.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 3: View of the area prior to excavation toward the Northwest.



PHOTO 4: View of the center area prior to excavation.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



11.08.2022 11:56 AM
32.66221, -104.47867
Unnamed Road, Artesia, NMA

PHOTO 5: View of the area prior to excavation toward the South.



PHOTO 6: View of the Northern sample area after excavation.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 7: View of the Northern entrance area after excavation.



PHOTO 8: View of the Eastern sample area after excavation.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 9: View of the Southern sample area after excavation.



PHOTO 10: View of the Western sample area after excavation.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 11: View of the center sample area after excavation.



PHOTO 12: View of potholed Center area.

Responsive ■ Resourceful ■ Reliable

Osage Boyd Yeso Battery ■ Eddy County, New Mexico
June 20, 2024 ■ Terracon Project No. KH227019



PHOTO 13: View of the North entrance sample area after excavation.

Responsive ■ Resourceful ■ Reliable

APPENDIX D – ANALYTICAL REPORT AND CHAIN OF CUSTODY



Environment Testing

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock Texas 79424
Generated 11/21/2022 6:29:54 PM

JOB DESCRIPTION

Osage Boyd Yasa
SDG NUMBER KH227019

JOB NUMBER

890-3422-1

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Laboratory Job ID: 890-3422-1
SDG: KH227019

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Client Sample Results	5
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	14
Lab Chronicle	16
Certification Summary	18
Method Summary	19
Sample Summary	20
Chain of Custody	21
Receipt Checklists	22
Appendix	24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
⬤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
SQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Job ID: 890-3422-1

Laboratory: Eurofins Carlsbad

Narrative	
	Job Narrative 890-3422-1

Receipt

The samples were received on 11/9/2022 2:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.6°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: N (890-3422-1), E (890-3422-2), S (890-3422-3) and W (890-3422-4).

GC VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: N

Lab Sample ID: 890-3422-1

Date Collected: 11/09/22 12:30

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 18:51	1
Toluene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 18:51	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 18:51	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/14/22 14:45	11/19/22 18:51	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 18:51	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/14/22 14:45	11/19/22 18:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130	11/14/22 14:45	11/19/22 18:51	1
1,4-Difluorobenzene (Surr)	93		70 - 130	11/14/22 14:45	11/19/22 18:51	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			11/21/22 14:54	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/14/22 13:38	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 11:53	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 11:53	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 11:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	89		70 - 130	11/11/22 09:33	11/13/22 11:53	1
o-Terphenyl	95		70 - 130	11/11/22 09:33	11/13/22 11:53	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	524		24.9		mg/Kg			11/15/22 16:26	5

Client Sample ID: E

Lab Sample ID: 890-3422-2

Date Collected: 11/09/22 12:32

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 19:12	1
Toluene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 19:12	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 19:12	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/14/22 14:45	11/19/22 19:12	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/14/22 14:45	11/19/22 19:12	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/14/22 14:45	11/19/22 19:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		70 - 130	11/14/22 14:45	11/19/22 19:12	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: E

Lab Sample ID: 890-3422-2

Date Collected: 11/09/22 12:32

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	107		70 - 130	11/14/22 14:45	11/19/22 19:12	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			11/21/22 14:54	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			11/14/22 13:38	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		11/11/22 09:33	11/13/22 12:56	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		11/11/22 09:33	11/13/22 12:56	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		11/11/22 09:33	11/13/22 12:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	91		70 - 130				11/11/22 09:33	11/13/22 12:56	1
o-Terphenyl	99		70 - 130				11/11/22 09:33	11/13/22 12:56	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	496		4.95		mg/Kg			11/15/22 16:33	1

Client Sample ID: S

Lab Sample ID: 890-3422-3

Date Collected: 11/09/22 12:34

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:32	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:32	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:32	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		11/14/22 14:45	11/19/22 19:32	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:32	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		11/14/22 14:45	11/19/22 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	121		70 - 130	11/14/22 14:45	11/19/22 19:32	1
1,4-Difluorobenzene (Surr)	103		70 - 130	11/14/22 14:45	11/19/22 19:32	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			11/21/22 14:54	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	77.1		49.9		mg/Kg			11/14/22 13:38	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: S

Lab Sample ID: 890-3422-3

Date Collected: 11/09/22 12:34

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/11/22 09:33	11/13/22 14:20	1
Diesel Range Organics (Over C10-C28)	77.1		49.9		mg/Kg		11/11/22 09:33	11/13/22 14:20	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/11/22 09:33	11/13/22 14:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	102		70 - 130				11/11/22 09:33	11/13/22 14:20	1
o-Terphenyl	109		70 - 130				11/11/22 09:33	11/13/22 14:20	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	58.3		4.96		mg/Kg			11/15/22 16:40	1

Client Sample ID: W

Lab Sample ID: 890-3422-4

Date Collected: 11/09/22 12:36

Matrix: Solid

Date Received: 11/09/22 14:00

Sample Depth: 0.5'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		11/14/22 14:45	11/19/22 19:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		70 - 130				11/14/22 14:45	11/19/22 19:53	1
1,4-Difluorobenzene (Surr)	95		70 - 130				11/14/22 14:45	11/19/22 19:53	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			11/21/22 14:54	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/11/22 11:26	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/10/22 12:00	11/10/22 20:01	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/10/22 12:00	11/10/22 20:01	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/10/22 12:00	11/10/22 20:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	111		70 - 130				11/10/22 12:00	11/10/22 20:01	1
o-Terphenyl	118		70 - 130				11/10/22 12:00	11/10/22 20:01	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: W
Date Collected: 11/09/22 12:36
Date Received: 11/09/22 14:00
Sample Depth: 0.5'

Lab Sample ID: 890-3422-4
Matrix: Solid

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3340		24.8		mg/Kg			11/15/22 16:47	5

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-3422-1	N	97	93
890-3422-2	E	111	107
890-3422-3	S	121	103
890-3422-4	W	112	95
LCS 880-39525/1-A	Lab Control Sample	85	87
LCSD 880-39525/2-A	Lab Control Sample Dup	86	94
MB 880-39525/5-A	Method Blank	103	91
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-3422-1	N	89	95
890-3422-1 MS	N	87	81
890-3422-1 MSD	N	78	72
890-3422-2	E	91	99
890-3422-3	S	102	109
890-3422-4	W	111	118
LCS 880-39026/2-A	Lab Control Sample	108	110
LCS 880-39298/2-A	Lab Control Sample	105	113
LCSD 880-39026/3-A	Lab Control Sample Dup	102	102
LCSD 880-39298/3-A	Lab Control Sample Dup	92	98
MB 880-39026/1-A	Method Blank	116	122
MB 880-39298/1-A	Method Blank	104	122
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-39525/5-A

Matrix: Solid

Analysis Batch: 39964

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39525

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/14/22 14:45	11/19/22 14:00	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/14/22 14:45	11/19/22 14:00	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/14/22 14:45	11/19/22 14:00	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/14/22 14:45	11/19/22 14:00	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/14/22 14:45	11/19/22 14:00	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/14/22 14:45	11/19/22 14:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		70 - 130	11/14/22 14:45	11/19/22 14:00	1
1,4-Difluorobenzene (Surr)	91		70 - 130	11/14/22 14:45	11/19/22 14:00	1

Lab Sample ID: LCS 880-39525/1-A

Matrix: Solid

Analysis Batch: 39964

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 39525

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.09188		mg/Kg		92	70 - 130
Toluene	0.100	0.09514		mg/Kg		95	70 - 130
Ethylbenzene	0.100	0.09248		mg/Kg		92	70 - 130
m-Xylene & p-Xylene	0.200	0.1768		mg/Kg		88	70 - 130
o-Xylene	0.100	0.09960		mg/Kg		100	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	85		70 - 130
1,4-Difluorobenzene (Surr)	87		70 - 130

Lab Sample ID: LCSD 880-39525/2-A

Matrix: Solid

Analysis Batch: 39964

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 39525

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.09845		mg/Kg		98	70 - 130	7	35
Toluene	0.100	0.09905		mg/Kg		99	70 - 130	4	35
Ethylbenzene	0.100	0.09684		mg/Kg		97	70 - 130	5	35
m-Xylene & p-Xylene	0.200	0.1843		mg/Kg		92	70 - 130	4	35
o-Xylene	0.100	0.1036		mg/Kg		104	70 - 130	4	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	86		70 - 130
1,4-Difluorobenzene (Surr)	94		70 - 130

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-39026/1-A							Client Sample ID: Method Blank		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39159							Prep Batch: 39026		
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/08/22 16:10	11/10/22 09:11	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/08/22 16:10	11/10/22 09:11	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/08/22 16:10	11/10/22 09:11	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	116		70 - 130				11/08/22 16:10	11/10/22 09:11	1
o-Terphenyl	122		70 - 130				11/08/22 16:10	11/10/22 09:11	1

Lab Sample ID: LCS 880-39026/2-A							Client Sample ID: Lab Control Sample		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39159							Prep Batch: 39026		
Analyte		Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Gasoline Range Organics (GRO)-C6-C10		1000	998.3		mg/Kg		100	70 - 130	
Diesel Range Organics (Over C10-C28)		1000	968.7		mg/Kg		97	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
1-Chlorooctane	108		70 - 130						
o-Terphenyl	110		70 - 130						

Lab Sample ID: LCSD 880-39026/3-A							Client Sample ID: Lab Control Sample Dup			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 39159							Prep Batch: 39026			
Analyte		Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10		1000	903.6		mg/Kg		90	70 - 130	10	20
Diesel Range Organics (Over C10-C28)		1000	887.7		mg/Kg		89	70 - 130	9	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits							
1-Chlorooctane	102		70 - 130							
o-Terphenyl	102		70 - 130							

Lab Sample ID: MB 880-39298/1-A							Client Sample ID: Method Blank		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39373							Prep Batch: 39298		
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 09:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 09:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/11/22 09:33	11/13/22 09:25	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-39298/1-A

Matrix: Solid

Analysis Batch: 39373

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39298

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	104		70 - 130	11/11/22 09:33	11/13/22 09:25	1
o-Terphenyl	122		70 - 130	11/11/22 09:33	11/13/22 09:25	1

Lab Sample ID: LCS 880-39298/2-A

Matrix: Solid

Analysis Batch: 39373

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 39298

			Spike	LCS	LCS				%Rec		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1126		mg/Kg		113	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1101		mg/Kg		110	70 - 130		
Surrogate		LCS	LCS								
	%Recovery	Qualifier	Limits								
1-Chlorooctane	105		70 - 130								
o-Terphenyl	113		70 - 130								

Lab Sample ID: LCSD 880-39298/3-A

Matrix: Solid

Analysis Batch: 39373

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 39298

			Spike	LCSD	LCSD				%Rec			RPD	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit		
Gasoline Range Organics (GRO)-C6-C10			1000	927.9		mg/Kg		93	70 - 130	19	20		
Diesel Range Organics (Over C10-C28)			1000	959.4		mg/Kg		96	70 - 130	14	20		
Surrogate		LCSD	LCSD										
	%Recovery	Qualifier	Limits										
1-Chlorooctane	92		70 - 130										
o-Terphenyl	98		70 - 130										

Lab Sample ID: 890-3422-1 MS

Matrix: Solid

Analysis Batch: 39373

Client Sample ID: N

Prep Type: Total/NA

Prep Batch: 39298

	Sample	Sample	Spike	MS	MS				%Rec		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	997	1006		mg/Kg		96	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U	997	819.0		mg/Kg		81	70 - 130		
Surrogate		MS	MS								
	%Recovery	Qualifier	Limits								
1-Chlorooctane	87		70 - 130								
o-Terphenyl	81		70 - 130								

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 890-3422-1 MSD

Matrix: Solid

Analysis Batch: 39373

Client Sample ID: N

Prep Type: Total/NA

Prep Batch: 39298

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	999.1		mg/Kg		95	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<50.0	U	999	776.3		mg/Kg		76	70 - 130	5	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1-Chlorooctane	78		70 - 130								
o-Terphenyl	72		70 - 130								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39357/1-A

Matrix: Solid

Analysis Batch: 39627

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<5.00	U	5.00		mg/Kg			11/15/22 13:13	1

Lab Sample ID: LCS 880-39357/2-A

Matrix: Solid

Analysis Batch: 39627

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Chloride	250	265.7		mg/Kg		106	90 - 110

Lab Sample ID: LCSD 880-39357/3-A

Matrix: Solid

Analysis Batch: 39627

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	RPD	RPD
							Limits		Limit
Chloride	250	265.4		mg/Kg		106	90 - 110	0	20

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

GC VOA

Prep Batch: 39525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	5035	
890-3422-2	E	Total/NA	Solid	5035	
890-3422-3	S	Total/NA	Solid	5035	
890-3422-4	W	Total/NA	Solid	5035	
MB 880-39525/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-39525/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-39525/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 39964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	8021B	39525
890-3422-2	E	Total/NA	Solid	8021B	39525
890-3422-3	S	Total/NA	Solid	8021B	39525
890-3422-4	W	Total/NA	Solid	8021B	39525
MB 880-39525/5-A	Method Blank	Total/NA	Solid	8021B	39525
LCS 880-39525/1-A	Lab Control Sample	Total/NA	Solid	8021B	39525
LCSD 880-39525/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	39525

Analysis Batch: 40117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	Total BTEX	
890-3422-2	E	Total/NA	Solid	Total BTEX	
890-3422-3	S	Total/NA	Solid	Total BTEX	
890-3422-4	W	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 39026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-4	W	Total/NA	Solid	8015NM Prep	
MB 880-39026/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-39026/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-39026/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 39159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-4	W	Total/NA	Solid	8015B NM	39026
MB 880-39026/1-A	Method Blank	Total/NA	Solid	8015B NM	39026
LCS 880-39026/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	39026
LCSD 880-39026/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	39026

Prep Batch: 39298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	8015NM Prep	
890-3422-2	E	Total/NA	Solid	8015NM Prep	
890-3422-3	S	Total/NA	Solid	8015NM Prep	
MB 880-39298/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-39298/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-39298/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-3422-1 MS	N	Total/NA	Solid	8015NM Prep	
890-3422-1 MSD	N	Total/NA	Solid	8015NM Prep	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

GC Semi VOA

Analysis Batch: 39321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	8015 NM	
890-3422-2	E	Total/NA	Solid	8015 NM	
890-3422-3	S	Total/NA	Solid	8015 NM	
890-3422-4	W	Total/NA	Solid	8015 NM	

Analysis Batch: 39373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Total/NA	Solid	8015B NM	39298
890-3422-2	E	Total/NA	Solid	8015B NM	39298
890-3422-3	S	Total/NA	Solid	8015B NM	39298
MB 880-39298/1-A	Method Blank	Total/NA	Solid	8015B NM	39298
LCS 880-39298/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	39298
LCSD 880-39298/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	39298
890-3422-1 MS	N	Total/NA	Solid	8015B NM	39298
890-3422-1 MSD	N	Total/NA	Solid	8015B NM	39298

HPLC/IC

Leach Batch: 39357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Soluble	Solid	DI Leach	
890-3422-2	E	Soluble	Solid	DI Leach	
890-3422-3	S	Soluble	Solid	DI Leach	
890-3422-4	W	Soluble	Solid	DI Leach	
MB 880-39357/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39357/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39357/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Analysis Batch: 39627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3422-1	N	Soluble	Solid	300.0	39357
890-3422-2	E	Soluble	Solid	300.0	39357
890-3422-3	S	Soluble	Solid	300.0	39357
890-3422-4	W	Soluble	Solid	300.0	39357
MB 880-39357/1-A	Method Blank	Soluble	Solid	300.0	39357
LCS 880-39357/2-A	Lab Control Sample	Soluble	Solid	300.0	39357
LCSD 880-39357/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39357

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: N
Date Collected: 11/09/22 12:30
Date Received: 11/09/22 14:00

Lab Sample ID: 890-3422-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	39525	11/14/22 14:45	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39964	11/19/22 18:51	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40117	11/21/22 14:54	SM	EET MID
Total/NA	Analysis	8015 NM		1			39321	11/14/22 13:38	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39298	11/11/22 09:33	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39373	11/13/22 11:53	AJ	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	39357	11/11/22 17:26	KS	EET MID
Soluble	Analysis	300.0		5			39627	11/15/22 16:26	CH	EET MID

Client Sample ID: E
Date Collected: 11/09/22 12:32
Date Received: 11/09/22 14:00

Lab Sample ID: 890-3422-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	39525	11/14/22 14:45	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39964	11/19/22 19:12	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40117	11/21/22 14:54	SM	EET MID
Total/NA	Analysis	8015 NM		1			39321	11/14/22 13:38	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	39298	11/11/22 09:33	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39373	11/13/22 12:56	AJ	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	39357	11/11/22 17:26	KS	EET MID
Soluble	Analysis	300.0		1			39627	11/15/22 16:33	CH	EET MID

Client Sample ID: S
Date Collected: 11/09/22 12:34
Date Received: 11/09/22 14:00

Lab Sample ID: 890-3422-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	39525	11/14/22 14:45	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39964	11/19/22 19:32	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40117	11/21/22 14:54	SM	EET MID
Total/NA	Analysis	8015 NM		1			39321	11/14/22 13:38	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39298	11/11/22 09:33	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39373	11/13/22 14:20	AJ	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	39357	11/11/22 17:26	KS	EET MID
Soluble	Analysis	300.0		1			39627	11/15/22 16:40	CH	EET MID

Client Sample ID: W
Date Collected: 11/09/22 12:36
Date Received: 11/09/22 14:00

Lab Sample ID: 890-3422-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	39525	11/14/22 14:45	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39964	11/19/22 19:53	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40117	11/21/22 14:54	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Client Sample ID: W
Date Collected: 11/09/22 12:36
Date Received: 11/09/22 14:00

Lab Sample ID: 890-3422-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			39321	11/11/22 11:26	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	39026	11/10/22 12:00	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39159	11/10/22 20:01	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	39357	11/11/22 17:26	KS	EET MID
Soluble	Analysis	300.0		5			39627	11/15/22 16:47	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yasa

Job ID: 890-3422-1
SDG: KH227019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3422-1	N	Solid	11/09/22 12:30	11/09/22 14:00	0.5'
890-3422-2	E	Solid	11/09/22 12:32	11/09/22 14:00	0.5'
890-3422-3	S	Solid	11/09/22 12:34	11/09/22 14:00	0.5'
890-3422-4	W	Solid	11/09/22 12:36	11/09/22 14:00	0.5'

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



Environment Testing

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-333-
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No.:

www.xenco.com Page _____ of _____

Project Manager:	Joe Greenfelder		Bill to: (if different)
Company Name:	Terracorp		Company Name:
Address:			Address:
City, State ZIP:	Carlstadt NJ 08820		City, State ZIP:
Phone:		Email:	becky.sue.miller@terraco

Work Order Comments	
Program:	UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:	
Reporting:	Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other: <input type="text"/>

[illegible]

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3422-1

SDG Number: KH227019

Login Number: 3422

List Number: 1

Creator: Stutzman, Amanda

List Source: Eurofins Carlsbad

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3422-1

SDG Number: KH227019

Login Number: 3422

List Number: 2

Creator: Rodriguez, Leticia

List Source: Eurofins Midland

List Creation: 11/10/22 10:49 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Eurofins Carlsbad

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
11/21/2022 6:29:54 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).





Environment Testing

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock Texas 79424

Generated 11/23/2022 2:51:09 PM

JOB DESCRIPTION

Osage Boyd Yaso
SDG NUMBER KH227019

JOB NUMBER

890-3432-1

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Laboratory Job ID: 890-3432-1
SDG: KH227019

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Client Sample Results	5
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	14
Lab Chronicle	16
Certification Summary	18
Method Summary	19
Sample Summary	20
Chain of Custody	21
Receipt Checklists	22
Appendix	24

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
⬤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
SQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Job ID: 890-3432-1

Laboratory: Eurofins Carlsbad

Narrative	
	Job Narrative 890-3432-1

Receipt

The samples were received on 11/10/2022 4:14 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 10.0°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: BH02 3' (890-3432-1), BH02 4' (890-3432-2), BH01 4' (890-3432-3), BH01 5' (890-3432-4) and EFS01 (890-3432-5).

GC VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH02 3'

Lab Sample ID: 890-3432-1

Date Collected: 11/10/22 09:45

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 3

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0502	U	0.0502		mg/Kg		11/14/22 16:30	11/23/22 07:51	25
Toluene	<0.0502	U	0.0502		mg/Kg		11/14/22 16:30	11/23/22 07:51	25
Ethylbenzene	0.122		0.0502		mg/Kg		11/14/22 16:30	11/23/22 07:51	25
m-Xylene & p-Xylene	0.196		0.100		mg/Kg		11/14/22 16:30	11/23/22 07:51	25
o-Xylene	0.0598		0.0502		mg/Kg		11/14/22 16:30	11/23/22 07:51	25
Xylenes, Total	0.256		0.100		mg/Kg		11/14/22 16:30	11/23/22 07:51	25

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		70 - 130	11/14/22 16:30	11/23/22 07:51	25
1,4-Difluorobenzene (Surr)	81		70 - 130	11/14/22 16:30	11/23/22 07:51	25

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.378		0.100		mg/Kg			11/23/22 13:25	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 16:29	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 11:08	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 11:08	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 11:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	118		70 - 130	11/14/22 14:27	11/15/22 11:08	1
o-Terphenyl	117		70 - 130	11/14/22 14:27	11/15/22 11:08	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	207		4.97		mg/Kg			11/16/22 01:43	1

Client Sample ID: BH02 4'

Lab Sample ID: 890-3432-2

Date Collected: 11/10/22 10:05

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 4

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		11/14/22 16:30	11/23/22 06:29	1
Toluene	<0.00198	U	0.00198		mg/Kg		11/14/22 16:30	11/23/22 06:29	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		11/14/22 16:30	11/23/22 06:29	1
m-Xylene & p-Xylene	<0.00396	U	0.00396		mg/Kg		11/14/22 16:30	11/23/22 06:29	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		11/14/22 16:30	11/23/22 06:29	1
Xylenes, Total	<0.00396	U	0.00396		mg/Kg		11/14/22 16:30	11/23/22 06:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	82		70 - 130	11/14/22 16:30	11/23/22 06:29	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH02 4'

Lab Sample ID: 890-3432-2

Date Collected: 11/10/22 10:05

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 4

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	107		70 - 130	11/14/22 16:30	11/23/22 06:29	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00396	U	0.00396		mg/Kg			11/23/22 13:25	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			11/15/22 16:29	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		11/14/22 14:27	11/15/22 12:12	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		11/14/22 14:27	11/15/22 12:12	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		11/14/22 14:27	11/15/22 12:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	100		70 - 130				11/14/22 14:27	11/15/22 12:12	1
o-Terphenyl	100		70 - 130				11/14/22 14:27	11/15/22 12:12	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	850		4.96		mg/Kg			11/16/22 02:00	1

Client Sample ID: BH01 4'

Lab Sample ID: 890-3432-3

Date Collected: 11/10/22 10:10

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 4

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00243		0.00199		mg/Kg		11/14/22 16:30	11/23/22 06:49	1
Toluene	0.0120		0.00199		mg/Kg		11/14/22 16:30	11/23/22 06:49	1
Ethylbenzene	0.00934		0.00199		mg/Kg		11/14/22 16:30	11/23/22 06:49	1
m-Xylene & p-Xylene	0.0120		0.00398		mg/Kg		11/14/22 16:30	11/23/22 06:49	1
o-Xylene	0.00523		0.00199		mg/Kg		11/14/22 16:30	11/23/22 06:49	1
Xylenes, Total	0.0172		0.00398		mg/Kg		11/14/22 16:30	11/23/22 06:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		70 - 130	11/14/22 16:30	11/23/22 06:49	1
1,4-Difluorobenzene (Surr)	103		70 - 130	11/14/22 16:30	11/23/22 06:49	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.0410		0.00398		mg/Kg			11/23/22 13:25	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			11/15/22 16:29	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH01 4'

Lab Sample ID: 890-3432-3

Date Collected: 11/10/22 10:10

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 4

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/14/22 14:27	11/15/22 13:57	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		11/14/22 14:27	11/15/22 13:57	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/14/22 14:27	11/15/22 13:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	90		70 - 130				11/14/22 14:27	11/15/22 13:57	1
o-Terphenyl	92		70 - 130				11/14/22 14:27	11/15/22 13:57	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	329		5.00		mg/Kg			11/16/22 02:06	1

Client Sample ID: BH01 5'

Lab Sample ID: 890-3432-4

Date Collected: 11/10/22 10:20

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 5

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		11/14/22 16:30	11/23/22 07:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130				11/14/22 16:30	11/23/22 07:10	1
1,4-Difluorobenzene (Surr)	109		70 - 130				11/14/22 16:30	11/23/22 07:10	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			11/23/22 13:25	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 16:29	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:17	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:17	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	93		70 - 130				11/14/22 14:27	11/15/22 14:17	1
o-Terphenyl	94		70 - 130				11/14/22 14:27	11/15/22 14:17	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH01 5'

Lab Sample ID: 890-3432-4

Date Collected: 11/10/22 10:20

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 5

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	326		5.03		mg/Kg			11/16/22 02:11	1

Client Sample ID: EFS01

Lab Sample ID: 890-3432-5

Date Collected: 11/10/22 12:44

Matrix: Solid

Date Received: 11/10/22 16:14

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		11/14/22 16:30	11/23/22 07:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130				11/14/22 16:30	11/23/22 07:30	1
1,4-Difluorobenzene (Surr)	101		70 - 130				11/14/22 16:30	11/23/22 07:30	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			11/23/22 13:25	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 16:29	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:38	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:38	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 14:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	96		70 - 130				11/14/22 14:27	11/15/22 14:38	1
o-Terphenyl	96		70 - 130				11/14/22 14:27	11/15/22 14:38	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	511		5.05		mg/Kg			11/16/22 02:17	1

Eurofins Carlsbad

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-3432-1	BH02 3'	75	81
890-3432-2	BH02 4'	82	107
890-3432-3	BH01 4'	86	103
890-3432-4	BH01 5'	97	109
890-3432-5	EFS01	87	101
LCS 880-39563/1-A	Lab Control Sample	88	105
LCSD 880-39563/2-A	Lab Control Sample Dup	83	104
MB 880-39563/5-A	Method Blank	75	107
MB 880-39841/5-A	Method Blank	79	97
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-3432-1	BH02 3'	118	117
890-3432-1 MS	BH02 3'	88	75
890-3432-1 MSD	BH02 3'	87	74
890-3432-2	BH02 4'	100	100
890-3432-3	BH01 4'	90	92
890-3432-4	BH01 5'	93	94
890-3432-5	EFS01	96	96
LCS 880-39516/2-A	Lab Control Sample	84	81
LCSD 880-39516/3-A	Lab Control Sample Dup	84	81
MB 880-39516/1-A	Method Blank	107	110
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-39563/5-A

Matrix: Solid

Analysis Batch: 40174

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39563

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/22/22 23:45	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/22/22 23:45	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/22/22 23:45	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/14/22 16:30	11/22/22 23:45	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/14/22 16:30	11/22/22 23:45	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/14/22 16:30	11/22/22 23:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		70 - 130	11/14/22 16:30	11/22/22 23:45	1
1,4-Difluorobenzene (Surr)	107		70 - 130	11/14/22 16:30	11/22/22 23:45	1

Lab Sample ID: LCS 880-39563/1-A

Matrix: Solid

Analysis Batch: 40174

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 39563

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.08599		mg/Kg		86	70 - 130
Toluene	0.100	0.1010		mg/Kg		101	70 - 130
Ethylbenzene	0.100	0.1006		mg/Kg		101	70 - 130
m-Xylene & p-Xylene	0.200	0.1829		mg/Kg		91	70 - 130
o-Xylene	0.100	0.09030		mg/Kg		90	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		70 - 130
1,4-Difluorobenzene (Surr)	105		70 - 130

Lab Sample ID: LCSD 880-39563/2-A

Matrix: Solid

Analysis Batch: 40174

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 39563

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.07648		mg/Kg		76	70 - 130	12	35
Toluene	0.100	0.08875		mg/Kg		89	70 - 130	13	35
Ethylbenzene	0.100	0.09295		mg/Kg		93	70 - 130	8	35
m-Xylene & p-Xylene	0.200	0.1689		mg/Kg		84	70 - 130	8	35
o-Xylene	0.100	0.08440		mg/Kg		84	70 - 130	7	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	83		70 - 130
1,4-Difluorobenzene (Surr)	104		70 - 130

Lab Sample ID: MB 880-39841/5-A

Matrix: Solid

Analysis Batch: 40174

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39841

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/17/22 15:04	11/22/22 11:43	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/17/22 15:04	11/22/22 11:43	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-39841/5-A
Matrix: Solid
Analysis Batch: 40174

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39841

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/17/22 15:04	11/22/22 11:43	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/17/22 15:04	11/22/22 11:43	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/17/22 15:04	11/22/22 11:43	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/17/22 15:04	11/22/22 11:43	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		70 - 130				11/17/22 15:04	11/22/22 11:43	1
1,4-Difluorobenzene (Surr)	97		70 - 130				11/17/22 15:04	11/22/22 11:43	1

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-39516/1-A
Matrix: Solid
Analysis Batch: 39567

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39516

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 08:37	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 08:37	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:27	11/15/22 08:37	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	107		70 - 130				11/14/22 14:27	11/15/22 08:37	1
o-Terphenyl	110		70 - 130				11/14/22 14:27	11/15/22 08:37	1

Lab Sample ID: LCS 880-39516/2-A
Matrix: Solid
Analysis Batch: 39567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39516

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	801.1		mg/Kg		80	70 - 130
Diesel Range Organics (Over C10-C28)	1000	802.2		mg/Kg		80	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1-Chlorooctane	84		70 - 130				
o-Terphenyl	81		70 - 130				

Lab Sample ID: LCSD 880-39516/3-A
Matrix: Solid
Analysis Batch: 39567

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39516

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	805.9		mg/Kg		81	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	1000	801.6		mg/Kg		80	70 - 130	0	20

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 880-39516/3-A

Matrix: Solid

Analysis Batch: 39567

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 39516

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	84		70 - 130
o-Terphenyl	81		70 - 130

Lab Sample ID: 890-3432-1 MS

Matrix: Solid

Analysis Batch: 39567

Client Sample ID: BH02 3'

Prep Type: Total/NA

Prep Batch: 39516

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	997	1121		mg/Kg		110	70 - 130	
Diesel Range Organics (Over C10-C28)	<50.0	U	997	818.0		mg/Kg		80	70 - 130	
Surrogate	%Recovery	Qualifier	Limits							
1-Chlorooctane	88		70 - 130							
o-Terphenyl	75		70 - 130							

Lab Sample ID: 890-3432-1 MSD

Matrix: Solid

Analysis Batch: 39567

Client Sample ID: BH02 3'

Prep Type: Total/NA

Prep Batch: 39516

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	1119		mg/Kg		110	70 - 130	0	20	
Diesel Range Organics (Over C10-C28)	<50.0	U	999	826.5		mg/Kg		81	70 - 130	1	20	
Surrogate	%Recovery	Qualifier	Limits									
1-Chlorooctane	87		70 - 130									
o-Terphenyl	74		70 - 130									

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39449/1-A

Matrix: Solid

Analysis Batch: 39642

Client Sample ID: Method Blank

Prep Type: Soluble

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	<5.00	U	5.00		mg/Kg			11/16/22 01:26	1	

Lab Sample ID: LCS 880-39449/2-A

Matrix: Solid

Analysis Batch: 39642

Client Sample ID: Lab Control Sample

Prep Type: Soluble

	Spike	LCS	LCS					%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chloride	250	274.3		mg/Kg		110	90 - 110		

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 880-39449/3-A				Client Sample ID: Lab Control Sample Dup							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 39642											
Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	274.5		mg/Kg		110	90 - 110	0	20

Lab Sample ID: 890-3432-1 MS				Client Sample ID: BH02 3'							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 39642											
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	207		249	451.3		mg/Kg		98	90 - 110		

Lab Sample ID: 890-3432-1 MSD				Client Sample ID: BH02 3'							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 39642											
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	207		249	467.6		mg/Kg		105	90 - 110	4	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

GC VOA

Prep Batch: 39563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	5035	
890-3432-2	BH02 4'	Total/NA	Solid	5035	
890-3432-3	BH01 4'	Total/NA	Solid	5035	
890-3432-4	BH01 5'	Total/NA	Solid	5035	
890-3432-5	EFS01	Total/NA	Solid	5035	
MB 880-39563/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-39563/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-39563/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Prep Batch: 39841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-39841/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 40174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	8021B	39563
890-3432-2	BH02 4'	Total/NA	Solid	8021B	39563
890-3432-3	BH01 4'	Total/NA	Solid	8021B	39563
890-3432-4	BH01 5'	Total/NA	Solid	8021B	39563
890-3432-5	EFS01	Total/NA	Solid	8021B	39563
MB 880-39563/5-A	Method Blank	Total/NA	Solid	8021B	39563
MB 880-39841/5-A	Method Blank	Total/NA	Solid	8021B	39841
LCS 880-39563/1-A	Lab Control Sample	Total/NA	Solid	8021B	39563
LCSD 880-39563/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	39563

Analysis Batch: 40324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	Total BTEX	
890-3432-2	BH02 4'	Total/NA	Solid	Total BTEX	
890-3432-3	BH01 4'	Total/NA	Solid	Total BTEX	
890-3432-4	BH01 5'	Total/NA	Solid	Total BTEX	
890-3432-5	EFS01	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 39516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	8015NM Prep	
890-3432-2	BH02 4'	Total/NA	Solid	8015NM Prep	
890-3432-3	BH01 4'	Total/NA	Solid	8015NM Prep	
890-3432-4	BH01 5'	Total/NA	Solid	8015NM Prep	
890-3432-5	EFS01	Total/NA	Solid	8015NM Prep	
MB 880-39516/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-39516/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-39516/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-3432-1 MS	BH02 3'	Total/NA	Solid	8015NM Prep	
890-3432-1 MSD	BH02 3'	Total/NA	Solid	8015NM Prep	

Analysis Batch: 39567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	8015B NM	39516

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

GC Semi VOA (Continued)

Analysis Batch: 39567 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-2	BH02 4'	Total/NA	Solid	8015B NM	39516
890-3432-3	BH01 4'	Total/NA	Solid	8015B NM	39516
890-3432-4	BH01 5'	Total/NA	Solid	8015B NM	39516
890-3432-5	EFS01	Total/NA	Solid	8015B NM	39516
MB 880-39516/1-A	Method Blank	Total/NA	Solid	8015B NM	39516
LCS 880-39516/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	39516
LCSD 880-39516/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	39516
890-3432-1 MS	BH02 3'	Total/NA	Solid	8015B NM	39516
890-3432-1 MSD	BH02 3'	Total/NA	Solid	8015B NM	39516

Analysis Batch: 39644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Total/NA	Solid	8015 NM	
890-3432-2	BH02 4'	Total/NA	Solid	8015 NM	
890-3432-3	BH01 4'	Total/NA	Solid	8015 NM	
890-3432-4	BH01 5'	Total/NA	Solid	8015 NM	
890-3432-5	EFS01	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 39449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Soluble	Solid	DI Leach	
890-3432-2	BH02 4'	Soluble	Solid	DI Leach	
890-3432-3	BH01 4'	Soluble	Solid	DI Leach	
890-3432-4	BH01 5'	Soluble	Solid	DI Leach	
890-3432-5	EFS01	Soluble	Solid	DI Leach	
MB 880-39449/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39449/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39449/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3432-1 MS	BH02 3'	Soluble	Solid	DI Leach	
890-3432-1 MSD	BH02 3'	Soluble	Solid	DI Leach	

Analysis Batch: 39642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3432-1	BH02 3'	Soluble	Solid	300.0	39449
890-3432-2	BH02 4'	Soluble	Solid	300.0	39449
890-3432-3	BH01 4'	Soluble	Solid	300.0	39449
890-3432-4	BH01 5'	Soluble	Solid	300.0	39449
890-3432-5	EFS01	Soluble	Solid	300.0	39449
MB 880-39449/1-A	Method Blank	Soluble	Solid	300.0	39449
LCS 880-39449/2-A	Lab Control Sample	Soluble	Solid	300.0	39449
LCSD 880-39449/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39449
890-3432-1 MS	BH02 3'	Soluble	Solid	300.0	39449
890-3432-1 MSD	BH02 3'	Soluble	Solid	300.0	39449

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH02 3'

Date Collected: 11/10/22 09:45

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	39563	11/14/22 16:30	MNR	EET MID
Total/NA	Analysis	8021B		25	5 mL	5 mL	40174	11/23/22 07:51	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40324	11/23/22 13:25	SM	EET MID
Total/NA	Analysis	8015 NM		1			39644	11/15/22 16:29	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39516	11/14/22 14:27	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 11:08	AJ	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	39449	11/14/22 11:43	KS	EET MID
Soluble	Analysis	300.0		1			39642	11/16/22 01:43	CH	EET MID

Client Sample ID: BH02 4'

Date Collected: 11/10/22 10:05

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	39563	11/14/22 16:30	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40174	11/23/22 06:29	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40324	11/23/22 13:25	SM	EET MID
Total/NA	Analysis	8015 NM		1			39644	11/15/22 16:29	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	39516	11/14/22 14:27	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 12:12	AJ	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	39449	11/14/22 11:43	KS	EET MID
Soluble	Analysis	300.0		1			39642	11/16/22 02:00	CH	EET MID

Client Sample ID: BH01 4'

Date Collected: 11/10/22 10:10

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	39563	11/14/22 16:30	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40174	11/23/22 06:49	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40324	11/23/22 13:25	SM	EET MID
Total/NA	Analysis	8015 NM		1			39644	11/15/22 16:29	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39516	11/14/22 14:27	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 13:57	AJ	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	39449	11/14/22 11:43	KS	EET MID
Soluble	Analysis	300.0		1			39642	11/16/22 02:06	CH	EET MID

Client Sample ID: BH01 5'

Date Collected: 11/10/22 10:20

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	39563	11/14/22 16:30	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40174	11/23/22 07:10	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40324	11/23/22 13:25	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Client Sample ID: BH01 5'

Date Collected: 11/10/22 10:20

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			39644	11/15/22 16:29	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39516	11/14/22 14:27	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 14:17	AJ	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	39449	11/14/22 11:43	KS	EET MID
Soluble	Analysis	300.0		1			39642	11/16/22 02:11	CH	EET MID

Client Sample ID: EFS01

Date Collected: 11/10/22 12:44

Date Received: 11/10/22 16:14

Lab Sample ID: 890-3432-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	39563	11/14/22 16:30	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40174	11/23/22 07:30	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40324	11/23/22 13:25	SM	EET MID
Total/NA	Analysis	8015 NM		1			39644	11/15/22 16:29	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39516	11/14/22 14:27	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 14:38	AJ	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	39449	11/14/22 11:43	KS	EET MID
Soluble	Analysis	300.0		1			39642	11/16/22 02:17	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3432-1
SDG: KH227019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3432-1	BH02 3'	Solid	11/10/22 09:45	11/10/22 16:14	3
890-3432-2	BH02 4'	Solid	11/10/22 10:05	11/10/22 16:14	4
890-3432-3	BH01 4'	Solid	11/10/22 10:10	11/10/22 16:14	4
890-3432-4	BH01 5'	Solid	11/10/22 10:20	11/10/22 16:14	5
890-3432-5	EFS01	Solid	11/10/22 12:44	11/10/22 16:14	2

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Joe Gunder	Bill to: (if different)	
Company Name:	Texascon	Company Name:	
Address:		Address:	
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	
Phone:		Email:	

Work Order Comments	
Program:	UST/PT <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:	
Reporting:	Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other: _____

Project Name:	Osage Boyd yard	Turn Around		ANALYSIS REQUEST	Preservative Codes None: NO DI Water: H ₂ O Cool: Cool MeOH: Me HCL: HC HNO ₃ : HN H ₂ SO ₄ : H ₂ H ₃ PO ₄ : HP NaHSO ₄ : NABIS Na ₂ S ₂ O ₅ : NaSO ₃ Zn Acetate+NaOH: Zn NaOH+Ascorbic Acid: SAPC
Project Number:	KH227019	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Rush			
Project Location:		Due Date:			
Sampler's Name:	Buckley Miller	TAT starts the day received by the lab, if received by 4:30pm			
PO #:		Temp Blank:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Parameters	
SAMPLE RECEIPT		Samples Received Intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Thermometer ID:	74111007
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Correction Factor:		Wet Ice:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Temperature Reading:	10.2		
Total Containers:		Corrected Temperature:	10.0		



890-3432 Chain of Custody

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Chloride (EPA 300)	BTEX (80248)	TPH (8015)	Sample Comments
BH02	3'	11/10	9:45	3'	G	1				
BH02	4'		10:05	4'	G	1				
BH01	4'		10:10	4'	G	1				
BH01	5'		10:20	5'	G	1				
EFS01	S		12:44	2'	C	1				

Total 200.7 / 6010 2008 / 6020: 8RCRA 13PPM Texas T1 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO₂ Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U Hg: 1631 / 245.1 / 7470 / 7471

Notes: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Buckley Miller	Joe Gunder	11-10-2016 13			

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3432-1

SDG Number: KH227019

Login Number: 3432

List Number: 1

Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3432-1

SDG Number: KH227019

Login Number: 3432
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 11/14/22 08:39 AM


Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Eurofins Carlsbad

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
11/23/2022 2:51:09 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).





Environment Testing

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock Texas 79424
Generated 11/21/2022 6:32:12 PM

JOB DESCRIPTION

osage boyd yasa
SDG NUMBER kh227019

JOB NUMBER

890-3440-1

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Laboratory Job ID: 890-3440-1
SDG: kh227019

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Client Sample Results	5
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	13
Lab Chronicle	15
Certification Summary	17
Method Summary	18
Sample Summary	19
Chain of Custody	20
Receipt Checklists	21
Appendix	23

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Job ID: 890-3440-1

Laboratory: Eurofins Carlsbad

Narrative	
Job Narrative 890-3440-1	

Receipt

The samples were received on 11/11/2022 3:03 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: E-FS 1.1 (890-3440-1), E-FS 3.1 (890-3440-2), E-FS 4.1 (890-3440-3) and BH03 (890-3440-4).

GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: E-FS 4.1 (890-3440-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

Method 8015MOD_NM: The method blank for preparation batch 880-39620 and analytical batch 880-39567 contained Gasoline Range Organics (GRO)-C6-C10 above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: E-FS 1.1

Lab Sample ID: 890-3440-1

Date Collected: 11/11/22 11:14

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0401	U	0.0401		mg/Kg		11/17/22 09:35	11/19/22 05:09	20
Toluene	0.0489		0.0401		mg/Kg		11/17/22 09:35	11/19/22 05:09	20
Ethylbenzene	0.500		0.0401		mg/Kg		11/17/22 09:35	11/19/22 05:09	20
m-Xylene & p-Xylene	0.455		0.0802		mg/Kg		11/17/22 09:35	11/19/22 05:09	20
o-Xylene	0.291		0.0401		mg/Kg		11/17/22 09:35	11/19/22 05:09	20
Xylenes, Total	0.746		0.0802		mg/Kg		11/17/22 09:35	11/19/22 05:09	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130	11/17/22 09:35	11/19/22 05:09	20
1,4-Difluorobenzene (Surr)	77		70 - 130	11/17/22 09:35	11/19/22 05:09	20

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	1.29		0.0802		mg/Kg			11/21/22 15:09	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	944		49.9		mg/Kg			11/16/22 09:14	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	90.8		49.9		mg/Kg		11/15/22 13:35	11/16/22 02:19	1
Diesel Range Organics (Over C10-C28)	546		49.9		mg/Kg		11/15/22 13:35	11/16/22 02:19	1
Oil Range Organics (Over C28-C36)	307		49.9		mg/Kg		11/15/22 13:35	11/16/22 02:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	97		70 - 130	11/15/22 13:35	11/16/22 02:19	1
o-Terphenyl	86		70 - 130	11/15/22 13:35	11/16/22 02:19	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1440		25.0		mg/Kg			11/18/22 02:08	5

Client Sample ID: E-FS 3.1

Lab Sample ID: 890-3440-2

Date Collected: 11/11/22 11:19

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0399	U	0.0399		mg/Kg		11/17/22 09:35	11/19/22 05:29	20
Toluene	<0.0399	U	0.0399		mg/Kg		11/17/22 09:35	11/19/22 05:29	20
Ethylbenzene	0.0599		0.0399		mg/Kg		11/17/22 09:35	11/19/22 05:29	20
m-Xylene & p-Xylene	<0.0798	U	0.0798		mg/Kg		11/17/22 09:35	11/19/22 05:29	20
o-Xylene	<0.0399	U	0.0399		mg/Kg		11/17/22 09:35	11/19/22 05:29	20
Xylenes, Total	<0.0798	U	0.0798		mg/Kg		11/17/22 09:35	11/19/22 05:29	20

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: E-FS 3.1

Lab Sample ID: 890-3440-2

Date Collected: 11/11/22 11:19

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		70 - 130				11/17/22 09:35	11/19/22 05:29	20
1,4-Difluorobenzene (Surr)	82		70 - 130				11/17/22 09:35	11/19/22 05:29	20
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0798	U	0.0798		mg/Kg			11/21/22 15:09	1
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	746		50.0		mg/Kg			11/16/22 09:14	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	62.5		50.0		mg/Kg		11/15/22 13:35	11/16/22 02:42	1
Diesel Range Organics (Over C10-C28)	431		50.0		mg/Kg		11/15/22 13:35	11/16/22 02:42	1
Oil Range Organics (Over C28-C36)	252		50.0		mg/Kg		11/15/22 13:35	11/16/22 02:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	104		70 - 130				11/15/22 13:35	11/16/22 02:42	1
o-Terphenyl	92		70 - 130				11/15/22 13:35	11/16/22 02:42	1
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1850		24.8		mg/Kg			11/18/22 02:15	5

Client Sample ID: E-FS 4.1

Lab Sample ID: 890-3440-3

Date Collected: 11/11/22 11:21

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0444		0.0402		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
Toluene	1.11		0.0402		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
Ethylbenzene	2.55		0.0402		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
m-Xylene & p-Xylene	2.44		0.0805		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
o-Xylene	1.26		0.0402		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
Xylenes, Total	3.70		0.0805		mg/Kg		11/17/22 09:35	11/19/22 05:49	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		70 - 130				11/17/22 09:35	11/19/22 05:49	20
1,4-Difluorobenzene (Surr)	64	S1-	70 - 130				11/17/22 09:35	11/19/22 05:49	20
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	7.40		0.0805		mg/Kg			11/21/22 15:09	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: E-FS 4.1

Lab Sample ID: 890-3440-3

Date Collected: 11/11/22 11:21

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	3250		49.9		mg/Kg			11/16/22 09:14	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	303		49.9		mg/Kg		11/15/22 13:35	11/16/22 01:58	1
Diesel Range Organics (Over C10-C28)	1900		49.9		mg/Kg		11/15/22 13:35	11/16/22 01:58	1
Oil Range Organics (Over C28-C36)	1050		49.9		mg/Kg		11/15/22 13:35	11/16/22 01:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	114		70 - 130				11/15/22 13:35	11/16/22 01:58	1
o-Terphenyl	99		70 - 130				11/15/22 13:35	11/16/22 01:58	1
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3080		25.2		mg/Kg			11/18/22 02:36	5

Client Sample ID: BH03

Lab Sample ID: 890-3440-4

Date Collected: 11/11/22 01:32

Matrix: Solid

Date Received: 11/11/22 15:03

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Benzene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
Toluene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/17/22 09:35	11/19/22 04:48	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	95		70 - 130				11/17/22 09:35	11/19/22 04:48	1	
1,4-Difluorobenzene (Surr)	110		70 - 130				11/17/22 09:35	11/19/22 04:48	1	
Method: TAL SOP Total BTEX - Total BTEX Calculation										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Total BTEX	<0.00402	U	0.00402		mg/Kg			11/21/22 15:09	1	
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Total TPH	<49.9	U	49.9		mg/Kg			11/16/22 09:14	1	
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/15/22 13:35	11/15/22 22:45	1	
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		11/15/22 13:35	11/15/22 22:45	1	
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/15/22 13:35	11/15/22 22:45	1	

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: BH03
Date Collected: 11/11/22 01:32
Date Received: 11/11/22 15:03
Sample Depth: 2

Lab Sample ID: 890-3440-4
Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	96		70 - 130	11/15/22 13:35	11/15/22 22:45	1
o-Terphenyl	98		70 - 130	11/15/22 13:35	11/15/22 22:45	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2030		25.1		mg/Kg			11/18/22 02:43	5

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-3440-1	E-FS 1.1	85	77
890-3440-2	E-FS 3.1	92	82
890-3440-3	E-FS 4.1	88	64 S1-
890-3440-4	BH03	95	110
LCS 880-39778/1-A	Lab Control Sample	100	103
LCSD 880-39778/2-A	Lab Control Sample Dup	90	97
MB 880-39778/5-A	Method Blank	75	106
MB 880-39818/5-A	Method Blank	76	106
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-3440-1	E-FS 1.1	97	86
890-3440-2	E-FS 3.1	104	92
890-3440-3	E-FS 4.1	114	99
890-3440-4	BH03	96	98
LCS 880-39620/2-A	Lab Control Sample	86	84
LCSD 880-39620/3-A	Lab Control Sample Dup	89	85
MB 880-39620/1-A	Method Blank	94	92
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-39778/5-A

Matrix: Solid

Analysis Batch: 39916

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39778

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 02:17	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 02:17	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 02:17	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/17/22 09:35	11/19/22 02:17	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 02:17	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/17/22 09:35	11/19/22 02:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	75		70 - 130	11/17/22 09:35	11/19/22 02:17	1
1,4-Difluorobenzene (Surr)	106		70 - 130	11/17/22 09:35	11/19/22 02:17	1

Lab Sample ID: LCS 880-39778/1-A

Matrix: Solid

Analysis Batch: 39916

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 39778

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.08007		mg/Kg		80	70 - 130
Toluene	0.100	0.1029		mg/Kg		103	70 - 130
Ethylbenzene	0.100	0.1044		mg/Kg		104	70 - 130
m-Xylene & p-Xylene	0.200	0.1912		mg/Kg		96	70 - 130
o-Xylene	0.100	0.09534		mg/Kg		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		70 - 130
1,4-Difluorobenzene (Surr)	103		70 - 130

Lab Sample ID: LCSD 880-39778/2-A

Matrix: Solid

Analysis Batch: 39916

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 39778

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.08010		mg/Kg		80	70 - 130	0	35
Toluene	0.100	0.09753		mg/Kg		98	70 - 130	5	35
Ethylbenzene	0.100	0.09716		mg/Kg		97	70 - 130	7	35
m-Xylene & p-Xylene	0.200	0.1792		mg/Kg		90	70 - 130	6	35
o-Xylene	0.100	0.09015		mg/Kg		90	70 - 130	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		70 - 130
1,4-Difluorobenzene (Surr)	97		70 - 130

Lab Sample ID: MB 880-39818/5-A

Matrix: Solid

Analysis Batch: 39916

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 39818

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/17/22 13:46	11/18/22 14:42	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/17/22 13:46	11/18/22 14:42	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-39818/5-A							Client Sample ID: Method Blank		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39916							Prep Batch: 39818		
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/17/22 13:46	11/18/22 14:42	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/17/22 13:46	11/18/22 14:42	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/17/22 13:46	11/18/22 14:42	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/17/22 13:46	11/18/22 14:42	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		70 - 130				11/17/22 13:46	11/18/22 14:42	1
1,4-Difluorobenzene (Surr)	106		70 - 130				11/17/22 13:46	11/18/22 14:42	1

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-39620/1-A							Client Sample ID: Method Blank		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39567							Prep Batch: 39620		
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/15/22 13:35	11/15/22 19:54	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/15/22 13:35	11/15/22 19:54	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/15/22 13:35	11/15/22 19:54	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	94		70 - 130				11/15/22 13:35	11/15/22 19:54	1
o-Terphenyl	92		70 - 130				11/15/22 13:35	11/15/22 19:54	1

Lab Sample ID: LCS 880-39620/2-A							Client Sample ID: Lab Control Sample		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39567							Prep Batch: 39620		
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	1000	953.5		mg/Kg		95	70 - 130		
Diesel Range Organics (Over C10-C28)	1000	838.5		mg/Kg		84	70 - 130		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
1-Chlorooctane	86		70 - 130						
o-Terphenyl	84		70 - 130						

Lab Sample ID: LCSD 880-39620/3-A							Client Sample ID: Lab Control Sample Dup		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 39567							Prep Batch: 39620		
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10	1000	1012		mg/Kg		101	70 - 130	6	20
Diesel Range Organics (Over C10-C28)	1000	888.8		mg/Kg		89	70 - 130	6	20

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 880-39620/3-A
Matrix: Solid
Analysis Batch: 39567

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39620

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
1-Chlorooctane	89		70 - 130
o-Terphenyl	85		70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39692/1-A
Matrix: Solid
Analysis Batch: 39819

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<5.00	U	5.00		mg/Kg			11/17/22 23:45	1

Lab Sample ID: LCS 880-39692/2-A
Matrix: Solid
Analysis Batch: 39819

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	250	255.6		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-39692/3-A
Matrix: Solid
Analysis Batch: 39819

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	250	247.4		mg/Kg		99	90 - 110	3	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

GC VOA

Prep Batch: 39778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	5035	
890-3440-2	E-FS 3.1	Total/NA	Solid	5035	
890-3440-3	E-FS 4.1	Total/NA	Solid	5035	
890-3440-4	BH03	Total/NA	Solid	5035	
MB 880-39778/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-39778/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-39778/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Prep Batch: 39818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-39818/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 39916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	8021B	39778
890-3440-2	E-FS 3.1	Total/NA	Solid	8021B	39778
890-3440-3	E-FS 4.1	Total/NA	Solid	8021B	39778
890-3440-4	BH03	Total/NA	Solid	8021B	39778
MB 880-39778/5-A	Method Blank	Total/NA	Solid	8021B	39778
MB 880-39818/5-A	Method Blank	Total/NA	Solid	8021B	39818
LCS 880-39778/1-A	Lab Control Sample	Total/NA	Solid	8021B	39778
LCSD 880-39778/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	39778

Analysis Batch: 40123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	Total BTEX	
890-3440-2	E-FS 3.1	Total/NA	Solid	Total BTEX	
890-3440-3	E-FS 4.1	Total/NA	Solid	Total BTEX	
890-3440-4	BH03	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 39567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	8015B NM	39620
890-3440-2	E-FS 3.1	Total/NA	Solid	8015B NM	39620
890-3440-3	E-FS 4.1	Total/NA	Solid	8015B NM	39620
890-3440-4	BH03	Total/NA	Solid	8015B NM	39620
MB 880-39620/1-A	Method Blank	Total/NA	Solid	8015B NM	39620
LCS 880-39620/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	39620
LCSD 880-39620/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	39620

Prep Batch: 39620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	8015NM Prep	
890-3440-2	E-FS 3.1	Total/NA	Solid	8015NM Prep	
890-3440-3	E-FS 4.1	Total/NA	Solid	8015NM Prep	
890-3440-4	BH03	Total/NA	Solid	8015NM Prep	
MB 880-39620/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-39620/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-39620/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

GC Semi VOA

Analysis Batch: 39671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Total/NA	Solid	8015 NM	
890-3440-2	E-FS 3.1	Total/NA	Solid	8015 NM	
890-3440-3	E-FS 4.1	Total/NA	Solid	8015 NM	
890-3440-4	BH03	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 39692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Soluble	Solid	DI Leach	
890-3440-2	E-FS 3.1	Soluble	Solid	DI Leach	
890-3440-3	E-FS 4.1	Soluble	Solid	DI Leach	
890-3440-4	BH03	Soluble	Solid	DI Leach	
MB 880-39692/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39692/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39692/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Analysis Batch: 39819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3440-1	E-FS 1.1	Soluble	Solid	300.0	39692
890-3440-2	E-FS 3.1	Soluble	Solid	300.0	39692
890-3440-3	E-FS 4.1	Soluble	Solid	300.0	39692
890-3440-4	BH03	Soluble	Solid	300.0	39692
MB 880-39692/1-A	Method Blank	Soluble	Solid	300.0	39692
LCS 880-39692/2-A	Lab Control Sample	Soluble	Solid	300.0	39692
LCSD 880-39692/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39692

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: E-FS 1.1

Lab Sample ID: 890-3440-1

Date Collected: 11/11/22 11:14

Matrix: Solid

Date Received: 11/11/22 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	39916	11/19/22 05:09	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40123	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39671	11/16/22 09:14	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39620	11/15/22 13:35	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/16/22 02:19	AJ	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	39692	11/16/22 10:18	KS	EET MID
Soluble	Analysis	300.0		5			39819	11/18/22 02:08	CH	EET MID

Client Sample ID: E-FS 3.1

Lab Sample ID: 890-3440-2

Date Collected: 11/11/22 11:19

Matrix: Solid

Date Received: 11/11/22 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	39916	11/19/22 05:29	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40123	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39671	11/16/22 09:14	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39620	11/15/22 13:35	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/16/22 02:42	AJ	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	39692	11/16/22 10:18	KS	EET MID
Soluble	Analysis	300.0		5			39819	11/18/22 02:15	CH	EET MID

Client Sample ID: E-FS 4.1

Lab Sample ID: 890-3440-3

Date Collected: 11/11/22 11:21

Matrix: Solid

Date Received: 11/11/22 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	39916	11/19/22 05:49	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40123	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39671	11/16/22 09:14	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39620	11/15/22 13:35	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/16/22 01:58	AJ	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	39692	11/16/22 10:18	KS	EET MID
Soluble	Analysis	300.0		5			39819	11/18/22 02:36	CH	EET MID

Client Sample ID: BH03

Lab Sample ID: 890-3440-4

Date Collected: 11/11/22 01:32

Matrix: Solid

Date Received: 11/11/22 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39916	11/19/22 04:48	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40123	11/21/22 15:09	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Client Sample ID: BH03
Date Collected: 11/11/22 01:32
Date Received: 11/11/22 15:03

Lab Sample ID: 890-3440-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			39671	11/16/22 09:14	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39620	11/15/22 13:35	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39567	11/15/22 22:45	AJ	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	39692	11/16/22 10:18	KS	EET MID
Soluble	Analysis	300.0		5			39819	11/18/22 02:43	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: osage boyd yasa

Job ID: 890-3440-1
SDG: kh227019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3440-1	E-FS 1.1	Solid	11/11/22 11:14	11/11/22 15:03	2
890-3440-2	E-FS 3.1	Solid	11/11/22 11:19	11/11/22 15:03	2
890-3440-3	E-FS 4.1	Solid	11/11/22 11:21	11/11/22 15:03	2
890-3440-4	BH03	Solid	11/11/22 01:32	11/11/22 15:03	2

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

www.xenco.com Page _____ of _____

Project Manager:	<i>Joe Guadalupe</i>	Bill to: (if different)	
Company Name:	<i>Texaco</i>	Company Name:	
Address:	<i>4518 W Pierce St.</i>	Address:	
City, State ZIP:	<i>Carlsbad NM 88220</i>	City, State ZIP:	
Phone:	<i>575 689 4020</i>	Email:	<i>buckley@texaco.com</i>

Program: <input type="checkbox"/> UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other: _____

Project Name:	<i>Orange, Boyd Yaseo</i>	Turn Around	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Rush	Pst. Code	
Project Number:	<i>KH227019</i>	Due Date:			
Project Location:	<i>Buckley Miller</i>	TAT starts the day received by the lab, if received by 4:30pm			
Sampler's Name:	<i>Buckley Miller</i>	Wet Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
P.O. #:		Thermometer ID:	<i>11W207</i>		
SAMPLE RECEIPT	Temp Blank: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Correction Factor:	<i>-0.2</i>		
Samples Received intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Temperature Reading:	<i>1.2</i>		
Cooler Custody Seals:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Corrected Temperature:	<i>1.0</i>		
Sample Custody Seals:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A				
Total Containers:					



890-3440 Chain of Custody

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Parameters	Preservative Codes	Sample Comments
<i>E-FS 1.1</i>	<i>S</i>	<i>11/11</i>	<i>11:14</i>	<i>2'</i>	<i>C</i>	<i>1</i>	<i>Chloride (method 300)</i>	None: NO DI Water: H ₂ O	
<i>E-FS 3.1</i>	<i>S</i>	<i>11:19</i>	<i>11:19</i>	<i>1</i>	<i>C</i>	<i>1</i>	<i>BTEX (8024B)</i>	Cool: Cool MeOH: Me	
<i>E-FS 4.1</i>	<i>S</i>	<i>11:21</i>	<i>11:21</i>	<i>1</i>	<i>C</i>	<i>1</i>	<i>TPH (8015)</i>	HCL: HC HNO ₃ : HN	
<i>BHO3</i>	<i>S</i>	<i>11:32</i>	<i>11:32</i>	<i>1</i>	<i>C</i>	<i>1</i>		H ₂ SO ₄ : H ₂ H ₃ PO ₄ : HP	
								NaHSO ₄ : NABIS	
								Na ₂ S ₂ O ₅ : NaSO ₃	
								Zn Acetate+NaOH: Zn	
								NaOH+Ascorbic Acid: SAPC	

Total 2007 / 6010 2008 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SIO₂ Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
<i>Buckley Miller</i>	<i>Joe Guadalupe</i>	<i>11-11-22 1503</i>			

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3440-1

SDG Number: kh227019

Login Number: 3440

List Source: Eurofins Carlsbad

List Number: 1

Creator: Clifton, Cloe

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3440-1

SDG Number: kh227019

Login Number: 3440

List Number: 2

Creator: Rodriguez, Leticia

List Source: Eurofins Midland

List Creation: 11/15/22 11:14 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Eurofins Carlsbad**Job Notes**

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization

Generated
11/21/2022 6:32:12 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

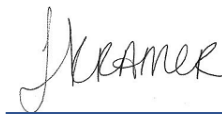
· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).





Environment Testing

1

2

3

4

5

6

7

8

9

10

11

12

13

14

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock, Texas 79424

Generated 11/29/2022 3:22:02 PM

JOB DESCRIPTION

Osage Boyd yaser
SDG NUMBER KH227019

JOB NUMBER

890-3485-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

Eurofins Carlsbad

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
11/29/2022 3:22:02 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).



Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Laboratory Job ID: 890-3485-1
SDG: KH227019

Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Client Sample Results	7
Surrogate Summary	9
QC Sample Results	10
QC Association Summary	13
Lab Chronicle	15
Certification Summary	16
Method Summary	17
Sample Summary	18
Chain of Custody	19
Receipt Checklists	20

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
SQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Job ID: 890-3485-1

Laboratory: Eurofins Carlsbad

Narrative	Job Narrative 890-3485-1
-----------	-----------------------------

Receipt

The samples were received on 11/15/2022 3:33 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.0°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: SE-WS01 (890-3485-1) and ES-WS01 (890-3485-2).

GC VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (LCS 880-40185/2-A) and (LCSD 880-40185/3-A). Evidence of matrix interferences is not obvious.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Client Sample ID: SE-WS01
Date Collected: 11/15/22 12:27
Date Received: 11/15/22 15:33
Sample Depth: 0.2'

Lab Sample ID: 890-3485-1
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.996	U	0.996		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
Toluene	10.2		0.996		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
Ethylbenzene	16.4		0.996		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
m-Xylene & p-Xylene	19.8		1.99		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
o-Xylene	7.47		0.996		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
Xylenes, Total	27.3		1.99		mg/Kg		11/28/22 14:35	11/29/22 13:13	500
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		70 - 130				11/28/22 14:35	11/29/22 13:13	500
1,4-Difluorobenzene (Surr)	108		70 - 130				11/28/22 14:35	11/29/22 13:13	500

Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	53.9		1.99		mg/Kg			11/29/22 14:49	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	8290		250		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	513		250		mg/Kg		11/22/22 09:47	11/22/22 18:21	5
Diesel Range Organics (Over C10-C28)	7010		250		mg/Kg		11/22/22 09:47	11/22/22 18:21	5
Oil Range Organics (Over C28-C36)	769		250		mg/Kg		11/22/22 09:47	11/22/22 18:21	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	113		70 - 130				11/22/22 09:47	11/22/22 18:21	5
o-Terphenyl	126		70 - 130				11/22/22 09:47	11/22/22 18:21	5

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	345		4.99		mg/Kg			11/22/22 01:11	1

Client Sample ID: ES-WS01
Date Collected: 11/15/22 12:32
Date Received: 11/15/22 15:33
Sample Depth: 0.2'

Lab Sample ID: 890-3485-2
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.139		0.0398		mg/Kg		11/28/22 14:35	11/29/22 13:34	20
Toluene	0.406		0.0398		mg/Kg		11/28/22 14:35	11/29/22 13:34	20
Ethylbenzene	0.599		0.0398		mg/Kg		11/28/22 14:35	11/29/22 13:34	20
m-Xylene & p-Xylene	0.700		0.0795		mg/Kg		11/28/22 14:35	11/29/22 13:34	20
o-Xylene	0.392		0.0398		mg/Kg		11/28/22 14:35	11/29/22 13:34	20
Xylenes, Total	1.09		0.0795		mg/Kg		11/28/22 14:35	11/29/22 13:34	20

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Client Sample ID: ES-WS01
Date Collected: 11/15/22 12:32
Date Received: 11/15/22 15:33
Sample Depth: 0.2'

Lab Sample ID: 890-3485-2
Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	128		70 - 130				11/28/22 14:35	11/29/22 13:34	20
1,4-Difluorobenzene (Surr)	113		70 - 130				11/28/22 14:35	11/29/22 13:34	20
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	2.24		0.0795		mg/Kg	-		11/29/22 14:49	1
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	76.5		49.9		mg/Kg	-		11/23/22 12:17	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg	-	11/22/22 09:47	11/22/22 17:37	1
Diesel Range Organics (Over C10-C28)	76.5		49.9		mg/Kg	-	11/22/22 09:47	11/22/22 17:37	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg	-	11/22/22 09:47	11/22/22 17:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	81		70 - 130				11/22/22 09:47	11/22/22 17:37	1
o-Terphenyl	96		70 - 130				11/22/22 09:47	11/22/22 17:37	1
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	343		5.01		mg/Kg	-		11/22/22 01:17	1

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)
Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-3485-1	SE-WS01	105	108
890-3485-2	ES-WS01	128	113
LCS 880-40471/1-A	Lab Control Sample	106	109
LCSD 880-40471/2-A	Lab Control Sample Dup	93	113
MB 880-40471/5-A	Method Blank	82	104
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

Method: 8015B NM - Diesel Range Organics (DRO) (GC)
Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-3485-1	SE-WS01	113	126
890-3485-2	ES-WS01	81	96
LCS 880-40185/2-A	Lab Control Sample	163 S1+	190 S1+
LCSD 880-40185/3-A	Lab Control Sample Dup	157 S1+	180 S1+
MB 880-40185/1-A	Method Blank	108	126
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-40471/5-A

Matrix: Solid

Analysis Batch: 40540

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40471

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:35	11/29/22 10:48	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:35	11/29/22 10:48	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:35	11/29/22 10:48	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/28/22 14:35	11/29/22 10:48	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:35	11/29/22 10:48	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/28/22 14:35	11/29/22 10:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	82		70 - 130	11/28/22 14:35	11/29/22 10:48	1
1,4-Difluorobenzene (Surr)	104		70 - 130	11/28/22 14:35	11/29/22 10:48	1

Lab Sample ID: LCS 880-40471/1-A

Matrix: Solid

Analysis Batch: 40540

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 40471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1088		mg/Kg		109	70 - 130
Toluene	0.100	0.1011		mg/Kg		101	70 - 130
Ethylbenzene	0.100	0.1035		mg/Kg		103	70 - 130
m-Xylene & p-Xylene	0.200	0.2150		mg/Kg		108	70 - 130
o-Xylene	0.100	0.1054		mg/Kg		105	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		70 - 130
1,4-Difluorobenzene (Surr)	109		70 - 130

Lab Sample ID: LCSD 880-40471/2-A

Matrix: Solid

Analysis Batch: 40540

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 40471

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1068		mg/Kg		107	70 - 130	2	35
Toluene	0.100	0.09285		mg/Kg		93	70 - 130	8	35
Ethylbenzene	0.100	0.08914		mg/Kg		89	70 - 130	15	35
m-Xylene & p-Xylene	0.200	0.1804		mg/Kg		90	70 - 130	18	35
o-Xylene	0.100	0.08869		mg/Kg		89	70 - 130	17	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		70 - 130
1,4-Difluorobenzene (Surr)	113		70 - 130

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-40185/1-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40185

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/22/22 08:09	11/22/22 08:21	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/22/22 08:09	11/22/22 08:21	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/22/22 08:09	11/22/22 08:21	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	108		70 - 130				11/22/22 08:09	11/22/22 08:21	1
o-Terphenyl	126		70 - 130				11/22/22 08:09	11/22/22 08:21	1

Lab Sample ID: LCS 880-40185/2-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 40185

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	816.2		mg/Kg		82	70 - 130
Diesel Range Organics (Over C10-C28)	1000	988.2		mg/Kg		99	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1-Chlorooctane	163	S1+	70 - 130				
o-Terphenyl	190	S1+	70 - 130				

Lab Sample ID: LCSD 880-40185/3-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 40185

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	827.6		mg/Kg		83	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	1000	925.3		mg/Kg		93	70 - 130	7	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
1-Chlorooctane	157	S1+	70 - 130						
o-Terphenyl	180	S1+	70 - 130						

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39830/1-A

Matrix: Solid

Analysis Batch: 40139

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/21/22 23:52	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-39830/2-A

Matrix: Solid

Analysis Batch: 40139

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	256.0		mg/Kg		102	90 - 110

Lab Sample ID: LCSD 880-39830/3-A

Matrix: Solid

Analysis Batch: 40139

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	250	256.0		mg/Kg		102	90 - 110	0	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

GC VOA

Prep Batch: 40471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	5035	
890-3485-2	ES-WS01	Total/NA	Solid	5035	
MB 880-40471/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-40471/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-40471/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 40540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	8021B	40471
890-3485-2	ES-WS01	Total/NA	Solid	8021B	40471
MB 880-40471/5-A	Method Blank	Total/NA	Solid	8021B	40471
LCS 880-40471/1-A	Lab Control Sample	Total/NA	Solid	8021B	40471
LCSD 880-40471/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	40471

Analysis Batch: 40619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	Total BTEX	
890-3485-2	ES-WS01	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 40170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	8015B NM	40185
890-3485-2	ES-WS01	Total/NA	Solid	8015B NM	40185
MB 880-40185/1-A	Method Blank	Total/NA	Solid	8015B NM	40185
LCS 880-40185/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	40185
LCSD 880-40185/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	40185

Prep Batch: 40185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	8015NM Prep	
890-3485-2	ES-WS01	Total/NA	Solid	8015NM Prep	
MB 880-40185/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-40185/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-40185/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 40308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Total/NA	Solid	8015 NM	
890-3485-2	ES-WS01	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 39830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Soluble	Solid	DI Leach	
890-3485-2	ES-WS01	Soluble	Solid	DI Leach	
MB 880-39830/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39830/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39830/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

HPLC/IC

Analysis Batch: 40139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3485-1	SE-WS01	Soluble	Solid	300.0	39830
890-3485-2	ES-WS01	Soluble	Solid	300.0	39830
MB 880-39830/1-A	Method Blank	Soluble	Solid	300.0	39830
LCS 880-39830/2-A	Lab Control Sample	Soluble	Solid	300.0	39830
LCSD 880-39830/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39830

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Client Sample ID: SE-WS01
Date Collected: 11/15/22 12:27
Date Received: 11/15/22 15:33

Lab Sample ID: 890-3485-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	40471	11/28/22 14:35	MNR	EET MID
Total/NA	Analysis	8021B		500	5 mL	5 mL	40540	11/29/22 13:13	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40619	11/29/22 14:49	SM	EET MID
Total/NA	Analysis	8015 NM		1			40308	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	40185	11/22/22 09:47	AM	EET MID
Total/NA	Analysis	8015B NM		5	1 uL	1 uL	40170	11/22/22 18:21	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	39830	11/17/22 14:36	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40139	11/22/22 01:11	CH	EET MID

Client Sample ID: ES-WS01
Date Collected: 11/15/22 12:32
Date Received: 11/15/22 15:33

Lab Sample ID: 890-3485-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40471	11/28/22 14:35	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	40540	11/29/22 13:34	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40619	11/29/22 14:49	SM	EET MID
Total/NA	Analysis	8015 NM		1			40308	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	40185	11/22/22 09:47	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/22/22 17:37	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	39830	11/17/22 14:36	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40139	11/22/22 01:17	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd yaser

Job ID: 890-3485-1
SDG: KH227019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3485-1	SE-WS01	Solid	11/15/22 12:27	11/15/22 15:33	0.2'
890-3485-2	ES-WS01	Solid	11/15/22 12:32	11/15/22 15:33	0.2'

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



Environment Testing

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No:

www.xenco.com Page 1 of 1

Project Manager:						Bill to: (if different)					
Company Name:						Company Name:					
Address:						Address:					
City, State ZIP:						City, State ZIP:					
Phone:						Email:					
Project Name:											
Project Number:											
Project Location:											
Sampler's Name:											
PO #:											
SAMPLE RECEIPT											
Samples Received In tact:											
Cooler Custody Seals:											
Sample Custody Seals:											
Total Containers:											
Sample Identification											
Matrix											
Date Sampled											
Time Sampled											
Depth											
Grab/Comp											
# of Cont.											
Parameters											
Chloride (EPA)											
BTEX (80240)											
TPH (8015)											
ANALYSIS REQUEST											
Preservative Codes											
None: NO											
DI Water: H ₂ O											
Cool: Cool											
MeOH: Me											
HCL: HCl											
HNO ₃ : HN											
H ₂ SO ₄ : H ₂											
NaOH: Na											
H ₃ PO ₄ : HP											
NaHSO ₄ : NABIS											
Na ₂ S ₂ O ₅ : NaSO ₃											
Zn Acetate+NaOH: Zn											
NaOH+Ascorbic Acid: SAPC											
Sample Comments											

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3485-1

SDG Number: KH227019

Login Number: 3485

List Number: 1

Creator: Stutzman, Amanda

List Source: Eurofins Carlsbad

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3485-1

SDG Number: KH227019

Login Number: 3485

List Number: 2

Creator: Rodriguez, Leticia

List Source: Eurofins Midland

List Creation: 11/17/22 02:07 PM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	



Environment Testing

1

2

3

4

5

6

7

8

9

10

11

12

13

14

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock, Texas 79424

Generated 11/30/2022 11:11:20 AM

JOB DESCRIPTION

Osage Boyd Yaso
SDG NUMBER KH227019

JOB NUMBER


890-3492-1

Eurofins Carlsbad

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
11/30/2022 11:11:20 AM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).



Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Laboratory Job ID: 890-3492-1
SDG: KH227019

Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Client Sample Results	7
Surrogate Summary	19
QC Sample Results	21
QC Association Summary	25
Lab Chronicle	29
Certification Summary	34
Method Summary	35
Sample Summary	36
Chain of Custody	37
Receipt Checklists	39

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Job ID: 890-3492-1

Laboratory: Eurofins Carlsbad

Narrative	
	Job Narrative 890-3492-1

Receipt

The samples were received on 11/16/2022 2:32 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.6°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: S-WS03 (890-3492-1), S-WS04 (890-3492-2), SW-FS01 (890-3492-3), SE-FS01 (890-3492-4), EM-WS01 (890-3492-5), EM-FS02 (890-3492-6), EN-WS01 (890-3492-7), EN-WS02 (890-3492-8), EN-FS01 (890-3492-9), N-WS01 (890-3492-10), WN-WS01 (890-3492-11), WN-WS02 (890-3492-12), WN-FS01 (890-3492-13) and WN-FS02 (890-3492-14).

GC VOA

Method 8021B: Surrogate recovery for the following samples were outside control limits: N-WS01 (890-3492-10) and WN-WS01 (890-3492-11). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-40177 and analytical batch 880-40170 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (LCS 880-40177/2-A) and (LCSD 880-40177/3-A). Evidence of matrix interferences is not obvious.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: S-WS03

Lab Sample ID: 890-3492-1

Date Collected: 11/16/22 10:57

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.198	U	0.198		mg/Kg		11/28/22 10:23	11/28/22 13:59	100
Toluene	<0.198	U	0.198		mg/Kg		11/28/22 10:23	11/28/22 13:59	100
Ethylbenzene	1.34		0.198		mg/Kg		11/28/22 10:23	11/28/22 13:59	100
m-Xylene & p-Xylene	1.72		0.396		mg/Kg		11/28/22 10:23	11/28/22 13:59	100
o-Xylene	0.848		0.198		mg/Kg		11/28/22 10:23	11/28/22 13:59	100
Xylenes, Total	2.57		0.396		mg/Kg		11/28/22 10:23	11/28/22 13:59	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		70 - 130	11/28/22 10:23	11/28/22 13:59	100
1,4-Difluorobenzene (Surr)	94		70 - 130	11/28/22 10:23	11/28/22 13:59	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	3.91		0.396		mg/Kg			11/28/22 16:52	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1690		49.8		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	127		49.8		mg/Kg		11/22/22 08:21	11/23/22 04:36	1
Diesel Range Organics (Over C10-C28)	1400		49.8		mg/Kg		11/22/22 08:21	11/23/22 04:36	1
Oil Range Organics (Over C28-C36)	166		49.8		mg/Kg		11/22/22 08:21	11/23/22 04:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	83		70 - 130	11/22/22 08:21	11/23/22 04:36	1
o-Terphenyl	91		70 - 130	11/22/22 08:21	11/23/22 04:36	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	159		4.97		mg/Kg			11/22/22 15:23	1

Client Sample ID: S-WS04

Lab Sample ID: 890-3492-2

Date Collected: 11/16/22 10:59

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.201	U	0.201		mg/Kg		11/28/22 10:23	11/28/22 14:19	100
Toluene	0.429		0.201		mg/Kg		11/28/22 10:23	11/28/22 14:19	100
Ethylbenzene	0.992		0.201		mg/Kg		11/28/22 10:23	11/28/22 14:19	100
m-Xylene & p-Xylene	1.01		0.402		mg/Kg		11/28/22 10:23	11/28/22 14:19	100
o-Xylene	0.546		0.201		mg/Kg		11/28/22 10:23	11/28/22 14:19	100
Xylenes, Total	1.56		0.402		mg/Kg		11/28/22 10:23	11/28/22 14:19	100

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: S-WS04

Lab Sample ID: 890-3492-2

Date Collected: 11/16/22 10:59

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130				11/28/22 10:23	11/28/22 14:19	100
1,4-Difluorobenzene (Surr)	88		70 - 130				11/28/22 10:23	11/28/22 14:19	100
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	2.98		0.402		mg/Kg			11/28/22 16:52	1
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	4630		250		mg/Kg			11/23/22 12:17	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<250	U	250		mg/Kg		11/22/22 08:21	11/23/22 03:09	5
Diesel Range Organics (Over C10-C28)	3900		250		mg/Kg		11/22/22 08:21	11/23/22 03:09	5
Oil Range Organics (Over C28-C36)	733		250		mg/Kg		11/22/22 08:21	11/23/22 03:09	5
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	83		70 - 130				11/22/22 08:21	11/23/22 03:09	5
o-Terphenyl	99		70 - 130				11/22/22 08:21	11/23/22 03:09	5
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	183		24.8		mg/Kg			11/22/22 15:40	5

Client Sample ID: SW-FS01

Lab Sample ID: 890-3492-3

Date Collected: 11/16/22 11:02

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.199	U	0.199		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
Toluene	0.983		0.199		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
Ethylbenzene	1.65		0.199		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
m-Xylene & p-Xylene	1.68		0.398		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
o-Xylene	0.864		0.199		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
Xylenes, Total	2.54		0.398		mg/Kg		11/28/22 10:23	11/28/22 14:40	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130				11/28/22 10:23	11/28/22 14:40	100
1,4-Difluorobenzene (Surr)	96		70 - 130				11/28/22 10:23	11/28/22 14:40	100
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	5.18		0.398		mg/Kg			11/28/22 16:52	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: SW-FS01

Lab Sample ID: 890-3492-3

Date Collected: 11/16/22 11:02

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	4000		49.9		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	145		49.9		mg/Kg		11/22/22 08:21	11/23/22 02:03	1
Diesel Range Organics (Over C10-C28)	3420		49.9		mg/Kg		11/22/22 08:21	11/23/22 02:03	1
Oil Range Organics (Over C28-C36)	436		49.9		mg/Kg		11/22/22 08:21	11/23/22 02:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	93		70 - 130				11/22/22 08:21	11/23/22 02:03	1
o-Terphenyl	101		70 - 130				11/22/22 08:21	11/23/22 02:03	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	288		5.02		mg/Kg			11/22/22 15:46	1

Client Sample ID: SE-FS01

Lab Sample ID: 890-3492-4

Date Collected: 11/16/22 11:04

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.199	U	0.199		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
Toluene	4.54		0.199		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
Ethylbenzene	5.81		0.199		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
m-Xylene & p-Xylene	6.16		0.398		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
o-Xylene	2.69		0.199		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
Xylenes, Total	8.85		0.398		mg/Kg		11/28/22 10:23	11/28/22 15:00	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130				11/28/22 10:23	11/28/22 15:00	100
1,4-Difluorobenzene (Surr)	86		70 - 130				11/28/22 10:23	11/28/22 15:00	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	19.2		0.398		mg/Kg			11/28/22 16:52	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	8590		249		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	569		249		mg/Kg		11/22/22 08:21	11/23/22 03:30	5
Diesel Range Organics (Over C10-C28)	7140		249		mg/Kg		11/22/22 08:21	11/23/22 03:30	5

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: SE-FS01

Lab Sample ID: 890-3492-4

Date Collected: 11/16/22 11:04

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Oil Range Organics (Over C28-C36)	883		249		mg/Kg		11/22/22 08:21	11/23/22 03:30	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	97		70 - 130				11/22/22 08:21	11/23/22 03:30	5
o-Terphenyl	129		70 - 130				11/22/22 08:21	11/23/22 03:30	5

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	791		25.0		mg/Kg			11/22/22 15:51	5

Client Sample ID: EM-WS01

Lab Sample ID: 890-3492-5

Date Collected: 11/16/22 11:07

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.200	U	0.200		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
Toluene	<0.200	U	0.200		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
Ethylbenzene	2.00		0.200		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
m-Xylene & p-Xylene	1.93		0.399		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
o-Xylene	1.15		0.200		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
Xylenes, Total	3.08		0.399		mg/Kg		11/28/22 10:23	11/28/22 15:21	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	81		70 - 130				11/28/22 10:23	11/28/22 15:21	100
1,4-Difluorobenzene (Surr)	88		70 - 130				11/28/22 10:23	11/28/22 15:21	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	5.08		0.399		mg/Kg			11/28/22 16:52	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1620		50.0		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	172		50.0		mg/Kg		11/22/22 08:21	11/23/22 04:14	1
Diesel Range Organics (Over C10-C28)	1270		50.0		mg/Kg		11/22/22 08:21	11/23/22 04:14	1
Oil Range Organics (Over C28-C36)	174		50.0		mg/Kg		11/22/22 08:21	11/23/22 04:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	88		70 - 130				11/22/22 08:21	11/23/22 04:14	1
o-Terphenyl	96		70 - 130				11/22/22 08:21	11/23/22 04:14	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: EM-WS01

Lab Sample ID: 890-3492-5

Date Collected: 11/16/22 11:07

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	932		24.9		mg/Kg			11/22/22 15:57	5

Client Sample ID: EM-FS02

Lab Sample ID: 890-3492-6

Date Collected: 11/16/22 11:14

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.201	U	0.201		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
Toluene	1.76		0.201		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
Ethylbenzene	4.41		0.201		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
m-Xylene & p-Xylene	3.95		0.402		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
o-Xylene	2.05		0.201		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
Xylenes, Total	6.00		0.402		mg/Kg		11/28/22 10:23	11/28/22 15:41	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130				11/28/22 10:23	11/28/22 15:41	100
1,4-Difluorobenzene (Surr)	91		70 - 130				11/28/22 10:23	11/28/22 15:41	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	12.2		0.402		mg/Kg			11/28/22 16:52	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	2810		50.0		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	270		50.0		mg/Kg		11/22/22 08:21	11/23/22 03:52	1
Diesel Range Organics (Over C10-C28)	2240		50.0		mg/Kg		11/22/22 08:21	11/23/22 03:52	1
Oil Range Organics (Over C28-C36)	302		50.0		mg/Kg		11/22/22 08:21	11/23/22 03:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	108		70 - 130				11/22/22 08:21	11/23/22 03:52	1
o-Terphenyl	114		70 - 130				11/22/22 08:21	11/23/22 03:52	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1110		25.3		mg/Kg			11/22/22 16:03	5

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: EN-WS01

Lab Sample ID: 890-3492-7

Date Collected: 11/16/22 11:16

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 14:44	20
Toluene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 14:44	20
Ethylbenzene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 14:44	20
m-Xylene & p-Xylene	<0.0795	U	0.0795		mg/Kg		11/28/22 14:18	11/29/22 14:44	20
o-Xylene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 14:44	20
Xylenes, Total	<0.0795	U	0.0795		mg/Kg		11/28/22 14:18	11/29/22 14:44	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		70 - 130	11/28/22 14:18	11/29/22 14:44	20
1,4-Difluorobenzene (Surr)	71		70 - 130	11/28/22 14:18	11/29/22 14:44	20

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0795	U	0.0795		mg/Kg			11/29/22 15:04	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	230		49.9		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/22/22 08:21	11/23/22 00:35	1
Diesel Range Organics (Over C10-C28)	230		49.9		mg/Kg		11/22/22 08:21	11/23/22 00:35	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/22/22 08:21	11/23/22 00:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	89		70 - 130	11/22/22 08:21	11/23/22 00:35	1
o-Terphenyl	103		70 - 130	11/22/22 08:21	11/23/22 00:35	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1260		24.8		mg/Kg			11/22/22 16:09	5

Client Sample ID: EN-WS02

Lab Sample ID: 890-3492-8

Date Collected: 11/16/22 11:19

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.199	U	0.199		mg/Kg		11/28/22 10:23	11/28/22 19:14	100
Toluene	0.863		0.199		mg/Kg		11/28/22 10:23	11/28/22 19:14	100
Ethylbenzene	2.25		0.199		mg/Kg		11/28/22 10:23	11/28/22 19:14	100
m-Xylene & p-Xylene	2.37		0.398		mg/Kg		11/28/22 10:23	11/28/22 19:14	100
o-Xylene	1.11		0.199		mg/Kg		11/28/22 10:23	11/28/22 19:14	100
Xylenes, Total	3.48		0.398		mg/Kg		11/28/22 10:23	11/28/22 19:14	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130	11/28/22 10:23	11/28/22 19:14	100

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: EN-WS02

Lab Sample ID: 890-3492-8

Date Collected: 11/16/22 11:19

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	87		70 - 130	11/28/22 10:23	11/28/22 19:14	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	6.59		0.398		mg/Kg			11/29/22 09:34	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	3830		50.0		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	192		50.0		mg/Kg		11/22/22 08:21	11/23/22 01:41	1
Diesel Range Organics (Over C10-C28)	3150		50.0		mg/Kg		11/22/22 08:21	11/23/22 01:41	1
Oil Range Organics (Over C28-C36)	483		50.0		mg/Kg		11/22/22 08:21	11/23/22 01:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	106		70 - 130				11/22/22 08:21	11/23/22 01:41	1
o-Terphenyl	117		70 - 130				11/22/22 08:21	11/23/22 01:41	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9900		99.6		mg/Kg			11/22/22 16:14	20

Client Sample ID: EN-FS01

Lab Sample ID: 890-3492-9

Date Collected: 11/16/22 11:23

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.200	U	0.200		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
Toluene	0.969		0.200		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
Ethylbenzene	2.25		0.200		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
m-Xylene & p-Xylene	2.43		0.399		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
o-Xylene	1.15		0.200		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
Xylenes, Total	3.58		0.399		mg/Kg		11/28/22 10:23	11/28/22 19:34	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130				11/28/22 10:23	11/28/22 19:34	100
1,4-Difluorobenzene (Surr)	94		70 - 130				11/28/22 10:23	11/28/22 19:34	100

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	6.80		0.399		mg/Kg			11/29/22 09:34	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: EN-FS01

Lab Sample ID: 890-3492-9

Date Collected: 11/16/22 11:23

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	3550		50.0		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	166		50.0		mg/Kg		11/22/22 08:21	11/23/22 02:47	1
Diesel Range Organics (Over C10-C28)	3000		50.0		mg/Kg		11/22/22 08:21	11/23/22 02:47	1
Oil Range Organics (Over C28-C36)	381		50.0		mg/Kg		11/22/22 08:21	11/23/22 02:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	103		70 - 130				11/22/22 08:21	11/23/22 02:47	1
o-Terphenyl	111		70 - 130				11/22/22 08:21	11/23/22 02:47	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1210		25.1		mg/Kg			11/22/22 04:37	5

Client Sample ID: N-WS01

Lab Sample ID: 890-3492-10

Date Collected: 11/16/22 11:27

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
Toluene	0.0426		0.0398		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
Ethylbenzene	0.108		0.0398		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
m-Xylene & p-Xylene	0.191		0.0795		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
o-Xylene	0.130		0.0398		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
Xylenes, Total	0.321		0.0795		mg/Kg		11/28/22 14:18	11/29/22 19:59	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		70 - 130				11/28/22 14:18	11/29/22 19:59	20
1,4-Difluorobenzene (Surr)	69	S1-	70 - 130				11/28/22 14:18	11/29/22 19:59	20

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.472		0.0795		mg/Kg			11/30/22 09:51	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	375		49.9		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/22/22 08:21	11/23/22 00:57	1
Diesel Range Organics (Over C10-C28)	375		49.9		mg/Kg		11/22/22 08:21	11/23/22 00:57	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/22/22 08:21	11/23/22 00:57	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: N-WS01

Lab Sample ID: 890-3492-10

Date Collected: 11/16/22 11:27

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	98		70 - 130	11/22/22 08:21	11/23/22 00:57	1
o-Terphenyl	114		70 - 130	11/22/22 08:21	11/23/22 00:57	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1640		25.0		mg/Kg			11/22/22 04:44	5

Client Sample ID: WN-WS01

Lab Sample ID: 890-3492-11

Date Collected: 11/16/22 11:34

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0402	U	0.0402		mg/Kg		11/28/22 14:18	11/29/22 20:19	20
Toluene	<0.0402	U	0.0402		mg/Kg		11/28/22 14:18	11/29/22 20:19	20
Ethylbenzene	<0.0402	U	0.0402		mg/Kg		11/28/22 14:18	11/29/22 20:19	20
m-Xylene & p-Xylene	<0.0803	U	0.0803		mg/Kg		11/28/22 14:18	11/29/22 20:19	20
o-Xylene	<0.0402	U	0.0402		mg/Kg		11/28/22 14:18	11/29/22 20:19	20
Xylenes, Total	<0.0803	U	0.0803		mg/Kg		11/28/22 14:18	11/29/22 20:19	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		70 - 130	11/28/22 14:18	11/29/22 20:19	20
1,4-Difluorobenzene (Surr)	69	S1-	70 - 130	11/28/22 14:18	11/29/22 20:19	20

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0803	U	0.0803		mg/Kg			11/30/22 09:51	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	857		49.8		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		11/22/22 08:21	11/22/22 23:50	1
Diesel Range Organics (Over C10-C28)	747		49.8		mg/Kg		11/22/22 08:21	11/22/22 23:50	1
Oil Range Organics (Over C28-C36)	110		49.8		mg/Kg		11/22/22 08:21	11/22/22 23:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	85		70 - 130	11/22/22 08:21	11/22/22 23:50	1
o-Terphenyl	97		70 - 130	11/22/22 08:21	11/22/22 23:50	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1410		24.8		mg/Kg			11/22/22 04:51	5

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: WN-WS02

Lab Sample ID: 890-3492-12

Date Collected: 11/16/22 11:36

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 0-2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
Toluene	<0.00202	U	0.00202		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
Ethylbenzene	0.00348		0.00202		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
m-Xylene & p-Xylene	0.00448		0.00404		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
Xylenes, Total	0.00448		0.00404		mg/Kg		11/28/22 10:23	11/28/22 17:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	72		70 - 130				11/28/22 10:23	11/28/22 17:52	1
1,4-Difluorobenzene (Surr)	105		70 - 130				11/28/22 10:23	11/28/22 17:52	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.00796		0.00404		mg/Kg			11/29/22 09:34	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	2620		50.0		mg/Kg			11/23/22 12:17	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/22/22 08:21	11/23/22 02:25	1
Diesel Range Organics (Over C10-C28)	2130		50.0		mg/Kg		11/22/22 08:21	11/23/22 02:25	1
Oil Range Organics (Over C28-C36)	487		50.0		mg/Kg		11/22/22 08:21	11/23/22 02:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	101		70 - 130				11/22/22 08:21	11/23/22 02:25	1
o-Terphenyl	113		70 - 130				11/22/22 08:21	11/23/22 02:25	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2860		49.8		mg/Kg			11/22/22 04:58	10

Client Sample ID: WN-FS01

Lab Sample ID: 890-3492-13

Date Collected: 11/16/22 11:38

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.199	U	0.199		mg/Kg		11/28/22 10:23	11/28/22 20:36	100
Toluene	<0.199	U	0.199		mg/Kg		11/28/22 10:23	11/28/22 20:36	100
Ethylbenzene	0.388		0.199		mg/Kg		11/28/22 10:23	11/28/22 20:36	100
m-Xylene & p-Xylene	0.551		0.398		mg/Kg		11/28/22 10:23	11/28/22 20:36	100
o-Xylene	0.315		0.199		mg/Kg		11/28/22 10:23	11/28/22 20:36	100
Xylenes, Total	0.866		0.398		mg/Kg		11/28/22 10:23	11/28/22 20:36	100

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: WN-FS01

Lab Sample ID: 890-3492-13

Date Collected: 11/16/22 11:38

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130				11/28/22 10:23	11/28/22 20:36	100
1,4-Difluorobenzene (Surr)	97		70 - 130				11/28/22 10:23	11/28/22 20:36	100
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	1.25		0.398		mg/Kg			11/29/22 09:34	1
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1500		49.9		mg/Kg			11/23/22 12:17	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	102		49.9		mg/Kg		11/22/22 08:21	11/23/22 00:12	1
Diesel Range Organics (Over C10-C28)	1230		49.9		mg/Kg		11/22/22 08:21	11/23/22 00:12	1
Oil Range Organics (Over C28-C36)	168		49.9		mg/Kg		11/22/22 08:21	11/23/22 00:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	92		70 - 130				11/22/22 08:21	11/23/22 00:12	1
o-Terphenyl	102		70 - 130				11/22/22 08:21	11/23/22 00:12	1
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	339		4.97		mg/Kg			11/22/22 05:05	1

Client Sample ID: WN-FS02

Lab Sample ID: 890-3492-14

Date Collected: 11/16/22 11:40

Matrix: Solid

Date Received: 11/16/22 14:32

Sample Depth: 2

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
Toluene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
Ethylbenzene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
m-Xylene & p-Xylene	<0.0795	U	0.0795		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
o-Xylene	<0.0398	U	0.0398		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
Xylenes, Total	<0.0795	U	0.0795		mg/Kg		11/28/22 14:18	11/29/22 20:40	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		70 - 130				11/28/22 14:18	11/29/22 20:40	20
1,4-Difluorobenzene (Surr)	72		70 - 130				11/28/22 14:18	11/29/22 20:40	20
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0795	U	0.0795		mg/Kg			11/30/22 09:51	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: WN-FS02
Date Collected: 11/16/22 11:40
Date Received: 11/16/22 14:32
Sample Depth: 2

Lab Sample ID: 890-3492-14
Matrix: Solid

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Total TPH	998		49.9		mg/Kg			11/23/22 12:17	1	
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/22/22 08:21	11/23/22 04:58	1	
Diesel Range Organics (Over C10-C28)	861		49.9		mg/Kg		11/22/22 08:21	11/23/22 04:58	1	
Oil Range Organics (Over C28-C36)	137		49.9		mg/Kg		11/22/22 08:21	11/23/22 04:58	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1-Chlorooctane	100		70 - 130				11/22/22 08:21	11/23/22 04:58	1	
o-Terphenyl	112		70 - 130				11/22/22 08:21	11/23/22 04:58	1	
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	523		4.95		mg/Kg			11/22/22 05:13	1	

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	BFB1	DFBZ1				
		(70-130)	(70-130)				
890-3492-1	S-WS03	93	94				
890-3492-2	S-WS04	85	88				
890-3492-3	SW-FS01	87	96				
890-3492-4	SE-FS01	85	86				
890-3492-5	EM-WS01	81	88				
890-3492-6	EM-FS02	91	91				
890-3492-7	EN-WS01	88	71				
890-3492-8	EN-WS02	90	87				
890-3492-9	EN-FS01	97	94				
890-3492-10	N-WS01	95	69 S1-				
890-3492-11	WN-WS01	86	69 S1-				
890-3492-12	WN-WS02	72	105				
890-3492-13	WN-FS01	89	97				
890-3492-14	WN-FS02	84	72				
LCS 880-40412/1-A	Lab Control Sample	86	107				
LCS 880-40470/1-A	Lab Control Sample	87	111				
LCSD 880-40412/2-A	Lab Control Sample Dup	88	101				
LCSD 880-40470/2-A	Lab Control Sample Dup	83	107				
MB 880-40412/5-A	Method Blank	74	110				
MB 880-40470/5-A	Method Blank	72	109				
Surrogate Legend							
BFB = 4-Bromofluorobenzene (Surr)							
DFBZ = 1,4-Difluorobenzene (Surr)							

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	1CO1	OTPH1						
		(70-130)	(70-130)						
890-3492-1	S-WS03	83	91						
890-3492-2	S-WS04	83	99						
890-3492-3	SW-FS01	93	101						
890-3492-4	SE-FS01	97	129						
890-3492-5	EM-WS01	88	96						
890-3492-6	EM-FS02	108	114						
890-3492-7	EN-WS01	89	103						
890-3492-8	EN-WS02	106	117						
890-3492-9	EN-FS01	103	111						
890-3492-10	N-WS01	98	114						
890-3492-11	WN-WS01	85	97						
890-3492-12	WN-WS02	101	113						
890-3492-13	WN-FS01	92	102						
890-3492-14	WN-FS02	100	112						
LCS 880-40177/2-A	Lab Control Sample	165 S1+	192 S1+						
LCSD 880-40177/3-A	Lab Control Sample Dup	161 S1+	188 S1+						
MB 880-40177/1-A	Method Blank	112	135 S1+						
Surrogate Legend									
1CO = 1-Chlorooctane									

Eurofins Carlsbad

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso
OTPH = o-Terphenyl

Job ID: 890-3492-1
SDG: KH227019

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-40412/5-A

Matrix: Solid

Analysis Batch: 40361

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40412

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/28/22 10:23	11/28/22 12:29	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/28/22 10:23	11/28/22 12:29	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/28/22 10:23	11/28/22 12:29	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/28/22 10:23	11/28/22 12:29	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/28/22 10:23	11/28/22 12:29	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/28/22 10:23	11/28/22 12:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		70 - 130	11/28/22 10:23	11/28/22 12:29	1
1,4-Difluorobenzene (Surr)	110		70 - 130	11/28/22 10:23	11/28/22 12:29	1

Lab Sample ID: LCS 880-40412/1-A

Matrix: Solid

Analysis Batch: 40361

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 40412

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.09831		mg/Kg		98	70 - 130
Toluene	0.100	0.1061		mg/Kg		106	70 - 130
Ethylbenzene	0.100	0.09887		mg/Kg		99	70 - 130
m-Xylene & p-Xylene	0.200	0.1767		mg/Kg		88	70 - 130
o-Xylene	0.100	0.08535		mg/Kg		85	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	86		70 - 130
1,4-Difluorobenzene (Surr)	107		70 - 130

Lab Sample ID: LCSD 880-40412/2-A

Matrix: Solid

Analysis Batch: 40361

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 40412

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1104		mg/Kg		110	70 - 130	12	35
Toluene	0.100	0.1243		mg/Kg		124	70 - 130	16	35
Ethylbenzene	0.100	0.1190		mg/Kg		119	70 - 130	18	35
m-Xylene & p-Xylene	0.200	0.2122		mg/Kg		106	70 - 130	18	35
o-Xylene	0.100	0.1020		mg/Kg		102	70 - 130	18	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		70 - 130
1,4-Difluorobenzene (Surr)	101		70 - 130

Lab Sample ID: MB 880-40470/5-A

Matrix: Solid

Analysis Batch: 40541

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40470

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:18	11/29/22 12:12	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:18	11/29/22 12:12	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-40470/5-A

Matrix: Solid

Analysis Batch: 40541

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40470

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:18	11/29/22 12:12	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/28/22 14:18	11/29/22 12:12	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/28/22 14:18	11/29/22 12:12	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/28/22 14:18	11/29/22 12:12	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	72		70 - 130	11/28/22 14:18	11/29/22 12:12	1
1,4-Difluorobenzene (Surr)	109		70 - 130	11/28/22 14:18	11/29/22 12:12	1

Lab Sample ID: LCS 880-40470/1-A

Matrix: Solid

Analysis Batch: 40541

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 40470

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.09656		mg/Kg		97	70 - 130
Toluene	0.100	0.1057		mg/Kg		106	70 - 130
Ethylbenzene	0.100	0.09986		mg/Kg		100	70 - 130
m-Xylene & p-Xylene	0.200	0.1780		mg/Kg		89	70 - 130
o-Xylene	0.100	0.08731		mg/Kg		87	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	87		70 - 130
1,4-Difluorobenzene (Surr)	111		70 - 130

Lab Sample ID: LCSD 880-40470/2-A

Matrix: Solid

Analysis Batch: 40541

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 40470

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.09346		mg/Kg		93	70 - 130	3	35
Toluene	0.100	0.1020		mg/Kg		102	70 - 130	4	35
Ethylbenzene	0.100	0.09994		mg/Kg		100	70 - 130	0	35
m-Xylene & p-Xylene	0.200	0.1782		mg/Kg		89	70 - 130	0	35
o-Xylene	0.100	0.08553		mg/Kg		86	70 - 130	2	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	83		70 - 130
1,4-Difluorobenzene (Surr)	107		70 - 130

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-40177/1-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40177

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/22/22 08:21	11/22/22 19:48	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-40177/1-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 40177

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/22/22 08:21	11/22/22 19:48	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/22/22 08:21	11/22/22 19:48	1
Surrogate	MB	MB	Limits				Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
1-Chlorooctane	112		70 - 130				11/22/22 08:21	11/22/22 19:48	1
o-Terphenyl	135	S1+	70 - 130				11/22/22 08:21	11/22/22 19:48	1

Lab Sample ID: LCS 880-40177/2-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 40177

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	1000	830.0		mg/Kg		83	70 - 130		
Diesel Range Organics (Over C10-C28)	1000	958.2		mg/Kg		96	70 - 130		
Surrogate	LCS	LCS	Limits						
1-Chlorooctane	165	S1+	70 - 130						
o-Terphenyl	192	S1+	70 - 130						

Lab Sample ID: LCSD 880-40177/3-A

Matrix: Solid

Analysis Batch: 40170

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 40177

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	842.6		mg/Kg		84	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	1000	949.1		mg/Kg		95	70 - 130	1	20
Surrogate	LCSD	LCSD	Limits						
1-Chlorooctane	161	S1+	70 - 130						
o-Terphenyl	188	S1+	70 - 130						

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39832/1-A

Matrix: Solid

Analysis Batch: 40153

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<5.00	U	5.00		mg/Kg			11/22/22 01:46	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-39832/2-A

Matrix: Solid

Analysis Batch: 40153

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	245.8		mg/Kg		98	90 - 110

Lab Sample ID: LCSD 880-39832/3-A

Matrix: Solid

Analysis Batch: 40153

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	250	241.8		mg/Kg		97	90 - 110	2	20

Lab Sample ID: MB 880-40003/1-A

Matrix: Solid

Analysis Batch: 40155

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/22/22 13:24	1

Lab Sample ID: LCS 880-40003/2-A

Matrix: Solid

Analysis Batch: 40155

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	257.5		mg/Kg		103	90 - 110

Lab Sample ID: LCSD 880-40003/3-A

Matrix: Solid

Analysis Batch: 40155

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	250	257.7		mg/Kg		103	90 - 110	0	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

GC VOA

Analysis Batch: 40361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	8021B	40412
890-3492-2	S-WS04	Total/NA	Solid	8021B	40412
890-3492-3	SW-FS01	Total/NA	Solid	8021B	40412
890-3492-4	SE-FS01	Total/NA	Solid	8021B	40412
890-3492-5	EM-WS01	Total/NA	Solid	8021B	40412
890-3492-6	EM-FS02	Total/NA	Solid	8021B	40412
890-3492-8	EN-WS02	Total/NA	Solid	8021B	40412
890-3492-9	EN-FS01	Total/NA	Solid	8021B	40412
890-3492-12	WN-WS02	Total/NA	Solid	8021B	40412
890-3492-13	WN-FS01	Total/NA	Solid	8021B	40412
MB 880-40412/5-A	Method Blank	Total/NA	Solid	8021B	40412
LCS 880-40412/1-A	Lab Control Sample	Total/NA	Solid	8021B	40412
LCSD 880-40412/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	40412

Prep Batch: 40412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	5035	
890-3492-2	S-WS04	Total/NA	Solid	5035	
890-3492-3	SW-FS01	Total/NA	Solid	5035	
890-3492-4	SE-FS01	Total/NA	Solid	5035	
890-3492-5	EM-WS01	Total/NA	Solid	5035	
890-3492-6	EM-FS02	Total/NA	Solid	5035	
890-3492-8	EN-WS02	Total/NA	Solid	5035	
890-3492-9	EN-FS01	Total/NA	Solid	5035	
890-3492-12	WN-WS02	Total/NA	Solid	5035	
890-3492-13	WN-FS01	Total/NA	Solid	5035	
MB 880-40412/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-40412/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-40412/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Prep Batch: 40470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-7	EN-WS01	Total/NA	Solid	5035	
890-3492-10	N-WS01	Total/NA	Solid	5035	
890-3492-11	WN-WS01	Total/NA	Solid	5035	
890-3492-14	WN-FS02	Total/NA	Solid	5035	
MB 880-40470/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-40470/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-40470/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 40520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	Total BTEX	
890-3492-2	S-WS04	Total/NA	Solid	Total BTEX	
890-3492-3	SW-FS01	Total/NA	Solid	Total BTEX	
890-3492-4	SE-FS01	Total/NA	Solid	Total BTEX	
890-3492-5	EM-WS01	Total/NA	Solid	Total BTEX	
890-3492-6	EM-FS02	Total/NA	Solid	Total BTEX	
890-3492-7	EN-WS01	Total/NA	Solid	Total BTEX	
890-3492-8	EN-WS02	Total/NA	Solid	Total BTEX	
890-3492-9	EN-FS01	Total/NA	Solid	Total BTEX	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

GC VOA (Continued)

Analysis Batch: 40520 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-10	N-WS01	Total/NA	Solid	Total BTEX	
890-3492-11	WN-WS01	Total/NA	Solid	Total BTEX	
890-3492-12	WN-WS02	Total/NA	Solid	Total BTEX	
890-3492-13	WN-FS01	Total/NA	Solid	Total BTEX	
890-3492-14	WN-FS02	Total/NA	Solid	Total BTEX	

Analysis Batch: 40541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-7	EN-WS01	Total/NA	Solid	8021B	40470
890-3492-10	N-WS01	Total/NA	Solid	8021B	40470
890-3492-11	WN-WS01	Total/NA	Solid	8021B	40470
890-3492-14	WN-FS02	Total/NA	Solid	8021B	40470
MB 880-40470/5-A	Method Blank	Total/NA	Solid	8021B	40470
LCS 880-40470/1-A	Lab Control Sample	Total/NA	Solid	8021B	40470
LCSD 880-40470/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	40470

GC Semi VOA

Analysis Batch: 40170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	8015B NM	40177
890-3492-2	S-WS04	Total/NA	Solid	8015B NM	40177
890-3492-3	SW-FS01	Total/NA	Solid	8015B NM	40177
890-3492-4	SE-FS01	Total/NA	Solid	8015B NM	40177
890-3492-5	EM-WS01	Total/NA	Solid	8015B NM	40177
890-3492-6	EM-FS02	Total/NA	Solid	8015B NM	40177
890-3492-7	EN-WS01	Total/NA	Solid	8015B NM	40177
890-3492-8	EN-WS02	Total/NA	Solid	8015B NM	40177
890-3492-9	EN-FS01	Total/NA	Solid	8015B NM	40177
890-3492-10	N-WS01	Total/NA	Solid	8015B NM	40177
890-3492-11	WN-WS01	Total/NA	Solid	8015B NM	40177
890-3492-12	WN-WS02	Total/NA	Solid	8015B NM	40177
890-3492-13	WN-FS01	Total/NA	Solid	8015B NM	40177
890-3492-14	WN-FS02	Total/NA	Solid	8015B NM	40177
MB 880-40177/1-A	Method Blank	Total/NA	Solid	8015B NM	40177
LCS 880-40177/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	40177
LCSD 880-40177/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	40177

Prep Batch: 40177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	8015NM Prep	
890-3492-2	S-WS04	Total/NA	Solid	8015NM Prep	
890-3492-3	SW-FS01	Total/NA	Solid	8015NM Prep	
890-3492-4	SE-FS01	Total/NA	Solid	8015NM Prep	
890-3492-5	EM-WS01	Total/NA	Solid	8015NM Prep	
890-3492-6	EM-FS02	Total/NA	Solid	8015NM Prep	
890-3492-7	EN-WS01	Total/NA	Solid	8015NM Prep	
890-3492-8	EN-WS02	Total/NA	Solid	8015NM Prep	
890-3492-9	EN-FS01	Total/NA	Solid	8015NM Prep	
890-3492-10	N-WS01	Total/NA	Solid	8015NM Prep	
890-3492-11	WN-WS01	Total/NA	Solid	8015NM Prep	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

GC Semi VOA (Continued)

Prep Batch: 40177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-12	WN-WS02	Total/NA	Solid	8015NM Prep	
890-3492-13	WN-FS01	Total/NA	Solid	8015NM Prep	
890-3492-14	WN-FS02	Total/NA	Solid	8015NM Prep	
MB 880-40177/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-40177/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-40177/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 40315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Total/NA	Solid	8015 NM	
890-3492-2	S-WS04	Total/NA	Solid	8015 NM	
890-3492-3	SW-FS01	Total/NA	Solid	8015 NM	
890-3492-4	SE-FS01	Total/NA	Solid	8015 NM	
890-3492-5	EM-WS01	Total/NA	Solid	8015 NM	
890-3492-6	EM-FS02	Total/NA	Solid	8015 NM	
890-3492-7	EN-WS01	Total/NA	Solid	8015 NM	
890-3492-8	EN-WS02	Total/NA	Solid	8015 NM	
890-3492-9	EN-FS01	Total/NA	Solid	8015 NM	
890-3492-10	N-WS01	Total/NA	Solid	8015 NM	
890-3492-11	WN-WS01	Total/NA	Solid	8015 NM	
890-3492-12	WN-WS02	Total/NA	Solid	8015 NM	
890-3492-13	WN-FS01	Total/NA	Solid	8015 NM	
890-3492-14	WN-FS02	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 39832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-9	EN-FS01	Soluble	Solid	DI Leach	
890-3492-10	N-WS01	Soluble	Solid	DI Leach	
890-3492-11	WN-WS01	Soluble	Solid	DI Leach	
890-3492-12	WN-WS02	Soluble	Solid	DI Leach	
890-3492-13	WN-FS01	Soluble	Solid	DI Leach	
890-3492-14	WN-FS02	Soluble	Solid	DI Leach	
MB 880-39832/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39832/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39832/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Leach Batch: 40003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Soluble	Solid	DI Leach	
890-3492-2	S-WS04	Soluble	Solid	DI Leach	
890-3492-3	SW-FS01	Soluble	Solid	DI Leach	
890-3492-4	SE-FS01	Soluble	Solid	DI Leach	
890-3492-5	EM-WS01	Soluble	Solid	DI Leach	
890-3492-6	EM-FS02	Soluble	Solid	DI Leach	
890-3492-7	EN-WS01	Soluble	Solid	DI Leach	
890-3492-8	EN-WS02	Soluble	Solid	DI Leach	
MB 880-40003/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-40003/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-40003/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

HPLC/IC

Analysis Batch: 40153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-9	EN-FS01	Soluble	Solid	300.0	39832
890-3492-10	N-WS01	Soluble	Solid	300.0	39832
890-3492-11	WN-WS01	Soluble	Solid	300.0	39832
890-3492-12	WN-WS02	Soluble	Solid	300.0	39832
890-3492-13	WN-FS01	Soluble	Solid	300.0	39832
890-3492-14	WN-FS02	Soluble	Solid	300.0	39832
MB 880-39832/1-A	Method Blank	Soluble	Solid	300.0	39832
LCS 880-39832/2-A	Lab Control Sample	Soluble	Solid	300.0	39832
LCSD 880-39832/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39832

Analysis Batch: 40155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3492-1	S-WS03	Soluble	Solid	300.0	40003
890-3492-2	S-WS04	Soluble	Solid	300.0	40003
890-3492-3	SW-FS01	Soluble	Solid	300.0	40003
890-3492-4	SE-FS01	Soluble	Solid	300.0	40003
890-3492-5	EM-WS01	Soluble	Solid	300.0	40003
890-3492-6	EM-FS02	Soluble	Solid	300.0	40003
890-3492-7	EN-WS01	Soluble	Solid	300.0	40003
890-3492-8	EN-WS02	Soluble	Solid	300.0	40003
MB 880-40003/1-A	Method Blank	Soluble	Solid	300.0	40003
LCS 880-40003/2-A	Lab Control Sample	Soluble	Solid	300.0	40003
LCSD 880-40003/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	40003

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: S-WS03
Date Collected: 11/16/22 10:57
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 13:59	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 04:36	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40155	11/22/22 15:23	SMC	EET MID

Client Sample ID: S-WS04
Date Collected: 11/16/22 10:59
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 14:19	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		5	1 uL	1 uL	40170	11/23/22 03:09	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40155	11/22/22 15:40	SMC	EET MID

Client Sample ID: SW-FS01
Date Collected: 11/16/22 11:02
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 14:40	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 02:03	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40155	11/22/22 15:46	SMC	EET MID

Client Sample ID: SE-FS01
Date Collected: 11/16/22 11:04
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 15:00	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: SE-FS01

Date Collected: 11/16/22 11:04

Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		5	1 uL	1 uL	40170	11/23/22 03:30	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40155	11/22/22 15:51	SMC	EET MID

Client Sample ID: EM-WS01

Date Collected: 11/16/22 11:07

Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 15:21	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 04:14	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40155	11/22/22 15:57	SMC	EET MID

Client Sample ID: EM-FS02

Date Collected: 11/16/22 11:14

Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 15:41	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/28/22 16:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 03:52	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40155	11/22/22 16:03	SMC	EET MID

Client Sample ID: EN-WS01

Date Collected: 11/16/22 11:16

Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40470	11/28/22 14:18	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	40541	11/29/22 14:44	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/29/22 15:04	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 00:35	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: EN-WS01

Lab Sample ID: 890-3492-7

Date Collected: 11/16/22 11:16

Matrix: Solid

Date Received: 11/16/22 14:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			5.05 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40155	11/22/22 16:09	SMC	EET MID

Client Sample ID: EN-WS02

Lab Sample ID: 890-3492-8

Date Collected: 11/16/22 11:19

Matrix: Solid

Date Received: 11/16/22 14:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 19:14	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/29/22 09:34	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 01:41	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	40003	11/20/22 12:10	CH	EET MID
Soluble	Analysis	300.0		20	50 mL	50 mL	40155	11/22/22 16:14	SMC	EET MID

Client Sample ID: EN-FS01

Lab Sample ID: 890-3492-9

Date Collected: 11/16/22 11:23

Matrix: Solid

Date Received: 11/16/22 14:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 19:34	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/29/22 09:34	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 02:47	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40153	11/22/22 04:37	CH	EET MID

Client Sample ID: N-WS01

Lab Sample ID: 890-3492-10

Date Collected: 11/16/22 11:27

Matrix: Solid

Date Received: 11/16/22 14:32

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40470	11/28/22 14:18	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	40541	11/29/22 19:59	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/30/22 09:51	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 00:57	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40153	11/22/22 04:44	CH	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: WN-WS01
Date Collected: 11/16/22 11:34
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-11
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	40470	11/28/22 14:18	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	40541	11/29/22 20:19	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/30/22 09:51	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/22/22 23:50	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	40153	11/22/22 04:51	CH	EET MID

Client Sample ID: WN-WS02
Date Collected: 11/16/22 11:36
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-12
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.95 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40361	11/28/22 17:52	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/29/22 09:34	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 02:25	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		10	50 mL	50 mL	40153	11/22/22 04:58	CH	EET MID

Client Sample ID: WN-FS01
Date Collected: 11/16/22 11:38
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-13
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	40412	11/28/22 10:23	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	40361	11/28/22 20:36	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/29/22 09:34	SM	EET MID
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 00:12	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40153	11/22/22 05:05	CH	EET MID

Client Sample ID: WN-FS02
Date Collected: 11/16/22 11:40
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-14
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	40470	11/28/22 14:18	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	40541	11/29/22 20:40	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40520	11/30/22 09:51	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Client Sample ID: WN-FS02
Date Collected: 11/16/22 11:40
Date Received: 11/16/22 14:32

Lab Sample ID: 890-3492-14
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			40315	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	40177	11/22/22 08:21	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40170	11/23/22 04:58	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	39832	11/17/22 14:46	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40153	11/22/22 05:13	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 890-3492-1
SDG: KH227019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3492-1	S-WS03	Solid	11/16/22 10:57	11/16/22 14:32	0-2
890-3492-2	S-WS04	Solid	11/16/22 10:59	11/16/22 14:32	0-2
890-3492-3	SW-FS01	Solid	11/16/22 11:02	11/16/22 14:32	2
890-3492-4	SE-FS01	Solid	11/16/22 11:04	11/16/22 14:32	2
890-3492-5	EM-WS01	Solid	11/16/22 11:07	11/16/22 14:32	0-2
890-3492-6	EM-FS02	Solid	11/16/22 11:14	11/16/22 14:32	2
890-3492-7	EN-WS01	Solid	11/16/22 11:16	11/16/22 14:32	0-2
890-3492-8	EN-WS02	Solid	11/16/22 11:19	11/16/22 14:32	0-2
890-3492-9	EN-FS01	Solid	11/16/22 11:23	11/16/22 14:32	2
890-3492-10	N-WS01	Solid	11/16/22 11:27	11/16/22 14:32	0-2
890-3492-11	WN-WS01	Solid	11/16/22 11:34	11/16/22 14:32	0-2
890-3492-12	WN-WS02	Solid	11/16/22 11:36	11/16/22 14:32	0-2
890-3492-13	WN-FS01	Solid	11/16/22 11:38	11/16/22 14:32	2
890-3492-14	WN-FS02	Solid	11/16/22 11:40	11/16/22 14:32	2



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

www.xenco.com Page 1 of 2

Project Manager:	Joseph Gunder	Bill to: (if different)	
Company Name:	Texascon	Company Name:	
Address:	4518 W Paces St	Address:	
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	
Phone:	575 689 4020	Email:	buckey.smiller@texascon.com

Project Name:	Osage Blvd Spill	Turn Around	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Rush	Pes. Code	
Project Number:	KH27019	Due Date:			
Project Location:	Edley Miller	TAT starts the day received by the lab if received by 4:30pm			
Sampler's Name:	Buckey Miller				
P.O. #:					
SAMPLE RECEIPT	Temp Blank: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Wet Ice: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Samples Received Intact:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Thermometer ID:	TNW-007		
Cooler Custody Seals:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Correction Factor:	-0.2		
Sample Custody Seals:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Temperature Reading:	21.8		
Total Containers:		Corrected Temperature:	2.6		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Parameters	ANALYSIS REQUEST	Preservative Codes	Sample Comments
S-WSO3	S	11/16	10:57	0-2	C	1	Chloride (EPA 300)		None: NO	DI Water: H2O
S-WSO4	S		10:59	0-2		1	BTEX (8024 B)		Cool: Cool	MeOH: Me
SW-FSO1	S		11:02	2		1	TPH (8015)		HCL: HC	HNO3: HN
SE-FSO1	S		11:04	2		1			H2SO4: H2	NaOH: Na
EM-WSO1	S		11:07	0-2		1			H3PO4: HP	
EM-FSO2	S		11:14	2		1			NaHSO4: NABIS	
EN-WSO1	S		11:16	0-2		1			Na2S2O3: NaSO3	
EN-WSO2	S		11:19	0-2		1			Zn Acetate+NaOH: Zn	
EN-FSO1	S		11:23	2		1			NaOH+Ascorbic Acid: SARC	
N-WSO1	S		11:27	0-2		1				

Total 2007/6010 2008/6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SIO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Buckey Miller	Andrew A. Stief	11/16/20 1432			



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

www.xenco.com

Page 2 of 2

Project Manager:	Joseph Guzman	Bill to: (if different)	
Company Name:	Texascan	Company Name:	
Address:	4518 W Pierce St	Address:	
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	
Phone:	575 689 4020	Email:	

Program: <input type="checkbox"/> UST/PT <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project: <input type="checkbox"/> Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Reporting: <input type="checkbox"/> Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	Deliverables: <input type="checkbox"/> EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other: _____

Project Name:	Osage Bayd yase	Turn Around	<input type="checkbox"/> Routine <input type="checkbox"/> Rush	Pres. Code	
Project Number:	KH227019	Due Date:			
Project Location:	Edley	TAT starts the day received by the lab, if received by 4:30pm			
Sampler's Name:	Buckley Miller				
PO #:					
SAMPLE RECEIPT	Temp Blank:	Yes No	Thermometer ID:	Wet Ice:	Yes No
Samples Received Intact:	Yes No				
Cooler Custody Seals:	Yes No	N/A	Correction Factor:		
Sample Custody Seals:	Yes No	N/A	Temperature Reading:		
Total Containers:			Corrected Temperature:		
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp
WN - WSO1	S	11/16	11:34	0-2	C
WN - WSO2	S		11:36	0-2	
WN - FSO1	S		11:38	2	
WN - FSO2	S		11:40	2	

Chloride (EPA 300)
BTEX (8024 B)
TPH (8015)

ANALYSIS REQUEST

Preservative Codes

None: NO
Cool: Cool
HCL: HCL
H₂SO₄: H₂
H₃PO₄: HP
NaHSO₄: NABIS
Na₂S₂O₃: NaSO₃
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO ₂ Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed	TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U	Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Buckley Miller	Amanda Stiff	11/16/22 1432			

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3492-1

SDG Number: KH227019

Login Number: 3492

List Number: 1

Creator: Stutzman, Amanda

List Source: Eurofins Carlsbad

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3492-1

SDG Number: KH227019

Login Number: 3492

List Number: 2

Creator: Rodriguez, Leticia

List Source: Eurofins Midland

List Creation: 11/18/22 11:02 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	



Environment Testing

1

2

3

4

5

6

7

8

9

10

11

12

13

14

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock, Texas 79424
Generated 12/14/2022 1:27:53 PM

JOB DESCRIPTION

Osage Boyd Yaso
SDG NUMBER Eddy

JOB NUMBER

880-22198-1

Eurofins Midland

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
12/14/2022 1:27:53 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Midland

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).



Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Laboratory Job ID: 880-22198-1
SDG: Eddy

Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Client Sample Results	8
Surrogate Summary	13
QC Sample Results	15
QC Association Summary	24
Lab Chronicle	27
Certification Summary	29
Method Summary	30
Sample Summary	31
Chain of Custody	32
Receipt Checklists	33

1

2

3

4

5

6

7

8

9

10

11

12

13

14

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Job ID: 880-22198-1**Laboratory: Eurofins Midland****Narrative****Job Narrative
880-22198-1****Receipt**

The samples were received on 12/1/2022 1:02 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice.

GC VOA

Method 8021B: Surrogate recovery for the following samples were outside control limits: EN-FS02 (880-22198-2), WN-FS02 (880-22198-3), W-FS01 (880-22198-4), W-FS03 (880-22198-6) and (880-22122-A-50-E). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (LCS 880-41400/1-A). Evidence of matrix interferences is not obvious.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (880-22122-A-50-C MS) and (880-22122-A-50-D MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 880-41259 and analytical batch 880-41213 was outside control limits. Sample non-homogeneity is suspected.

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-41226 and analytical batch 880-41315 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (LCS 880-41226/2-A) and (LCSD 880-41226/3-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: (880-22177-A-1-E). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: EN-FS01 (880-22198-1), EN-FS02 (880-22198-2) and WN-FS02 (880-22198-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-41225 and analytical batch 880-41315 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (LCS 880-41225/2-A) and (LCSD 880-41225/3-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (880-22199-A-41-D), (880-22199-A-41-E MS) and (880-22199-A-41-F MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: W-FS01 (880-22198-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Job ID: 880-22198-1 (Continued)

Laboratory: Eurofins Midland (Continued)

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: EN-FS01
Date Collected: 11/30/22 09:44
Date Received: 12/01/22 13:02
Sample Depth: 3'

Lab Sample ID: 880-22198-1
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 05:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130				12/08/22 16:23	12/14/22 05:19	1
1,4-Difluorobenzene (Surr)	106		70 - 130				12/08/22 16:23	12/14/22 05:19	1
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/14/22 10:47	1
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			12/09/22 09:57	1
Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		12/07/22 09:28	12/08/22 20:17	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/07/22 09:28	12/08/22 20:17	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/07/22 09:28	12/08/22 20:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	128		70 - 130				12/07/22 09:28	12/08/22 20:17	1
o-Terphenyl	149	S1+	70 - 130				12/07/22 09:28	12/08/22 20:17	1
Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	237		4.99		mg/Kg			12/08/22 22:22	1

Client Sample ID: EN-FS02
Date Collected: 11/30/22 09:47
Date Received: 12/01/22 13:02
Sample Depth: 3'

Lab Sample ID: 880-22198-2
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 05:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	142	S1+	70 - 130				12/08/22 16:23	12/14/22 05:40	1

Eurofins Midland

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: EN-FS02

Lab Sample ID: 880-22198-2

Date Collected: 11/30/22 09:47

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 3'

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	106		70 - 130	12/08/22 16:23	12/14/22 05:40	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/14/22 10:47	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			12/09/22 09:57	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		12/07/22 09:28	12/08/22 20:38	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		12/07/22 09:28	12/08/22 20:38	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		12/07/22 09:28	12/08/22 20:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	119		70 - 130				12/07/22 09:28	12/08/22 20:38	1
o-Terphenyl	140	S1+	70 - 130				12/07/22 09:28	12/08/22 20:38	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	463		4.96		mg/Kg			12/08/22 22:42	1

Client Sample ID: WN-FS02

Lab Sample ID: 880-22198-3

Date Collected: 11/30/22 09:57

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 2'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
Toluene	<0.00201	U	0.00201		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		12/08/22 16:23	12/14/22 06:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	162	S1+	70 - 130				12/08/22 16:23	12/14/22 06:00	1
1,4-Difluorobenzene (Surr)	95		70 - 130				12/08/22 16:23	12/14/22 06:00	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			12/14/22 10:47	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/09/22 09:57	1

Eurofins Midland

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: WN-FS02

Lab Sample ID: 880-22198-3

Date Collected: 11/30/22 09:57

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 2'

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 21:00	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 21:00	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 21:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	114		70 - 130				12/07/22 09:28	12/08/22 21:00	1
o-Terphenyl	133	S1+	70 - 130				12/07/22 09:28	12/08/22 21:00	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75.3		5.02		mg/Kg			12/08/22 22:49	1

Client Sample ID: W-FS01

Lab Sample ID: 880-22198-4

Date Collected: 11/30/22 09:59

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 2'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		12/08/22 16:23	12/14/22 06:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	150	S1+	70 - 130				12/08/22 16:23	12/14/22 06:21	1
1,4-Difluorobenzene (Surr)	106		70 - 130				12/08/22 16:23	12/14/22 06:21	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			12/14/22 10:47	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	69.1		49.8		mg/Kg			12/09/22 09:57	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		12/07/22 09:25	12/09/22 06:20	1
Diesel Range Organics (Over C10-C28)	69.1		49.8		mg/Kg		12/07/22 09:25	12/09/22 06:20	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		12/07/22 09:25	12/09/22 06:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	132	S1+	70 - 130				12/07/22 09:25	12/09/22 06:20	1
o-Terphenyl	158	S1+	70 - 130				12/07/22 09:25	12/09/22 06:20	1

Eurofins Midland

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: W-FS01

Lab Sample ID: 880-22198-4

Date Collected: 11/30/22 09:59

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 2'

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	291		5.03		mg/Kg			12/08/22 22:55	1

Client Sample ID: W-FS02

Lab Sample ID: 880-22198-5

Date Collected: 11/30/22 10:02

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 2'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.245		0.0401		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
Toluene	<0.0401	U	0.0401		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
Ethylbenzene	0.144		0.0401		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
m-Xylene & p-Xylene	0.116		0.0802		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
o-Xylene	0.205		0.0401		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
Xylenes, Total	0.321		0.0802		mg/Kg		12/12/22 15:50	12/13/22 19:43	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		70 - 130				12/12/22 15:50	12/13/22 19:43	20
1,4-Difluorobenzene (Surr)	108		70 - 130				12/12/22 15:50	12/13/22 19:43	20

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.710		0.0802		mg/Kg			12/14/22 11:05	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1270		50.0		mg/Kg			12/09/22 09:57	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/07/22 09:25	12/09/22 06:42	1
Diesel Range Organics (Over C10-C28)	1150		50.0		mg/Kg		12/07/22 09:25	12/09/22 06:42	1
Oil Range Organics (Over C28-C36)	117		50.0		mg/Kg		12/07/22 09:25	12/09/22 06:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	109		70 - 130				12/07/22 09:25	12/09/22 06:42	1
o-Terphenyl	123		70 - 130				12/07/22 09:25	12/09/22 06:42	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	34.0		4.98		mg/Kg			12/08/22 23:02	1

Eurofins Midland

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: W-FS03

Lab Sample ID: 880-22198-6

Date Collected: 11/30/22 12:04

Matrix: Solid

Date Received: 12/01/22 13:02

Sample Depth: 0 - 2'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 06:41	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 06:41	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 06:41	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 06:41	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/08/22 16:23	12/14/22 06:41	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/08/22 16:23	12/14/22 06:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	147	S1+	70 - 130	12/08/22 16:23	12/14/22 06:41	1
1,4-Difluorobenzene (Surr)	107		70 - 130	12/08/22 16:23	12/14/22 06:41	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/14/22 10:47	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			12/08/22 10:05	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U F2	49.9		mg/Kg		12/07/22 10:37	12/07/22 20:49	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/07/22 10:37	12/07/22 20:49	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/07/22 10:37	12/07/22 20:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	122		70 - 130	12/07/22 10:37	12/07/22 20:49	1
o-Terphenyl	127		70 - 130	12/07/22 10:37	12/07/22 20:49	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2950		25.1		mg/Kg			12/08/22 23:22	5

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
880-22122-A-50-C MS	Matrix Spike	145 S1+	93
880-22122-A-50-D MSD	Matrix Spike Duplicate	134 S1+	85
880-22198-1	EN-FS01	97	106
880-22198-2	EN-FS02	142 S1+	106
880-22198-3	WN-FS02	162 S1+	95
880-22198-4	W-FS01	150 S1+	106
880-22198-5	W-FS02	114	108
880-22198-6	W-FS03	147 S1+	107
890-3613-A-1-G MS	Matrix Spike	104	98
890-3613-A-1-H MSD	Matrix Spike Duplicate	105	99
LCS 880-41400/1-A	Lab Control Sample	141 S1+	93
LCS 880-41668/1-A	Lab Control Sample	96	92
LCSD 880-41400/2-A	Lab Control Sample Dup	127	91
LCSD 880-41668/2-A	Lab Control Sample Dup	95	97
MB 880-41400/5-A	Method Blank	78	103
MB 880-41401/5-A	Method Blank	78	103
MB 880-41668/5-A	Method Blank	106	87
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
880-22177-A-1-F MS	Matrix Spike	109	112
880-22177-A-1-G MSD	Matrix Spike Duplicate	124	128
880-22198-1	EN-FS01	128	149 S1+
880-22198-2	EN-FS02	119	140 S1+
880-22198-3	WN-FS02	114	133 S1+
880-22198-4	W-FS01	132 S1+	158 S1+
880-22198-5	W-FS02	109	123
880-22198-6	W-FS03	122	127
880-22198-6 MS	W-FS03	110	102
880-22198-6 MSD	W-FS03	101	95
880-22199-A-41-E MS	Matrix Spike	113	117
880-22199-A-41-F MSD	Matrix Spike Duplicate	127	131 S1+
LCS 880-41225/2-A	Lab Control Sample	144 S1+	168 S1+
LCS 880-41226/2-A	Lab Control Sample	134 S1+	159 S1+
LCS 880-41259/2-A	Lab Control Sample	116	119
LCSD 880-41225/3-A	Lab Control Sample Dup	152 S1+	179 S1+
LCSD 880-41226/3-A	Lab Control Sample Dup	141 S1+	162 S1+
LCSD 880-41259/3-A	Lab Control Sample Dup	104	107
MB 880-41225/1-A	Method Blank	109	167 S1+
MB 880-41226/1-A	Method Blank	115	171 S1+
MB 880-41259/1-A	Method Blank	120	130
Surrogate Legend			

Eurofins Midland

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso
1CO = 1-Chlorooctane
OTPH = o-Terphenyl

Job ID: 880-22198-1
SDG: Eddy

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-41400/5-A							Client Sample ID: Method Blank		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 41705							Prep Batch: 41400		
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/08/22 16:23	12/13/22 23:56	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		70 - 130				12/08/22 16:23	12/13/22 23:56	1
1,4-Difluorobenzene (Surr)	103		70 - 130				12/08/22 16:23	12/13/22 23:56	1

Lab Sample ID: LCS 880-41400/1-A							Client Sample ID: Lab Control Sample		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 41705							Prep Batch: 41400		
Analyte		Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Benzene		0.100	0.1049		mg/Kg		105	70 - 130	
Toluene		0.100	0.09994		mg/Kg		100	70 - 130	
Ethylbenzene		0.100	0.1102		mg/Kg		110	70 - 130	
m-Xylene & p-Xylene		0.200	0.2402		mg/Kg		120	70 - 130	
o-Xylene		0.100	0.1173		mg/Kg		117	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	141	S1+	70 - 130						
1,4-Difluorobenzene (Surr)	93		70 - 130						

Lab Sample ID: LCSD 880-41400/2-A							Client Sample ID: Lab Control Sample Dup			
Matrix: Solid							Prep Type: Total/NA			
Analysis Batch: 41705							Prep Batch: 41400			
Analyte		Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Benzene		0.100	0.08250		mg/Kg		82	70 - 130	24	35
Toluene		0.100	0.08174		mg/Kg		82	70 - 130	20	35
Ethylbenzene		0.100	0.08948		mg/Kg		89	70 - 130	21	35
m-Xylene & p-Xylene		0.200	0.1962		mg/Kg		98	70 - 130	20	35
o-Xylene		0.100	0.09728		mg/Kg		97	70 - 130	19	35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits							
4-Bromofluorobenzene (Surr)	127		70 - 130							
1,4-Difluorobenzene (Surr)	91		70 - 130							

Lab Sample ID: 880-22122-A-50-C MS							Client Sample ID: Matrix Spike		
Matrix: Solid							Prep Type: Total/NA		
Analysis Batch: 41705							Prep Batch: 41400		
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00201	U	0.100	0.08982		mg/Kg		90	70 - 130
Toluene	<0.00201	U	0.100	0.08948		mg/Kg		89	70 - 130

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 880-22122-A-50-C MS

Matrix: Solid

Analysis Batch: 41705

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 41400

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.100	0.09715		mg/Kg		97	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.200	0.2154		mg/Kg		108	70 - 130
o-Xylene	<0.00201	U	0.100	0.1050		mg/Kg		104	70 - 130
	MS %Recovery	MS Qualifier	MS Limits						
Surrogate									
4-Bromofluorobenzene (Surr)	145	S1+	70 - 130						
1,4-Difluorobenzene (Surr)	93		70 - 130						

Lab Sample ID: 880-22122-A-50-D MSD

Matrix: Solid

Analysis Batch: 41705

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 41400

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0996	0.07413		mg/Kg		74	70 - 130	19	35
Toluene	<0.00201	U	0.0996	0.07447		mg/Kg		75	70 - 130	18	35
Ethylbenzene	<0.00201	U	0.0996	0.08070		mg/Kg		81	70 - 130	19	35
m-Xylene & p-Xylene	<0.00402	U	0.199	0.1781		mg/Kg		89	70 - 130	19	35
o-Xylene	<0.00201	U	0.0996	0.08881		mg/Kg		89	70 - 130	17	35
	MSD %Recovery	MSD Qualifier	MSD Limits								
Surrogate											
4-Bromofluorobenzene (Surr)	134	S1+	70 - 130								
1,4-Difluorobenzene (Surr)	85		70 - 130								

Lab Sample ID: MB 880-41401/5-A

Matrix: Solid

Analysis Batch: 41705

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/08/22 16:47	12/13/22 12:20	1
	MB %Recovery	MB Qualifier	MB Limits						
Surrogate									
4-Bromofluorobenzene (Surr)	78		70 - 130						
1,4-Difluorobenzene (Surr)	103		70 - 130						

Lab Sample ID: MB 880-41668/5-A

Matrix: Solid

Analysis Batch: 41701

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/12/22 15:50	12/13/22 11:45	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/12/22 15:50	12/13/22 11:45	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/12/22 15:50	12/13/22 11:45	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/12/22 15:50	12/13/22 11:45	1

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-41668/5-A

Matrix: Solid

Analysis Batch: 41701

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/12/22 15:50	12/13/22 11:45	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/12/22 15:50	12/13/22 11:45	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		70 - 130				12/12/22 15:50	12/13/22 11:45	1
1,4-Difluorobenzene (Surr)	87		70 - 130				12/12/22 15:50	12/13/22 11:45	1

Lab Sample ID: LCS 880-41668/1-A

Matrix: Solid

Analysis Batch: 41701

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 41668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1175		mg/Kg		118	70 - 130
Toluene	0.100	0.1084		mg/Kg		108	70 - 130
Ethylbenzene	0.100	0.1053		mg/Kg		105	70 - 130
m-Xylene & p-Xylene	0.200	0.2247		mg/Kg		112	70 - 130
o-Xylene	0.100	0.1096		mg/Kg		110	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	96		70 - 130				
1,4-Difluorobenzene (Surr)	92		70 - 130				

Lab Sample ID: LCSD 880-41668/2-A

Matrix: Solid

Analysis Batch: 41701

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41668

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1136		mg/Kg		114	70 - 130	3	35
Toluene	0.100	0.1036		mg/Kg		104	70 - 130	5	35
Ethylbenzene	0.100	0.09505		mg/Kg		95	70 - 130	10	35
m-Xylene & p-Xylene	0.200	0.1989		mg/Kg		99	70 - 130	12	35
o-Xylene	0.100	0.09808		mg/Kg		98	70 - 130	11	35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	95		70 - 130						
1,4-Difluorobenzene (Surr)	97		70 - 130						

Lab Sample ID: 890-3613-A-1-G MS

Matrix: Solid

Analysis Batch: 41701

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 41668

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00201	U	0.0998	0.08393		mg/Kg		84	70 - 130
Toluene	<0.00201	U	0.0998	0.08250		mg/Kg		83	70 - 130
Ethylbenzene	<0.00201	U	0.0998	0.08222		mg/Kg		82	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.200	0.1739		mg/Kg		87	70 - 130
o-Xylene	<0.00201	U	0.0998	0.08792		mg/Kg		88	70 - 130

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 890-3613-A-1-G MS
Matrix: Solid
Analysis Batch: 41701

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 41668

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,4-Difluorobenzene (Surr)	98		70 - 130

Lab Sample ID: 890-3613-A-1-H MSD
Matrix: Solid
Analysis Batch: 41701

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 41668

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.100	0.07966		mg/Kg		79	70 - 130	5	35
Toluene	<0.00201	U	0.100	0.07771		mg/Kg		78	70 - 130	6	35
Ethylbenzene	<0.00201	U	0.100	0.07671		mg/Kg		77	70 - 130	7	35
m-Xylene & p-Xylene	<0.00402	U	0.200	0.1619		mg/Kg		81	70 - 130	7	35
o-Xylene	<0.00201	U	0.100	0.08296		mg/Kg		83	70 - 130	6	35
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	105		70 - 130								
1,4-Difluorobenzene (Surr)	99		70 - 130								

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-41225/1-A
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 41225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/07/22 09:25	12/08/22 21:43	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/07/22 09:25	12/08/22 21:43	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/07/22 09:25	12/08/22 21:43	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	109		70 - 130				12/07/22 09:25	12/08/22 21:43	1
o-Terphenyl	167	S1+	70 - 130				12/07/22 09:25	12/08/22 21:43	1

Lab Sample ID: LCS 880-41225/2-A
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	1000	917.2		mg/Kg		92	70 - 130		
Diesel Range Organics (Over C10-C28)	1000	914.5		mg/Kg		91	70 - 130		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
1-Chlorooctane	144	S1+	70 - 130						
o-Terphenyl	168	S1+	70 - 130						

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 880-41225/3-A				Client Sample ID: Lab Control Sample Dup							
Matrix: Solid				Prep Type: Total/NA							
Analysis Batch: 41315				Prep Batch: 41225							
Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	913.4		mg/Kg		91	70 - 130	0	20
Diesel Range Organics (Over C10-C28)			1000	955.3		mg/Kg		96	70 - 130	4	20
LCSD LCSD											
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	152	S1+	70 - 130								
o-Terphenyl	179	S1+	70 - 130								

Lab Sample ID: 880-22199-A-41-E MS				Client Sample ID: Matrix Spike							
Matrix: Solid				Prep Type: Total/NA							
Analysis Batch: 41315				Prep Batch: 41225							
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	1034		mg/Kg		100	70 - 130		
Diesel Range Organics (Over C10-C28)	513		999	1252		mg/Kg		74	70 - 130		
MS MS											
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	113		70 - 130								
o-Terphenyl	117		70 - 130								

Lab Sample ID: 880-22199-A-41-F MSD				Client Sample ID: Matrix Spike Duplicate							
Matrix: Solid				Prep Type: Total/NA							
Analysis Batch: 41315				Prep Batch: 41225							
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	997	1192		mg/Kg		116	70 - 130	14	20
Diesel Range Organics (Over C10-C28)	513		997	1409		mg/Kg		90	70 - 130	12	20
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	127		70 - 130								
o-Terphenyl	131	S1+	70 - 130								

Lab Sample ID: MB 880-41226/1-A				Client Sample ID: Method Blank							
Matrix: Solid				Prep Type: Total/NA							
Analysis Batch: 41315				Prep Batch: 41226							
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 09:18		1	
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 09:18		1	
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/07/22 09:28	12/08/22 09:18		1	

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 880-41226/1-A
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 41226

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	115		70 - 130	12/07/22 09:28	12/08/22 09:18	1
o-Terphenyl	171	S1+	70 - 130	12/07/22 09:28	12/08/22 09:18	1

Lab Sample ID: LCS 880-41226/2-A
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41226

			Spike	LCS	LCS				%Rec		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	901.7		mg/Kg		90	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	848.3		mg/Kg		85	70 - 130		
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	134	S1+	70 - 130								
o-Terphenyl	159	S1+	70 - 130								

Lab Sample ID: LCSD 880-41226/3-A
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 41226

			Spike	LCSD	LCSD				%Rec		RPD	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Gasoline Range Organics (GRO)-C6-C10			1000	928.8		mg/Kg		93	70 - 130	3	20	
Diesel Range Organics (Over C10-C28)			1000	867.2		mg/Kg		87	70 - 130	2	20	
Surrogate	%Recovery	Qualifier	Limits									
1-Chlorooctane	141	S1+	70 - 130									
o-Terphenyl	162	S1+	70 - 130									

Lab Sample ID: 880-22177-A-1-F MS
Matrix: Solid
Analysis Batch: 41315

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 41226

	Sample	Sample	Spike	MS	MS				%Rec		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	1017		mg/Kg		99	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U	999	1123		mg/Kg		112	70 - 130		
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	109		70 - 130								
o-Terphenyl	112		70 - 130								

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 880-22177-A-1-G MSD

Matrix: Solid

Analysis Batch: 41315

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 41226

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	997	1242		mg/Kg		122	70 - 130	20	20
Diesel Range Organics (Over C10-C28)	<50.0	U	997	1289		mg/Kg		129	70 - 130	14	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1-Chlorooctane	124		70 - 130								
o-Terphenyl	128		70 - 130								

Lab Sample ID: MB 880-41259/1-A

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41259

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/07/22 10:37	12/07/22 19:46	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/07/22 10:37	12/07/22 19:46	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/07/22 10:37	12/07/22 19:46	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	120		70 - 130				12/07/22 10:37	12/07/22 19:46	1
o-Terphenyl	130		70 - 130				12/07/22 10:37	12/07/22 19:46	1

Lab Sample ID: LCS 880-41259/2-A

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 41259

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	1000	1015		mg/Kg		102	70 - 130		
Diesel Range Organics (Over C10-C28)	1000	1071		mg/Kg		107	70 - 130		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
1-Chlorooctane	116		70 - 130						
o-Terphenyl	119		70 - 130						

Lab Sample ID: LCSD 880-41259/3-A

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41259

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	1088		mg/Kg		109	70 - 130	7	20
Diesel Range Organics (Over C10-C28)	1000	1080		mg/Kg		108	70 - 130	1	20

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 880-41259/3-A

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41259

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	104		70 - 130
o-Terphenyl	107		70 - 130

Lab Sample ID: 880-22198-6 MS

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: W-FS03

Prep Type: Total/NA

Prep Batch: 41259

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U F2	999	1193		mg/Kg		117	70 - 130	
Diesel Range Organics (Over C10-C28)	<49.9	U	999	891.4		mg/Kg		87	70 - 130	
Surrogate	%Recovery	Qualifier	Limits							
1-Chlorooctane	110		70 - 130							
o-Terphenyl	102		70 - 130							

Lab Sample ID: 880-22198-6 MSD

Matrix: Solid

Analysis Batch: 41213

Client Sample ID: W-FS03

Prep Type: Total/NA

Prep Batch: 41259

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U F2	997	941.5	F2	mg/Kg		92	70 - 130	24	20	
Diesel Range Organics (Over C10-C28)	<49.9	U	997	844.8		mg/Kg		83	70 - 130	5	20	
Surrogate	%Recovery	Qualifier	Limits									
1-Chlorooctane	101		70 - 130									
o-Terphenyl	95		70 - 130									

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-40961/1-A

Matrix: Solid

Analysis Batch: 41090

Client Sample ID: Method Blank

Prep Type: Soluble

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	<5.00	U	5.00		mg/Kg			12/08/22 22:02	1	

Lab Sample ID: LCS 880-40961/2-A

Matrix: Solid

Analysis Batch: 41090

Client Sample ID: Lab Control Sample

Prep Type: Soluble

	Spike	LCS	LCS					%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chloride	250	267.2		mg/Kg		107	90 - 110		

Eurofins Midland

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 880-40961/3-A				Client Sample ID: Lab Control Sample Dup							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 41090											
Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	272.6		mg/Kg		109	90 - 110	2	20

Lab Sample ID: 880-22198-1 MS				Client Sample ID: EN-FS01							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 41090											
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	237		250	506.3		mg/Kg		108	90 - 110		

Lab Sample ID: 880-22198-1 MSD				Client Sample ID: EN-FS01							
Matrix: Solid				Prep Type: Soluble							
Analysis Batch: 41090											
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	237		250	504.6		mg/Kg		107	90 - 110	0	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

GC VOA

Prep Batch: 41400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	5035	
880-22198-2	EN-FS02	Total/NA	Solid	5035	
880-22198-3	WN-FS02	Total/NA	Solid	5035	
880-22198-4	W-FS01	Total/NA	Solid	5035	
880-22198-6	W-FS03	Total/NA	Solid	5035	
MB 880-41400/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-41400/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-41400/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-22122-A-50-C MS	Matrix Spike	Total/NA	Solid	5035	
880-22122-A-50-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 41401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-41401/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 41668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-5	W-FS02	Total/NA	Solid	5035	
MB 880-41668/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-41668/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-41668/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3613-A-1-G MS	Matrix Spike	Total/NA	Solid	5035	
890-3613-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 41701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-5	W-FS02	Total/NA	Solid	8021B	41668
MB 880-41668/5-A	Method Blank	Total/NA	Solid	8021B	41668
LCS 880-41668/1-A	Lab Control Sample	Total/NA	Solid	8021B	41668
LCSD 880-41668/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	41668
890-3613-A-1-G MS	Matrix Spike	Total/NA	Solid	8021B	41668
890-3613-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	41668

Analysis Batch: 41705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	8021B	41400
880-22198-2	EN-FS02	Total/NA	Solid	8021B	41400
880-22198-3	WN-FS02	Total/NA	Solid	8021B	41400
880-22198-4	W-FS01	Total/NA	Solid	8021B	41400
880-22198-6	W-FS03	Total/NA	Solid	8021B	41400
MB 880-41400/5-A	Method Blank	Total/NA	Solid	8021B	41400
MB 880-41401/5-A	Method Blank	Total/NA	Solid	8021B	41401
LCS 880-41400/1-A	Lab Control Sample	Total/NA	Solid	8021B	41400
LCSD 880-41400/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	41400
880-22122-A-50-C MS	Matrix Spike	Total/NA	Solid	8021B	41400
880-22122-A-50-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	41400

Analysis Batch: 41798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	Total BTEX	
880-22198-2	EN-FS02	Total/NA	Solid	Total BTEX	

Eurofins Midland

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

GC VOA (Continued)

Analysis Batch: 41798 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-3	WN-FS02	Total/NA	Solid	Total BTEX	
880-22198-4	W-FS01	Total/NA	Solid	Total BTEX	
880-22198-5	W-FS02	Total/NA	Solid	Total BTEX	
880-22198-6	W-FS03	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 41213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-6	W-FS03	Total/NA	Solid	8015B NM	41259
MB 880-41259/1-A	Method Blank	Total/NA	Solid	8015B NM	41259
LCS 880-41259/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41259
LCSD 880-41259/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41259
880-22198-6 MS	W-FS03	Total/NA	Solid	8015B NM	41259
880-22198-6 MSD	W-FS03	Total/NA	Solid	8015B NM	41259

Prep Batch: 41225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-4	W-FS01	Total/NA	Solid	8015NM Prep	
880-22198-5	W-FS02	Total/NA	Solid	8015NM Prep	
MB 880-41225/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41225/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-41225/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-22199-A-41-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-22199-A-41-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Prep Batch: 41226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	8015NM Prep	
880-22198-2	EN-FS02	Total/NA	Solid	8015NM Prep	
880-22198-3	WN-FS02	Total/NA	Solid	8015NM Prep	
MB 880-41226/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41226/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-41226/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-22177-A-1-F MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-22177-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Prep Batch: 41259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-6	W-FS03	Total/NA	Solid	8015NM Prep	
MB 880-41259/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41259/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-41259/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-22198-6 MS	W-FS03	Total/NA	Solid	8015NM Prep	
880-22198-6 MSD	W-FS03	Total/NA	Solid	8015NM Prep	

Analysis Batch: 41315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	8015B NM	41226
880-22198-2	EN-FS02	Total/NA	Solid	8015B NM	41226
880-22198-3	WN-FS02	Total/NA	Solid	8015B NM	41226

Eurofins Midland

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

GC Semi VOA (Continued)

Analysis Batch: 41315 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-4	W-FS01	Total/NA	Solid	8015B NM	41225
880-22198-5	W-FS02	Total/NA	Solid	8015B NM	41225
MB 880-41225/1-A	Method Blank	Total/NA	Solid	8015B NM	41225
MB 880-41226/1-A	Method Blank	Total/NA	Solid	8015B NM	41226
LCS 880-41225/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41225
LCS 880-41226/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41226
LCSD 880-41225/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41225
LCSD 880-41226/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41226
880-22177-A-1-F MS	Matrix Spike	Total/NA	Solid	8015B NM	41226
880-22177-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	41226
880-22199-A-41-E MS	Matrix Spike	Total/NA	Solid	8015B NM	41225
880-22199-A-41-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	41225

Analysis Batch: 41343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Total/NA	Solid	8015 NM	
880-22198-2	EN-FS02	Total/NA	Solid	8015 NM	
880-22198-3	WN-FS02	Total/NA	Solid	8015 NM	
880-22198-4	W-FS01	Total/NA	Solid	8015 NM	
880-22198-5	W-FS02	Total/NA	Solid	8015 NM	
880-22198-6	W-FS03	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 40961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Soluble	Solid	DI Leach	
880-22198-2	EN-FS02	Soluble	Solid	DI Leach	
880-22198-3	WN-FS02	Soluble	Solid	DI Leach	
880-22198-4	W-FS01	Soluble	Solid	DI Leach	
880-22198-5	W-FS02	Soluble	Solid	DI Leach	
880-22198-6	W-FS03	Soluble	Solid	DI Leach	
MB 880-40961/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-40961/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-40961/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-22198-1 MS	EN-FS01	Soluble	Solid	DI Leach	
880-22198-1 MSD	EN-FS01	Soluble	Solid	DI Leach	

Analysis Batch: 41090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-22198-1	EN-FS01	Soluble	Solid	300.0	40961
880-22198-2	EN-FS02	Soluble	Solid	300.0	40961
880-22198-3	WN-FS02	Soluble	Solid	300.0	40961
880-22198-4	W-FS01	Soluble	Solid	300.0	40961
880-22198-5	W-FS02	Soluble	Solid	300.0	40961
880-22198-6	W-FS03	Soluble	Solid	300.0	40961
MB 880-40961/1-A	Method Blank	Soluble	Solid	300.0	40961
LCS 880-40961/2-A	Lab Control Sample	Soluble	Solid	300.0	40961
LCSD 880-40961/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	40961
880-22198-1 MS	EN-FS01	Soluble	Solid	300.0	40961
880-22198-1 MSD	EN-FS01	Soluble	Solid	300.0	40961

Eurofins Midland

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: EN-FS01
Date Collected: 11/30/22 09:44
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	41400	12/08/22 16:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41705	12/14/22 05:19	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 10:47	SM	EET MID
Total/NA	Analysis	8015 NM		1			41343	12/09/22 09:57	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	41226	12/07/22 09:28	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41315	12/08/22 20:17	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		1			41090	12/08/22 22:22	CH	EET MID

Client Sample ID: EN-FS02
Date Collected: 11/30/22 09:47
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	41400	12/08/22 16:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41705	12/14/22 05:40	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 10:47	SM	EET MID
Total/NA	Analysis	8015 NM		1			41343	12/09/22 09:57	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	41226	12/07/22 09:28	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41315	12/08/22 20:38	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		1			41090	12/08/22 22:42	CH	EET MID

Client Sample ID: WN-FS02
Date Collected: 11/30/22 09:57
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	41400	12/08/22 16:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41705	12/14/22 06:00	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 10:47	SM	EET MID
Total/NA	Analysis	8015 NM		1			41343	12/09/22 09:57	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41226	12/07/22 09:28	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41315	12/08/22 21:00	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		1			41090	12/08/22 22:49	CH	EET MID

Client Sample ID: W-FS01
Date Collected: 11/30/22 09:59
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	41400	12/08/22 16:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41705	12/14/22 06:21	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 10:47	SM	EET MID

Eurofins Midland

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Client Sample ID: W-FS01
Date Collected: 11/30/22 09:59
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			41343	12/09/22 09:57	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	41225	12/07/22 09:25	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41315	12/09/22 06:20	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		1			41090	12/08/22 22:55	CH	EET MID

Client Sample ID: W-FS02
Date Collected: 11/30/22 10:02
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	41668	12/12/22 15:50	MNR	EET MID
Total/NA	Analysis	8021B		20	5 mL	5 mL	41701	12/13/22 19:43	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 11:05	SM	EET MID
Total/NA	Analysis	8015 NM		1			41343	12/09/22 09:57	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41225	12/07/22 09:25	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41315	12/09/22 06:42	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		1			41090	12/08/22 23:02	CH	EET MID

Client Sample ID: W-FS03
Date Collected: 11/30/22 12:04
Date Received: 12/01/22 13:02

Lab Sample ID: 880-22198-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	41400	12/08/22 16:23	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41705	12/14/22 06:41	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41798	12/14/22 10:47	SM	EET MID
Total/NA	Analysis	8015 NM		1			41343	12/08/22 10:05	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	41259	12/07/22 10:37	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41213	12/07/22 20:49	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	40961	12/03/22 13:53	SMC	EET MID
Soluble	Analysis	300.0		5			41090	12/08/22 23:22	CH	EET MID

Laboratory References:
EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd Yaso

Job ID: 880-22198-1
SDG: Eddy

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
880-22198-1	EN-FS01	Solid	11/30/22 09:44	12/01/22 13:02	3'
880-22198-2	EN-FS02	Solid	11/30/22 09:47	12/01/22 13:02	3'
880-22198-3	WN-FS02	Solid	11/30/22 09:57	12/01/22 13:02	2'
880-22198-4	W-FS01	Solid	11/30/22 09:59	12/01/22 13:02	2'
880-22198-5	W-FS02	Solid	11/30/22 10:02	12/01/22 13:02	2'
880-22198-6	W-FS03	Solid	11/30/22 12:04	12/01/22 13:02	0 - 2'



Environment Testing

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: 20110


www.xenco.com Page 1 of 1

Project Manager	Joe Guesst		Bill to: (if different)	
Company Name	Tuscacana		Company Name:	
Address:	4518 W 9 th Place		Address:	
City, State ZIP:	Catalpa NM 88220		City, State ZIP:	
Phone	575 689 4020	Email	becky.sue.williams@tuscacana.com	

Work Order Comments				
Program:	UST/PST <input type="checkbox"/>	PRP <input type="checkbox"/>	Brownfields <input type="checkbox"/>	RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:				
Reporting	Level II <input type="checkbox"/>	Level III <input type="checkbox"/>	PST/UST <input type="checkbox"/>	TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables	EDD <input type="checkbox"/>	Adapt <input type="checkbox"/>	Other	

[illegible]

Sample Identification										Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Sample Comments													
EN - ES01										S	11/30	9:44	3'	C	1	8	CW	BT	PP										
EN - ES02										S		9:47	3'	C	1	8	8	8	8										
WN - ES02										S		9:57	2'	C	1	8	8	8	8										
W - ES01										S		9:59	2'	C	1	8	8	8	8										
W - ES02										S		10:02	2'	C	1	8	8	8	8										
W - WS03										S		12:04	0-2'	C	1	8	8	8	8										





880-22198 Chain of Custody



880-22198 Chain of Custody

Total 2007 / 6010	2008 / 6020:	
8RCrA	13PPM	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO ₂ Na Sr Ti Sn U V Zn
TCdP / SPLP 6010	8RCrA	Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U
		Hg 1631 / 245 1 / 7470 / 7471

Notices: Signature of this document and fulfillment of samples constitutes a valid purchase order from client company to Eurofins Xeno, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xeno will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xeno. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xeno, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by (Signature)	Received by (Signature)	Date/Time	Relinquished by (Signature)	Received by (Signature)	Date/Time
1 		12/1/22 13:02	2		
3			4		
5			6		

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 880-22198-1

SDG Number: Eddy

Login Number: 22198
List Number: 1
Creator: Kramer, Jessica

List Source: Eurofins Midland

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	



Environment Testing

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

ANALYTICAL REPORT

PREPARED FOR

Attn: Joseph Guesnier
Terracon Consulting Eng & Scientists
5847 50th St
Lubbock, Texas 79424
Generated 12/13/2022 2:48:29 PM

JOB DESCRIPTION

Osage Boyd
SDG NUMBER Eddy

JOB NUMBER

890-3598-1

Eurofins Carlsbad

Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
12/13/2022 2:48:29 PM

Authorized for release by
Jessica Kramer, Project Manager
Jessica.Kramer@et.eurofinsus.com
(432)704-5440

Eurofins Carlsbad

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs

· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically "SAFE" if no coliform bacteria are detected. To be considered "SAFE" your report should indicate "<1 cfu/100mL" or "NEG" for the coliform test. If you report indicates a positive result "POS" or a value greater than or equal to one, then your supply is "UNSAFE FOR DRINKING" contact your local health department.

Warranties, Terms, and Conditions

· Analyses for Field Parameters are performed by Eurofins Philadelphia field staff. Locations and certifications are identified on the Chain of Custody as follows:

ERF = field staff performs tests under NJ State certification #02015

VL = field staff performs tests under NJ State certification #06005

WG = field staff performs tests under NJ State certification #PA001

H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as "grab" samples unless otherwise identified.

· Reported results related only to the samples as tested. Eurofins Philadelphia is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· Eurofins Philadelphia is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins' online data portal "TotalAccess" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by Eurofins Philadelphia : Nicki Smith (Environmental Chemistry) and Jacqueline Gartner (Water Microbiology).



Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Laboratory Job ID: 890-3598-1
SDG: Eddy

Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Client Sample Results	7
Surrogate Summary	12
QC Sample Results	13
QC Association Summary	17
Lab Chronicle	20
Certification Summary	22
Method Summary	23
Sample Summary	24
Chain of Custody	25
Receipt Checklists	26

1
2
3
4
5
6
7
8
9
10
11
12
13
14

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Job ID: 890-3598-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative 890-3598-1

Receipt

The samples were received on 12/7/2022 2:38 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.4°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: C-FS 1.3 (890-3598-1), C-FS 3.3 (890-3598-2), NW-FS 1.3 (890-3598-3), NE-FS 1.3 (890-3598-4), C-FS 2.7 (890-3598-5) and N Entrance (890-3598-6).

GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: C-FS 1.3 (890-3598-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: C-FS 1.3 (890-3598-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA

Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-41491 and analytical batch 880-41523 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-41523/5), (LCS 880-41491/2-A) and (LCSD 880-41491/3-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The method blank for preparation batch 880-41491 and analytical batch 880-41523 contained Gasoline Range Organics (GRO)-C6-C10 above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: C-FS 1.3

Lab Sample ID: 890-3598-1

Date Collected: 12/07/22 07:55

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 3'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.227		0.0200		mg/Kg		12/08/22 15:57	12/09/22 19:42	10
Toluene	2.25		0.0200		mg/Kg		12/08/22 15:57	12/09/22 19:42	10
Ethylbenzene	10.5		0.200		mg/Kg		12/12/22 16:04	12/13/22 00:55	100
m-Xylene & p-Xylene	5.32		0.0399		mg/Kg		12/08/22 15:57	12/09/22 19:42	10
o-Xylene	9.38		0.200		mg/Kg		12/12/22 16:04	12/13/22 00:55	100
Xylenes, Total	19.4		0.399		mg/Kg		12/12/22 16:04	12/13/22 00:55	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	431	S1+	70 - 130	12/08/22 15:57	12/09/22 19:42	10
1,4-Difluorobenzene (Surr)	112		70 - 130	12/08/22 15:57	12/09/22 19:42	10

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	27.7		0.200		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	85.3		50.0		mg/Kg			12/12/22 12:52	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 15:56	1
Diesel Range Organics (Over C10-C28)	85.3		50.0		mg/Kg		12/09/22 14:59	12/11/22 15:56	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 15:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	105		70 - 130	12/09/22 14:59	12/11/22 15:56	1
o-Terphenyl	104		70 - 130	12/09/22 14:59	12/11/22 15:56	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	535		5.03		mg/Kg			12/10/22 10:05	1

Client Sample ID: C-FS 3.3

Lab Sample ID: 890-3598-2

Date Collected: 12/07/22 08:00

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 3'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:00	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:00	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:00	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/08/22 15:57	12/09/22 18:00	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:00	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/08/22 15:57	12/09/22 18:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		70 - 130	12/08/22 15:57	12/09/22 18:00	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: C-FS 3.3

Lab Sample ID: 890-3598-2

Date Collected: 12/07/22 08:00

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 3'

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	97		70 - 130	12/08/22 15:57	12/09/22 18:00	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			12/12/22 12:52	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		12/09/22 14:59	12/11/22 16:41	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		12/09/22 14:59	12/11/22 16:41	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		12/09/22 14:59	12/11/22 16:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	98		70 - 130				12/09/22 14:59	12/11/22 16:41	1
o-Terphenyl	97		70 - 130				12/09/22 14:59	12/11/22 16:41	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	34.1		4.97		mg/Kg			12/10/22 10:11	1

Client Sample ID: NW-FS 1.3

Lab Sample ID: 890-3598-3

Date Collected: 12/07/22 08:25

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 4'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 18:20	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 18:20	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 18:20	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		12/08/22 15:57	12/09/22 18:20	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 18:20	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		12/08/22 15:57	12/09/22 18:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		70 - 130	12/08/22 15:57	12/09/22 18:20	1
1,4-Difluorobenzene (Surr)	70		70 - 130	12/08/22 15:57	12/09/22 18:20	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			12/12/22 12:52	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: NW-FS 1.3

Lab Sample ID: 890-3598-3

Date Collected: 12/07/22 08:25

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 4'

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:03	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:03	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	101		70 - 130	12/09/22 14:59	12/11/22 17:03	1
o-Terphenyl	97		70 - 130	12/09/22 14:59	12/11/22 17:03	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	493		5.01		mg/Kg			12/10/22 10:18	1

Client Sample ID: NE-FS 1.3

Lab Sample ID: 890-3598-4

Date Collected: 12/07/22 10:40

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 4'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:41	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:41	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:41	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/08/22 15:57	12/09/22 18:41	1
o-Xylene	0.00301		0.00199		mg/Kg		12/08/22 15:57	12/09/22 18:41	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/08/22 15:57	12/09/22 18:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130	12/08/22 15:57	12/09/22 18:41	1
1,4-Difluorobenzene (Surr)	76		70 - 130	12/08/22 15:57	12/09/22 18:41	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/12/22 12:52	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 17:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 17:25	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 17:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	103		70 - 130	12/09/22 14:59	12/11/22 17:25	1
o-Terphenyl	105		70 - 130	12/09/22 14:59	12/11/22 17:25	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: NE-FS 1.3

Date Collected: 12/07/22 10:40

Date Received: 12/07/22 14:38

Sample Depth: 4'

Lab Sample ID: 890-3598-4

Matrix: Solid

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	48.7		5.02		mg/Kg			12/10/22 10:25	1

Client Sample ID: C-FS 2.7

Date Collected: 12/07/22 13:35

Date Received: 12/07/22 14:38

Sample Depth: 6'

Lab Sample ID: 890-3598-5

Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00729		0.00200		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
Toluene	0.00540		0.00200		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		12/08/22 15:57	12/09/22 19:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		70 - 130				12/08/22 15:57	12/09/22 19:01	1
1,4-Difluorobenzene (Surr)	99		70 - 130				12/08/22 15:57	12/09/22 19:01	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.0127		0.00401		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			12/12/22 12:52	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:47	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:47	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/09/22 14:59	12/11/22 17:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	98		70 - 130				12/09/22 14:59	12/11/22 17:47	1
o-Terphenyl	99		70 - 130				12/09/22 14:59	12/11/22 17:47	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	288		4.99		mg/Kg			12/10/22 10:31	1

Eurofins Carlsbad

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: N Entrance

Lab Sample ID: 890-3598-6

Date Collected: 12/07/22 10:44

Matrix: Solid

Date Received: 12/07/22 14:38

Sample Depth: 3'

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00625		0.00199		mg/Kg		12/08/22 15:57	12/09/22 19:22	1
Toluene	0.0170		0.00199		mg/Kg		12/08/22 15:57	12/09/22 19:22	1
Ethylbenzene	0.0145		0.00199		mg/Kg		12/08/22 15:57	12/09/22 19:22	1
m-Xylene & p-Xylene	0.0161		0.00398		mg/Kg		12/08/22 15:57	12/09/22 19:22	1
o-Xylene	0.00766		0.00199		mg/Kg		12/08/22 15:57	12/09/22 19:22	1
Xylenes, Total	0.0238		0.00398		mg/Kg		12/08/22 15:57	12/09/22 19:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		70 - 130	12/08/22 15:57	12/09/22 19:22	1
1,4-Difluorobenzene (Surr)	106		70 - 130	12/08/22 15:57	12/09/22 19:22	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.0615		0.00398		mg/Kg			12/12/22 15:56	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/12/22 12:52	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 18:10	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 18:10	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 18:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	100		70 - 130	12/09/22 14:59	12/11/22 18:10	1
o-Terphenyl	97		70 - 130	12/09/22 14:59	12/11/22 18:10	1

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	334		4.98		mg/Kg			12/10/22 10:38	1

Eurofins Carlsbad

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB1	DFBZ1
		(70-130)	(70-130)
LCS 880-41393/1-A	Lab Control Sample	101	111
LCS 880-41395/1-A	Lab Control Sample	122	94
LCSD 880-41393/2-A	Lab Control Sample Dup	104	112
LCSD 880-41395/2-A	Lab Control Sample Dup	121	102
MB 880-41393/5-A	Method Blank	86	100
MB 880-41395/5-A	Method Blank	85	100
MB 880-41570/5-A	Method Blank	87	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	1CO1	OTPH1
		(70-130)	(70-130)
LCS 880-41491/2-A	Lab Control Sample	147 S1+	136 S1+
LCSD 880-41491/3-A	Lab Control Sample Dup	144 S1+	136 S1+
MB 880-41491/1-A	Method Blank	113	151 S1+

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-41393/5-A

Matrix: Solid

Analysis Batch: 41420

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41393

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 11:50	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 11:50	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 11:50	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/08/22 15:57	12/09/22 11:50	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/08/22 15:57	12/09/22 11:50	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/08/22 15:57	12/09/22 11:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		70 - 130	12/08/22 15:57	12/09/22 11:50	1
1,4-Difluorobenzene (Surr)	100		70 - 130	12/08/22 15:57	12/09/22 11:50	1

Lab Sample ID: LCS 880-41393/1-A

Matrix: Solid

Analysis Batch: 41420

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 41393

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1221		mg/Kg		122	70 - 130
Toluene	0.100	0.1089		mg/Kg		109	70 - 130
Ethylbenzene	0.100	0.1108		mg/Kg		111	70 - 130
m-Xylene & p-Xylene	0.200	0.2201		mg/Kg		110	70 - 130
o-Xylene	0.100	0.1084		mg/Kg		108	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		70 - 130
1,4-Difluorobenzene (Surr)	111		70 - 130

Lab Sample ID: LCSD 880-41393/2-A

Matrix: Solid

Analysis Batch: 41420

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41393

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1225		mg/Kg		122	70 - 130	0	35
Toluene	0.100	0.1087		mg/Kg		109	70 - 130	0	35
Ethylbenzene	0.100	0.1061		mg/Kg		106	70 - 130	4	35
m-Xylene & p-Xylene	0.200	0.2133		mg/Kg		107	70 - 130	3	35
o-Xylene	0.100	0.1043		mg/Kg		104	70 - 130	4	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,4-Difluorobenzene (Surr)	112		70 - 130

Lab Sample ID: MB 880-41395/5-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41395

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/12/22 11:53	12/12/22 21:29	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/12/22 11:53	12/12/22 21:29	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-41395/5-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41395

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/12/22 11:53	12/12/22 21:29	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/12/22 11:53	12/12/22 21:29	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/12/22 11:53	12/12/22 21:29	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/12/22 11:53	12/12/22 21:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130	12/12/22 11:53	12/12/22 21:29	1
1,4-Difluorobenzene (Surr)	100		70 - 130	12/12/22 11:53	12/12/22 21:29	1

Lab Sample ID: LCS 880-41395/1-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 41395

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1023		mg/Kg		102	70 - 130
Toluene	0.100	0.09929		mg/Kg		99	70 - 130
Ethylbenzene	0.100	0.1053		mg/Kg		105	70 - 130
m-Xylene & p-Xylene	0.200	0.2256		mg/Kg		113	70 - 130
o-Xylene	0.100	0.1125		mg/Kg		113	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	122		70 - 130
1,4-Difluorobenzene (Surr)	94		70 - 130

Lab Sample ID: LCSD 880-41395/2-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41395

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1055		mg/Kg		105	70 - 130	3	35
Toluene	0.100	0.09676		mg/Kg		97	70 - 130	3	35
Ethylbenzene	0.100	0.1022		mg/Kg		102	70 - 130	3	35
m-Xylene & p-Xylene	0.200	0.2215		mg/Kg		111	70 - 130	2	35
o-Xylene	0.100	0.1104		mg/Kg		110	70 - 130	2	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	121		70 - 130
1,4-Difluorobenzene (Surr)	102		70 - 130

Lab Sample ID: MB 880-41570/5-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41570

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/12/22 08:35	12/12/22 10:55	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/12/22 08:35	12/12/22 10:55	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/12/22 08:35	12/12/22 10:55	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/12/22 08:35	12/12/22 10:55	1

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 880-41570/5-A

Matrix: Solid

Analysis Batch: 41565

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41570

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/12/22 08:35	12/12/22 10:55	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/12/22 08:35	12/12/22 10:55	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130				12/12/22 08:35	12/12/22 10:55	1
1,4-Difluorobenzene (Surr)	99		70 - 130				12/12/22 08:35	12/12/22 10:55	1

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-41491/1-A

Matrix: Solid

Analysis Batch: 41523

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 41491

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 09:16	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 09:16	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/09/22 14:59	12/11/22 09:16	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1-Chlorooctane	113		70 - 130				12/09/22 14:59	12/11/22 09:16	1
o-Terphenyl	151	S1+	70 - 130				12/09/22 14:59	12/11/22 09:16	1

Lab Sample ID: LCS 880-41491/2-A

Matrix: Solid

Analysis Batch: 41523

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 41491

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	869.9		mg/Kg		87	70 - 130
Diesel Range Organics (Over C10-C28)	1000	1019		mg/Kg		102	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1-Chlorooctane	147	S1+	70 - 130				
o-Terphenyl	136	S1+	70 - 130				

Lab Sample ID: LCSD 880-41491/3-A

Matrix: Solid

Analysis Batch: 41523

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41491

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	857.3		mg/Kg		86	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	1000	969.5		mg/Kg		97	70 - 130	5	20

Eurofins Carlsbad

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 880-41491/3-A

Matrix: Solid

Analysis Batch: 41523

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 41491

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	144	S1+	70 - 130
o-Terphenyl	136	S1+	70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-41433/1-A

Matrix: Solid

Analysis Batch: 41532

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB	MB								
	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Chloride	<5.00	U	5.00		mg/Kg			12/10/22 08:45	1	

Lab Sample ID: LCS 880-41433/2-A

Matrix: Solid

Analysis Batch: 41532

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte		Spike	LCS	LCS				%Rec		
		Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chloride		250	260.9		mg/Kg		104	90 - 110		

Lab Sample ID: LCSD 880-41433/3-A

Matrix: Solid

Analysis Batch: 41532

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte		Spike	LCSD	LCSD				%Rec		RPD
		Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride		250	261.5		mg/Kg		105	90 - 110	0	20

Lab Sample ID: 890-3598-6 MS

Matrix: Solid

Analysis Batch: 41532

Client Sample ID: N Entrance

Prep Type: Soluble

Analyte	Sample	Sample	Spike	MS	MS			%Rec		
	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	334		249	580.4		mg/Kg		99	90 - 110	

Lab Sample ID: 890-3598-6 MSD

Matrix: Solid

Analysis Batch: 41532

Client Sample ID: N Entrance

Prep Type: Soluble

Analyte	Sample	Sample	Spike	MSD	MSD			%Rec		RPD
	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	Limit
Chloride	334		249	581.0		mg/Kg		99	90 - 110	0 20

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

GC VOA

Prep Batch: 41393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	5035	
890-3598-2	C-FS 3.3	Total/NA	Solid	5035	
890-3598-3	NW-FS 1.3	Total/NA	Solid	5035	
890-3598-4	NE-FS 1.3	Total/NA	Solid	5035	
890-3598-5	C-FS 2.7	Total/NA	Solid	5035	
890-3598-6	N Entrance	Total/NA	Solid	5035	
MB 880-41393/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-41393/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-41393/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Prep Batch: 41395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	5035	
MB 880-41395/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-41395/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-41395/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 41420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	8021B	41393
890-3598-2	C-FS 3.3	Total/NA	Solid	8021B	41393
890-3598-3	NW-FS 1.3	Total/NA	Solid	8021B	41393
890-3598-4	NE-FS 1.3	Total/NA	Solid	8021B	41393
890-3598-5	C-FS 2.7	Total/NA	Solid	8021B	41393
890-3598-6	N Entrance	Total/NA	Solid	8021B	41393
MB 880-41393/5-A	Method Blank	Total/NA	Solid	8021B	41393
LCS 880-41393/1-A	Lab Control Sample	Total/NA	Solid	8021B	41393
LCSD 880-41393/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	41393

Analysis Batch: 41565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	8021B	41395
MB 880-41395/5-A	Method Blank	Total/NA	Solid	8021B	41395
MB 880-41570/5-A	Method Blank	Total/NA	Solid	8021B	41570
LCS 880-41395/1-A	Lab Control Sample	Total/NA	Solid	8021B	41395
LCSD 880-41395/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	41395

Prep Batch: 41570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-41570/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 41671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	Total BTEX	
890-3598-2	C-FS 3.3	Total/NA	Solid	Total BTEX	
890-3598-3	NW-FS 1.3	Total/NA	Solid	Total BTEX	
890-3598-4	NE-FS 1.3	Total/NA	Solid	Total BTEX	
890-3598-5	C-FS 2.7	Total/NA	Solid	Total BTEX	
890-3598-6	N Entrance	Total/NA	Solid	Total BTEX	

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

GC Semi VOA

Prep Batch: 41491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	8015NM Prep	
890-3598-2	C-FS 3.3	Total/NA	Solid	8015NM Prep	
890-3598-3	NW-FS 1.3	Total/NA	Solid	8015NM Prep	
890-3598-4	NE-FS 1.3	Total/NA	Solid	8015NM Prep	
890-3598-5	C-FS 2.7	Total/NA	Solid	8015NM Prep	
890-3598-6	N Entrance	Total/NA	Solid	8015NM Prep	
MB 880-41491/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41491/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-41491/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 41523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	8015B NM	41491
890-3598-2	C-FS 3.3	Total/NA	Solid	8015B NM	41491
890-3598-3	NW-FS 1.3	Total/NA	Solid	8015B NM	41491
890-3598-4	NE-FS 1.3	Total/NA	Solid	8015B NM	41491
890-3598-5	C-FS 2.7	Total/NA	Solid	8015B NM	41491
890-3598-6	N Entrance	Total/NA	Solid	8015B NM	41491
MB 880-41491/1-A	Method Blank	Total/NA	Solid	8015B NM	41491
LCS 880-41491/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41491
LCSD 880-41491/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41491

Analysis Batch: 41640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Total/NA	Solid	8015 NM	
890-3598-2	C-FS 3.3	Total/NA	Solid	8015 NM	
890-3598-3	NW-FS 1.3	Total/NA	Solid	8015 NM	
890-3598-4	NE-FS 1.3	Total/NA	Solid	8015 NM	
890-3598-5	C-FS 2.7	Total/NA	Solid	8015 NM	
890-3598-6	N Entrance	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 41433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Soluble	Solid	DI Leach	
890-3598-2	C-FS 3.3	Soluble	Solid	DI Leach	
890-3598-3	NW-FS 1.3	Soluble	Solid	DI Leach	
890-3598-4	NE-FS 1.3	Soluble	Solid	DI Leach	
890-3598-5	C-FS 2.7	Soluble	Solid	DI Leach	
890-3598-6	N Entrance	Soluble	Solid	DI Leach	
MB 880-41433/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-41433/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-41433/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3598-6 MS	N Entrance	Soluble	Solid	DI Leach	
890-3598-6 MSD	N Entrance	Soluble	Solid	DI Leach	

Analysis Batch: 41532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-1	C-FS 1.3	Soluble	Solid	300.0	41433
890-3598-2	C-FS 3.3	Soluble	Solid	300.0	41433

Eurofins Carlsbad

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

HPLC/IC (Continued)

Analysis Batch: 41532 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3598-3	NW-FS 1.3	Soluble	Solid	300.0	41433
890-3598-4	NE-FS 1.3	Soluble	Solid	300.0	41433
890-3598-5	C-FS 2.7	Soluble	Solid	300.0	41433
890-3598-6	N Entrance	Soluble	Solid	300.0	41433
MB 880-41433/1-A	Method Blank	Soluble	Solid	300.0	41433
LCS 880-41433/2-A	Lab Control Sample	Soluble	Solid	300.0	41433
LCSD 880-41433/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	41433
890-3598-6 MS	N Entrance	Soluble	Solid	300.0	41433
890-3598-6 MSD	N Entrance	Soluble	Solid	300.0	41433

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: C-FS 1.3

Lab Sample ID: 890-3598-1

Date Collected: 12/07/22 07:55

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		10	5 mL	5 mL	41420	12/09/22 19:42	MNR	EET MID
Total/NA	Prep	5035			5.01 g	5 mL	41395	12/12/22 16:04	MNR	EET MID
Total/NA	Analysis	8021B		100	5 mL	5 mL	41565	12/13/22 00:55	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 15:56	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	41433	12/09/22 12:00	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:05	CH	EET MID

Client Sample ID: C-FS 3.3

Lab Sample ID: 890-3598-2

Date Collected: 12/07/22 08:00

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41420	12/09/22 18:00	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 16:41	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	41433	12/09/22 12:00	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:11	CH	EET MID

Client Sample ID: NW-FS 1.3

Lab Sample ID: 890-3598-3

Date Collected: 12/07/22 08:25

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41420	12/09/22 18:20	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 17:03	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	41433	12/09/22 12:00	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:18	CH	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Client Sample ID: NE-FS 1.3

Lab Sample ID: 890-3598-4

Date Collected: 12/07/22 10:40

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41420	12/09/22 18:41	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 17:25	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	41433	12/09/22 12:00	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:25	CH	EET MID

Client Sample ID: C-FS 2.7

Lab Sample ID: 890-3598-5

Date Collected: 12/07/22 13:35

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41420	12/09/22 19:01	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 17:47	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	41433	12/09/22 12:00	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:31	CH	EET MID

Client Sample ID: N Entrance

Lab Sample ID: 890-3598-6

Date Collected: 12/07/22 10:44

Matrix: Solid

Date Received: 12/07/22 14:38

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	41393	12/08/22 15:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	41420	12/09/22 19:22	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			41671	12/12/22 15:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			41640	12/12/22 12:52	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41491	12/09/22 14:59	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41523	12/11/22 18:10	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	41433	12/09/22 10:42	KS	EET MID
Soluble	Analysis	300.0		1			41532	12/10/22 10:38	CH	EET MID

Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Eurofins Carlsbad

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-24	06-30-23
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	MCAWW	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

Protocol References:

- ASTM = ASTM International
- MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

- EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage Boyd

Job ID: 890-3598-1
SDG: Eddy

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3598-1	C-FS 1.3	Solid	12/07/22 07:55	12/07/22 14:38	3'
890-3598-2	C-FS 3.3	Solid	12/07/22 08:00	12/07/22 14:38	3'
890-3598-3	NW-FS 1.3	Solid	12/07/22 08:25	12/07/22 14:38	4'
890-3598-4	NE-FS 1.3	Solid	12/07/22 10:40	12/07/22 14:38	4'
890-3598-5	C-FS 2.7	Solid	12/07/22 13:35	12/07/22 14:38	6'
890-3598-6	N Entrance	Solid	12/07/22 10:44	12/07/22 14:38	3'

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14



Environment Testing

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-333-
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Chain of Custody

Work Order No: _____

Page _____ of _____
www.xenco.com

Project Manager:	Joe Cummings		Bill to: (if different)
Company Name:	Terracott		Company Name:
Address:	4518 W Parce		Address:
City, State ZIP:	Carlsbad NM		City, State ZIP:
Phone:	806 507 7075		Email:

Work Order Comments	
Program:	<input type="checkbox"/> UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund
State of Project:	
Reporting:	Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:

[illegible][illegible]

Total 200.7 / 6010	200.8 / 6020:	
88CRA	13PPM	Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO ₂ Na Sr Ti Sn U V Zn
TCLP / SPLP 6010 : 88CRA		5b As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document is a relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xeno, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xeno will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xeno. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xeno, but not analyzed. These terms will be enforced unless previously negotiated.

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	Buckley W.B.	Averett A.	12/7/2014	38		
3				4		
5				6		

Revised Date 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3598-1

SDG Number: Eddy

Login Number: 3598**List Number: 1****Creator: Stutzman, Amanda****List Source: Eurofins Carlsbad**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 890-3598-1

SDG Number: Eddy

Login Number: 3598**List Number: 2****Creator: Rodriguez, Leticia****List Source: Eurofins Midland****List Creation: 12/09/22 11:39 AM**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 14, 2024

JOSEPH GUESNIER

TERRACON CONSULTANTS

5827 50TH ST. SUITE 1

LUBBOCK, TX 79424

RE: OSAGE YASO BOYD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 02/09/24 13:02.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 02/09/2024
 Reported: 02/14/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 02/08/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S - SW - 01.2 0'-2' (H240636-01)

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/10/2024	ND	2.21	111	2.00	13.2	
Toluene*	<0.050	0.050	02/10/2024	ND	2.21	110	2.00	13.3	
Ethylbenzene*	<0.050	0.050	02/10/2024	ND	2.19	109	2.00	13.3	
Total Xylenes*	<0.150	0.150	02/10/2024	ND	6.37	106	6.00	13.6	
Total BTEX	<0.300	0.300	02/10/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.5 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	592	16.0	02/12/2024	ND	384	96.0	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2024	ND	218	109	200	1.23	
DRO >C10-C28*	<10.0	10.0	02/09/2024	ND	224	112	200	6.76	
EXT DRO >C28-C36	<10.0	10.0	02/09/2024	ND					

Surrogate: 1-Chlorooctane 79.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 73.5 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 02/09/2024
 Reported: 02/14/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 02/08/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W - 1.2 0.5' (H240636-02)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/10/2024	ND	2.21	111	2.00	13.2		
Toluene*	<0.050	0.050	02/10/2024	ND	2.21	110	2.00	13.3		
Ethylbenzene*	<0.050	0.050	02/10/2024	ND	2.19	109	2.00	13.3		
Total Xylenes*	<0.150	0.150	02/10/2024	ND	6.37	106	6.00	13.6		
Total BTEx	<0.300	0.300	02/10/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.6 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	02/12/2024	ND	384	96.0	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2024	ND	218	109	200	1.23	
DRO >C10-C28*	<10.0	10.0	02/09/2024	ND	224	112	200	6.76	
EXT DRO >C28-C36	<10.0	10.0	02/09/2024	ND					

Surrogate: 1-Chlorooctane 83.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 76.0 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

A handwritten signature in black ink, appearing to read "C. D. Keene", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 03, 2024

JOSEPH GUESNIER

TERRACON CONSULTANTS

5827 50TH ST. SUITE 1

LUBBOCK, TX 79424

RE: OSAGE YASO BOYD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 04/26/24 13:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive, with the first name "Celey" and last name "Keene" clearly distinguishable.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WN - SW 0-4' (H242250-01)

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697	
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68	
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03	
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69	
Total BTEX	<0.300	0.300	04/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	640	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	225	113	200	2.25	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	227	114	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 91.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.4 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: E - FS 4.2 4' (H242250-02)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/01/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	05/01/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	05/01/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	05/01/2024	ND	6.58	110	6.00	4.69		
Total BTEx	<0.300	0.300	05/01/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3440	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/01/2024	ND	225	113	200	2.25	
DRO >C10-C28*	2710	10.0	05/01/2024	ND	227	114	200	2.83	
EXT DRO >C28-C36	698	10.0	05/01/2024	ND					

Surrogate: 1-Chlorooctane 98.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 132 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: EM - SW 1.2 0-4' (H242250-03)

BTX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	320	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/03/2024	ND	225	113	200	2.25	
DRO >C10-C28*	<10.0	10.0	05/03/2024	ND	227	114	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	05/03/2024	ND					

Surrogate: 1-Chlorooctane 70.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 82.5 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: EN - SW 2.2 0-4' (H242250-04)

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	336	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 83.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 80.5 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: EM - FS 2.2 4' (H242250-05)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 110 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	192	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 101 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.6 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W - FS 2.2 4' (H242250-06)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	96.0	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 97.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 93.6 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WN - FS 4' (H242250-07)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 100 % 48.2-134

Surrogate: 1-Chlorooctadecane 93.7 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S - SW 01.2 0-4' (H242250-08)

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697	
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68	
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03	
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69	
Total BTEX	<0.300	0.300	04/30/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 96.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 93.9 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: C - FS 01.2 4' (H242250-09)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEx	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 107 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	400	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 93.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 90.6 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 04/26/2024
 Reported: 05/03/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 04/25/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SE - SW 01.2 0-4' (H242250-10)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	0.697		
Toluene*	<0.050	0.050	04/30/2024	ND	2.14	107	2.00	4.68		
Ethylbenzene*	<0.050	0.050	04/30/2024	ND	2.19	109	2.00	5.03		
Total Xylenes*	<0.150	0.150	04/30/2024	ND	6.58	110	6.00	4.69		
Total BTEX	<0.300	0.300	04/30/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 110 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1970	16.0	04/30/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/30/2024	ND	210	105	200	0.836	
DRO >C10-C28*	<10.0	10.0	04/30/2024	ND	214	107	200	0.560	
EXT DRO >C28-C36	<10.0	10.0	04/30/2024	ND					

Surrogate: 1-Chlorooctane 94.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 88.5 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(575) 393-2326 FAX (575) 393-2476							BILL TO		ANALYSIS REQUEST							
Company Name: Terracon							P.O. #:									
Project Manager: Joseph Guesnier							Company: Spur									
Address: 4518 W. Perce Street							Attn: Kathleen Purvis									
City: Carlsbad							Address: 9655 Katy Hwy									
State: NM Zip: 88220							City: Houston									
Phone #: 8065077057 Fax #:							State: TX Zip: 77024									
Project #: KH227019 Project Owner: Spur							Phone #:									
Project Location: Eddy							Fax #:									
Sampler Name: Travis Casey																
FOR LAB USE ONLY																
Lab I.D.							(G)RAB OR (C)OMP.									
							# CONTAINERS									
Sample I.D.							GROUNDWATER									
							WASTEWATER									
Matrix							SOIL									
							OIL									
							SLUDGE									
							OTHER :									
							ACID/BASE:									
PRESERV.							ICE / COOL									
							OTHER :									
SAMPLING							DATE									
							TIME									
PLEASE NOTE: Liability and Damages. Cardinal's liability and clients exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.							Chloride (EPA Method 4500)									
							TPH Extended 8015									
							BTEX (EPA Method 8021B)									
Relinquished By: B Miller Date: 4-26-24 Time: 1:30 PM Received By: [Signature] Date: _____ Time: _____							Turnaround Time: Standard Rush									
							Thermometer ID #449 #140									
							Correction Factor 0.5°C									
							Bacteria (only) Sample Condition Cool Intact									
							Corrected Temp. °C									
REMARKS: joseph.guesnier@terracon.com; travis.casey@terracon.com; austin.worley@terracon.com; michael.adams@terracon.com																
Verbal Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #:																
All Results are emailed. Please provide Email address:																



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 17, 2024

JOSEPH GUESNIER
TERRACON CONSULTANTS
5827 50TH ST. SUITE 1
LUBBOCK, TX 79424

RE: OSAGE YASO BOYD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 05/14/24 9:37.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene
Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 05/14/2024
 Reported: 05/17/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 05/07/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WN - SW 0-4' (H242614-01)

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2024	ND	1.97	98.6	2.00	0.0453	
Toluene*	<0.050	0.050	05/15/2024	ND	1.99	99.6	2.00	0.648	
Ethylbenzene*	<0.050	0.050	05/15/2024	ND	1.97	98.3	2.00	1.03	
Total Xylenes*	<0.150	0.150	05/15/2024	ND	6.17	103	6.00	1.08	
Total BTEX	<0.300	0.300	05/15/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	112	16.0	05/15/2024	ND	400	100	400	11.3		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/15/2024	ND	194	97.0	200	0.609	
DRO >C10-C28*	<10.0	10.0	05/15/2024	ND	200	100	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	05/15/2024	ND					

Surrogate: 1-Chlorooctane 66.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 66.5 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 05/14/2024
 Reported: 05/17/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 05/07/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: E - FS 4.2 5' (H242614-02)

BTX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2024	ND	1.97	98.6	2.00	0.0453	
Toluene*	<0.050	0.050	05/15/2024	ND	1.99	99.6	2.00	0.648	
Ethylbenzene*	<0.050	0.050	05/15/2024	ND	1.97	98.3	2.00	1.03	
Total Xylenes*	<0.150	0.150	05/15/2024	ND	6.17	103	6.00	1.08	
Total BTX	<0.300	0.300	05/15/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1140	16.0	05/15/2024	ND	400	100	400	11.3	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/15/2024	ND	194	97.0	200	0.609	
DRO >C10-C28*	345	10.0	05/15/2024	ND	200	100	200	5.50	
EXT DRO >C28-C36	73.2	10.0	05/15/2024	ND					

Surrogate: 1-Chlorooctane 86.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.1 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 05/14/2024
 Reported: 05/17/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 05/07/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SE - SW 1.2 0-4' (H242614-03)

BTX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/15/2024	ND	1.97	98.6	2.00	0.0453	
Toluene*	<0.050	0.050	05/15/2024	ND	1.99	99.6	2.00	0.648	
Ethylbenzene*	<0.050	0.050	05/15/2024	ND	1.97	98.3	2.00	1.03	
Total Xylenes*	<0.150	0.150	05/15/2024	ND	6.17	103	6.00	1.08	
Total BTX	<0.300	0.300	05/15/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	05/15/2024	ND	400	100	400	11.3	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/15/2024	ND	194	97.0	200	0.609	
DRO >C10-C28*	<10.0	10.0	05/15/2024	ND	200	100	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	05/15/2024	ND					

Surrogate: 1-Chlorooctane 68.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 61.7 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

A handwritten signature in black ink, appearing to read "Mike Snyder", is written over a horizontal line.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Terracon		BILL TO		ANALYSIS REQUEST																							
Project Manager: Joseph C. C. Smith		P.O. #:																									
Address: 4518 W. Perice Street		Company: Terracon																									
City: Carlsbad		Attn: Joseph																									
Phone #: 8065077057		Address:																									
Fax #:		City:																									
Project #: KH227019		State:																									
Project Owner:		Zip:																									
Project Location:		Phone #:																									
Sample Name: Travis Casey		Fax #:																									
FOR LAB USE ONLY																											
Lab I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX				PRESERV.		SAMPLING															
Sample I.D.		GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER :		ACID/BASE:		ICE / COOL		OTHER :									
H342614		1 W- SW		0-4'		1		1		1		1		5-7		1015		1		1							
2 E-FS 4.2		5'		1		1		1		1		1		1045		1		1		1							
3 SE-SW 1.2		0-4'		1		1		1		1		1		1110		1		1		1							
<p>PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.</p>																											
Relinquished By:		Date: 5-14-24		Received By:		Time: 0937		Date:		Received By:		Time:		Remarks: Joseph, guesnier@terracon.com; Travis Casey@terracon.com; Austin Worley@terracon.com; Michael Adams@terracon.com; Beckysue Miller@terracon.com; Justin Trenn@terracon.com; gus.sanchez@terracon.com													
Delivered By: (Circle One)		Observed Temp. °C: 5.2		Sample Condition		Cool Intact		Checked By: (Initials)		Turnaround Time:		Standard		Bacteria (only)		Sample Condition											
Sampler - UPS - Bus - Other:		Corrected Temp. °C:		Cool Intact		Yes		No		Thermometer ID #443		Rush		Cool Intact		Observed Temp. °C											
FORM-006 R 3.2 10/07/21		† Cardinal cannot accept verbal changes. Please email changes to caley.keene@cardinallabsnm.com		Yes		No		Add'l Phone #:		All Results are emailed. Please provide Email address:		Yes		No		Corrected Temp. °C											



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 04, 2024

JOSEPH GUESNIER

TERRACON CONSULTANTS

5827 50TH ST. SUITE 1

LUBBOCK, TX 79424

RE: OSAGE YASO BOYD BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 05/31/24 16:17.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

TERRACON CONSULTANTS
 JOSEPH GUESNIER
 5827 50TH ST. SUITE 1
 LUBBOCK TX, 79424
 Fax To:

Received: 05/31/2024
 Reported: 06/04/2024
 Project Name: OSAGE YASO BOYD BATTERY
 Project Number: KH227019
 Project Location: SPUR - EDDY

Sampling Date: 05/31/2024
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Alyssa Parras

Sample ID: FS 4.2 4.5' (H243086-01)

BTX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/04/2024	ND	1.87	93.4	2.00	3.26	
Toluene*	<0.050	0.050	06/04/2024	ND	1.84	92.0	2.00	2.71	
Ethylbenzene*	<0.050	0.050	06/04/2024	ND	1.86	93.1	2.00	2.36	
Total Xylenes*	<0.150	0.150	06/04/2024	ND	5.40	90.1	6.00	2.10	
Total BTX	<0.300	0.300	06/04/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.5 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	06/04/2024	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	06/03/2024	ND	231	115	200	0.929	
DRO >C10-C28*	<10.0	10.0	06/03/2024	ND	239	120	200	3.15	
EXT DRO >C28-C36	<10.0	10.0	06/03/2024	ND					

Surrogate: 1-Chlorooctane 116 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

- BS-3 Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

A handwritten signature in black ink, appearing to read "Mike Snyder".

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240

(575) 393-2326 FAX (575) 393-2476

FORM-006 R 3.2 10/07/21

APPENDIX E – TERRACON STANDARD OF CARE, LIMITATION, AND RELIANCE

Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, Spur Energy Partners, as reflected in our proposal.

Additional Scope Limitations

The development of this Amended RAP is based upon information provided by the Client and Terracon's remediation and construction services line. Such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those by information provided by the Client. The data, interpretations, findings, and recommendations are based solely upon reformation executed within the scope of these services.

Reliance

This report has been prepared for the exclusive use of Spur Energy Partners, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Spur Energy Partners and Terracon. Any unauthorized distribution or reuse is at Spur Energy Partners sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal and Spur Energy Partners and Terracon's Master Services Agreement. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to Spur Energy Partners and all relying parties unless otherwise agreed in writing.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 363070

QUESTIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:
	328947
	Action Number:
	363070
Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2102253370
Incident Name	NAPP2102253370 OSAGE BOYD YESO BATTERY @ 30-015-21355
Incident Type	Produced Water Release
Incident Status	Remediation Closure Report Received
Incident Well	[30-015-21355] OSAGE BOYD COM #001

Location of Release Source	
Please answer all the questions in this group.	
Site Name	OSAGE BOYD YESO BATTERY
Date Release Discovered	01/22/2021
Surface Owner	Private

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Not answered.
Produced Water Released (bbls) Details	Cause: Equipment Failure Valve Produced Water Released: 21 BBL Recovered: 10 BBL Lost: 11 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	A tank overflowed due to the failure of a love joy coupling that broke on the water transfer pump, therefore the pump could not pump down the fluids.

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 2

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:	328947
	Action Number:	363070
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	No, according to supplied volumes this does not appear to be a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	No
Reasons why this would be considered a submission for a notification of a major release	Unavailable.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.

The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	N/A

Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Katherine Purvis Title: EHS Coordinator Email: katherine.purvis@spurenergy.com Date: 07/11/2024
--	--

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 3

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:	328947
	Action Number:	363070
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS**Site Characterization**

Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 75 and 100 (ft.)
What method was used to determine the depth to ground water	U.S. Geological Survey
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 1 and 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Between 1 and 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Between 1 and 5 (mi.)
An (non-karst) unstable area	Between 1000 (ft.) and ½ (mi.)
Categorize the risk of this well / site being in a karst geology	Medium
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan

Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No

Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)

Chloride (EPA 300.0 or SM4500 Cl B)	3340
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	8592
GRO+DRO (EPA SW-846 Method 8015M)	7709
BTEX (EPA SW-846 Method 8021B or 8260B)	53.9
Benzene (EPA SW-846 Method 8021B or 8260B)	0.2

Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

On what estimated date will the remediation commence	11/10/2022
On what date will (or did) the final sampling or liner inspection occur	05/31/2024
On what date will (or was) the remediation complete(d)	05/31/2024
What is the estimated surface area (in square feet) that will be reclaimed	6000
What is the estimated volume (in cubic yards) that will be reclaimed	1000
What is the estimated surface area (in square feet) that will be remediated	6000
What is the estimated volume (in cubic yards) that will be remediated	300

These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 4

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:	328947
	Action Number:	363070
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS**Remediation Plan (continued)**

Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:

(Select all answers below that apply.)

(Ex Situ) Excavation and off-site disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for off-site disposal	LEA LAND LANDFILL [fEEM0112342028]
OR which OCD approved well (API) will be used for off-site disposal	Not answered.
OR is the off-site disposal site, to be used, out-of-state	Not answered.
OR is the off-site disposal site, to be used, an NMED facility	Not answered.
(Ex Situ) Excavation and on-site remediation (i.e. On-Site Land Farms)	Not answered.
(In Situ) Soil Vapor Extraction	Not answered.
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	Not answered.
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	Not answered.
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	Not answered.
Ground Water Abatement pursuant to 19.15.30 NMAC	Not answered.
OTHER (Non-listed remedial process)	Not answered.

Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Katherine Purvis Title: EHS Coordinator Email: katherine.purvis@spurenergy.com Date: 07/11/2024
--	--

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 5

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 363070
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
<i>Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.</i>	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 6

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:	328947
	Action Number:	363070
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	348742
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/31/2024
What was the (estimated) number of samples that were to be gathered	1
What was the sampling surface area in square feet	200

Remediation Closure Request

Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.

Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	6000
What was the total volume (cubic yards) remediated	300
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	6000
What was the total volume (in cubic yards) reclaimed	1000
Summarize any additional remediation activities not included by answers (above)	N/A

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Katherine Purvis Title: EHS Coordinator Email: katherine.purvis@spurenergy.com Date: 07/11/2024
--	--

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 7

Action 363070

QUESTIONS (continued)

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 363070
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 363070

CONDITIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID:
	328947
	Action Number:
	363070
Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	This Remediation Closure Report is approved. Areas reasonably needed for production or subsequent drilling operations will need to be reclaimed and revegetated as soon as they are no longer reasonably needed. A report for reclamation and revegetation will need to be submitted and approved prior to this incident receiving the final status of "Restoration Complete".	8/2/2024
scott.rodgers	The reclamation report will need to include: Executive Summary of the reclamation activities; Scaled Site Map including sampling locations; Analytical results including, but not limited to, results showing that any remaining impacts meet the reclamation standards and results to prove the backfill is non-waste containing; At least one (1) representative 5-point composite sample will need to be collected from the backfill material that will be used for the reclamation of the top four feet of the excavation. OCD reserves the right to request additional sampling if needed; pictures of the backfilled areas showing that the area is back, as nearly as practical, to the original condition or the final land use and maintain those areas to control dust and minimize erosion to the extent practical; pictures of the top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater; and a revegetation plan.	8/2/2024