ENSOLUM

February 7, 2023

New Mexico Oil Conservation District
New Mexico Energy, Minerals, and Natural Resources
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Closure Request
SEMU Permian South Header
Incident Number NAPP2230754633
Lea County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of Maverick Permian, LLC (Maverick), has prepared this *Closure Request* to document assessment, excavation, and soil sampling activities performed at the SEMU Permian South Header (Site). The purpose of the Site assessment, excavation, and soil sampling activities was to address impacts to soil resulting from a release of crude oil and produced water at the Site. Based on the excavation activities and laboratory analytical results from soil sampling events, Maverick is submitting this *Closure Request*, describing remediation that has occurred and requesting closure for Incident Number NAPP2230754633.

SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit C, Section 30, Township 20 South, Range 38 East, in Lea County, New Mexico (32.549475°, -103.190427°) and is associated with oil and gas exploration and production operations on Private Land.

On October 10, 2022, a flowline failure resulted in an unauthorized release of approximately 4.55 barrels (bbls) of produced water and 0.05 bbls of crude oil, which sprayed onto the adjacent pasture. No free-standing fluids were recovered. Maverick reported the release immediately via email to the New Mexico Oil Conservation Division (NMOCD) on October 10, 2022 and submitted a *Release Notification Form C-141* (Form C-141) on November 3, 2022. The release was assigned Incident Number NAPP2230754633.

SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was assess for applicablity of Table 1, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Results from the characterization desktop review are presented on page 3 of the Form C-141 (Appendix A), Site Assessment/Characterization. Potential Site receptors are identified on Figure 1.

Depth to groundwater at the Site is conservatively estimated to be between 51 feet and 100 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well is United States Geological Survey (USGS) well 323307103113601, located approximately

0.26 miles northwest of the Site. The groundwater well has a reported depth to groundwater of 82.73 feet bgs and a total depth of 115 feet bgs. The next closest permitted groundwater well with the most recent depth to groundwater data is New Mexico Office of the State Engineer (NMOSE) well L-15414-POD1, located approximately 0.82 miles northeast of the Site. The NMOSE groundwater well was drilled in November 2022 to a depth of 110 feet bgs and groundwater was not encountered. Thus, depth to groundwater for NMOSE well L-15414-POD1 is estimated to be greater than 110 feet bgs. NMOSE well L-15414-POD1 indicates groundwater has likley stayed at or has lowered over time since the USGS well was last measured. Utlizing the USGS well data is a conservative approach for reasonabaly determining probable groundwater depth beneath the Site per 19.15.29.11.A (2) NMAC. All wells used for depth to groundwater determination are presented on Figure 1. The referenced well records are included in Appendix B.

The closest continuously flowing or significant watercourse to the Site is an emergent wetland, located approximately 11,660 feet south of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (low potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- TPH: 2,500 mg/kg
- Chloride: 10,000 mg/kg

A reclamation requirement of 600 mg/kg chloride and 100 mg/kg TPH applies to the top 4 feet of the pasture area that was impacted by the release, per 19.15.29.13.D (1) NMAC for the top 4 feet of areas that will be reclaimed following remediation.

INITIAL ASSESSMENT ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

On October 11, 2022, Site assessment activities were conducted to evaluate the release extent based on information provided on the Form C-141 and visual observations. Seven preliminary assessment soil samples (SS01 through SS07) were collected within the visually impacted area. The impacted area was categorized into two areas based on soil saturation: the release extent and the overspray area. Soil samples SS01 through SS04 were collected within the release extent and soil samples SS05 through SS07 were collected within the overspray area at a depth of 0.5 feet bgs. The preliminary soil samples were field screened for volatile organic copmounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. The release extent, overspray area and soil sample locations were mapped utilizing a handheld global positioning system (GPS) unit and are depicted on Figure 2. Photographic documentation was completed during the Site visit and a photographic log is included in Appendix C.

Soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported under strict chain-of-custody procedures to Eurofins Laboratories (Eurofins) in Carlsbad, New Mexico,

for analysis of the following chemicals of concern (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method 300.0.

Laboratory analytical results for preliminary assessment soil samples SS01 through SS04 indicated TPH and/or chloride concentrations exceeded the Site Closure Criteria. Laboratory analytical results for preliminary soil samples SS05 through SS07 collected throughout the overspray area indicated concentrations of all COCs were compliant with the Site Closure Criteria and reclamation requirement. Table 1 summarizes soil analytical resuts. Laboratory analytical reports are included as Appendix D.

Based on visible staining in the release area and laboratory analytical results for preliminary soil samples SS01 through SS04, excavation activities appeared warranted.

DELINEATION ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

On November 17, 2022, Ensolum personnel were at the Site to further evaluate the vertical extent of the overspray area. Three boreholes were advanced via hand-auger at the respective locations of assessment soil samples SS05 through SS07. One discrete delineation soil sample was collected from each borehole location, SS05A through SS07A, at a depth of 1-foot bgs. Delineation activities were directed by field screening for VOCs and chloride as described above. The boreholes were backfilled with soil removed.

The soil samples were collected, handled, and analyzed as described above. The overspray area and delineation soil sample locations were mapped utilizing a handheld GPS unit and are depicted on Figure 2. A photographic log of the overspray area is included as Appendix C.

Laboratory analytical results for borehole samples SS05A through SS07A, indicated all COC concentrations were compliant with the Site Closure Criteria and reclamation requirement. Table 1 summarizes soil analytical resuts. Laboratory analytical reports are included as Appendix D.

EXCAVATION ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

Between November 9 and December 7, 2022, Ensolum personnel were at the Site to oversee excavation activities based on visible staining and laboratory analytical results for preliminary assessment soil samples SS01 through SS04. Excavation activities were performed via hand shoveling, skid steer, and backhoe in order to achieve maximum removal of impacted soil. To direct excavation activities, soil was field screened for VOCs and chloride as described above.

Following excavation activities, 5-point composite excavation confirmation samples were collected from the the excavation. The 5-point composite samples were collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. Composite soil samples FS01 through FS09 were collected from the floor and sidewalls of the excavation at depths ranging from 1foot to 1.5 feet bgs. Due to the shallow depth of the excavation, soil from the sidewalls was incorporated into the floor samples. The soil samples were handled and analyzed as described above. The excavation extent and excavation soil sample locations were mapped utilizing a handheld GPS unit and are depicted on Figure 3. A photographic log of the excavation is included as Appendix C.

Laboratory analytical results for excavation soil samples FS01 through FS09, collected from the final excavation extent, indicated concentrations of all COCs were compliant with the Site Closure Criteria and reclamtion requirement. Table 1 summarizes soil analytical resuts. Laboratory analytical reports are included as Appendix D.

The excavation measured approximately 1,750 square feet in areal extent. A total of approximately 97 cubic yards of impacted soil was removed during the excavation activities. The impacted soil was transported and properly disposed of at R360 Environmental Solutions in Hobbs, New Mexico. After completion of confirmation sampling, the excavation was secured with fencing.

CLOSURE REQUEST

Remedial actions conducted at the Site to address the October 2022 release of produced water and crude oil are believed to have mitigated adverse conditions at this Site. Laboratory analytical results for the delineation soil samples collected throughout the overspray area and excavation confirmation soil samples indicated concentrations of all COCs were compliant with the Site Closure Criteria. Based on the laboratory analytical results, no further remediation appears warranted.

Maverick believes these remedial actions are protective of human health, the environment, and groundwater and requests closure for Incident NAPP2230754633. NMOCD notifications are included as Appendix A. Upon NMOCD approval of this *Closure Request*, Maverick will backfill the excavation with material purchased locally and recontoured the Site to match pre-existing site conditions.

If you have any questions or comments, please contact Ms. Kalei Jennings at (817) 683-2503 or kjennings@ensolum.com.

Sincerely,
Ensolum, LLC

Hadlie Green
Staff Geologist

Kalei Jennings
Senior Scientist

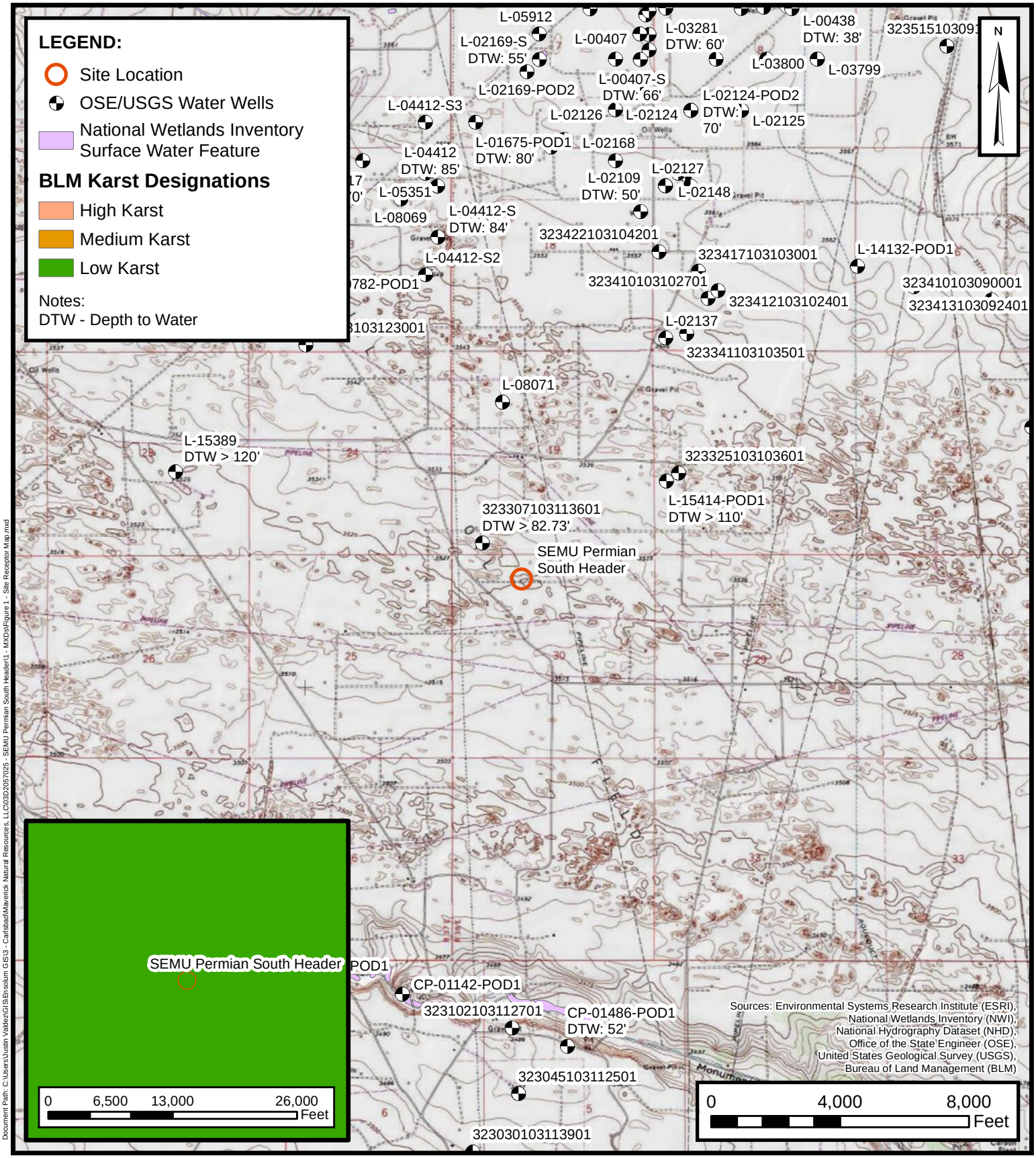
cc: Bryce Wagoner, Maverick Permian, LLC

Attachments:

Figure 1	Site Receptor Map
Figure 2	Preliminary Soil Sample Locations
Figure 3	Excavation Soil Sample Locations
Table 1	Soil Sample Analytical Results
Appendix A	Final C-141
Appendix B	Referenced Well Records
Appendix C	Photographic Log
Appendix D	Laboratory Analytical Reports

ENSOLUM

FIGURES



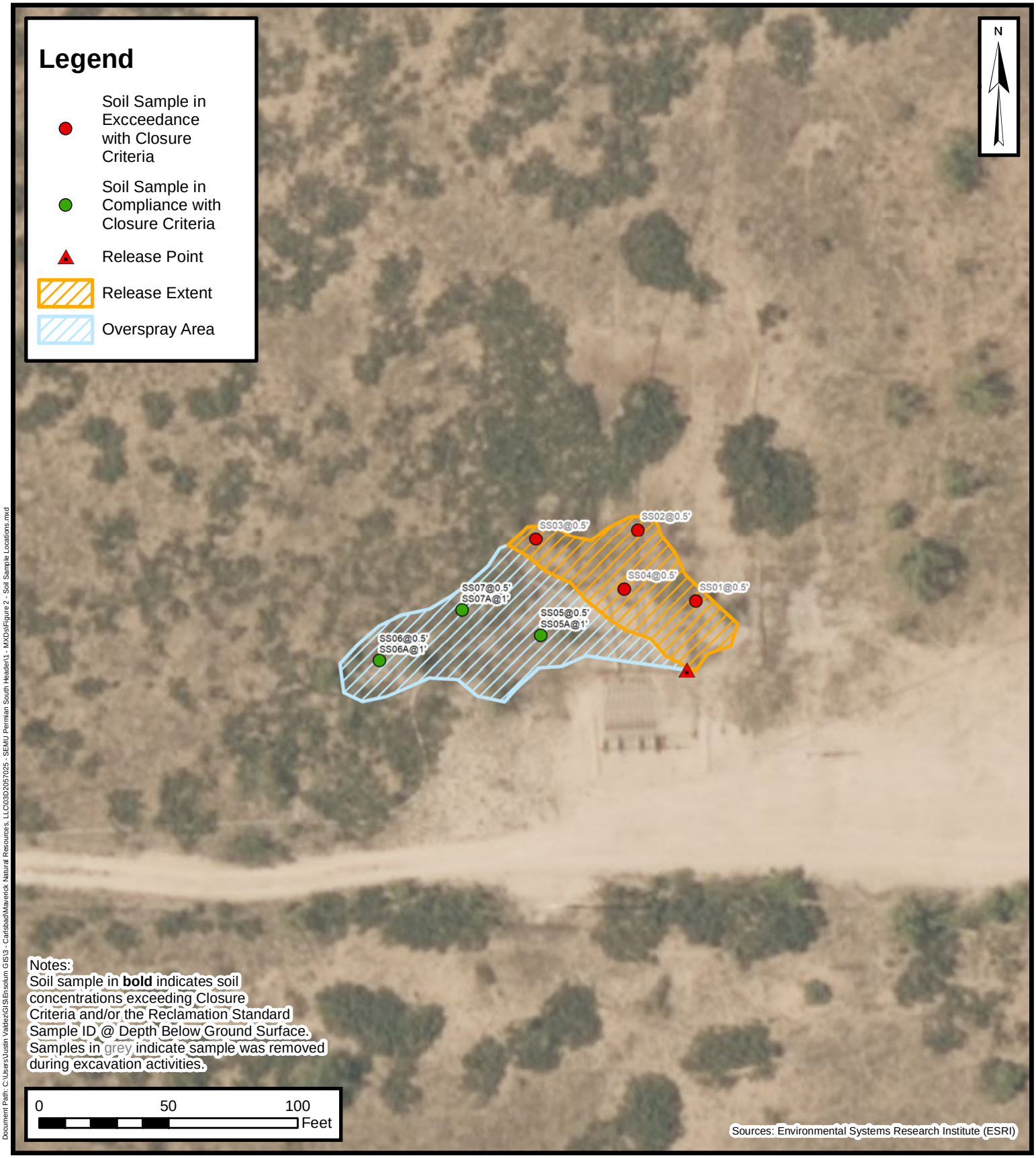
Document Path: C:\Users\Justin Valdez\GIS\Ensolum GIS\3 - Carlsbad\Maverick Natural Resources, LLC\03D2057025 - SEMU Permian South Header\01 - MXDs\Figure 1 - Site Receptor Map.mxd

ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Receptor Map

Maverick Permian, LLC
SEMU Permian South Header
NAPP2230754633
Unit C Sec 30 T20S R38E
Lea County, New Mexico

FIGURE
1



Document Path: C:\Users\Dustin Valdez\GIS\Ensolum GIS\3 - Carlsbad\Maverick Natural Resources, LLC\03D2057025 - SEMU Permian South Header\1 - MXDs\Figure 2 - Soil Sample Locations.mxd

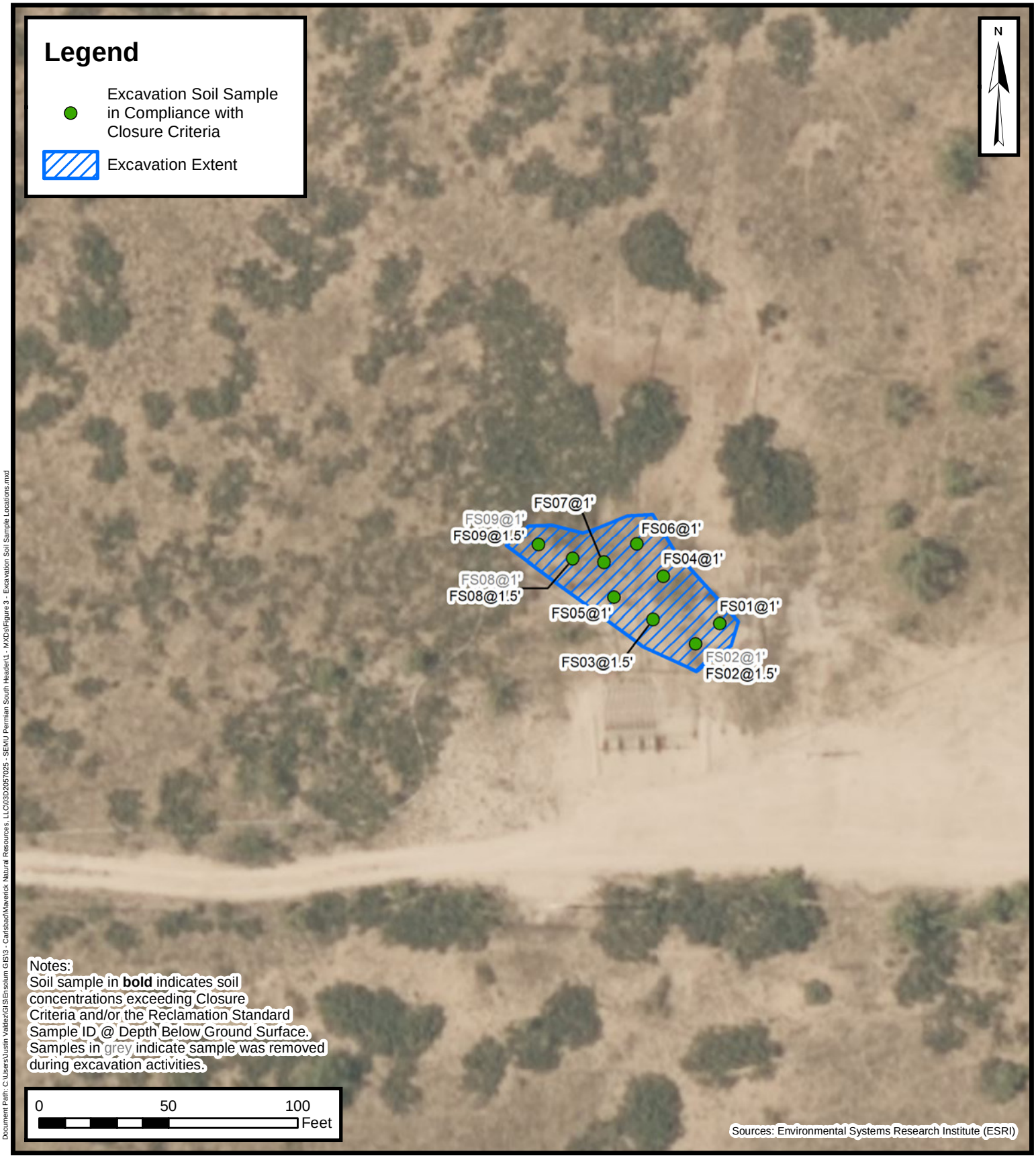
ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Soil Sample Locations

Maverick Permian, LLC
SEMU Permian South Header
NAPP2230754633
Unit C Sec 30 T20S R38E
Lea County, New Mexico

FIGURE

2



Document Path: C:\Users\Justin Valdez\GIS\Ensolum GIS\3 - Carlsbad\Maverick Natural Resources, LLC\03D2057025 - SEMU Permian South Header\01 - MXDs\Figure 3 - Excavation Soil Sample Locations.mxd

ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Excavation Soil Sample Locations

Maverick Permian, LLC
SEMU Permian South Header
NAPP2230754633
Unit C Sec 30 T20S R38E
Lea County, New Mexico

FIGURE

3

ENSOLUM

TABLES

ENSOLUM

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
SEMU Permian South Header
Maverick Permian, LLC
Lea County, New Mexico

Sample Designation	Date	Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			**10**	**50**	**NE**	**NE**	**NE**	**1,000**	**2,500**	**10,000**
Soil Samples										
SS01	10/11/2022	0.5	0.428	17.1	1,030	13,100	<498	**14,130**	**14,100**	487*
SS02	10/11/2022	0.5	<0.200	0.918	2,320	15,800	<500	**18,120**	**18,100**	176*
SS03	10/11/2022	0.5	<0.202	<0.404	113	2,260	<49.9	**2,373**	**2,370**	**1,470***
SS04	10/11/2022	0.5	<0.0402	0.106	<49.9	512	<49.9	512	**512**	**1,090***
SS05	10/11/2022	0.5	<0.0398	<0.0795	<49.8	<49.8	<49.8	<49.8	<49.8	478*
SS05A	11/17/2022	1	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	84.1*
SS06	10/11/2022	0.5	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	176*
SS06A	11/17/2022	1	<0.00201	<0.00402	<49.9	70.2	<49.9	70.2	70.2	21.8*
SS07	10/11/2022	0.5	<0.00201	<0.00402	<49.8		<49.8	<49.8	<49.8	147*
SS07A	11/17/2022	1	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	24.5*
Excavation Floor Soil Samples										
FS01	11/09/2022	1	<0.00199	<0.00398	<49.8	81.1	<49.8	81.1	81.1	180*
FS02	11/10/2022	1	<0.00202	<0.00403	<49.9	193	<49.9	193	193	135*
FS02A	12/07/2022	1.5	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0	<50.0	21.6*
FS03	11/10/2022	1	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	100*
FS04	11/10/2022	1	<0.00201	<0.00402	<50.0	<50.0	<50.0	<50.0	<50.0	198*
FS05	11/10/2022	1	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	492*
FS06	11/10/2022	1	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0	<50.0	104*
FS07	11/10/2022	1	<0.00199	<0.00398	<49.9	58.4	<49.9	58.4	58.4	190*
FS08	11/17/2022	1	<0.00199	<0.00398	<49.9	243	<49.9	243	243	185*
FS08A	12/07/2022	1.5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	11.8*
FS09	11/17/2022	1	<0.00201	<0.00402	<49.8	261	<49.8	261	261	24.4*
FS09A	12/07/2022	1.5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	14.0*

Notes:

bgs: below ground surface
mg/kg: milligrams per kilogram
NMOCD: New Mexico Oil Conservation Division
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
GRO: Gasoline Range Organics
DRO: Diesel Range Organics
ORO: Oil Range Organics
TPH: Total Petroleum Hydrocarbon

*Concentrations in **bold** exceed the NMOCD Table I Closure Criteria or reclamation standard where applicable.*
Grey text represents samples that have been excavated
* indicates sample was collected in area to be reclaimed after remediation is complete; reclamation standard for TPH in the top 4 feet is 100 mg/kg; chloride in the top 4 feet is 600 mg/kg

ENSOLUM

APPENDIX A

Final C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NAPP2230754633
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Maverick Permian, LLC	OGRID: 331199
Contact Name: Bryce Wagoner	Contact Telephone: 928-241-1862
Contact email: Bryce.Wagoner@mavresources.com	Incident # *(assigned by OCD)* NAPP2230754633
Contact mailing address: 1410 NW County Road Hobbs, NM 88240	

Location of Release Source

Latitude 32.549475 Longitude -103.190427

(NAD 83 in decimal degrees to 5 decimal places)

Site Name SEMU Permian South Header	Site Type
Date Release Discovered October 10, 2022	API# *(if applicable)* *30-025-07861*

Unit Letter	Section	Township	Range	County
C	30	20 S	38 E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☒ Crude Oil	Volume Released (bbls) 0.05 bbls	Volume Recovered (bbls) 0
☒ Produced Water	Volume Released (bbls) 4.55 bbls	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
The release was caused by valve malfunction on a flow line resulting in a minor release. The release occurred off pad. The source of the release has been stopped and the impacted area has been secured.

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2230754633
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

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.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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.

Printed Name: ____Bryce Wagoner _____ Title: ___Permian HSE Specialist II_____

Signature: _____ Date: __10/242022_____

email: _____Bryce.Wagoner@mavresources.com____ Telephone: ___928-241-1862_____

OCD Only

Received by: ___Jocelyn Harimon_____ Date: ___11/03/2022__

Pooled Fluids on the Surface										
	Length (ft.)	Width (ft.)	Depth (in)	# of Boundaries *edges of pool where depth is 0 . don't count shared boundaries*	Oil-Water Ratio (%)	Pooled Area (ft^2)	Estimated Average Depth (ft.)	Pooled Volume (bbl.)	Volume of Oil in Subsurface (bbl.)	Volume of Water in Subsurface (bbl.)
Rectangle A	4.0	4.0	2.0	4.0	0.01	16.0	0.0	0.1	0.00	0.12
Rectangle B	4.0	4.0	2.0	4.0	0.01	16.0	0.0	0.1	0.00	0.12
Rectangle C	4.0	4.0	2.00	4.00	0.01	16.000	0.042	0.119	0.00	0.12
Rectangle D						0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Rectangle E						0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
							Total Volume (bbls):	**0.36**	**0.01**	**0.35**

Subsurface Fluids										
	Length (ft.)	Width (ft.)	Depth (in.)	Saturation (%) *10% in consolidated sediments after rain to 50% in sand with no precipitation*	Oil-Water Ratio (%)	Area (ft^2)	Volume (bbl.)	Estimated Volume in Subsurface (bbl.)	Volume of Oil in Subsurface (bbl.)	Volume of Water in Subsurface (bbl.)
Rectangle A	20.0	45.0	1.0	0.1	0.01	900.0	13.4	1.1	0.01	1.1
Rectangle B	63.0	31.0	1.0	0.1	0.01	1953.0	29.0	2.3	0.02	2.3
Rectangle C	24.0	15.0	2.0	0.1	0.01	360.0	10.7	0.9	0.01	0.8
Rectangle D						0.0	0.0	0.0	0.00	0.0
Rectangle E						0.0	0.0	0.0	0.00	0.0
Rectangle F						0.0	0.0	0.0	0.00	0.0
Rectangle G						0.0	0.0	0.0	0.00	0.0
Rectangle H						0.0	0.0	0.0	0.00	0.0
Rectangle I						0.0	0.0	0.0	0.00	0.0
Rectangle J						0.0	0.0	0.0	0.00	0.0
							Total Volume (bbls):	**4.24**	**0.04**	**4.20**

TOTAL RELEASE VOLUME (bbls):	4.6

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

Operator: Maverick Permian LLC 1111 Bagby Street Suite 1600 Houston, TX 77002	OGRID: 331199
	Action Number: 156196
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	11/3/2022

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2230754633
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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?	51-100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☒ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2230754633
District RP	
Facility ID	
Application ID	

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.

Printed Name: __Bryce Wagoner_____ Title: _HSE Specialist_____

Signature:_____ Date: __2/7/2023_____

email: __Bryce.Wagoner@mavresources.com_____ Telephone: ___928-241-1862_____

OCD Only

Received by: _____Jocelyn Harimon_____ Date: __02/07/2023____

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2230754633
District RP	
Facility ID	
Application ID	

Closure

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 (electronic submittals in .pdf format are preferred) 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.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

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.

Printed Name: Bryce Wagoner Title: HSE Specialist

Signature: Date: 2/7/2023

email: Bryce.Wagoner@mavresources.com Telephone: 928-241-1862

OCD Only

Received by: Jocelyn Harimon Date: 02/07/2023

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Jennifer Nobui Date: 02/22/2023

Printed Name: Jennifer Nobui Title: Environmental Specialist A

ENSOLUM

APPENDIX B

Referenced Well Records

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: United States | GO

Click to hideNews Bulletins

- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
- Full News

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 323307103113601

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 323307103113601 20S.38E.19.312141

Lea County, New Mexico
Latitude 32°33'07", Longitude 103°11'36" NAD27
Land-surface elevation 3,534 feet above NAVD88
The depth of the well is 115 feet below land surface.
This well is completed in the High Plains aquifer (N100HGHPLN) 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

Date	Time	? Water-level date-time accuracy	? Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Status	? Method of measurement	? Measuring agency	? Source of measurement	? Water-level approval status
1954-04-02		D	62610		3454.12	NGVD29	1	Z			A
1954-04-02		D	62611		3455.23	NAVD88	1	Z			A
1954-04-02		D	72019	78.77			1	Z			A
1961-02-28		D	62610		3453.28	NGVD29	1	Z			A
1961-02-28		D	62611		3454.39	NAVD88	1	Z			A
1961-02-28		D	72019	79.61			1	Z			A
1966-03-08		D	62610		3446.84	NGVD29	1	Z			A
1966-03-08		D	62611		3447.95	NAVD88	1	Z			A
1966-03-08		D	72019	86.05			1	Z			A
1968-04-08		D	62610		3451.86	NGVD29	1	Z			A
1968-04-08		D	62611		3452.97	NAVD88	1	Z			A
1968-04-08		D	72019	81.03			1	Z			A
1971-01-28		D	62610		3451.34	NGVD29	1	Z			A
1971-01-28		D	62611		3452.45	NAVD88	1	Z			A
1971-01-28		D	72019	81.55			1	Z			A
1976-01-29		D	62610		3450.16	NGVD29	1	Z			A
1976-01-29		D	62611		3451.27	NAVD88	1	Z			A
1976-01-29		D	72019	82.73			1	Z			A

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Parameter code	62610	Groundwater level above NGVD 1929, feet
Parameter code	62611	Groundwater level above NAVD 1988, feet
Parameter code	72019	Depth to water level, feet below land surface
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929
Status	1	Static
Method of measurement	Z	Other.

Section	Code	Description
Measuring agency		Not determined
Source of measurement		Not determined
Water-level approval status	A	Approved for publication -- Processing and review completed.

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

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: 2023-01-31 14:52:06 EST
0.3 0.24 nadww02

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
NA	L 15414 POD1	3	1	3	20	20S	38E	671043	3603587

Driller License: 1184 **Driller Company:** WEST TEXAS WATER WELL SERVICE

Driller Name: RUSSELL SOUTHERLAND

Drill Start Date:	11/10/2022	**Drill Finish Date:**	11/10/2022	**Plug Date:**	
Log File Date:	12/21/2022	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	103 feet	**Depth Water:**	

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

Alert! Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology geoinfo.nmt.edu/resources/water/cgmn/ if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email nmbg-waterlevels@nmt.edu, prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP: ☐ Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: ~~BH01~~ L-15414-POD1

Name of well owner: Maverick Natural Resources, LLC

Mailing address: 1410 NW County Road County:

City: Hobbs State: New Mexico Zip code: 88240

Phone number: 928-241-1862 E-mail: bryce.wagoner@mavresources.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: West Texas Drilling Services

New Mexico Well Driller License No.: WD# 1184 Expiration Date: 10/31/2023

IV. WELL INFORMATION: ☐ **Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.**

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 33 min, 23.46 sec
Longitude: 103 deg, 10 min, 41.55 sec, NAD 83

2) Reason(s) for plugging well(s):

Soil boring

3) Was well used for any type of monitoring program? No If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: >100 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 110 feet

OSE DIT NOV 8 2022 PM3:32

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: Temporary PVC SCH 40

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: N/A

☐ a well screen or perforated pipe, state the screened interval(s): N/A

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? No If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? _____ If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

☐ **If plugging method differs between multiple wells on same site, a separate form must be completed for each method.**

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

The temporary 2" well material will be removed. If no water is encountered, drill cuttings will be used to ten feet below ground surface (bgs) and plugged using hydrated bentonite. If groundwater is encountered the boring will be plugged, tremie from bottom to a slurry of Portland Type I/II cement in lifts.

2) Will well head be cut-off below land surface after plugging? N/A

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 287

4) Type of Cement proposed: Type I/II

5) Proposed cement grout mix: <6.0 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

OSE DIT NOV 8 2022 PM3:32

7) Grout additives requested, and percent by dry weight relative to cement:

N/A

8) Additional notes and calculations:

N/A

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

N/A

VIII. SIGNATURE:

I, Kalei Jennings, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Kalei Jennings — Signature of Applicant

10/27/2022 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

X Approved subject to the attached conditions.

_____ Not approved for the reasons provided on the attached letter.

OSE DIT NOV 8 2022 PM3:32

Witness my hand and official seal this 9th day of November, 2022

Mike A. Hamman ~~John R. D'Antonio Jr.~~, P.E., New Mexico State Engineer

By: K. Parekh
KASHYAP PAREKH
W.R.M. I

GREAT SEAL OF THE STATE OF NEW MEXICO 1912

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)	N/A	N/A	0
Bottom of proposed interval of grout placement (ft bgl)	N/A	N/A	100
Theoretical volume of grout required per interval (gallons)	N/A	N/A	287
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement	N/A	N/A	<6.0
Mixed on-site or batch-mixed and delivered?	N/A	N/A	onsite
Grout additive 1 requested	N/A	N/A	N/A
Additive 1 percent by dry weight relative to cement	N/A	N/A	N/A
Grout additive 2 requested	N/A	N/A	N/A
Additive 2 percent by dry weight relative to cement	N/A	N/A	N/A

OSE DIT NOV 8 2022 PM3:32

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)	N/A	N/A	0
Bottom of proposed sealant of grout placement (ft bgl)	N/A	N/A	10
Theoretical volume of sealant required per interval (gallons)	N/A	N/A	26
Proposed abandonment sealant (manufacturer and trade name)	N/A	N/A	Baroid Hold Plug

OSE DIT NOV 8 2022 PM3:32

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220-6292

In Reply Refer To:
3162.4 (NM-080)
NMLC031670B

November 2, 2022

NM Office of the State Engineer
1900 W. Second St.
Roswell, NM 88201

Re: SEMU Burger B 108
30-025-26269
Section 20, T20S-R38E
32.556715,-103.178192
Lea County, New Mexico

To Whom It May Concern:

The above well location and the immediate area mentioned above requires advanced soil boring to take place at approximately 110 feet below ground surface via an air rotary rig with hallow stem auger equipment. The boring will be secured and left open for 72 hours at which time Maverick Permian LLC will assess for the presence or absence of groundwater. An oil-water interface probe will be utilized to confirm depth to groundwater in the soil boring. The Bureau of Land Management (landowner) authorizes the access of the area to accomplish depth to groundwater determination of this site.

If you have any questions contact Crisha Morgan, at 575-234-5987.

Sincerely,

Crisha Morgan

Crisha A. Morgan
Certified Environmental Protection Specialist

OSE DIT NOV 8 2022 PM3:32

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

Mike A. Hamman, P.E.
State Engineer

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

November 9, 2022

Maverick Natural Resources LLC
1410 NW County Road
Hobbs, NM 88240

RE: Well Plugging Plan of Operations for well no. L-15414-POD1

Greetings:

Enclosed is your copy of the Well Plugging Plan of Operations for the above referenced well subject to the attached Conditions of Approval. The proposed method of operation is found to be acceptable and in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 30, 2017 by the State Engineer. subject to the attached Conditions of Approval.

Well Plugging Plan of Operations form (WD-08) has been updated. Current form can be found on the OSE website at the following link https://www.ose.state.nm.us/Statewide/wdForms.php.

Within 30 days after the well is plugged, the well driller is required to file a complete plugging record with the OSE and the permit holder.

Sincerely,

K. Parekh

Kashyap Parekh
Water Resources Manager I

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623- 8559

Applicant has identified wells, listed below, to be plugged. West Texas Drilling Services (WD-1184) will perform the plugging.

Permittee: Maverick Natural Resources, LLC
NMOSE Permit Number: L-15414-POD1

NMOSE File	Casing diameter (inches)	Well depth (feet bgl)	Approximate static water level (feet bgl)	Latitude	Longitude
L-15414-POD1	2.0	110.0	100	32° 33' 23.46"	103° 10' 41.55''

Specific Plugging Conditions of Approval for well located in Lea County.

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. The total Theoretical volume of sealant required for abandonment of 2.0 inch diameter (I.D.) casing is approximately 287 gallons. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of well, which is estimated at 110 feet.

3. **Ground Water encountered:** Type I/II Portland cement mixed with 5.2 to 6.0 gallons of fresh water per 94-lb sack of cement is approved for the plugging the well.

4. **Dry Hole:** (a) Drill cuttings up to ten feet of land surface. (b) 10 feet to 0 feet – Hydrated bentonite. The bentonite shall be hydrated separately with its required increments of water prior to being mixed into the cement slurry.

5. Sealant shall be placed by pumping through a tremie pipe extended to near well bottom and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column upwards from below. Tremie pipe may be pulled as necessary to retain minimal submergence in the advancing column of sealant.

6. Should cement "shrinks-back" occur in the well, use of a tremie for topping off is required for cement placement deeper than 20 feet below land surface or if water is present in the casing. The approved sealant for topping off is identified in condition 3. of these Specific Conditions of Approval.

7. Any open annulus encountered surrounding the casing shall also be sealed by the placement of the approved sealant. When plugging shallow wells with no construction or environmental concerns, and if the well record on a well to be plugged shows a proper 20-foot annular seal, a plugging plan can propose the use of clean fill material to a nominal 30 feet bgs, then placing an OSE approved sealant to surface. Lacking that information, we would require an excavation of at least 2-feet which shall then be filled in its entirety with sealant to surface.

8. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

9. NMOSE witnessing of the plugging of the shallow well will not be required.

10. Any deviation from this plan must obtain an approved variance from this office prior to implementation.

11. A Well Plugging Record itemizing actual abandonment process and materials used shall be filed with the State Engineer within 30 days after completion of well plugging. For the plugging record, please resurvey coordinate location for well and note coordinate system for GPS unit. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 9th day of November 2022

Mike A. Hamman, P.E. State Engineer

By: K. Parekh

Kashyap Parekh
Water Resources Manager I

ENSOLUM

APPENDIX C

Photographic Log

ENSOLUM

Photographic Log
Maverick Permian, LLC
SEMU Permian South Header
Incident Number NAPP2230754633

Photograph: 1 Date: 10/11/2022
Description: Soil staining in release extent
View: Northwest

Photograph: 2 Date: 10/11/2022
Description: Overspray area
View: Northwest

Photograph: 3 Date: 11/10/2022
Description: Excedavation activities
View: West

Photograph: 4 Date: 11/10/2022
Description: Excavation activities
View: Southwest

ENSOLUM

APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
705 W. Wadley
Suite 210
Midland Texas 79701

Generated 11/21/2022 2:43:23 PM

JOB DESCRIPTION

SEMD PERMIAN SHEADER
SDG NUMBER 03D2057025

JOB NUMBER

890-3430-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

my EOL

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Laboratory Job ID: 890-3430-1
SDG: 03D2057025

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Job ID: 890-3430-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3430-1

Receipt
The samples were received on 11/10/2022 3:11 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 4.2°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: FS05A (890-3430-1), FS06A (890-3430-2), FS07A (890-3430-3), FS04A (890-3430-4), FS03 (890-3430-5) and FS02 (890-3430-6).

GC VOA
Method 8021B: Surrogate recovery for the following sample was outside control limits: FS03 (890-3430-5). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-39778 and analytical batch 880-39916 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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) recoveries for preparation batch 880-39514 and analytical batch 880-39389 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS05A

Date Collected: 11/10/22 10:45
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-1

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/17/22 09:35	11/19/22 02:46	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/17/22 09:35	11/19/22 02:46	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/17/22 09:35	11/19/22 02:46	1
m-Xylene & p-Xylene	<0.00398	U F1	0.00398		mg/Kg		11/17/22 09:35	11/19/22 02:46	1
o-Xylene	<0.00199	U F1	0.00199		mg/Kg		11/17/22 09:35	11/19/22 02:46	1
Xylenes, Total	<0.00398	U F1	0.00398		mg/Kg		11/17/22 09:35	11/19/22 02:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*70 - 130*	*11/17/22 09:35*	*11/19/22 02:46*	*1*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*	*11/17/22 09:35*	*11/19/22 02:46*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			11/21/22 15:09	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 09:20	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:17	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:17	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*103*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:17*	*1*
o-Terphenyl	*89*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:17*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**492**		5.04		mg/Kg			11/15/22 18:30	1

Client Sample ID: FS06A

Date Collected: 11/10/22 10:50
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 03:06	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 03:06	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 03:06	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		11/17/22 09:35	11/19/22 03:06	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 03:06	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		11/17/22 09:35	11/19/22 03:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:06*	*1*

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS06A

Date Collected: 11/10/22 10:50
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-2

Matrix: Solid

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:06*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399	mg/Kg			11/21/22 15:09	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			11/15/22 09:20	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		11/14/22 14:24	11/15/22 04:37	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		11/14/22 14:24	11/15/22 04:37	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		11/14/22 14:24	11/15/22 04:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*116*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:37*	*1*
o-Terphenyl	*98*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:37*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**104**		4.96	mg/Kg			11/15/22 18:51	1

Client Sample ID: FS07A

Date Collected: 11/10/22 10:55
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-3

Matrix: Solid

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		11/17/22 09:35	11/19/22 03:27	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/17/22 09:35	11/19/22 03:27	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/17/22 09:35	11/19/22 03:27	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/17/22 09:35	11/19/22 03:27	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/17/22 09:35	11/19/22 03:27	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/17/22 09:35	11/19/22 03:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:27*	*1*
1,4-Difluorobenzene (Surr)	*109*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:27*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			11/21/22 15:09	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**58.4**		49.9	mg/Kg			11/15/22 09:20	1

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS07A

Date Collected: 11/10/22 10:55
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-3

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/14/22 14:24	11/15/22 03:56	1
Diesel Range Organics (Over C10-C28)	**58.4**		49.9		mg/Kg		11/14/22 14:24	11/15/22 03:56	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/14/22 14:24	11/15/22 03:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*111*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:56*	*1*
o-Terphenyl	*95*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:56*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		4.96		mg/Kg			11/15/22 18:58	1

Client Sample ID: FS04A

Date Collected: 11/10/22 11:30
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-4

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 03:47	1
Toluene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 03:47	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 03:47	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/17/22 09:35	11/19/22 03:47	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/17/22 09:35	11/19/22 03:47	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/17/22 09:35	11/19/22 03:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:47*	*1*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*	*11/17/22 09:35*	*11/19/22 03:47*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		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		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 09:20	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:57	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:57	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 04:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*106*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:57*	*1*
o-Terphenyl	*95*		*70 - 130*	*11/14/22 14:24*	*11/15/22 04:57*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS04A

Lab Sample ID: 890-3430-4
Matrix: Solid
Date Collected: 11/10/22 11:30
Date Received: 11/10/22 15:11
Sample Depth: 12

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	198		5.00		mg/Kg			11/15/22 19:05	1

Client Sample ID: FS03

Lab Sample ID: 890-3430-5
Matrix: Solid
Date Collected: 11/10/22 12:55
Date Received: 11/10/22 15:11
Sample Depth: 12

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 04:07	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 04:07	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 04:07	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		11/17/22 09:35	11/19/22 04:07	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/17/22 09:35	11/19/22 04:07	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		11/17/22 09:35	11/19/22 04:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*65*	*S1-*	*70 - 130*	*11/17/22 09:35*	*11/19/22 04:07*	*1*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*	*11/17/22 09:35*	*11/19/22 04:07*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			11/21/22 15:09	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/15/22 09:20	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 03:36	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 03:36	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/15/22 03:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*119*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:36*	*1*
o-Terphenyl	*105*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:36*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		4.97		mg/Kg			11/15/22 19:12	1

Client Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS02

Date Collected: 11/10/22 13:00
Date Received: 11/10/22 15:11
Sample Depth: 12

Lab Sample ID: 890-3430-6

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		11/17/22 09:35	11/19/22 04:28	1
Toluene	<0.00202	U	0.00202		mg/Kg		11/17/22 09:35	11/19/22 04:28	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		11/17/22 09:35	11/19/22 04:28	1
m-Xylene & p-Xylene	<0.00403	U	0.00403		mg/Kg		11/17/22 09:35	11/19/22 04:28	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		11/17/22 09:35	11/19/22 04:28	1
Xylenes, Total	<0.00403	U	0.00403		mg/Kg		11/17/22 09:35	11/19/22 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*	*11/17/22 09:35*	*11/19/22 04:28*	*1*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*	*11/17/22 09:35*	*11/19/22 04:28*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403		mg/Kg			11/21/22 15:09	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**193**		49.9		mg/Kg			11/15/22 09:20	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/14/22 14:24	11/15/22 03:17	1
Diesel Range Organics (Over C10-C28)	**193**		49.9		mg/Kg		11/14/22 14:24	11/15/22 03:17	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/14/22 14:24	11/15/22 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*110*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:17*	*1*
o-Terphenyl	*98*		*70 - 130*	*11/14/22 14:24*	*11/15/22 03:17*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**135**		5.03		mg/Kg			11/15/22 19:19	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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)
890-3430-1	FS05A	80	108
890-3430-1 MS	FS05A	92	100
890-3430-1 MSD	FS05A	94	105
890-3430-2	FS06A	103	106
890-3430-3	FS07A	92	109
890-3430-4	FS04A	92	113
890-3430-5	FS03	65 S1-	100
890-3430-6	FS02	81	106
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)
890-3429-A-1-E MS	Matrix Spike	103	90
890-3429-A-1-F MSD	Matrix Spike Duplicate	115	102
890-3430-1	FS05A	103	89
890-3430-2	FS06A	116	98
890-3430-3	FS07A	111	95
890-3430-4	FS04A	106	95
890-3430-5	FS03	119	105
890-3430-6	FS02	110	98
LCS 880-39514/2-A	Lab Control Sample	90	92
LCSD 880-39514/3-A	Lab Control Sample Dup	91	91
MB 880-39514/1-A	Method Blank	98	107

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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		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: 890-3430-1 MS
Matrix: Solid
Analysis Batch: 39916

Client Sample ID: FS05A
Prep Type: Total/NA
Prep Batch: 39778

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U	0.0996	0.08070		mg/Kg		81	70 - 130		
Toluene	<0.00199	U	0.0996	0.08241		mg/Kg		83	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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

Lab Sample ID: 890-3430-1 MS — **Client Sample ID: FS05A**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39916 — **Prep Batch: 39778**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U	0.0996	0.07439		mg/Kg		75	70 - 130
m-Xylene & p-Xylene	<0.00398	U F1	0.199	0.1169	F1	mg/Kg		59	70 - 130
o-Xylene	<0.00199	U F1	0.0996	0.06442	F1	mg/Kg		64	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: 890-3430-1 MSD — **Client Sample ID: FS05A**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39916 — **Prep Batch: 39778**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U	0.0990	0.07660		mg/Kg		77	70 - 130	5	35
Toluene	<0.00199	U	0.0990	0.08282		mg/Kg		84	70 - 130	1	35
Ethylbenzene	<0.00199	U	0.0990	0.07579		mg/Kg		77	70 - 130	2	35
m-Xylene & p-Xylene	<0.00398	U F1	0.198	0.1208	F1	mg/Kg		61	70 - 130	3	35
o-Xylene	<0.00199	U F1	0.0990	0.06756	F1	mg/Kg		68	70 - 130	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*

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	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
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 880-39514/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39389 — **Prep Batch: 39514**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		11/14/22 14:24	11/14/22 20:26	1

QC Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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

Lab Sample ID: MB 880-39514/1-A
Matrix: Solid
Analysis Batch: 39389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39514

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/14/22 20:26	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/14/22 14:24	11/14/22 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*98*		*70 - 130*	*11/14/22 14:24*	*11/14/22 20:26*	*1*
o-Terphenyl	*107*		*70 - 130*	*11/14/22 14:24*	*11/14/22 20:26*	*1*

Lab Sample ID: LCS 880-39514/2-A
Matrix: Solid
Analysis Batch: 39389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39514

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1060		mg/Kg		106	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	937.0		mg/Kg		94	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*90*		*70 - 130*
o-Terphenyl	*92*		*70 - 130*

Lab Sample ID: LCSD 880-39514/3-A
Matrix: Solid
Analysis Batch: 39389

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39514

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1076		mg/Kg		108	70 - 130	2	20
Diesel Range Organics (Over C10-C28)			1000	934.9		mg/Kg		93	70 - 130	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*91*		*70 - 130*
o-Terphenyl	*91*		*70 - 130*

Lab Sample ID: 890-3429-A-1-E MS
Matrix: Solid
Analysis Batch: 39389

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 39514

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 F1	997	1209		mg/Kg		120	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U	997	1026		mg/Kg		103	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*103*		*70 - 130*
o-Terphenyl	*90*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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

Lab Sample ID: 890-3429-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39389 — **Prep Batch: 39514**

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 F1	999	1387	F1	mg/Kg		137	70 - 130	14	20
Diesel Range Organics (Over C10-C28)	<50.0	U	999	1164		mg/Kg		117	70 - 130	13	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*115*		*70 - 130*
o-Terphenyl	*102*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39448/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 39641

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/15/22 17:25	1

Lab Sample ID: LCS 880-39448/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 39641

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	259.6		mg/Kg		104	90 - 110		

Lab Sample ID: LCSD 880-39448/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 39641

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	266.9		mg/Kg		107	90 - 110	3	20

Lab Sample ID: 890-3429-A-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 39641

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	52.7		253	300.0		mg/Kg		98	90 - 110		

Lab Sample ID: 890-3429-A-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 39641

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	52.7		253	308.0		mg/Kg		101	90 - 110	3	20

QC Association Summary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

GC VOA

Prep Batch: 39778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Total/NA	Solid	5035	
890-3430-2	FS06A	Total/NA	Solid	5035	
890-3430-3	FS07A	Total/NA	Solid	5035	
890-3430-4	FS04A	Total/NA	Solid	5035	
890-3430-5	FS03	Total/NA	Solid	5035	
890-3430-6	FS02	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	
890-3430-1 MS	FS05A	Total/NA	Solid	5035	
890-3430-1 MSD	FS05A	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
890-3430-1	FS05A	Total/NA	Solid	8021B	39778
890-3430-2	FS06A	Total/NA	Solid	8021B	39778
890-3430-3	FS07A	Total/NA	Solid	8021B	39778
890-3430-4	FS04A	Total/NA	Solid	8021B	39778
890-3430-5	FS03	Total/NA	Solid	8021B	39778
890-3430-6	FS02	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
890-3430-1 MS	FS05A	Total/NA	Solid	8021B	39778
890-3430-1 MSD	FS05A	Total/NA	Solid	8021B	39778

Analysis Batch: 40122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Total/NA	Solid	Total BTEX	
890-3430-2	FS06A	Total/NA	Solid	Total BTEX	
890-3430-3	FS07A	Total/NA	Solid	Total BTEX	
890-3430-4	FS04A	Total/NA	Solid	Total BTEX	
890-3430-5	FS03	Total/NA	Solid	Total BTEX	
890-3430-6	FS02	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 39389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Total/NA	Solid	8015B NM	39514
890-3430-2	FS06A	Total/NA	Solid	8015B NM	39514
890-3430-3	FS07A	Total/NA	Solid	8015B NM	39514
890-3430-4	FS04A	Total/NA	Solid	8015B NM	39514
890-3430-5	FS03	Total/NA	Solid	8015B NM	39514
890-3430-6	FS02	Total/NA	Solid	8015B NM	39514
MB 880-39514/1-A	Method Blank	Total/NA	Solid	8015B NM	39514

QC Association Summary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

GC Semi VOA (Continued)

Analysis Batch: 39389 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 880-39514/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	39514
LCSD 880-39514/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	39514
890-3429-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	39514
890-3429-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	39514

Prep Batch: 39514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Total/NA	Solid	8015NM Prep	
890-3430-2	FS06A	Total/NA	Solid	8015NM Prep	
890-3430-3	FS07A	Total/NA	Solid	8015NM Prep	
890-3430-4	FS04A	Total/NA	Solid	8015NM Prep	
890-3430-5	FS03	Total/NA	Solid	8015NM Prep	
890-3430-6	FS02	Total/NA	Solid	8015NM Prep	
MB 880-39514/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-39514/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-39514/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-3429-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-3429-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 39580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Total/NA	Solid	8015 NM	
890-3430-2	FS06A	Total/NA	Solid	8015 NM	
890-3430-3	FS07A	Total/NA	Solid	8015 NM	
890-3430-4	FS04A	Total/NA	Solid	8015 NM	
890-3430-5	FS03	Total/NA	Solid	8015 NM	
890-3430-6	FS02	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 39448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Soluble	Solid	DI Leach	
890-3430-2	FS06A	Soluble	Solid	DI Leach	
890-3430-3	FS07A	Soluble	Solid	DI Leach	
890-3430-4	FS04A	Soluble	Solid	DI Leach	
890-3430-5	FS03	Soluble	Solid	DI Leach	
890-3430-6	FS02	Soluble	Solid	DI Leach	
MB 880-39448/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39448/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39448/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3429-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-3429-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 39641

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-1	FS05A	Soluble	Solid	300.0	39448
890-3430-2	FS06A	Soluble	Solid	300.0	39448
890-3430-3	FS07A	Soluble	Solid	300.0	39448
890-3430-4	FS04A	Soluble	Solid	300.0	39448
890-3430-5	FS03	Soluble	Solid	300.0	39448

QC Association Summary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

HPLC/IC (Continued)

Analysis Batch: 39641 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3430-6	FS02	Soluble	Solid	300.0	39448
MB 880-39448/1-A	Method Blank	Soluble	Solid	300.0	39448
LCS 880-39448/2-A	Lab Control Sample	Soluble	Solid	300.0	39448
LCSD 880-39448/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39448
890-3429-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	39448
890-3429-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	39448

Lab Chronicle

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS05A
Date Collected: 11/10/22 10:45
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-1
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			5.03 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 02:46	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 04:17	AJ	EET MID
Soluble	Leach	DI Leach			4.96 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 18:30	CH	EET MID

Client Sample ID: FS06A
Date Collected: 11/10/22 10:50
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-2
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			5.01 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 03:06	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 04:37	AJ	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 18:51	CH	EET MID

Client Sample ID: FS07A
Date Collected: 11/10/22 10:55
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-3
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	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39916	11/19/22 03:27	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 03:56	AJ	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 18:58	CH	EET MID

Client Sample ID: FS04A
Date Collected: 11/10/22 11:30
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-4
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			4.97 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 03:47	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Client Sample ID: FS04A
Date Collected: 11/10/22 11:30
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-4
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			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 04:57	AJ	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 19:05	CH	EET MID

Client Sample ID: FS03
Date Collected: 11/10/22 12:55
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-5
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	39778	11/17/22 09:35	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39916	11/19/22 04:07	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 03:36	AJ	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 19:12	CH	EET MID

Client Sample ID: FS02
Date Collected: 11/10/22 13:00
Date Received: 11/10/22 15:11

Lab Sample ID: 890-3430-6
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			4.96 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 04:28	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40122	11/21/22 15:09	SM	EET MID
Total/NA	Analysis	8015 NM		1			39580	11/15/22 09:20	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	39514	11/14/22 14:24	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	39389	11/15/22 03:17	AJ	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	39448	11/14/22 11:42	KS	EET MID
Soluble	Analysis	300.0		1			39641	11/15/22 19:19	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMD PERMIAN SHEADER

Job ID: 890-3430-1
SDG: 03D2057025

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3430-1	FS05A	Solid	11/10/22 10:45	11/10/22 15:11	12
890-3430-2	FS06A	Solid	11/10/22 10:50	11/10/22 15:11	12
890-3430-3	FS07A	Solid	11/10/22 10:55	11/10/22 15:11	12
890-3430-4	FS04A	Solid	11/10/22 11:30	11/10/22 15:11	12
890-3430-5	FS03	Solid	11/10/22 12:55	11/10/22 15:11	12
890-3430-6	FS02	Solid	11/10/22 13:00	11/10/22 15:11	12

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Khalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum
Address:	3122 Nat'l Parks Hwy	Address:	3122 Nat'l Parks Hwy
City, State ZIP:	Carlsbad, NM, 88220	City, State ZIP:	
Phone:	432-557-8895 Email:	hgreen@ensolum.com / khjennings@ensolum.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	SEMD Permian Sweeper	Turn Around	
Project Number:	03D2057025	☑ Routine ☐ Rush	
Project Location:	32.549475, -103.190425	Due Date:	
Sampler's Name:	J. Falcomata	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	Thermo08
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	4.4
Total Containers:		Corrected Temperature:	4.2

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: BTEX	TPH	Chlorides
FS05A	S	11-10-22	1045	12"	C	1		✓	✓	✓
FS06A	S	11-10-22	1050	12"	C	1		✓	✓	✓
FS07A	S	11-10-22	1055	12"	C	1		✓	✓	✓
FS04A	S	11-10-22	1130	12"	C	1		✓	✓	✓
FS03	S	11-10-22	1255	~~2~~ 18"	C	1		✓	✓	✓
FS02	S	11-10-22	1300	~~2~~ 18"	C	1		✓	✓	✓

890-3430 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2SO_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
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 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
1		11.10.22 1511	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3430-1
SDG Number: 03D2057025

Login Number: 3430
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: Ensolum

Job Number: 890-3430-1
SDG Number: 03D2057025

Login Number: 3430
List Number: 2
Creator: Rodriguez, Leticia

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

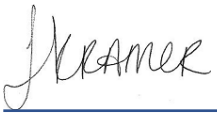
Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature 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
11/21/2022 2:43:23 PM

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

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
705 W. Wadley
Suite 210
Midland Texas 79701

Generated 11/23/2022 12:08:06 PM

JOB DESCRIPTION

SEMU Permian South Header
SDG NUMBER 03D2057025

JOB NUMBER

890-3474-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

Client: Ensolum
Project/Site: SEMU Permian South Header

Laboratory Job ID: 890-3474-1
SDG: 03D2057025

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Job ID: 890-3474-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3474-1

Receipt
The sample was received on 11/15/2022 1:31 PM. Unless otherwise noted below, the sample 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 sample was received and analyzed from an unpreserved bulk soil jar: FS01 (890-3474-1).

GC VOA
Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-39696 and analytical batch 880-39930 was outside the upper control limits.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-39722 and analytical batch 880-39930 was outside the upper control limits.

Method 8021B: The method blank for preparation batch 880-39696 and analytical batch 880-39930 contained m-Xylene & p-Xylene 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.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-39722 and analytical batch 880-39930 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8021B: The method blank for preparation batch 880-39722 and analytical batch 880-39930 contained m-Xylene & p-Xylene 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.

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.

Client Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Client Sample ID: FS01

Date Collected: 11/09/22 11:05
Date Received: 11/15/22 13:31
Sample Depth: 1'

Lab Sample ID: 890-3474-1

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/16/22 14:31	11/20/22 03:23	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/16/22 14:31	11/20/22 03:23	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/16/22 14:31	11/20/22 03:23	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		11/16/22 14:31	11/20/22 03:23	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		11/16/22 14:31	11/20/22 03:23	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		11/16/22 14:31	11/20/22 03:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*	*11/16/22 14:31*	*11/20/22 03:23*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*11/16/22 14:31*	*11/20/22 03:23*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			11/21/22 18:12	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**81.1**		49.8		mg/Kg			11/23/22 12:17	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		11/22/22 09:47	11/22/22 17:59	1
Diesel Range Organics (Over C10-C28)	**81.1**		49.8		mg/Kg		11/22/22 09:47	11/22/22 17:59	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		11/22/22 09:47	11/22/22 17:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*70*		*70 - 130*	*11/22/22 09:47*	*11/22/22 17:59*	*1*
o-Terphenyl	*79*		*70 - 130*	*11/22/22 09:47*	*11/22/22 17:59*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**180**		5.00		mg/Kg			11/22/22 04:29	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)											
		BFB1	DFBZ1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
880-21638-A-1-A MS	Matrix Spike	81	90										
880-21638-A-1-B MSD	Matrix Spike Duplicate	104	94										
890-3474-1	FS01	117	95										
LCS 880-39722/1-A	Lab Control Sample	113	92										
LCSD 880-39722/2-A	Lab Control Sample Dup	95	94										
MB 880-39696/5-A	Method Blank	66 S1-	89										
MB 880-39722/5-A	Method Blank	69 S1-	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)											
		1CO1	OTPH1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-3474-1	FS01	70	79										
890-3499-A-1-C MS	Matrix Spike	96	101										
890-3499-A-1-D MSD	Matrix Spike Duplicate	113	118										
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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-39696/5-A
Matrix: Solid
Analysis Batch: 39930

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39696

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/16/22 10:35	11/19/22 06:32	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/16/22 10:35	11/19/22 06:32	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/16/22 10:35	11/19/22 06:32	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/16/22 10:35	11/19/22 06:32	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/16/22 10:35	11/19/22 06:32	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/16/22 10:35	11/19/22 06:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*66*	*S1-*	*70 - 130*	*11/16/22 10:35*	*11/19/22 06:32*	*1*
1,4-Difluorobenzene (Surr)	*89*		*70 - 130*	*11/16/22 10:35*	*11/19/22 06:32*	*1*

Lab Sample ID: MB 880-39722/5-A
Matrix: Solid
Analysis Batch: 39930

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39722

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/16/22 14:31	11/19/22 20:05	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/16/22 14:31	11/19/22 20:05	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/16/22 14:31	11/19/22 20:05	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/16/22 14:31	11/19/22 20:05	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/16/22 14:31	11/19/22 20:05	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/16/22 14:31	11/19/22 20:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*69*	*S1-*	*70 - 130*	*11/16/22 14:31*	*11/19/22 20:05*	*1*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*	*11/16/22 14:31*	*11/19/22 20:05*	*1*

Lab Sample ID: LCS 880-39722/1-A
Matrix: Solid
Analysis Batch: 39930

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39722

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.08735		mg/Kg		87	70 - 130		
Toluene			0.100	0.09484		mg/Kg		95	70 - 130		
Ethylbenzene			0.100	0.08020		mg/Kg		80	70 - 130		
m-Xylene & p-Xylene			0.200	0.1782		mg/Kg		89	70 - 130		
o-Xylene			0.100	0.08946		mg/Kg		89	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*

Lab Sample ID: LCSD 880-39722/2-A
Matrix: Solid
Analysis Batch: 39930

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39722

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08926		mg/Kg		89	70 - 130	2	35

Eurofins Carlsbad

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

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

Lab Sample ID: LCSD 880-39722/2-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39930 — **Prep Batch: 39722**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.08918		mg/Kg		89	70 - 130	6	35
Ethylbenzene			0.100	0.08323		mg/Kg		83	70 - 130	4	35
m-Xylene & p-Xylene			0.200	0.1763		mg/Kg		88	70 - 130	1	35
o-Xylene			0.100	0.08097		mg/Kg		81	70 - 130	10	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 880-21638-A-1-A MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39930 — **Prep Batch: 39722**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U F1 F2	0.0996	0.009060	F1	mg/Kg		9	70 - 130
Toluene	<0.00200	U F1 F2	0.0996	0.006781	F1	mg/Kg		7	70 - 130
Ethylbenzene	<0.00200	U F1 F2	0.0996	0.009392	F1	mg/Kg		9	70 - 130
m-Xylene & p-Xylene	<0.00401	U F1 F2	0.199	0.02431	F1	mg/Kg		11	70 - 130
o-Xylene	<0.00200	U F1 F2	0.0996	0.01365	F1	mg/Kg		14	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*

Lab Sample ID: 880-21638-A-1-B MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 39930 — **Prep Batch: 39722**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U F1 F2	0.0996	0.06861	F1 F2	mg/Kg		69	70 - 130	153	35
Toluene	<0.00200	U F1 F2	0.0996	0.05867	F1 F2	mg/Kg		59	70 - 130	159	35
Ethylbenzene	<0.00200	U F1 F2	0.0996	0.05768	F1 F2	mg/Kg		58	70 - 130	144	35
m-Xylene & p-Xylene	<0.00401	U F1 F2	0.199	0.1185	F1 F2	mg/Kg		59	70 - 130	132	35
o-Xylene	<0.00200	U F1 F2	0.0996	0.06295	F1 F2	mg/Kg		63	70 - 130	129	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

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

Lab Sample ID: MB 880-40185/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40170 — **Prep Batch: 40185**

Analyte	MB Result	MB Qualifier	RL		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

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

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

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		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/22/22 08:09	11/22/22 08:21	1
OII 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*

Lab Sample ID: 890-3499-A-1-C MS
Matrix: Solid
Analysis Batch: 40170

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 40185

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	865.2		mg/Kg		84	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	999	1010		mg/Kg		99	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*96*		*70 - 130*
o-Terphenyl	*101*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

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

Lab Sample ID: 890-3499-A-1-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40170 — **Prep Batch: 40185**

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	<49.9	U	999	1028		mg/Kg		101	70 - 130	17	20
Diesel Range Organics (Over C10-C28)	<49.9	U	999	1191		mg/Kg		117	70 - 130	16	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*113*		*70 - 130*
o-Terphenyl	*118*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-39831/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40150

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/22/22 03:10	1

Lab Sample ID: LCS 880-39831/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40150

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	255.5		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-39831/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40150

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	256.9		mg/Kg		103	90 - 110	1	20

Lab Sample ID: 890-3464-A-1-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40150

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	331		251	576.6		mg/Kg		98	90 - 110		

Lab Sample ID: 890-3464-A-1-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40150

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	331		251	576.9		mg/Kg		98	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

GC VOA

Prep Batch: 39696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-39696/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 39722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Total/NA	Solid	5035	
MB 880-39722/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-39722/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-39722/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-21638-A-1-A MS	Matrix Spike	Total/NA	Solid	5035	
880-21638-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 39930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Total/NA	Solid	8021B	39722
MB 880-39696/5-A	Method Blank	Total/NA	Solid	8021B	39696
MB 880-39722/5-A	Method Blank	Total/NA	Solid	8021B	39722
LCS 880-39722/1-A	Lab Control Sample	Total/NA	Solid	8021B	39722
LCSD 880-39722/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	39722
880-21638-A-1-A MS	Matrix Spike	Total/NA	Solid	8021B	39722
880-21638-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	39722

Analysis Batch: 40147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 40170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	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
890-3499-A-1-C MS	Matrix Spike	Total/NA	Solid	8015B NM	40185
890-3499-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	40185

Prep Batch: 40185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	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	
890-3499-A-1-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-3499-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 40309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Total/NA	Solid	8015 NM	

QC Association Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

HPLC/IC

Leach Batch: 39831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Soluble	Solid	DI Leach	
MB 880-39831/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-39831/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-39831/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3464-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-3464-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 40150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3474-1	FS01	Soluble	Solid	300.0	39831
MB 880-39831/1-A	Method Blank	Soluble	Solid	300.0	39831
LCS 880-39831/2-A	Lab Control Sample	Soluble	Solid	300.0	39831
LCSD 880-39831/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	39831
890-3464-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	39831
890-3464-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	39831

Lab Chronicle

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Client Sample ID: FS01

Date Collected: 11/09/22 11:05
Date Received: 11/15/22 13:31

Lab Sample ID: 890-3474-1

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			5.03 g	5 mL	39722	11/16/22 14:31	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	39930	11/20/22 03:23	SM	EET MID
Total/NA	Analysis	Total BTEX		1			40147	11/21/22 18:12	SM	EET MID
Total/NA	Analysis	8015 NM		1			40309	11/23/22 12:17	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 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 17:59	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	39831	11/17/22 14:43	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40150	11/22/22 04:29	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3474-1
SDG: 03D2057025

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3474-1	FS01	Solid	11/09/22 11:05	11/15/22 13:31	1'

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum LLC.	Company Name:	Ensolum LLC
Address:	601 N marienfeld St. Suite 400	Address:	601 N marienfeld St. Suite 400
City, State ZIP:	Midland, TX 79701	City, State ZIP:	Midland TX, 79701
Phone:	432.557.8895 Email:	hgreen@ensolum.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	SEMU PERMIAN SOUTH HEADER	Turn Around	
Project Number:	03D2057025	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	TAM-007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.8	
Total Containers:		Corrected Temperature:	5.6	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: Chlorides	BTEX	TPH
FS01	S	11.9.22	1105	1'	C	1		x	x	x

ANALYSIS REQUEST

890-3474 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2SO_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

11.14.22

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 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
1 CS	Amanda Short	11/15/22 1331			
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3474-1
SDG Number: 03D2057025

Login Number: 3474
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: Ensolum

Job Number: 890-3474-1
SDG Number: 03D2057025

Login Number: 3474
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	

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 12:08:06 PM

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

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kalei Jennings
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 12/1/2022 12:58:40 PM

JOB DESCRIPTION

SEMU PERMIAN SOUTH HEADER
SDG NUMBER 03D2057025

JOB NUMBER

890-3502-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

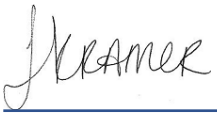
my EOL

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
12/1/2022 12:58:40 PM

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

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Laboratory Job ID: 890-3502-1
SDG: 03D2057025

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Job ID: 890-3502-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3502-1

Receipt
The samples were received on 11/17/2022 2:53 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 1.8°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: FS08 (890-3502-1) and FS09 (890-3502-2).

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-40433 and analytical batch 880-40656 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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 880-40210 and analytical batch 880-40168 was outside the upper control limits.

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Client Sample ID: FS08

Lab Sample ID: 890-3502-1
Matrix: Solid
Date Collected: 11/17/22 12:40
Date Received: 11/17/22 14:53
Sample Depth: 1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		11/30/22 10:40	12/01/22 04:54	1
Toluene	<0.00199	U	0.00199		mg/Kg		11/30/22 10:40	12/01/22 04:54	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		11/30/22 10:40	12/01/22 04:54	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		11/30/22 10:40	12/01/22 04:54	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		11/30/22 10:40	12/01/22 04:54	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		11/30/22 10:40	12/01/22 04:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*	*11/30/22 10:40*	*12/01/22 04:54*	*1*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*	*11/30/22 10:40*	*12/01/22 04:54*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/01/22 12:55	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**243**		49.9		mg/Kg			11/23/22 11:46	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		11/22/22 11:24	11/23/22 04:36	1
Diesel Range Organics (Over C10-C28)	**243**		49.9		mg/Kg		11/22/22 11:24	11/23/22 04:36	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		11/22/22 11:24	11/23/22 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*101*		*70 - 130*	*11/22/22 11:24*	*11/23/22 04:36*	*1*
o-Terphenyl	*91*		*70 - 130*	*11/22/22 11:24*	*11/23/22 04:36*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**185**		5.03		mg/Kg			11/23/22 12:30	1

Client Sample ID: FS09

Lab Sample ID: 890-3502-2
Matrix: Solid
Date Collected: 11/17/22 12:45
Date Received: 11/17/22 14:53
Sample Depth: 1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		11/30/22 10:40	12/01/22 05:14	1
Toluene	<0.00201	U	0.00201		mg/Kg		11/30/22 10:40	12/01/22 05:14	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/30/22 10:40	12/01/22 05:14	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/30/22 10:40	12/01/22 05:14	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/30/22 10:40	12/01/22 05:14	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/30/22 10:40	12/01/22 05:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*	*11/30/22 10:40*	*12/01/22 05:14*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Client Sample ID: FS09
Date Collected: 11/17/22 12:45
Date Received: 11/17/22 14:53
Sample Depth: 1

Lab Sample ID: 890-3502-2
Matrix: Solid

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*	*11/30/22 10:40*	*12/01/22 05:14*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			12/01/22 12:55	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**261**		49.8		mg/Kg			11/23/22 11:46	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		11/22/22 11:24	11/23/22 04:58	1
Diesel Range Organics (Over C10-C28)	**261**		49.8		mg/Kg		11/22/22 11:24	11/23/22 04:58	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		11/22/22 11:24	11/23/22 04:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*11/22/22 11:24*	*11/23/22 04:58*	*1*
o-Terphenyl	*91*		*70 - 130*	*11/22/22 11:24*	*11/23/22 04:58*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.4**		5.02		mg/Kg			11/23/22 12:55	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-3498-A-1-E MS	Matrix Spike	94	106
890-3498-A-1-F MSD	Matrix Spike Duplicate	95	118
890-3502-1	FS08	97	104
890-3502-2	FS09	97	106
LCS 880-40433/1-A	Lab Control Sample	90	120
LCSD 880-40433/2-A	Lab Control Sample Dup	89	119
MB 880-40433/5-A	Method Blank	81	104
MB 880-40588/5-A	Method Blank	84	101

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)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
820-6564-A-1-E MS	Matrix Spike	99	95
820-6564-A-1-F MSD	Matrix Spike Duplicate	117	97
890-3502-1	FS08	101	91
890-3502-2	FS09	96	91
LCS 880-40210/2-A	Lab Control Sample	104	103
LCSD 880-40210/3-A	Lab Control Sample Dup	115	102
MB 880-40210/1-A	Method Blank	135 S1+	135 S1+

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-40433/5-A
Matrix: Solid
Analysis Batch: 40656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40433

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/30/22 10:40	11/30/22 22:24	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/30/22 10:40	11/30/22 22:24	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/30/22 10:40	11/30/22 22:24	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/30/22 10:40	11/30/22 22:24	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/30/22 10:40	11/30/22 22:24	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/30/22 10:40	11/30/22 22:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*	*11/30/22 10:40*	*11/30/22 22:24*	*1*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*	*11/30/22 10:40*	*11/30/22 22:24*	*1*

Lab Sample ID: LCS 880-40433/1-A
Matrix: Solid
Analysis Batch: 40656

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40433

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1239		mg/Kg		124	70 - 130		
Toluene			0.100	0.1011		mg/Kg		101	70 - 130		
Ethylbenzene			0.100	0.09288		mg/Kg		93	70 - 130		
m-Xylene & p-Xylene			0.200	0.1867		mg/Kg		93	70 - 130		
o-Xylene			0.100	0.1047		mg/Kg		105	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*
1,4-Difluorobenzene (Surr)	*120*		*70 - 130*

Lab Sample ID: LCSD 880-40433/2-A
Matrix: Solid
Analysis Batch: 40656

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40433

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1176		mg/Kg		118	70 - 130	5	35
Toluene			0.100	0.09672		mg/Kg		97	70 - 130	4	35
Ethylbenzene			0.100	0.08809		mg/Kg		88	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1760		mg/Kg		88	70 - 130	6	35
o-Xylene			0.100	0.09085		mg/Kg		91	70 - 130	14	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*
1,4-Difluorobenzene (Surr)	*119*		*70 - 130*

Lab Sample ID: 890-3498-A-1-E MS
Matrix: Solid
Analysis Batch: 40656

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 40433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.100	0.08066		mg/Kg		80	70 - 130		
Toluene	<0.00201	U F1	0.100	0.06152	F1	mg/Kg		61	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

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

Lab Sample ID: 890-3498-A-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40656 — **Prep Batch: 40433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U F1	0.100	0.05273	F1	mg/Kg		53	70 - 130
m-Xylene & p-Xylene	<0.00402	U F1	0.201	0.1002	F1	mg/Kg		50	70 - 130
o-Xylene	<0.00201	U F1	0.100	0.05466	F1	mg/Kg		54	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*

Lab Sample ID: 890-3498-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40656 — **Prep Batch: 40433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0990	0.08386		mg/Kg		85	70 - 130	4	35
Toluene	<0.00201	U F1	0.0990	0.05786	F1	mg/Kg		58	70 - 130	6	35
Ethylbenzene	<0.00201	U F1	0.0990	0.04782	F1	mg/Kg		48	70 - 130	10	35
m-Xylene & p-Xylene	<0.00402	U F1	0.198	0.09262	F1	mg/Kg		47	70 - 130	8	35
o-Xylene	<0.00201	U F1	0.0990	0.05007	F1	mg/Kg		51	70 - 130	9	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*
1,4-Difluorobenzene (Surr)	*118*		*70 - 130*

Lab Sample ID: MB 880-40588/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40656 — **Prep Batch: 40588**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/29/22 10:58	11/30/22 11:46	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/29/22 10:58	11/30/22 11:46	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/29/22 10:58	11/30/22 11:46	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/29/22 10:58	11/30/22 11:46	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/29/22 10:58	11/30/22 11:46	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/29/22 10:58	11/30/22 11:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*70 - 130*	*11/29/22 10:58*	*11/30/22 11:46*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*	*11/29/22 10:58*	*11/30/22 11:46*	*1*

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

Lab Sample ID: MB 880-40210/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		11/22/22 11:24	11/22/22 19:48	1

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

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

Lab Sample ID: MB 880-40210/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/22/22 11:24	11/22/22 19:48	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/22/22 11:24	11/22/22 19:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*135*	*S1+*	*70 - 130*	*11/22/22 11:24*	*11/22/22 19:48*	*1*
o-Terphenyl	*135*	*S1+*	*70 - 130*	*11/22/22 11:24*	*11/22/22 19:48*	*1*

Lab Sample ID: LCS 880-40210/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	994.7		mg/Kg		99	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	955.7		mg/Kg		96	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*104*		*70 - 130*
o-Terphenyl	*103*		*70 - 130*

Lab Sample ID: LCSD 880-40210/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	869.2		mg/Kg		87	70 - 130	13	20
Diesel Range Organics (Over C10-C28)			1000	926.3		mg/Kg		93	70 - 130	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*115*		*70 - 130*
o-Terphenyl	*102*		*70 - 130*

Lab Sample ID: 820-6564-A-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	822.5		mg/Kg		80	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	999	906.5		mg/Kg		88	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*95*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

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

Lab Sample ID: 820-6564-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40168 — **Prep Batch: 40210**

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	<49.9	U	998	818.0		mg/Kg		80	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<49.9	U	998	934.6		mg/Kg		91	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*117*		*70 - 130*
o-Terphenyl	*97*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-40005/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40250

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/23/22 10:25	1

Lab Sample ID: LCS 880-40005/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40250

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	234.2		mg/Kg		94	90 - 110		

Lab Sample ID: LCSD 880-40005/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40250

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	235.5		mg/Kg		94	90 - 110	1	20

Lab Sample ID: 890-3502-1 MS — **Client Sample ID: FS08**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40250

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	185		252	428.8		mg/Kg		97	90 - 110		

Lab Sample ID: 890-3502-1 MSD — **Client Sample ID: FS08**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 40250

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	185		252	421.7		mg/Kg		94	90 - 110	2	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

GC VOA

Prep Batch: 40433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	5035	
890-3502-2	FS09	Total/NA	Solid	5035	
MB 880-40433/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-40433/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-40433/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3498-A-1-E MS	Matrix Spike	Total/NA	Solid	5035	
890-3498-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 40588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-40588/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 40656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	8021B	40433
890-3502-2	FS09	Total/NA	Solid	8021B	40433
MB 880-40433/5-A	Method Blank	Total/NA	Solid	8021B	40433
MB 880-40588/5-A	Method Blank	Total/NA	Solid	8021B	40588
LCS 880-40433/1-A	Lab Control Sample	Total/NA	Solid	8021B	40433
LCSD 880-40433/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	40433
890-3498-A-1-E MS	Matrix Spike	Total/NA	Solid	8021B	40433
890-3498-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	40433

Analysis Batch: 40791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	Total BTEX	
890-3502-2	FS09	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 40168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	8015B NM	40210
890-3502-2	FS09	Total/NA	Solid	8015B NM	40210
MB 880-40210/1-A	Method Blank	Total/NA	Solid	8015B NM	40210
LCS 880-40210/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	40210
LCSD 880-40210/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	40210
820-6564-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	40210
820-6564-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	40210

Prep Batch: 40210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	8015NM Prep	
890-3502-2	FS09	Total/NA	Solid	8015NM Prep	
MB 880-40210/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-40210/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-40210/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
820-6564-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
820-6564-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

GC Semi VOA

Analysis Batch: 40303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Total/NA	Solid	8015 NM	
890-3502-2	FS09	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 40005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Soluble	Solid	DI Leach	
890-3502-2	FS09	Soluble	Solid	DI Leach	
MB 880-40005/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-40005/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-40005/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3502-1 MS	FS08	Soluble	Solid	DI Leach	
890-3502-1 MSD	FS08	Soluble	Solid	DI Leach	

Analysis Batch: 40250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3502-1	FS08	Soluble	Solid	300.0	40005
890-3502-2	FS09	Soluble	Solid	300.0	40005
MB 880-40005/1-A	Method Blank	Soluble	Solid	300.0	40005
LCS 880-40005/2-A	Lab Control Sample	Soluble	Solid	300.0	40005
LCSD 880-40005/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	40005
890-3502-1 MS	FS08	Soluble	Solid	300.0	40005
890-3502-1 MSD	FS08	Soluble	Solid	300.0	40005

Lab Chronicle

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Client Sample ID: FS08

Date Collected: 11/17/22 12:40
Date Received: 11/17/22 14:53

Lab Sample ID: 890-3502-1

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			5.03 g	5 mL	40433	11/30/22 10:40	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40656	12/01/22 04:54	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40791	12/01/22 12:55	SM	EET MID
Total/NA	Analysis	8015 NM		1			40303	11/23/22 11:46	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	40210	11/22/22 11:24	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40168	11/23/22 04:36	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	40005	11/20/22 12:12	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40250	11/23/22 12:30	SMC	EET MID

Client Sample ID: FS09

Date Collected: 11/17/22 12:45
Date Received: 11/17/22 14:53

Lab Sample ID: 890-3502-2

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	40433	11/30/22 10:40	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40656	12/01/22 05:14	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40791	12/01/22 12:55	SM	EET MID
Total/NA	Analysis	8015 NM		1			40303	11/23/22 11:46	SM	EET MID
Total/NA	Prep	8015NM Prep			10.05 g	10 mL	40210	11/22/22 11:24	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40168	11/23/22 04:58	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	40005	11/20/22 12:12	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40250	11/23/22 12:55	SMC	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3502-1
SDG: 03D2057025

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3502-1	FS08	Solid	11/17/22 12:40	11/17/22 14:53	1
890-3502-2	FS09	Solid	11/17/22 12:45	11/17/22 14:53	1

eurofins | Environment Testing Xenco

Chain of Custody

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

www.xenco.com

Work Order No: _____

Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N. Marienfeld Street, Suite 400	Address:	
City, State ZIP:	Midland, TX 79701	City, State ZIP:	
Phone:	432-557-8895	Email:	Hgreen@ensolum.com; Kjennings@ensolu.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project: NM
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	SEMU Permian South Header	Turn Around	
Project Number:	03D2057025	☑ Routine ☐ Rush	
Project Location:	32.549475, -103.190427	Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:	03D2057025		

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	T NM-007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	2.0	
Total Containers:		Corrected Temperature:	1.8	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES 300	TPH 8015	BTEX 8021
FS08	SL	11/17/2022	1240	1	C	1		X	X	X
FS09	SL	11/17/2022	1245	1	C	1		X	X	X

ANALYSIS REQUEST — Parameters

890-3502 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2SO_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

11.17.22

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 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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	Amanda Salt	11/17/22 1453	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3502-1
SDG Number: 03D2057025

Login Number: 3502
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: Ensolum

Job Number: 890-3502-1
SDG Number: 03D2057025

Login Number: 3502
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 11/21/22 08:46 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 | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kalei Jennings
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Generated 11/29/2022 11:47:52 AM

JOB DESCRIPTION

SEMU PERMIAN SOUTH HEADER
SDG NUMBER 03D2057025

JOB NUMBER

890-3509-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

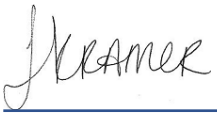
See page two for job notes and contact information.

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 11:47:52 AM

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

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Laboratory Job ID: 890-3509-1
SDG: 03D2057025

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
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, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Job ID: 890-3509-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3509-1

Receipt
The samples were received on 11/17/2022 2:57 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 1.8°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: SS05A (890-3509-1), SS06A (890-3509-2) and SS07A (890-3509-3).

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-40434 and analytical batch 880-40362 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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 880-40270 and analytical batch 880-40256 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: SS05A (890-3509-1). 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 880-40387 and analytical batch 880-40408 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: SS06A (890-3509-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The method blank for preparation batch 880-40387 and analytical batch 880-40408 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.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 880-40387 and analytical batch 880-40408 was outside control limits. Sample non-homogeneity is suspected.

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-40006 and analytical batch 880-40248 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.The associated samples are: SS05A (890-3509-1), SS06A (890-3509-2), SS07A (890-3509-3), (890-3507-A-1-A), (890-3507-A-1-B MS) and (890-3507-A-1-C MSD).

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

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Client Sample ID: SS05A

Lab Sample ID: 890-3509-1
Matrix: Solid
Date Collected: 11/17/22 12:35
Date Received: 11/17/22 14:57
Sample Depth: 1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U F1 F2	0.00200		mg/Kg		11/28/22 11:03	11/28/22 23:11	1
Toluene	<0.00200	U F1 F2	0.00200		mg/Kg		11/28/22 11:03	11/28/22 23:11	1
Ethylbenzene	<0.00200	U F1 F2	0.00200		mg/Kg		11/28/22 11:03	11/28/22 23:11	1
m-Xylene & p-Xylene	<0.00401	U F1 F2	0.00401		mg/Kg		11/28/22 11:03	11/28/22 23:11	1
o-Xylene	<0.00200	U F1 F2	0.00200		mg/Kg		11/28/22 11:03	11/28/22 23:11	1
Xylenes, Total	<0.00401	U F1 F2	0.00401		mg/Kg		11/28/22 11:03	11/28/22 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*	*11/28/22 11:03*	*11/28/22 23:11*	*1*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*	*11/28/22 11:03*	*11/28/22 23:11*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			11/29/22 09:20	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			11/28/22 09:30	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 19:01	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 19:01	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*0.04*	*S1-*	*70 - 130*	*11/23/22 08:51*	*11/23/22 19:01*	*1*
o-Terphenyl	*0.4*	*S1-*	*70 - 130*	*11/23/22 08:51*	*11/23/22 19:01*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**84.1**		4.95		mg/Kg			11/23/22 06:23	1

Client Sample ID: SS06A

Lab Sample ID: 890-3509-2
Matrix: Solid
Date Collected: 11/17/22 12:30
Date Received: 11/17/22 14:57
Sample Depth: 1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		11/28/22 11:03	11/28/22 23:31	1
Toluene	<0.00201	U	0.00201		mg/Kg		11/28/22 11:03	11/28/22 23:31	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		11/28/22 11:03	11/28/22 23:31	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		11/28/22 11:03	11/28/22 23:31	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		11/28/22 11:03	11/28/22 23:31	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		11/28/22 11:03	11/28/22 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*	*11/28/22 11:03*	*11/28/22 23:31*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Client Sample ID: SS06A

Lab Sample ID: 890-3509-2
Matrix: Solid
Date Collected: 11/17/22 12:30
Date Received: 11/17/22 14:57
Sample Depth: 1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*	*11/28/22 11:03*	*11/28/22 23:31*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402	mg/Kg			11/29/22 09:20	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**70.2**		49.9	mg/Kg			11/29/22 12:08	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		11/28/22 09:07	11/28/22 23:18	1
Diesel Range Organics (Over C10-C28)	**70.2**		49.9	mg/Kg		11/28/22 09:07	11/28/22 23:18	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		11/28/22 09:07	11/28/22 23:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*135*	*S1+*	*70 - 130*	*11/28/22 09:07*	*11/28/22 23:18*	*1*
o-Terphenyl	*139*	*S1+*	*70 - 130*	*11/28/22 09:07*	*11/28/22 23:18*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21.8**		5.01	mg/Kg			11/23/22 06:29	1

Client Sample ID: SS07A

Lab Sample ID: 890-3509-3
Matrix: Solid
Date Collected: 11/17/22 12:25
Date Received: 11/17/22 14:57
Sample Depth: 1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/28/22 11:03	11/29/22 03:37	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/28/22 11:03	11/29/22 03:37	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/28/22 11:03	11/29/22 03:37	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		11/28/22 11:03	11/29/22 03:37	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/28/22 11:03	11/29/22 03:37	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		11/28/22 11:03	11/29/22 03:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*80*		*70 - 130*	*11/28/22 11:03*	*11/29/22 03:37*	*1*
1,4-Difluorobenzene (Surr)	*84*		*70 - 130*	*11/28/22 11:03*	*11/29/22 03:37*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			11/29/22 09:20	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			11/29/22 12:08	1

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Client Sample ID: SS07A
Date Collected: 11/17/22 12:25
Date Received: 11/17/22 14:57
Sample Depth: 1

Lab Sample ID: 890-3509-3
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 23:40	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 23:40	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 23:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*128*		*70 - 130*	*11/28/22 09:07*	*11/28/22 23:40*	*1*
o-Terphenyl	*124*		*70 - 130*	*11/28/22 09:07*	*11/28/22 23:40*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.5**		4.98		mg/Kg			11/23/22 06:34	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-3509-1	SS05A	88	100
890-3509-1 MS	SS05A	103	104
890-3509-1 MSD	SS05A	74	100
890-3509-2	SS06A	101	92
890-3509-3	SS07A	80	84
LCS 880-40434/1-A	Lab Control Sample	97	105
LCSD 880-40434/2-A	Lab Control Sample Dup	93	109
MB 880-40407/5-A	Method Blank	80	103
MB 880-40434/5-A	Method Blank	83	105

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)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-21770-A-1-E MS	Matrix Spike	99	98
880-21770-A-1-F MSD	Matrix Spike Duplicate	100	98
880-21869-A-1-F MS	Matrix Spike	109	102
880-21869-A-1-G MSD	Matrix Spike Duplicate	98	92
890-3509-1	SS05A	0.04 S1-	0.4 S1-
890-3509-2	SS06A	135 S1+	139 S1+
890-3509-3	SS07A	128	124
LCS 880-40270/2-A	Lab Control Sample	94	98
LCS 880-40387/2-A	Lab Control Sample	129	126
LCSD 880-40270/3-A	Lab Control Sample Dup	81	86
LCSD 880-40387/3-A	Lab Control Sample Dup	128	126
MB 880-40270/1-A	Method Blank	129	140 S1+
MB 880-40387/1-A	Method Blank	129	149 S1+

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-40407/5-A
Matrix: Solid
Analysis Batch: 40362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40407

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/28/22 09:59	11/28/22 12:11	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/28/22 09:59	11/28/22 12:11	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/28/22 09:59	11/28/22 12:11	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/28/22 09:59	11/28/22 12:11	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/28/22 09:59	11/28/22 12:11	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/28/22 09:59	11/28/22 12:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*70 - 130*	*11/28/22 09:59*	*11/28/22 12:11*	*1*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*	*11/28/22 09:59*	*11/28/22 12:11*	*1*

Lab Sample ID: MB 880-40434/5-A
Matrix: Solid
Analysis Batch: 40362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40434

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		11/28/22 11:03	11/28/22 22:49	1
Toluene	<0.00200	U	0.00200		mg/Kg		11/28/22 11:03	11/28/22 22:49	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		11/28/22 11:03	11/28/22 22:49	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		11/28/22 11:03	11/28/22 22:49	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		11/28/22 11:03	11/28/22 22:49	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		11/28/22 11:03	11/28/22 22:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*70 - 130*	*11/28/22 11:03*	*11/28/22 22:49*	*1*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*	*11/28/22 11:03*	*11/28/22 22:49*	*1*

Lab Sample ID: LCS 880-40434/1-A
Matrix: Solid
Analysis Batch: 40362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40434

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1007		mg/Kg		101	70 - 130		
Toluene			0.100	0.09296		mg/Kg		93	70 - 130		
Ethylbenzene			0.100	0.09103		mg/Kg		91	70 - 130		
m-Xylene & p-Xylene			0.200	0.1893		mg/Kg		95	70 - 130		
o-Xylene			0.100	0.09471		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*

Lab Sample ID: LCSD 880-40434/2-A
Matrix: Solid
Analysis Batch: 40362

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40434

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1120		mg/Kg		112	70 - 130	11	35

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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

Lab Sample ID: LCSD 880-40434/2-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40362 — **Prep Batch: 40434**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.1008		mg/Kg		101	70 - 130	8	35
Ethylbenzene			0.100	0.09560		mg/Kg		96	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1933		mg/Kg		97	70 - 130	2	35
o-Xylene			0.100	0.09615		mg/Kg		96	70 - 130	2	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*
1,4-Difluorobenzene (Surr)	*109*		*70 - 130*

Lab Sample ID: 890-3509-1 MS — **Client Sample ID: SS05A**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40362 — **Prep Batch: 40434**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U F1 F2	0.0996	0.05553	F1	mg/Kg		56	70 - 130
Toluene	<0.00200	U F1 F2	0.0996	0.05359	F1	mg/Kg		54	70 - 130
Ethylbenzene	<0.00200	U F1 F2	0.0996	0.05575	F1	mg/Kg		56	70 - 130
m-Xylene & p-Xylene	<0.00401	U F1 F2	0.199	0.1058	F1	mg/Kg		53	70 - 130
o-Xylene	<0.00200	U F1 F2	0.0996	0.05416	F1	mg/Kg		54	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*

Lab Sample ID: 890-3509-1 MSD — **Client Sample ID: SS05A**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40362 — **Prep Batch: 40434**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U F1 F2	0.0994	0.02856	F1 F2	mg/Kg		29	70 - 130	64	35
Toluene	<0.00200	U F1 F2	0.0994	0.02643	F1 F2	mg/Kg		27	70 - 130	68	35
Ethylbenzene	<0.00200	U F1 F2	0.0994	0.02401	F1 F2	mg/Kg		24	70 - 130	80	35
m-Xylene & p-Xylene	<0.00401	U F1 F2	0.199	0.04452	F1 F2	mg/Kg		22	70 - 130	82	35
o-Xylene	<0.00200	U F1 F2	0.0994	0.02377	F1 F2	mg/Kg		23	70 - 130	78	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*74*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

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

Lab Sample ID: MB 880-40270/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40256 — **Prep Batch: 40270**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 08:54	1

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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

Lab Sample ID: MB 880-40270/1-A
Matrix: Solid
Analysis Batch: 40256

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 40270

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 08:54	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/23/22 08:51	11/23/22 08:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*129*		*70 - 130*	*11/23/22 08:51*	*11/23/22 08:54*	*1*
o-Terphenyl	*140*	*S1+*	*70 - 130*	*11/23/22 08:51*	*11/23/22 08:54*	*1*

Lab Sample ID: LCS 880-40270/2-A
Matrix: Solid
Analysis Batch: 40256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40270

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1088		mg/Kg		109	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1082		mg/Kg		108	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*94*		*70 - 130*
o-Terphenyl	*98*		*70 - 130*

Lab Sample ID: LCSD 880-40270/3-A
Matrix: Solid
Analysis Batch: 40256

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40270

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	993.6		mg/Kg		99	70 - 130	9	20
Diesel Range Organics (Over C10-C28)			1000	923.3		mg/Kg		92	70 - 130	16	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*81*		*70 - 130*
o-Terphenyl	*86*		*70 - 130*

Lab Sample ID: 880-21770-A-1-E MS
Matrix: Solid
Analysis Batch: 40256

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 40270

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	1006		mg/Kg		98	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U	999	766.2		mg/Kg		77	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*98*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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

Lab Sample ID: 880-21770-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40256 — **Prep Batch: 40270**

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	1034		mg/Kg		101	70 - 130	3	20
Diesel Range Organics (Over C10-C28)	<50.0	U	997	774.1		mg/Kg		78	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*100*		*70 - 130*
o-Terphenyl	*98*		*70 - 130*

Lab Sample ID: MB 880-40387/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40408 — **Prep Batch: 40387**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 13:45	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 13:45	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		11/28/22 09:07	11/28/22 13:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*129*		*70 - 130*	*11/28/22 09:07*	*11/28/22 13:45*	*1*
o-Terphenyl	*149*	*S1+*	*70 - 130*	*11/28/22 09:07*	*11/28/22 13:45*	*1*

Lab Sample ID: LCS 880-40387/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40408 — **Prep Batch: 40387**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	898.0		mg/Kg		90	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	950.0		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*129*		*70 - 130*
o-Terphenyl	*126*		*70 - 130*

Lab Sample ID: LCSD 880-40387/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 40408 — **Prep Batch: 40387**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	990.0		mg/Kg		99	70 - 130	10	20
Diesel Range Organics (Over C10-C28)			1000	919.0		mg/Kg		92	70 - 130	3	20

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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

Lab Sample ID: LCSD 880-40387/3-A
Matrix: Solid
Analysis Batch: 40408

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 40387

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	128		70 - 130
o-Terphenyl	126		70 - 130

Lab Sample ID: 880-21869-A-1-F MS
Matrix: Solid
Analysis Batch: 40408

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 40387

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 F2	999	1131		mg/Kg		110	70 - 130
Diesel Range Organics (Over C10-C28)	<50.0	U	999	1232		mg/Kg		123	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	109		70 - 130
o-Terphenyl	102		70 - 130

Lab Sample ID: 880-21869-A-1-G MSD
Matrix: Solid
Analysis Batch: 40408

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 40387

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 F2	997	854.3	F2	mg/Kg		83	70 - 130	28	20
Diesel Range Organics (Over C10-C28)	<50.0	U	997	1090		mg/Kg		109	70 - 130	12	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	98		70 - 130
o-Terphenyl	92		70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-40006/1-A
Matrix: Solid
Analysis Batch: 40248

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			11/23/22 05:43	1

Lab Sample ID: LCS 880-40006/2-A
Matrix: Solid
Analysis Batch: 40248

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			250	264.7		mg/Kg		106	90 - 110

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 880-40006/3-A
Matrix: Solid
Analysis Batch: 40248

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	262.7		mg/Kg		105	90 - 110	1	20

Lab Sample ID: 890-3507-A-1-B MS
Matrix: Solid
Analysis Batch: 40248

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	716	F1	250	938.8	F1	mg/Kg		89	90 - 110		

Lab Sample ID: 890-3507-A-1-C MSD
Matrix: Solid
Analysis Batch: 40248

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	716	F1	250	935.8	F1	mg/Kg		88	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

GC VOA

Analysis Batch: 40362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	8021B	40434
890-3509-2	SS06A	Total/NA	Solid	8021B	40434
890-3509-3	SS07A	Total/NA	Solid	8021B	40434
MB 880-40407/5-A	Method Blank	Total/NA	Solid	8021B	40407
MB 880-40434/5-A	Method Blank	Total/NA	Solid	8021B	40434
LCS 880-40434/1-A	Lab Control Sample	Total/NA	Solid	8021B	40434
LCSD 880-40434/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	40434
890-3509-1 MS	SS05A	Total/NA	Solid	8021B	40434
890-3509-1 MSD	SS05A	Total/NA	Solid	8021B	40434

Prep Batch: 40407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-40407/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 40434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	5035	
890-3509-2	SS06A	Total/NA	Solid	5035	
890-3509-3	SS07A	Total/NA	Solid	5035	
MB 880-40434/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-40434/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-40434/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3509-1 MS	SS05A	Total/NA	Solid	5035	
890-3509-1 MSD	SS05A	Total/NA	Solid	5035	

Analysis Batch: 40560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	Total BTEX	
890-3509-2	SS06A	Total/NA	Solid	Total BTEX	
890-3509-3	SS07A	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 40256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	8015B NM	40270
MB 880-40270/1-A	Method Blank	Total/NA	Solid	8015B NM	40270
LCS 880-40270/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	40270
LCSD 880-40270/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	40270
880-21770-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	40270
880-21770-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	40270

Prep Batch: 40270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	8015NM Prep	
MB 880-40270/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-40270/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-40270/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-21770-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-21770-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

GC Semi VOA

Prep Batch: 40387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-2	SS06A	Total/NA	Solid	8015NM Prep	
890-3509-3	SS07A	Total/NA	Solid	8015NM Prep	
MB 880-40387/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-40387/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-40387/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-21869-A-1-F MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-21869-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 40396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Total/NA	Solid	8015 NM	
890-3509-2	SS06A	Total/NA	Solid	8015 NM	
890-3509-3	SS07A	Total/NA	Solid	8015 NM	

Analysis Batch: 40408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-2	SS06A	Total/NA	Solid	8015B NM	40387
890-3509-3	SS07A	Total/NA	Solid	8015B NM	40387
MB 880-40387/1-A	Method Blank	Total/NA	Solid	8015B NM	40387
LCS 880-40387/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	40387
LCSD 880-40387/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	40387
880-21869-A-1-F MS	Matrix Spike	Total/NA	Solid	8015B NM	40387
880-21869-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	40387

HPLC/IC

Leach Batch: 40006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Soluble	Solid	DI Leach	
890-3509-2	SS06A	Soluble	Solid	DI Leach	
890-3509-3	SS07A	Soluble	Solid	DI Leach	
MB 880-40006/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-40006/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-40006/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3507-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-3507-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 40248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3509-1	SS05A	Soluble	Solid	300.0	40006
890-3509-2	SS06A	Soluble	Solid	300.0	40006
890-3509-3	SS07A	Soluble	Solid	300.0	40006
MB 880-40006/1-A	Method Blank	Soluble	Solid	300.0	40006
LCS 880-40006/2-A	Lab Control Sample	Soluble	Solid	300.0	40006
LCSD 880-40006/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	40006
890-3507-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	40006
890-3507-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	40006

Lab Chronicle

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Client Sample ID: SS05A

Date Collected: 11/17/22 12:35
Date Received: 11/17/22 14:57

Lab Sample ID: 890-3509-1

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			4.99 g	5 mL	40434	11/28/22 11:03	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40362	11/28/22 23:11	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40560	11/29/22 09:20	SM	EET MID
Total/NA	Analysis	8015 NM		1			40396	11/28/22 09:30	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	40270	11/23/22 08:51	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40256	11/23/22 19:01	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	40006	11/20/22 12:14	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40248	11/23/22 06:23	SMC	EET MID

Client Sample ID: SS06A

Date Collected: 11/17/22 12:30
Date Received: 11/17/22 14:57

Lab Sample ID: 890-3509-2

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	40434	11/28/22 11:03	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40362	11/28/22 23:31	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40560	11/29/22 09:20	SM	EET MID
Total/NA	Analysis	8015 NM		1			40396	11/29/22 12:08	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	40387	11/28/22 09:07	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40408	11/28/22 23:18	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	40006	11/20/22 12:14	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40248	11/23/22 06:29	SMC	EET MID

Client Sample ID: SS07A

Date Collected: 11/17/22 12:25
Date Received: 11/17/22 14:57

Lab Sample ID: 890-3509-3

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			4.99 g	5 mL	40434	11/28/22 11:03	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	40362	11/29/22 03:37	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			40560	11/29/22 09:20	SM	EET MID
Total/NA	Analysis	8015 NM		1			40396	11/29/22 12:08	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	40387	11/28/22 09:07	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	40408	11/28/22 23:40	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	40006	11/20/22 12:14	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	40248	11/23/22 06:34	SMC	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3509-1
SDG: 03D2057025

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3509-1	SS05A	Solid	11/17/22 12:35	11/17/22 14:57	1
890-3509-2	SS06A	Solid	11/17/22 12:30	11/17/22 14:57	1
890-3509-3	SS07A	Solid	11/17/22 12:25	11/17/22 14:57	1

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N. Marienfeld Street, Suite 400	Address:	
City, State ZIP:	Midland, TX 79701	City, State ZIP:	
Phone:	432-557-8895	Email:	Hgreen@ensolum.com; Kjennings@ensolu.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project: NM
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	SEMU Permian South Header	Turn Around	
Project Number:	03D2057025	☑ Routine ☐ Rush	
Project Location:	32.549475, -103.190427	Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:	03D2057025		

SAMPLE RECEIPT	Temp Blank: Yes No	Wet Ice: Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	TAM-004
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes No N/A	Temperature Reading:	2.0
Total Containers:		Corrected Temperature:	1.8

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2SO_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES 300	TPH 8015	BTEX 8021	Sample Comments
SS05A	SL	11/17/2022	1235	1	Grab/	1		X	X	X	
SS06A	SL	11/17/2022	1230	1	Grab/	1		X	X	X	
SS07A	SL	11/17/2022	1225	1	Grab/	1		X	X	X	

890-3509 Chain of Custody

11-17-22

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 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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			11/17/22 1457			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3509-1
SDG Number: 03D2057025

Login Number: 3509
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: Ensolum

Job Number: 890-3509-1
SDG Number: 03D2057025

Login Number: 3509
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 11/21/22 08:46 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 | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kalei Jennings
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 12/21/2022 2:22:56 PM

JOB DESCRIPTION

SEMU PERMIAN SOUTH HEADER
SDG NUMBER New Mexico

JOB NUMBER

890-3597-1

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
12/21/2022 2:22:56 PM

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

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Laboratory Job ID: 890-3597-1
SDG: New Mexico

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD 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.
¤	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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Job ID: 890-3597-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3597-1

Receipt
The samples were received on 12/7/2022 2:29 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 5.0°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: FS02A (890-3597-1), FS08A (890-3597-2) and FS09A (890-3597-3).

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: The surrogate recovery for the blank associated with preparation batch 880-41625 and analytical batch 880-41693 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-41693/5) and (LCS 880-41625/2-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The method blank for preparation batch 880-41625 and analytical batch 880-41693 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.

Method 8015MOD_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-41625 and analytical batch 880-41693 recovered outside control limits for the following analytes: Diesel Range Organics (Over C10-C28).

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Client Sample ID: FS02A

Date Collected: 12/07/22 13:00
Date Received: 12/07/22 14:29
Sample Depth: 1.5

Lab Sample ID: 890-3597-1

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 12:40	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 12:40	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 12:40	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		12/17/22 16:57	12/21/22 12:40	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 12:40	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		12/17/22 16:57	12/21/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*	*12/17/22 16:57*	*12/21/22 12:40*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*12/17/22 16:57*	*12/21/22 12:40*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			12/21/22 14:44	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/14/22 12:15	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:36	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:36	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*109*		*70 - 130*	*12/12/22 11:00*	*12/13/22 17:36*	*1*
o-Terphenyl	*117*		*70 - 130*	*12/12/22 11:00*	*12/13/22 17:36*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21.6**		5.05		mg/Kg			12/14/22 08:30	1

Client Sample ID: FS08A

Date Collected: 12/07/22 13:04
Date Received: 12/07/22 14:29
Sample Depth: 1.5

Lab Sample ID: 890-3597-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:01	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:01	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:01	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/17/22 16:57	12/21/22 13:01	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:01	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/17/22 16:57	12/21/22 13:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:01*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Client Sample ID: FS08A

Date Collected: 12/07/22 13:04
Date Received: 12/07/22 14:29
Sample Depth: 1.5

Lab Sample ID: 890-3597-2

Matrix: Solid

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:01*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/21/22 14:44	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/14/22 12:15	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:59	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:59	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 17:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*111*		*70 - 130*	*12/12/22 11:00*	*12/13/22 17:59*	*1*
o-Terphenyl	*114*		*70 - 130*	*12/12/22 11:00*	*12/13/22 17:59*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11.8**		4.96		mg/Kg			12/14/22 08:50	1

Client Sample ID: FS09A

Date Collected: 12/07/22 13:07
Date Received: 12/07/22 14:29
Sample Depth: 1.5

Lab Sample ID: 890-3597-3

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:22	1
Toluene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:22	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:22	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		12/17/22 16:57	12/21/22 13:22	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		12/17/22 16:57	12/21/22 13:22	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		12/17/22 16:57	12/21/22 13:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:22*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:22*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			12/21/22 14:44	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/14/22 12:15	1

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Client Sample ID: FS09A
Date Collected: 12/07/22 13:07
Date Received: 12/07/22 14:29
Sample Depth: 1.5

Lab Sample ID: 890-3597-3
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 18:21	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		12/12/22 11:00	12/13/22 18:21	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*110*		*70 - 130*	*12/12/22 11:00*	*12/13/22 18:21*	*1*
o-Terphenyl	*111*		*70 - 130*	*12/12/22 11:00*	*12/13/22 18:21*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**14.0**		4.99		mg/Kg			12/14/22 08:57	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-3596-A-1-C MS	Matrix Spike	108	97
890-3596-A-1-D MSD	Matrix Spike Duplicate	103	95
890-3597-1	FS02A	115	96
890-3597-2	FS08A	116	98
890-3597-3	FS09A	113	96
LCS 880-42102/1-A	Lab Control Sample	104	86
LCSD 880-42102/2-A	Lab Control Sample Dup	96	95
MB 880-42102/5-A	Method Blank	104	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)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-22478-A-1-E MS	Matrix Spike	125	104
880-22478-A-1-F MSD	Matrix Spike Duplicate	127	106
890-3597-1	FS02A	109	117
890-3597-2	FS08A	111	114
890-3597-3	FS09A	110	111
LCS 880-41625/2-A	Lab Control Sample	165 S1+	162 S1+
LCSD 880-41625/3-A	Lab Control Sample Dup	127	128
MB 880-41625/1-A	Method Blank	148 S1+	209 S1+

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-42102/5-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42102

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/17/22 16:57	12/21/22 11:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*	*12/17/22 16:57*	*12/21/22 11:37*	*1*
1,4-Difluorobenzene (Surr)	*87*		*70 - 130*	*12/17/22 16:57*	*12/21/22 11:37*	*1*

Lab Sample ID: LCS 880-42102/1-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42102

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09547		mg/Kg		95	70 - 130		
Toluene			0.100	0.09588		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.09711		mg/Kg		97	70 - 130		
m-Xylene & p-Xylene			0.200	0.2098		mg/Kg		105	70 - 130		
o-Xylene			0.100	0.1046		mg/Kg		105	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*86*		*70 - 130*

Lab Sample ID: LCSD 880-42102/2-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42102

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.09980		mg/Kg		100	70 - 130	4	35
Toluene			0.100	0.09557		mg/Kg		96	70 - 130	0	35
Ethylbenzene			0.100	0.09201		mg/Kg		92	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1929		mg/Kg		96	70 - 130	8	35
o-Xylene			0.100	0.09532		mg/Kg		95	70 - 130	9	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 890-3596-A-1-C MS
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.100	0.08527		mg/Kg		85	70 - 130		
Toluene	<0.00201	U	0.100	0.07828		mg/Kg		78	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

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

Lab Sample ID: 890-3596-A-1-C MS
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.100	0.07303		mg/Kg		73	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.201	0.1563		mg/Kg		78	70 - 130
o-Xylene	<0.00201	U	0.100	0.07955		mg/Kg		79	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Lab Sample ID: 890-3596-A-1-D MSD
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0990	0.08417		mg/Kg		85	70 - 130	1	35
Toluene	<0.00201	U	0.0990	0.07691		mg/Kg		78	70 - 130	2	35
Ethylbenzene	<0.00201	U	0.0990	0.07004		mg/Kg		71	70 - 130	4	35
m-Xylene & p-Xylene	<0.00402	U	0.198	0.1496		mg/Kg		76	70 - 130	4	35
o-Xylene	<0.00201	U	0.0990	0.07544		mg/Kg		76	70 - 130	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

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

Lab Sample ID: MB 880-41625/1-A
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 41625

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 08:06	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 08:06	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 11:00	12/13/22 08:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*148*	*S1+*	*70 - 130*	*12/12/22 11:00*	*12/13/22 08:06*	*1*
o-Terphenyl	*209*	*S1+*	*70 - 130*	*12/12/22 11:00*	*12/13/22 08:06*	*1*

Lab Sample ID: LCS 880-41625/2-A
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41625

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1000	949.4		mg/Kg		95	70 - 130
Diesel Range Organics (Over C10-C28)			1000	1175		mg/Kg		118	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

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

Lab Sample ID: LCS 880-41625/2-A
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41625

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	165	S1+	70 - 130
o-Terphenyl	162	S1+	70 - 130

Lab Sample ID: LCSD 880-41625/3-A
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 41625

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	922.3		mg/Kg		92	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	925.4	*1	mg/Kg		93	70 - 130	24	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	127		70 - 130
o-Terphenyl	128		70 - 130

Lab Sample ID: 880-22478-A-1-E MS
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 41625

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	1156		mg/Kg		113	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U *1	999	1148		mg/Kg		113	70 - 130		

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	125		70 - 130
o-Terphenyl	104		70 - 130

Lab Sample ID: 880-22478-A-1-F MSD
Matrix: Solid
Analysis Batch: 41693

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 41625

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	1120		mg/Kg		109	70 - 130	3	20
Diesel Range Organics (Over C10-C28)	<50.0	U *1	997	1190		mg/Kg		117	70 - 130	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	127		70 - 130
o-Terphenyl	106		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-41471/1-A
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			12/14/22 08:09	1

Lab Sample ID: LCS 880-41471/2-A
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	254.3		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-41471/3-A
Matrix: Solid
Analysis Batch: 41738

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	268.2		mg/Kg		107	90 - 110	5	20

Lab Sample ID: 890-3597-1 MS
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: FS02A
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	21.6		253	261.3		mg/Kg		95	90 - 110		

Lab Sample ID: 890-3597-1 MSD
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: FS02A
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	21.6		253	262.7		mg/Kg		95	90 - 110	1	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

GC VOA

Prep Batch: 42102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	5035	
890-3597-2	FS08A	Total/NA	Solid	5035	
890-3597-3	FS09A	Total/NA	Solid	5035	
MB 880-42102/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-42102/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-42102/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3596-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-3596-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 42367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	8021B	42102
890-3597-2	FS08A	Total/NA	Solid	8021B	42102
890-3597-3	FS09A	Total/NA	Solid	8021B	42102
MB 880-42102/5-A	Method Blank	Total/NA	Solid	8021B	42102
LCS 880-42102/1-A	Lab Control Sample	Total/NA	Solid	8021B	42102
LCSD 880-42102/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	42102
890-3596-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	42102
890-3596-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	42102

Analysis Batch: 42426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	Total BTEX	
890-3597-2	FS08A	Total/NA	Solid	Total BTEX	
890-3597-3	FS09A	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 41625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	8015NM Prep	
890-3597-2	FS08A	Total/NA	Solid	8015NM Prep	
890-3597-3	FS09A	Total/NA	Solid	8015NM Prep	
MB 880-41625/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41625/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-41625/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-22478-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-22478-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 41693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	8015B NM	41625
890-3597-2	FS08A	Total/NA	Solid	8015B NM	41625
890-3597-3	FS09A	Total/NA	Solid	8015B NM	41625
MB 880-41625/1-A	Method Blank	Total/NA	Solid	8015B NM	41625
LCS 880-41625/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41625
LCSD 880-41625/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41625
880-22478-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	41625
880-22478-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	41625

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

GC Semi VOA

Analysis Batch: 41811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Total/NA	Solid	8015 NM	
890-3597-2	FS08A	Total/NA	Solid	8015 NM	
890-3597-3	FS09A	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 41471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Soluble	Solid	DI Leach	
890-3597-2	FS08A	Soluble	Solid	DI Leach	
890-3597-3	FS09A	Soluble	Solid	DI Leach	
MB 880-41471/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-41471/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-41471/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3597-1 MS	FS02A	Soluble	Solid	DI Leach	
890-3597-1 MSD	FS02A	Soluble	Solid	DI Leach	

Analysis Batch: 41738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3597-1	FS02A	Soluble	Solid	300.0	41471
890-3597-2	FS08A	Soluble	Solid	300.0	41471
890-3597-3	FS09A	Soluble	Solid	300.0	41471
MB 880-41471/1-A	Method Blank	Soluble	Solid	300.0	41471
LCS 880-41471/2-A	Lab Control Sample	Soluble	Solid	300.0	41471
LCSD 880-41471/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	41471
890-3597-1 MS	FS02A	Soluble	Solid	300.0	41471
890-3597-1 MSD	FS02A	Soluble	Solid	300.0	41471

Lab Chronicle

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Client Sample ID: FS02A

Date Collected: 12/07/22 13:00
Date Received: 12/07/22 14:29

Lab Sample ID: 890-3597-1

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			5.01 g	5 mL	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 12:40	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42426	12/21/22 14:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			41811	12/14/22 12:15	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41625	12/12/22 11:00	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41693	12/13/22 17:36	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 08:30	CH	EET MID

Client Sample ID: FS08A

Date Collected: 12/07/22 13:04
Date Received: 12/07/22 14:29

Lab Sample ID: 890-3597-2

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	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 13:01	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42426	12/21/22 14:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			41811	12/14/22 12:15	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41625	12/12/22 11:00	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41693	12/13/22 17:59	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 08:50	CH	EET MID

Client Sample ID: FS09A

Date Collected: 12/07/22 13:07
Date Received: 12/07/22 14:29

Lab Sample ID: 890-3597-3

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	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 13:22	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42426	12/21/22 14:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			41811	12/14/22 12:15	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	41625	12/12/22 11:00	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41693	12/13/22 18:21	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 08:57	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

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	T104704400-22-25	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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3597-1
SDG: New Mexico

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3597-1	FS02A	Solid	12/07/22 13:00	12/07/22 14:29	1.5
890-3597-2	FS08A	Solid	12/07/22 13:04	12/07/22 14:29	1.5
890-3597-3	FS09A	Solid	12/07/22 13:07	12/07/22 14:29	1.5

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	HADLIE GREEN	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N. Marienfeld Street, Suite 400	Address:	
City, State ZIP:	Midland, TX 79701	City, State ZIP:	
Phone:	432-557-8895 Email:	Hgreen@ensolum.com; Kjennings@ensolum.com	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project: NM
Reporting: Level II ☒ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☒ ADaPT ☐ Other:

Project Name:	SEMU PERMIAN SOUTH HEADER	Turn Around	
Project Number:	03D2057025	☒ Routine ☐ Rush	
Project Location:	NEW MEXICO	Due Date:	5 DAY
Sampler's Name:	HADLIE GREEN	TAT starts the day received by the lab, if received by 4:30pm	
PO #:	03D2057025		

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	TMM007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2	
Total Containers:		Corrected Temperature:	5.0	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	TPH 8015	BTEX 8021	CHLORIDE 300
FS02A	SL	12-7-22	1300	1.5	C	1		X	X	X
FS08A	SL	12-7-22	1304	1.5	C	1		X	X	X
FS09A	SL	12-7-22	1307	1.5	C	1		X	X	X

Parameters

890-3597 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

3 - 4oz

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 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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Hadlie Green		12.7.22 1429			
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3597-1
SDG Number: New Mexico

Login Number: 3597
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: Ensolum

Job Number: 890-3597-1
SDG Number: New Mexico

Login Number: 3597
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	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kalei Jennings
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 12/21/2022 2:47:54 PM

JOB DESCRIPTION

SEMU PERMIAN SOUTH HEADER
SDG NUMBER 03D2057025

JOB NUMBER

890-3599-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

my EOL

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
12/21/2022 2:47:54 PM

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

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Laboratory Job ID: 890-3599-1
SDG: 03D2057025

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Qualifiers

GC VOA

Qualifier	Qualifier Description
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.
¤	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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Job ID: 890-3599-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3599-1

Receipt
The samples were received on 12/7/2022 2:29 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 5.0°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: SS08 (890-3599-1), SS09 (890-3599-2), SS10 (890-3599-3) and SS11 (890-3599-4).

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

GC Semi VOA
Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-41575 and analytical batch 880-41559 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (LCS 880-41575/2-A) and (LCSD 880-41575/3-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: SS09 (890-3599-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 880-41575 and analytical batch 880-41559 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8015MOD_NM: The method blank for preparation batch 880-41575 and analytical batch 880-41559 contained Diesel Range Organics (Over C10-C28) and OII Range Organics (Over C28-C36) 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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS08

Lab Sample ID: 890-3599-1
Matrix: Solid
Date Collected: 12/07/22 13:20
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		12/17/22 16:57	12/21/22 13:42	1
Toluene	<0.00198	U	0.00198		mg/Kg		12/17/22 16:57	12/21/22 13:42	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		12/17/22 16:57	12/21/22 13:42	1
m-Xylene & p-Xylene	<0.00397	U	0.00397		mg/Kg		12/17/22 16:57	12/21/22 13:42	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		12/17/22 16:57	12/21/22 13:42	1
Xylenes, Total	<0.00397	U	0.00397		mg/Kg		12/17/22 16:57	12/21/22 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*121*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:42*	*1*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*12/17/22 16:57*	*12/21/22 13:42*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00397	U	0.00397		mg/Kg			12/21/22 14:44	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			12/13/22 10:27	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/13/22 03:44	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/13/22 03:44	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/13/22 03:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*107*		*70 - 130*	*12/12/22 09:30*	*12/13/22 03:44*	*1*
o-Terphenyl	*117*		*70 - 130*	*12/12/22 09:30*	*12/13/22 03:44*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**13.6**		5.03		mg/Kg			12/14/22 09:03	1

Client Sample ID: SS09

Lab Sample ID: 890-3599-2
Matrix: Solid
Date Collected: 12/07/22 13:23
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 14:03	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 14:03	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 14:03	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		12/17/22 16:57	12/21/22 14:03	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 14:03	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		12/17/22 16:57	12/21/22 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:03*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS09

Lab Sample ID: 890-3599-2
Matrix: Solid
Date Collected: 12/07/22 13:23
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:03*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399	mg/Kg			12/21/22 14:44	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			12/13/22 10:27	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		12/12/22 09:30	12/13/22 04:06	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		12/12/22 09:30	12/13/22 04:06	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		12/12/22 09:30	12/13/22 04:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*122*		*70 - 130*	*12/12/22 09:30*	*12/13/22 04:06*	*1*
o-Terphenyl	*135*	*S1+*	*70 - 130*	*12/12/22 09:30*	*12/13/22 04:06*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15.1**		4.97	mg/Kg			12/14/22 09:10	1

Client Sample ID: SS10

Lab Sample ID: 890-3599-3
Matrix: Solid
Date Collected: 12/07/22 13:27
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		12/17/22 16:57	12/21/22 14:24	1
Toluene	<0.00200	U	0.00200	mg/Kg		12/17/22 16:57	12/21/22 14:24	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		12/17/22 16:57	12/21/22 14:24	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		12/17/22 16:57	12/21/22 14:24	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		12/17/22 16:57	12/21/22 14:24	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		12/17/22 16:57	12/21/22 14:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:24*	*1*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:24*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			12/21/22 15:37	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			12/13/22 10:27	1

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS10

Lab Sample ID: 890-3599-3
Matrix: Solid
Date Collected: 12/07/22 13:27
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:28	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:28	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*110*		*70 - 130*	*12/12/22 09:30*	*12/13/22 04:28*	*1*
o-Terphenyl	*123*		*70 - 130*	*12/12/22 09:30*	*12/13/22 04:28*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15.3**		4.96		mg/Kg			12/14/22 09:30	1

Client Sample ID: SS11

Lab Sample ID: 890-3599-4
Matrix: Solid
Date Collected: 12/07/22 13:31
Date Received: 12/07/22 14:29
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		12/17/22 16:57	12/21/22 14:45	1
Toluene	<0.00202	U	0.00202		mg/Kg		12/17/22 16:57	12/21/22 14:45	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		12/17/22 16:57	12/21/22 14:45	1
m-Xylene & p-Xylene	<0.00403	U	0.00403		mg/Kg		12/17/22 16:57	12/21/22 14:45	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		12/17/22 16:57	12/21/22 14:45	1
Xylenes, Total	<0.00403	U	0.00403		mg/Kg		12/17/22 16:57	12/21/22 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*122*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:45*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*12/17/22 16:57*	*12/21/22 14:45*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403		mg/Kg			12/21/22 15:37	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			12/13/22 10:27	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:50	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:50	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		12/12/22 09:30	12/13/22 04:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*99*		*70 - 130*	*12/12/22 09:30*	*12/13/22 04:50*	*1*
o-Terphenyl	*110*		*70 - 130*	*12/12/22 09:30*	*12/13/22 04:50*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS11
Date Collected: 12/07/22 13:31
Date Received: 12/07/22 14:29
Sample Depth: 0.5

Lab Sample ID: 890-3599-4
Matrix: Solid

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.3		4.96		mg/Kg			12/14/22 09:36	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

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)
890-3596-A-1-C MS	Matrix Spike	108	97
890-3596-A-1-D MSD	Matrix Spike Duplicate	103	95
890-3599-1	SS08	121	97
890-3599-2	SS09	118	92
890-3599-3	SS10	123	94
890-3599-4	SS11	122	95
LCS 880-42102/1-A	Lab Control Sample	104	86
LCSD 880-42102/2-A	Lab Control Sample Dup	96	95
MB 880-42102/5-A	Method Blank	104	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)
890-3599-1	SS08	107	117
890-3599-2	SS09	122	135 S1+
890-3599-3	SS10	110	123
890-3599-4	SS11	99	110
890-3613-A-1-E MS	Matrix Spike	116	117
890-3613-A-1-F MSD	Matrix Spike Duplicate	99	99
LCS 880-41575/2-A	Lab Control Sample	133 S1+	159 S1+
LCSD 880-41575/3-A	Lab Control Sample Dup	131 S1+	156 S1+
MB 880-41575/1-A	Method Blank	140 S1+	210 S1+

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-42102/5-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42102

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Toluene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		12/17/22 16:57	12/21/22 11:37	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		12/17/22 16:57	12/21/22 11:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*	*12/17/22 16:57*	*12/21/22 11:37*	*1*
1,4-Difluorobenzene (Surr)	*87*		*70 - 130*	*12/17/22 16:57*	*12/21/22 11:37*	*1*

Lab Sample ID: LCS 880-42102/1-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42102

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09547		mg/Kg		95	70 - 130		
Toluene			0.100	0.09588		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.09711		mg/Kg		97	70 - 130		
m-Xylene & p-Xylene			0.200	0.2098		mg/Kg		105	70 - 130		
o-Xylene			0.100	0.1046		mg/Kg		105	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*86*		*70 - 130*

Lab Sample ID: LCSD 880-42102/2-A
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42102

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.09980		mg/Kg		100	70 - 130	4	35
Toluene			0.100	0.09557		mg/Kg		96	70 - 130	0	35
Ethylbenzene			0.100	0.09201		mg/Kg		92	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1929		mg/Kg		96	70 - 130	8	35
o-Xylene			0.100	0.09532		mg/Kg		95	70 - 130	9	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 890-3596-A-1-C MS
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.100	0.08527		mg/Kg		85	70 - 130		
Toluene	<0.00201	U	0.100	0.07828		mg/Kg		78	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

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

Lab Sample ID: 890-3596-A-1-C MS
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.100	0.07303		mg/Kg		73	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.201	0.1563		mg/Kg		78	70 - 130
o-Xylene	<0.00201	U	0.100	0.07955		mg/Kg		79	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Lab Sample ID: 890-3596-A-1-D MSD
Matrix: Solid
Analysis Batch: 42367

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 42102

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0990	0.08417		mg/Kg		85	70 - 130	1	35
Toluene	<0.00201	U	0.0990	0.07691		mg/Kg		78	70 - 130	2	35
Ethylbenzene	<0.00201	U	0.0990	0.07004		mg/Kg		71	70 - 130	4	35
m-Xylene & p-Xylene	<0.00402	U	0.198	0.1496		mg/Kg		76	70 - 130	4	35
o-Xylene	<0.00201	U	0.0990	0.07544		mg/Kg		76	70 - 130	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

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

Lab Sample ID: MB 880-41575/1-A
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 41575

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/12/22 19:41	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/12/22 19:41	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		12/12/22 09:30	12/12/22 19:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*140*	*S1+*	*70 - 130*	*12/12/22 09:30*	*12/12/22 19:41*	*1*
o-Terphenyl	*210*	*S1+*	*70 - 130*	*12/12/22 09:30*	*12/12/22 19:41*	*1*

Lab Sample ID: LCS 880-41575/2-A
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41575

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1000	929.8		mg/Kg		93	70 - 130
Diesel Range Organics (Over C10-C28)			1000	882.7		mg/Kg		88	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

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

Lab Sample ID: LCS 880-41575/2-A
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 41575

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	133	S1+	70 - 130
o-Terphenyl	159	S1+	70 - 130

Lab Sample ID: LCSD 880-41575/3-A
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 41575

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	807.2		mg/Kg		81	70 - 130	14	20
Diesel Range Organics (Over C10-C28)			1000	871.3		mg/Kg		87	70 - 130	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	131	S1+	70 - 130
o-Terphenyl	156	S1+	70 - 130

Lab Sample ID: 890-3613-A-1-E MS
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 41575

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 F2	999	1283		mg/Kg		128	70 - 130
Diesel Range Organics (Over C10-C28)	<50.0	U	999	1279		mg/Kg		128	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	116		70 - 130
o-Terphenyl	117		70 - 130

Lab Sample ID: 890-3613-A-1-F MSD
Matrix: Solid
Analysis Batch: 41559

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 41575

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 F2	997	971.7	F2	mg/Kg		97	70 - 130	28	20
Diesel Range Organics (Over C10-C28)	<50.0	U	997	1088		mg/Kg		109	70 - 130	16	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	99		70 - 130
o-Terphenyl	99		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-41471/1-A
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			12/14/22 08:09	1

Lab Sample ID: LCS 880-41471/2-A
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	254.3		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-41471/3-A
Matrix: Solid
Analysis Batch: 41738

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	268.2		mg/Kg		107	90 - 110	5	20

Lab Sample ID: 890-3597-A-1-B MS
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	21.6		253	261.3		mg/Kg		95	90 - 110		

Lab Sample ID: 890-3597-A-1-C MSD
Matrix: Solid
Analysis Batch: 41738

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	21.6		253	262.7		mg/Kg		95	90 - 110	1	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

GC VOA

Prep Batch: 42102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	5035	
890-3599-2	SS09	Total/NA	Solid	5035	
890-3599-3	SS10	Total/NA	Solid	5035	
890-3599-4	SS11	Total/NA	Solid	5035	
MB 880-42102/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-42102/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-42102/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3596-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-3596-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 42367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	8021B	42102
890-3599-2	SS09	Total/NA	Solid	8021B	42102
890-3599-3	SS10	Total/NA	Solid	8021B	42102
890-3599-4	SS11	Total/NA	Solid	8021B	42102
MB 880-42102/5-A	Method Blank	Total/NA	Solid	8021B	42102
LCS 880-42102/1-A	Lab Control Sample	Total/NA	Solid	8021B	42102
LCSD 880-42102/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	42102
890-3596-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	42102
890-3596-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	42102

Analysis Batch: 42427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	Total BTEX	
890-3599-2	SS09	Total/NA	Solid	Total BTEX	
890-3599-3	SS10	Total/NA	Solid	Total BTEX	
890-3599-4	SS11	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 41559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	8015B NM	41575
890-3599-2	SS09	Total/NA	Solid	8015B NM	41575
890-3599-3	SS10	Total/NA	Solid	8015B NM	41575
890-3599-4	SS11	Total/NA	Solid	8015B NM	41575
MB 880-41575/1-A	Method Blank	Total/NA	Solid	8015B NM	41575
LCS 880-41575/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	41575
LCSD 880-41575/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	41575
890-3613-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	41575
890-3613-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	41575

Prep Batch: 41575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	8015NM Prep	
890-3599-2	SS09	Total/NA	Solid	8015NM Prep	
890-3599-3	SS10	Total/NA	Solid	8015NM Prep	
890-3599-4	SS11	Total/NA	Solid	8015NM Prep	
MB 880-41575/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-41575/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

GC Semi VOA (Continued)

Prep Batch: 41575 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-41575/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-3613-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-3613-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 41726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Total/NA	Solid	8015 NM	
890-3599-2	SS09	Total/NA	Solid	8015 NM	
890-3599-3	SS10	Total/NA	Solid	8015 NM	
890-3599-4	SS11	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 41471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Soluble	Solid	DI Leach	
890-3599-2	SS09	Soluble	Solid	DI Leach	
890-3599-3	SS10	Soluble	Solid	DI Leach	
890-3599-4	SS11	Soluble	Solid	DI Leach	
MB 880-41471/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-41471/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-41471/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3597-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-3597-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 41738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3599-1	SS08	Soluble	Solid	300.0	41471
890-3599-2	SS09	Soluble	Solid	300.0	41471
890-3599-3	SS10	Soluble	Solid	300.0	41471
890-3599-4	SS11	Soluble	Solid	300.0	41471
MB 880-41471/1-A	Method Blank	Soluble	Solid	300.0	41471
LCS 880-41471/2-A	Lab Control Sample	Soluble	Solid	300.0	41471
LCSD 880-41471/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	41471
890-3597-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	41471
890-3597-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	41471

Lab Chronicle

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS08

Lab Sample ID: 890-3599-1
Matrix: Solid
Date Collected: 12/07/22 13:20
Date Received: 12/07/22 14:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.04 g	5 mL	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 13:42	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42427	12/21/22 14:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			41726	12/13/22 10:27	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	41575	12/12/22 09:30	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41559	12/13/22 03:44	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 09:03	CH	EET MID

Client Sample ID: SS09

Lab Sample ID: 890-3599-2
Matrix: Solid
Date Collected: 12/07/22 13:23
Date Received: 12/07/22 14:29

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	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 14:03	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42427	12/21/22 14:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			41726	12/13/22 10:27	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	41575	12/12/22 09:30	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41559	12/13/22 04:06	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 09:10	CH	EET MID

Client Sample ID: SS10

Lab Sample ID: 890-3599-3
Matrix: Solid
Date Collected: 12/07/22 13:27
Date Received: 12/07/22 14:29

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	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 14:24	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42427	12/21/22 15:37	SM	EET MID
Total/NA	Analysis	8015 NM		1			41726	12/13/22 10:27	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	41575	12/12/22 09:30	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41559	12/13/22 04:28	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 09:30	CH	EET MID

Client Sample ID: SS11

Lab Sample ID: 890-3599-4
Matrix: Solid
Date Collected: 12/07/22 13:31
Date Received: 12/07/22 14:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	42102	12/17/22 16:57	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	42367	12/21/22 14:45	SM	EET MID
Total/NA	Analysis	Total BTEX		1			42427	12/21/22 15:37	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Client Sample ID: SS11
Date Collected: 12/07/22 13:31
Date Received: 12/07/22 14:29

Lab Sample ID: 890-3599-4
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			41726	12/13/22 10:27	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	41575	12/12/22 09:30	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	41559	12/13/22 04:50	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	41471	12/09/22 13:16	KS	EET MID
Soluble	Analysis	300.0		1			41738	12/14/22 09:36	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

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	T104704400-22-25	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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

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: Ensolum
Project/Site: SEMU PERMIAN SOUTH HEADER

Job ID: 890-3599-1
SDG: 03D2057025

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3599-1	SS08	Solid	12/07/22 13:20	12/07/22 14:29	0.5
890-3599-2	SS09	Solid	12/07/22 13:23	12/07/22 14:29	0.5
890-3599-3	SS10	Solid	12/07/22 13:27	12/07/22 14:29	0.5
890-3599-4	SS11	Solid	12/07/22 13:31	12/07/22 14:29	0.5

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	HADLIE GREEN	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N. Marienfeld Street, Suite 400	Address:	
City, State ZIP:	Midland, TX 79701	City, State ZIP:	
Phone:	432-557-8895	Email:	Hgreen@ensolum.com; Kjennings@ensolum.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project: NM
Reporting: Level II ☒ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☒ ADaPT ☐ Other:

Project Name:	SEMU PERMIAN SOUTH HEADER	Turn Around	☐ Routine ☒ Rush
Project Number:	03D2057025	Due Date:	5DAY
Project Location:	NEW MEXICO	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	HADLIE GREEN		
PO #:	03D2057025		

SAMPLE RECEIPT				
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No	
Samples Received Intact:	(Yes) No	Thermometer ID:	TNM007	
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	5.2	
Total Containers:		Corrected Temperature:	5.0	

ANALYSIS REQUEST

Preservative Codes

None: NO | DI Water: H_2O
Cool: Cool | MeOH: Me
HCL: HC | HNO_3: HN
H_2SO_4: H_2 | NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

890-3599 Chain of Custody

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	TPH 8015	BTEX 8021	CHLORIDE 300	Sample Comments
SS08	SL	12-7-22	1320	0.5	G	1		X	X	X	4-407
SS09	SL	12-7-22	1323	0.5				X	X	X	
SS10	SL	12-7-22	1327	0.5				X	X	X	
SS11	SL	12-7-22	1331	0.5	↓	↓		X	X	X	

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 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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Hadlie Green		12-7-22 1429	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3599-1
SDG Number: 03D2057025

Login Number: 3599
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: Ensolum

Job Number: 890-3599-1
SDG Number: 03D2057025

Login Number: 3599
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	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 1/6/2023 4:28:07 PM

JOB DESCRIPTION

SEMU Permian South Header
SDG NUMBER Lea County NM

JOB NUMBER

890-3769-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

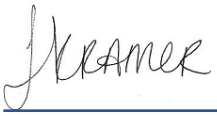
See page two for job notes and contact information.

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
1/6/2023 4:28:07 PM

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

Client: Ensolum
Project/Site: SEMU Permian South Header

Laboratory Job ID: 890-3769-1
SDG: Lea County NM

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

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
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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Job ID: 890-3769-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-3769-1

Receipt
The samples were received on 1/5/2023 10:30 AM. 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 5.0°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: SS08 (890-3769-1), SS09 (890-3769-2), SS10 (890-3769-3) and SS11 (890-3769-4).

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

GC Semi VOA
Method 8015MOD_NM: The surrogate recovery for the blank associated with preparation batch 880-43343 and analytical batch 880-43315 was outside the upper control limits.

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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS08

Lab Sample ID: 890-3769-1
Matrix: Solid
Date Collected: 01/04/23 13:00
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:22	1
Toluene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:22	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:22	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		01/06/23 10:00	01/06/23 13:22	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:22	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		01/06/23 10:00	01/06/23 13:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*	*01/06/23 10:00*	*01/06/23 13:22*	*1*
1,4-Difluorobenzene (Surr)	*111*		*70 - 130*	*01/06/23 10:00*	*01/06/23 13:22*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			01/06/23 15:28	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			01/06/23 16:56	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 12:35	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 12:35	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 12:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*01/06/23 08:58*	*01/06/23 12:35*	*1*
o-Terphenyl	*101*		*70 - 130*	*01/06/23 08:58*	*01/06/23 12:35*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.02	U	5.02		mg/Kg			01/06/23 14:13	1

Client Sample ID: SS09

Lab Sample ID: 890-3769-2
Matrix: Solid
Date Collected: 01/04/23 13:05
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:42	1
Toluene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:42	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:42	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		01/06/23 10:00	01/06/23 13:42	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		01/06/23 10:00	01/06/23 13:42	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		01/06/23 10:00	01/06/23 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*	*01/06/23 10:00*	*01/06/23 13:42*	*1*

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS09

Lab Sample ID: 890-3769-2
Matrix: Solid
Date Collected: 01/04/23 13:05
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*109*		*70 - 130*	*01/06/23 10:00*	*01/06/23 13:42*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			01/06/23 15:28	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8	mg/Kg			01/06/23 16:56	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8	mg/Kg		01/06/23 08:58	01/06/23 12:56	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		01/06/23 08:58	01/06/23 12:56	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		01/06/23 08:58	01/06/23 12:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*119*		*70 - 130*	*01/06/23 08:58*	*01/06/23 12:56*	*1*
o-Terphenyl	*112*		*70 - 130*	*01/06/23 08:58*	*01/06/23 12:56*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.06**		4.97	mg/Kg			01/06/23 14:27	1

Client Sample ID: SS10

Lab Sample ID: 890-3769-3
Matrix: Solid
Date Collected: 01/04/23 13:10
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		01/06/23 10:00	01/06/23 14:02	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/06/23 10:00	01/06/23 14:02	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/06/23 10:00	01/06/23 14:02	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		01/06/23 10:00	01/06/23 14:02	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/06/23 10:00	01/06/23 14:02	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		01/06/23 10:00	01/06/23 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*	*01/06/23 10:00*	*01/06/23 14:02*	*1*
1,4-Difluorobenzene (Surr)	*109*		*70 - 130*	*01/06/23 10:00*	*01/06/23 14:02*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399	mg/Kg			01/06/23 15:28	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			01/06/23 16:56	1

Client Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS10

Lab Sample ID: 890-3769-3
Matrix: Solid
Date Collected: 01/04/23 13:10
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 13:18	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 13:18	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		01/06/23 08:58	01/06/23 13:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*109*		*70 - 130*	*01/06/23 08:58*	*01/06/23 13:18*	*1*
o-Terphenyl	*113*		*70 - 130*	*01/06/23 08:58*	*01/06/23 13:18*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.99	U	4.99		mg/Kg			01/06/23 14:32	1

Client Sample ID: SS11

Lab Sample ID: 890-3769-4
Matrix: Solid
Date Collected: 01/04/23 13:15
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		01/06/23 10:00	01/06/23 14:23	1
Toluene	<0.00200	U	0.00200		mg/Kg		01/06/23 10:00	01/06/23 14:23	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		01/06/23 10:00	01/06/23 14:23	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		01/06/23 10:00	01/06/23 14:23	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		01/06/23 10:00	01/06/23 14:23	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		01/06/23 10:00	01/06/23 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*	*01/06/23 10:00*	*01/06/23 14:23*	*1*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*	*01/06/23 10:00*	*01/06/23 14:23*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			01/06/23 15:28	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			01/06/23 16:56	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		01/06/23 08:58	01/06/23 13:40	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		01/06/23 08:58	01/06/23 13:40	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		01/06/23 08:58	01/06/23 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*99*		*70 - 130*	*01/06/23 08:58*	*01/06/23 13:40*	*1*
o-Terphenyl	*104*		*70 - 130*	*01/06/23 08:58*	*01/06/23 13:40*	*1*

Client Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS11

Lab Sample ID: 890-3769-4
Matrix: Solid
Date Collected: 01/04/23 13:15
Date Received: 01/05/23 10:30
Sample Depth: 0.5'

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.05	U	5.05		mg/Kg			01/06/23 14:37	1

Surrogate Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-3738-A-1-E MS	Matrix Spike	99	105
890-3738-A-1-F MSD	Matrix Spike Duplicate	105	109
890-3769-1	SS08	109	111
890-3769-2	SS09	81	109
890-3769-3	SS10	109	109
890-3769-4	SS11	108	103
LCS 880-43171/1-A	Lab Control Sample	104	106
LCSD 880-43171/2-A	Lab Control Sample Dup	102	107
MB 880-43171/5-A	Method Blank	99	105

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)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-3758-A-101-D MS	Matrix Spike	101	96
890-3758-A-101-E MSD	Matrix Spike Duplicate	102	98
890-3769-1	SS08	94	101
890-3769-2	SS09	119	112
890-3769-3	SS10	109	113
890-3769-4	SS11	99	104
LCS 880-43343/2-A	Lab Control Sample	128	117
LCSD 880-43343/3-A	Lab Control Sample Dup	125	123
MB 880-43343/1-A	Method Blank	150 S1+	137 S1+

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-43171/5-A
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 43171

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		01/04/23 14:24	01/06/23 11:51	1
Toluene	<0.00200	U	0.00200		mg/Kg		01/04/23 14:24	01/06/23 11:51	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		01/04/23 14:24	01/06/23 11:51	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		01/04/23 14:24	01/06/23 11:51	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		01/04/23 14:24	01/06/23 11:51	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		01/04/23 14:24	01/06/23 11:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*	*01/04/23 14:24*	*01/06/23 11:51*	*1*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*	*01/04/23 14:24*	*01/06/23 11:51*	*1*

Lab Sample ID: LCS 880-43171/1-A
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 43171

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.07559		mg/Kg		76	70 - 130		
Toluene			0.100	0.07256		mg/Kg		73	70 - 130		
Ethylbenzene			0.100	0.07155		mg/Kg		72	70 - 130		
m-Xylene & p-Xylene			0.200	0.1466		mg/Kg		73	70 - 130		
o-Xylene			0.100	0.07250		mg/Kg		73	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*

Lab Sample ID: LCSD 880-43171/2-A
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 43171

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.07746		mg/Kg		77	70 - 130	2	35
Toluene			0.100	0.07295		mg/Kg		73	70 - 130	1	35
Ethylbenzene			0.100	0.07137		mg/Kg		71	70 - 130	0	35
m-Xylene & p-Xylene			0.200	0.1500		mg/Kg		75	70 - 130	2	35
o-Xylene			0.100	0.07359		mg/Kg		74	70 - 130	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*

Lab Sample ID: 890-3738-A-1-E MS
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 43171

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.100	0.09220		mg/Kg		92	70 - 130		
Toluene	<0.00201	U	0.100	0.08852		mg/Kg		88	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

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

Lab Sample ID: 890-3738-A-1-E MS
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 43171

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.100	0.08473		mg/Kg		85	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.200	0.1759		mg/Kg		88	70 - 130
o-Xylene	<0.00201	U	0.100	0.08390		mg/Kg		84	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*

Lab Sample ID: 890-3738-A-1-F MSD
Matrix: Solid
Analysis Batch: 43326

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 43171

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0990	0.1018		mg/Kg		103	70 - 130	10	35
Toluene	<0.00201	U	0.0990	0.09453		mg/Kg		95	70 - 130	7	35
Ethylbenzene	<0.00201	U	0.0990	0.09255		mg/Kg		93	70 - 130	9	35
m-Xylene & p-Xylene	<0.00402	U	0.198	0.1923		mg/Kg		97	70 - 130	9	35
o-Xylene	<0.00201	U	0.0990	0.09249		mg/Kg		93	70 - 130	10	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*
1,4-Difluorobenzene (Surr)	*109*		*70 - 130*

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

Lab Sample ID: MB 880-43343/1-A
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 43343

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		01/06/23 08:18	01/06/23 08:29	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		01/06/23 08:18	01/06/23 08:29	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		01/06/23 08:18	01/06/23 08:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*150*	*S1+*	*70 - 130*	*01/06/23 08:18*	*01/06/23 08:29*	*1*
o-Terphenyl	*137*	*S1+*	*70 - 130*	*01/06/23 08:18*	*01/06/23 08:29*	*1*

Lab Sample ID: LCS 880-43343/2-A
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 43343

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1000	1055		mg/Kg		106	70 - 130
Diesel Range Organics (Over C10-C28)			1000	1009		mg/Kg		101	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

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

Lab Sample ID: LCS 880-43343/2-A
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 43343

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	128		70 - 130
o-Terphenyl	117		70 - 130

Lab Sample ID: LCSD 880-43343/3-A
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 43343

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	994.1		mg/Kg		99	70 - 130	6	20
Diesel Range Organics (Over C10-C28)			1000	1020		mg/Kg		102	70 - 130	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	125		70 - 130
o-Terphenyl	123		70 - 130

Lab Sample ID: 890-3758-A-101-D MS
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 43343

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	998	1138		mg/Kg		112	70 - 130
Diesel Range Organics (Over C10-C28)	90.7		998	1021		mg/Kg		93	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	101		70 - 130
o-Terphenyl	96		70 - 130

Lab Sample ID: 890-3758-A-101-E MSD
Matrix: Solid
Analysis Batch: 43315

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 43343

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	<49.9	U	997	980.3		mg/Kg		96	70 - 130	15	20
Diesel Range Organics (Over C10-C28)	90.7		997	1038		mg/Kg		95	70 - 130	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	102		70 - 130
o-Terphenyl	98		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-43379/1-A
Matrix: Solid
Analysis Batch: 43414

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			01/06/23 13:58	1

Lab Sample ID: LCS 880-43379/2-A
Matrix: Solid
Analysis Batch: 43414

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	244.0		mg/Kg		98	90 - 110		

Lab Sample ID: LCSD 880-43379/3-A
Matrix: Solid
Analysis Batch: 43414

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	245.1		mg/Kg		98	90 - 110	0	20

Lab Sample ID: 890-3769-1 MS
Matrix: Solid
Analysis Batch: 43414

Client Sample ID: SS08
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	<5.02	U	251	254.6		mg/Kg		101	90 - 110		

Lab Sample ID: 890-3769-1 MSD
Matrix: Solid
Analysis Batch: 43414

Client Sample ID: SS08
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	<5.02	U	251	256.2		mg/Kg		101	90 - 110	1	20

QC Association Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

GC VOA

Prep Batch: 43171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	5035	
890-3769-2	SS09	Total/NA	Solid	5035	
890-3769-3	SS10	Total/NA	Solid	5035	
890-3769-4	SS11	Total/NA	Solid	5035	
MB 880-43171/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-43171/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-43171/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-3738-A-1-E MS	Matrix Spike	Total/NA	Solid	5035	
890-3738-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 43326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	8021B	43171
890-3769-2	SS09	Total/NA	Solid	8021B	43171
890-3769-3	SS10	Total/NA	Solid	8021B	43171
890-3769-4	SS11	Total/NA	Solid	8021B	43171
MB 880-43171/5-A	Method Blank	Total/NA	Solid	8021B	43171
LCS 880-43171/1-A	Lab Control Sample	Total/NA	Solid	8021B	43171
LCSD 880-43171/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	43171
890-3738-A-1-E MS	Matrix Spike	Total/NA	Solid	8021B	43171
890-3738-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	43171

Analysis Batch: 43422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	Total BTEX	
890-3769-2	SS09	Total/NA	Solid	Total BTEX	
890-3769-3	SS10	Total/NA	Solid	Total BTEX	
890-3769-4	SS11	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 43315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	8015B NM	43343
890-3769-2	SS09	Total/NA	Solid	8015B NM	43343
890-3769-3	SS10	Total/NA	Solid	8015B NM	43343
890-3769-4	SS11	Total/NA	Solid	8015B NM	43343
MB 880-43343/1-A	Method Blank	Total/NA	Solid	8015B NM	43343
LCS 880-43343/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	43343
LCSD 880-43343/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	43343
890-3758-A-101-D MS	Matrix Spike	Total/NA	Solid	8015B NM	43343
890-3758-A-101-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	43343

Prep Batch: 43343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	8015NM Prep	
890-3769-2	SS09	Total/NA	Solid	8015NM Prep	
890-3769-3	SS10	Total/NA	Solid	8015NM Prep	
890-3769-4	SS11	Total/NA	Solid	8015NM Prep	
MB 880-43343/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-43343/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

GC Semi VOA (Continued)

Prep Batch: 43343 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-43343/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-3758-A-101-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-3758-A-101-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 43444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Total/NA	Solid	8015 NM	
890-3769-2	SS09	Total/NA	Solid	8015 NM	
890-3769-3	SS10	Total/NA	Solid	8015 NM	
890-3769-4	SS11	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 43379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Soluble	Solid	DI Leach	
890-3769-2	SS09	Soluble	Solid	DI Leach	
890-3769-3	SS10	Soluble	Solid	DI Leach	
890-3769-4	SS11	Soluble	Solid	DI Leach	
MB 880-43379/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-43379/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-43379/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-3769-1 MS	SS08	Soluble	Solid	DI Leach	
890-3769-1 MSD	SS08	Soluble	Solid	DI Leach	

Analysis Batch: 43414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-3769-1	SS08	Soluble	Solid	300.0	43379
890-3769-2	SS09	Soluble	Solid	300.0	43379
890-3769-3	SS10	Soluble	Solid	300.0	43379
890-3769-4	SS11	Soluble	Solid	300.0	43379
MB 880-43379/1-A	Method Blank	Soluble	Solid	300.0	43379
LCS 880-43379/2-A	Lab Control Sample	Soluble	Solid	300.0	43379
LCSD 880-43379/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	43379
890-3769-1 MS	SS08	Soluble	Solid	300.0	43379
890-3769-1 MSD	SS08	Soluble	Solid	300.0	43379

Lab Chronicle

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS08

Date Collected: 01/04/23 13:00
Date Received: 01/05/23 10:30

Lab Sample ID: 890-3769-1
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			5.03 g	5 mL	43171	01/06/23 10:00	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	43326	01/06/23 13:22	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			43422	01/06/23 15:28	SM	EET MID
Total/NA	Analysis	8015 NM		1			43444	01/06/23 16:56	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	43343	01/06/23 08:58	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	43315	01/06/23 12:35	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	43379	01/06/23 12:42	KS	EET MID
Soluble	Analysis	300.0		1			43414	01/06/23 14:13	CH	EET MID

Client Sample ID: SS09

Date Collected: 01/04/23 13:05
Date Received: 01/05/23 10:30

Lab Sample ID: 890-3769-2
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			5.02 g	5 mL	43171	01/06/23 10:00	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	43326	01/06/23 13:42	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			43422	01/06/23 15:28	SM	EET MID
Total/NA	Analysis	8015 NM		1			43444	01/06/23 16:56	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	43343	01/06/23 08:58	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	43315	01/06/23 12:56	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	43379	01/06/23 12:42	KS	EET MID
Soluble	Analysis	300.0		1			43414	01/06/23 14:27	CH	EET MID

Client Sample ID: SS10

Date Collected: 01/04/23 13:10
Date Received: 01/05/23 10:30

Lab Sample ID: 890-3769-3
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			5.01 g	5 mL	43171	01/06/23 10:00	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	43326	01/06/23 14:02	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			43422	01/06/23 15:28	SM	EET MID
Total/NA	Analysis	8015 NM		1			43444	01/06/23 16:56	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	43343	01/06/23 08:58	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	43315	01/06/23 13:18	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	43379	01/06/23 12:42	KS	EET MID
Soluble	Analysis	300.0		1			43414	01/06/23 14:32	CH	EET MID

Client Sample ID: SS11

Date Collected: 01/04/23 13:15
Date Received: 01/05/23 10:30

Lab Sample ID: 890-3769-4
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	43171	01/06/23 10:00	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	43326	01/06/23 14:23	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			43422	01/06/23 15:28	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Client Sample ID: SS11

Date Collected: 01/04/23 13:15
Date Received: 01/05/23 10:30

Lab Sample ID: 890-3769-4

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			43444	01/06/23 16:56	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	43343	01/06/23 08:58	DM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	43315	01/06/23 13:40	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	43379	01/06/23 12:42	KS	EET MID
Soluble	Analysis	300.0		1			43414	01/06/23 14:37	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

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	T104704400-22-25	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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

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: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 890-3769-1
SDG: Lea County NM

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-3769-1	SS08	Solid	01/04/23 13:00	01/05/23 10:30	0.5'
890-3769-2	SS09	Solid	01/04/23 13:05	01/05/23 10:30	0.5'
890-3769-3	SS10	Solid	01/04/23 13:10	01/05/23 10:30	0.5'
890-3769-4	SS11	Solid	01/04/23 13:15	01/05/23 10:30	0.5'

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Kaley Jennings
Company Name:	Ensolum LLC	Company Name:	"
Address:	601 N Marienfeld St. Suite 400	Address:	"
City, State ZIP:	Midland TX 79701	City, State ZIP:	"
Phone:	817.683.2503	Email:	k jennings@ensolum.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Semu Permian South Header	Turn Around	
Project Number:	03D2057025	☐ Routine ☒ Rush	
Project Location:	Lea County, NM	Due Date:	24HR
Sampler's Name:	Connor Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	TAM-207
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	5.2
Total Containers:		Corrected Temperature:	5.0

Preservative Codes

None: NO | DI Water: H_2O
Cool: Cool | MeOH: Me
HCL: HC | HNO_3: HN
H_2SO_4: H_2 | NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: BTEX	TPH	Chlorides	Sample Comments
SS08	S	1.4.23	1300	0.5'	G	1		X	X	X	
SS09	S	1.4.23	1305	↓	↓	↓		X	X	X	
SS10	S	1.4.23	1310	↓	↓	↓		X	X	X	
SS11	S	1.4.23	1315	↓	↓	↓		X	X	X	
		1.4.23									

890-3769 Chain of Custody

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 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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	Amanda Stuff	1-5-23 1030			
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-3769-1
SDG Number: Lea County NM

Login Number: 3769
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: Ensolum

Job Number: 890-3769-1
SDG Number: Lea County NM

Login Number: 3769
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 01/06/23 11:27 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 | Environment Testing America

ANALYTICAL REPORT

Eurofins Midland
1211 W. Florida Ave
Midland, TX 79701
Tel: (432)704-5440

Laboratory Job ID: 880-20244-1
Client Project/Site: SEMU Permian South Header

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Kalei Jennings

JKRAMER

Authorized for release by:
10/20/2022 10:38:01 AM

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

Client: Ensolum
Project/Site: SEMU Permian South Header

Laboratory Job ID: 880-20244-1

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

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
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: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Job ID: 880-20244-1

Laboratory: Eurofins Midland

Narrative

Job Narrative
880-20244-1

Receipt
The samples were received on 10/11/2022 3:41 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 1.3°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-37241 and analytical batch 880-37264 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: SS02 (880-20244-2). 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
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-36774 and analytical batch 880-37000 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS01
Lab Sample ID: 880-20244-1
Date Collected: 10/11/22 09:33
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.428**		0.200		mg/Kg		10/18/22 14:33	10/19/22 13:34	100
Toluene	**3.98**		0.200		mg/Kg		10/18/22 14:33	10/19/22 13:34	100
Ethylbenzene	**4.36**		0.200		mg/Kg		10/18/22 14:33	10/19/22 13:34	100
m-Xylene & p-Xylene	**5.42**		0.399		mg/Kg		10/18/22 14:33	10/19/22 13:34	100
o-Xylene	**2.96**		0.200		mg/Kg		10/18/22 14:33	10/19/22 13:34	100
Xylenes, Total	**8.38**		0.399		mg/Kg		10/18/22 14:33	10/19/22 13:34	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*127*		*70 - 130*	*10/18/22 14:33*	*10/19/22 13:34*	*100*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*	*10/18/22 14:33*	*10/19/22 13:34*	*100*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	**17.1**		0.399		mg/Kg			10/19/22 14:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**14100**		498		mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**1030**		498		mg/Kg		10/12/22 09:02	10/12/22 18:19	10
Diesel Range Organics (Over C10-C28)	**13100**		498		mg/Kg		10/12/22 09:02	10/12/22 18:19	10
Oil Range Organics (Over C28-C36)	<498	U	498		mg/Kg		10/12/22 09:02	10/12/22 18:19	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*128*		*70 - 130*	*10/12/22 09:02*	*10/12/22 18:19*	*10*
o-Terphenyl	*113*		*70 - 130*	*10/12/22 09:02*	*10/12/22 18:19*	*10*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**487**		4.98		mg/Kg			10/16/22 09:33	1

Client Sample ID: SS02
Lab Sample ID: 880-20244-2
Date Collected: 10/11/22 09:35
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.200	U	0.200		mg/Kg		10/18/22 08:15	10/19/22 13:54	100
Toluene	**0.556**		0.200		mg/Kg		10/18/22 08:15	10/19/22 13:54	100
Ethylbenzene	<0.200	U	0.200		mg/Kg		10/18/22 08:15	10/19/22 13:54	100
m-Xylene & p-Xylene	<0.401	U	0.401		mg/Kg		10/18/22 08:15	10/19/22 13:54	100
o-Xylene	**0.362**		0.200		mg/Kg		10/18/22 08:15	10/19/22 13:54	100
Xylenes, Total	<0.401	U	0.401		mg/Kg		10/18/22 08:15	10/19/22 13:54	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*132*	*S1+*	*70 - 130*	*10/18/22 08:15*	*10/19/22 13:54*	*100*

Eurofins Midland

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS02
Lab Sample ID: 880-20244-2
Date Collected: 10/11/22 09:35
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*	*10/18/22 08:15*	*10/19/22 13:54*	*100*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	**0.918**		0.401	mg/Kg			10/19/22 14:44	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**18100**		500	mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**2320**		500	mg/Kg		10/12/22 09:02	10/12/22 18:40	10
Diesel Range Organics (Over C10-C28)	**15800**		500	mg/Kg		10/12/22 09:02	10/12/22 18:40	10
OII Range Organics (Over C28-C36)	<500	U	500	mg/Kg		10/12/22 09:02	10/12/22 18:40	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*10/12/22 09:02*	*10/12/22 18:40*	*10*
o-Terphenyl	*118*		*70 - 130*	*10/12/22 09:02*	*10/12/22 18:40*	*10*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**176**		4.99	mg/Kg			10/16/22 09:38	1

Client Sample ID: SS03
Lab Sample ID: 880-20244-3
Date Collected: 10/11/22 09:37
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.202	U	0.202	mg/Kg		10/18/22 08:15	10/19/22 14:15	100
Toluene	**0.319**		0.202	mg/Kg		10/18/22 08:15	10/19/22 14:15	100
Ethylbenzene	<0.202	U	0.202	mg/Kg		10/18/22 08:15	10/19/22 14:15	100
m-Xylene & p-Xylene	<0.404	U	0.404	mg/Kg		10/18/22 08:15	10/19/22 14:15	100
o-Xylene	<0.202	U	0.202	mg/Kg		10/18/22 08:15	10/19/22 14:15	100
Xylenes, Total	<0.404	U	0.404	mg/Kg		10/18/22 08:15	10/19/22 14:15	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*	*10/18/22 08:15*	*10/19/22 14:15*	*100*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*	*10/18/22 08:15*	*10/19/22 14:15*	*100*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.404	U	0.404	mg/Kg			10/19/22 14:44	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**2370**		49.9	mg/Kg			10/13/22 11:22	1

Eurofins Midland

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS03
Lab Sample ID: 880-20244-3
Date Collected: 10/11/22 09:37
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**113**		49.9		mg/Kg		10/12/22 09:02	10/12/22 19:02	1
Diesel Range Organics (Over C10-C28)	**2260**		49.9		mg/Kg		10/12/22 09:02	10/12/22 19:02	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		10/12/22 09:02	10/12/22 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*105*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:02*	*1*
o-Terphenyl	*103*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:02*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1470**		25.3		mg/Kg			10/16/22 09:43	5

Client Sample ID: SS04
Lab Sample ID: 880-20244-4
Date Collected: 10/11/22 09:38
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0402	U	0.0402		mg/Kg		10/18/22 08:15	10/19/22 18:21	20
Toluene	<0.0402	U	0.0402		mg/Kg		10/18/22 08:15	10/19/22 18:21	20
Ethylbenzene	**0.0452**		0.0402		mg/Kg		10/18/22 08:15	10/19/22 18:21	20
m-Xylene & p-Xylene	<0.0803	U	0.0803		mg/Kg		10/18/22 08:15	10/19/22 18:21	20
o-Xylene	**0.0603**		0.0402		mg/Kg		10/18/22 08:15	10/19/22 18:21	20
Xylenes, Total	<0.0803	U	0.0803		mg/Kg		10/18/22 08:15	10/19/22 18:21	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*	*10/18/22 08:15*	*10/19/22 18:21*	*20*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*10/18/22 08:15*	*10/19/22 18:21*	*20*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	**0.106**		0.0803		mg/Kg			10/20/22 11:21	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**512**		49.9		mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		10/12/22 09:02	10/12/22 19:24	1
Diesel Range Organics (Over C10-C28)	**512**		49.9		mg/Kg		10/12/22 09:02	10/12/22 19:24	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		10/12/22 09:02	10/12/22 19:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*100*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:24*	*1*
o-Terphenyl	*92*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:24*	*1*

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS04
Lab Sample ID: 880-20244-4
Date Collected: 10/11/22 09:38
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1090		5.02		mg/Kg			10/16/22 09:48	1

Client Sample ID: SS05
Lab Sample ID: 880-20244-5
Date Collected: 10/11/22 09:42
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0398	U	0.0398		mg/Kg		10/18/22 08:15	10/19/22 18:42	20
Toluene	<0.0398	U	0.0398		mg/Kg		10/18/22 08:15	10/19/22 18:42	20
Ethylbenzene	<0.0398	U	0.0398		mg/Kg		10/18/22 08:15	10/19/22 18:42	20
m-Xylene & p-Xylene	<0.0795	U	0.0795		mg/Kg		10/18/22 08:15	10/19/22 18:42	20
o-Xylene	<0.0398	U	0.0398		mg/Kg		10/18/22 08:15	10/19/22 18:42	20
Xylenes, Total	<0.0795	U	0.0795		mg/Kg		10/18/22 08:15	10/19/22 18:42	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*	*10/18/22 08:15*	*10/19/22 18:42*	*20*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*10/18/22 08:15*	*10/19/22 18:42*	*20*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0795	U	0.0795		mg/Kg			10/20/22 11:21	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 19:45	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 19:45	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*113*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:45*	*1*
o-Terphenyl	*105*		*70 - 130*	*10/12/22 09:02*	*10/12/22 19:45*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	478		4.95		mg/Kg			10/16/22 09:52	1

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS06
Lab Sample ID: 880-20244-6
Date Collected: 10/11/22 09:45
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		10/18/22 08:15	10/19/22 12:12	1
Toluene	<0.00200	U	0.00200		mg/Kg		10/18/22 08:15	10/19/22 12:12	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		10/18/22 08:15	10/19/22 12:12	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		10/18/22 08:15	10/19/22 12:12	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		10/18/22 08:15	10/19/22 12:12	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		10/18/22 08:15	10/19/22 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*129*		*70 - 130*	*10/18/22 08:15*	*10/19/22 12:12*	*1*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*10/18/22 08:15*	*10/19/22 12:12*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			10/19/22 13:29	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:07	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:07	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*115*		*70 - 130*	*10/12/22 09:02*	*10/12/22 20:07*	*1*
o-Terphenyl	*109*		*70 - 130*	*10/12/22 09:02*	*10/12/22 20:07*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**176**		5.04		mg/Kg			10/16/22 09:57	1

Client Sample ID: SS07
Lab Sample ID: 880-20244-7
Date Collected: 10/11/22 10:27
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		10/18/22 08:15	10/19/22 12:32	1
Toluene	<0.00201	U	0.00201		mg/Kg		10/18/22 08:15	10/19/22 12:32	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		10/18/22 08:15	10/19/22 12:32	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		10/18/22 08:15	10/19/22 12:32	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		10/18/22 08:15	10/19/22 12:32	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		10/18/22 08:15	10/19/22 12:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*	*10/18/22 08:15*	*10/19/22 12:32*	*1*

Client Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS07
Lab Sample ID: 880-20244-7
Date Collected: 10/11/22 10:27
Matrix: Solid
Date Received: 10/11/22 15:41
Sample Depth: 0.5

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*10/18/22 08:15*	*10/19/22 12:32*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			10/19/22 13:29	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			10/13/22 11:22	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:28	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:28	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		10/12/22 09:02	10/12/22 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*107*		*70 - 130*	*10/12/22 09:02*	*10/12/22 20:28*	*1*
o-Terphenyl	*101*		*70 - 130*	*10/12/22 09:02*	*10/12/22 20:28*	*1*

Method: MCAWW 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**147**		5.00		mg/Kg			10/15/22 05:45	1

Surrogate Summary

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

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)
880-20244-1	SS01	127	105
880-20244-2	SS02	132 S1+	91
880-20244-3	SS03	116	104
880-20244-4	SS04	101	93
880-20244-5	SS05	95	93
880-20244-6	SS06	129	98
880-20244-7	SS07	93	95
880-20432-A-1-B MS	Matrix Spike	93	108
880-20432-A-1-C MSD	Matrix Spike Duplicate	102	97
LCS 880-37241/1-A	Lab Control Sample	117	104
LCSD 880-37241/2-A	Lab Control Sample Dup	83	88
MB 880-37241/5-A	Method Blank	90	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 (70-130)	OTPH1 (70-130)
880-20128-A-19-C MS	Matrix Spike	89	83
880-20128-A-19-D MSD	Matrix Spike Duplicate	92	82
880-20244-1	SS01	128	113
880-20244-2	SS02	96	118
880-20244-3	SS03	105	103
880-20244-4	SS04	100	92
880-20244-5	SS05	113	105
880-20244-6	SS06	115	109
880-20244-7	SS07	107	101
LCS 880-36719/2-A	Lab Control Sample	109	114
LCSD 880-36719/3-A	Lab Control Sample Dup	110	114
MB 880-36719/1-A	Method Blank	105	103

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: SEMU Permian South Header

Job ID: 880-20244-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-37241/5-A
Matrix: Solid
Analysis Batch: 37264

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 37241

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		10/18/22 14:33	10/19/22 10:50	1
Toluene	<0.00200	U	0.00200		mg/Kg		10/18/22 14:33	10/19/22 10:50	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		10/18/22 14:33	10/19/22 10:50	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		10/18/22 14:33	10/19/22 10:50	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		10/18/22 14:33	10/19/22 10:50	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		10/18/22 14:33	10/19/22 10:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*	*10/18/22 14:33*	*10/19/22 10:50*	*1*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*	*10/18/22 14:33*	*10/19/22 10:50*	*1*

Lab Sample ID: LCS 880-37241/1-A
Matrix: Solid
Analysis Batch: 37264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 37241

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1002		mg/Kg		100	70 - 130		
Toluene			0.100	0.09988		mg/Kg		100	70 - 130		
Ethylbenzene			0.100	0.1071		mg/Kg		107	70 - 130		
m-Xylene & p-Xylene			0.200	0.2327		mg/Kg		116	70 - 130		
o-Xylene			0.100	0.1130		mg/Kg		113	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*

Lab Sample ID: LCSD 880-37241/2-A
Matrix: Solid
Analysis Batch: 37264

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 37241

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08677		mg/Kg		87	70 - 130	14	35
Toluene			0.100	0.08816		mg/Kg		88	70 - 130	12	35
Ethylbenzene			0.100	0.09190		mg/Kg		92	70 - 130	15	35
m-Xylene & p-Xylene			0.200	0.1686		mg/Kg		84	70 - 130	32	35
o-Xylene			0.100	0.08047		mg/Kg		80	70 - 130	34	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*83*		*70 - 130*
1,4-Difluorobenzene (Surr)	*88*		*70 - 130*

QC Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

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

Lab Sample ID: MB 880-36719/1-A
Matrix: Solid
Analysis Batch: 36707

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 36719

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		10/12/22 09:02	10/12/22 10:59	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		10/12/22 09:02	10/12/22 10:59	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		10/12/22 09:02	10/12/22 10:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*105*		*70 - 130*	*10/12/22 09:02*	*10/12/22 10:59*	*1*
o-Terphenyl	*103*		*70 - 130*	*10/12/22 09:02*	*10/12/22 10:59*	*1*

Lab Sample ID: LCS 880-36719/2-A
Matrix: Solid
Analysis Batch: 36707

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 36719

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	831.3		mg/Kg		83	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1153		mg/Kg		115	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*109*		*70 - 130*
o-Terphenyl	*114*		*70 - 130*

Lab Sample ID: LCSD 880-36719/3-A
Matrix: Solid
Analysis Batch: 36707

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 36719

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	834.3		mg/Kg		83	70 - 130	0	20
Diesel Range Organics (Over C10-C28)			1000	1160		mg/Kg		116	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*110*		*70 - 130*
o-Terphenyl	*114*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-36774/1-A
Matrix: Solid
Analysis Batch: 37000

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			10/15/22 03:16	1

QC Sample Results

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-36774/2-A
Matrix: Solid
Analysis Batch: 37000

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	271.8		mg/Kg		109	90 - 110		

Lab Sample ID: LCSD 880-36774/3-A
Matrix: Solid
Analysis Batch: 37000

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	258.1		mg/Kg		103	90 - 110	5	20

Lab Sample ID: MB 880-36793/1-A
Matrix: Solid
Analysis Batch: 37024

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			10/16/22 07:31	1

Lab Sample ID: LCS 880-36793/2-A
Matrix: Solid
Analysis Batch: 37024

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	250.7		mg/Kg		100	90 - 110		

Lab Sample ID: LCSD 880-36793/3-A
Matrix: Solid
Analysis Batch: 37024

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	247.8		mg/Kg		99	90 - 110	1	20

QC Association Summary

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

GC VOA

Prep Batch: 37241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	5035	
880-20244-2	SS02	Total/NA	Solid	5035	
880-20244-3	SS03	Total/NA	Solid	5035	
880-20244-4	SS04	Total/NA	Solid	5035	
880-20244-5	SS05	Total/NA	Solid	5035	
880-20244-6	SS06	Total/NA	Solid	5035	
880-20244-7	SS07	Total/NA	Solid	5035	
MB 880-37241/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-37241/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-37241/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 37264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	8021B	37241
880-20244-2	SS02	Total/NA	Solid	8021B	37241
880-20244-3	SS03	Total/NA	Solid	8021B	37241
880-20244-4	SS04	Total/NA	Solid	8021B	37241
880-20244-5	SS05	Total/NA	Solid	8021B	37241
880-20244-6	SS06	Total/NA	Solid	8021B	37241
880-20244-7	SS07	Total/NA	Solid	8021B	37241
MB 880-37241/5-A	Method Blank	Total/NA	Solid	8021B	37241
LCS 880-37241/1-A	Lab Control Sample	Total/NA	Solid	8021B	37241
LCSD 880-37241/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	37241

Analysis Batch: 37327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	Total BTEX	
880-20244-2	SS02	Total/NA	Solid	Total BTEX	
880-20244-3	SS03	Total/NA	Solid	Total BTEX	
880-20244-4	SS04	Total/NA	Solid	Total BTEX	
880-20244-5	SS05	Total/NA	Solid	Total BTEX	
880-20244-6	SS06	Total/NA	Solid	Total BTEX	
880-20244-7	SS07	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 36707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	8015B NM	36719
880-20244-2	SS02	Total/NA	Solid	8015B NM	36719
880-20244-3	SS03	Total/NA	Solid	8015B NM	36719
880-20244-4	SS04	Total/NA	Solid	8015B NM	36719
880-20244-5	SS05	Total/NA	Solid	8015B NM	36719
880-20244-6	SS06	Total/NA	Solid	8015B NM	36719
880-20244-7	SS07	Total/NA	Solid	8015B NM	36719
MB 880-36719/1-A	Method Blank	Total/NA	Solid	8015B NM	36719
LCS 880-36719/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	36719
LCSD 880-36719/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	36719

QC Association Summary

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

GC Semi VOA

Prep Batch: 36719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	8015NM Prep	
880-20244-2	SS02	Total/NA	Solid	8015NM Prep	
880-20244-3	SS03	Total/NA	Solid	8015NM Prep	
880-20244-4	SS04	Total/NA	Solid	8015NM Prep	
880-20244-5	SS05	Total/NA	Solid	8015NM Prep	
880-20244-6	SS06	Total/NA	Solid	8015NM Prep	
880-20244-7	SS07	Total/NA	Solid	8015NM Prep	
MB 880-36719/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-36719/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-36719/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 36852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Total/NA	Solid	8015 NM	
880-20244-2	SS02	Total/NA	Solid	8015 NM	
880-20244-3	SS03	Total/NA	Solid	8015 NM	
880-20244-4	SS04	Total/NA	Solid	8015 NM	
880-20244-5	SS05	Total/NA	Solid	8015 NM	
880-20244-6	SS06	Total/NA	Solid	8015 NM	
880-20244-7	SS07	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 36774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-7	SS07	Soluble	Solid	DI Leach	
MB 880-36774/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-36774/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-36774/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Leach Batch: 36793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Soluble	Solid	DI Leach	
880-20244-2	SS02	Soluble	Solid	DI Leach	
880-20244-3	SS03	Soluble	Solid	DI Leach	
880-20244-4	SS04	Soluble	Solid	DI Leach	
880-20244-5	SS05	Soluble	Solid	DI Leach	
880-20244-6	SS06	Soluble	Solid	DI Leach	
MB 880-36793/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-36793/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-36793/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Analysis Batch: 37000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-7	SS07	Soluble	Solid	300.0	36774
MB 880-36774/1-A	Method Blank	Soluble	Solid	300.0	36774
LCS 880-36774/2-A	Lab Control Sample	Soluble	Solid	300.0	36774
LCSD 880-36774/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	36774

QC Association Summary

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

HPLC/IC

Analysis Batch: 37024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-20244-1	SS01	Soluble	Solid	300.0	36793
880-20244-2	SS02	Soluble	Solid	300.0	36793
880-20244-3	SS03	Soluble	Solid	300.0	36793
880-20244-4	SS04	Soluble	Solid	300.0	36793
880-20244-5	SS05	Soluble	Solid	300.0	36793
880-20244-6	SS06	Soluble	Solid	300.0	36793
MB 880-36793/1-A	Method Blank	Soluble	Solid	300.0	36793
LCS 880-36793/2-A	Lab Control Sample	Soluble	Solid	300.0	36793
LCSD 880-36793/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	36793

Lab Chronicle

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS01
Lab Sample ID: 880-20244-1
Date Collected: 10/11/22 09:33
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 14:33
Total/NA	Analysis	8021B		100	37264	MNR	EET MID	10/19/22 13:34
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/19/22 14:22
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		10	36707	SM	EET MID	10/12/22 18:19
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		1	37024	CH	EET MID	10/16/22 09:33

Client Sample ID: SS02
Lab Sample ID: 880-20244-2
Date Collected: 10/11/22 09:35
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		100	37264	MNR	EET MID	10/19/22 13:54
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/19/22 14:44
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		10	36707	SM	EET MID	10/12/22 18:40
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		1	37024	CH	EET MID	10/16/22 09:38

Client Sample ID: SS03
Lab Sample ID: 880-20244-3
Date Collected: 10/11/22 09:37
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		100	37264	MNR	EET MID	10/19/22 14:15
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/19/22 14:44
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		1	36707	SM	EET MID	10/12/22 19:02
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		5	37024	CH	EET MID	10/16/22 09:43

Client Sample ID: SS04
Lab Sample ID: 880-20244-4
Date Collected: 10/11/22 09:38
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		20	37264	MNR	EET MID	10/19/22 18:21
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/20/22 11:21

Lab Chronicle

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS04
Lab Sample ID: 880-20244-4
Date Collected: 10/11/22 09:38
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		1	36707	SM	EET MID	10/12/22 19:24
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		1	37024	CH	EET MID	10/16/22 09:48

Client Sample ID: SS05
Lab Sample ID: 880-20244-5
Date Collected: 10/11/22 09:42
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		20	37264	MNR	EET MID	10/19/22 18:42
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/20/22 11:21
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		1	36707	SM	EET MID	10/12/22 19:45
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		1	37024	CH	EET MID	10/16/22 09:52

Client Sample ID: SS06
Lab Sample ID: 880-20244-6
Date Collected: 10/11/22 09:45
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		1	37264	MNR	EET MID	10/19/22 12:12
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/19/22 13:29
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		1	36707	SM	EET MID	10/12/22 20:07
Soluble	Leach	DI Leach			36793	KS	EET MID	10/12/22 16:20
Soluble	Analysis	300.0		1	37024	CH	EET MID	10/16/22 09:57

Client Sample ID: SS07
Lab Sample ID: 880-20244-7
Date Collected: 10/11/22 10:27
Matrix: Solid
Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			37241	MNR	EET MID	10/18/22 08:15
Total/NA	Analysis	8021B		1	37264	MNR	EET MID	10/19/22 12:32
Total/NA	Analysis	Total BTEX		1	37327	SM	EET MID	10/19/22 13:29
Total/NA	Analysis	8015 NM		1	36852	SM	EET MID	10/13/22 11:22
Total/NA	Prep	8015NM Prep			36719	DM	EET MID	10/12/22 09:02
Total/NA	Analysis	8015B NM		1	36707	SM	EET MID	10/12/22 20:28

Lab Chronicle

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

Client Sample ID: SS07
Lab Sample ID: 880-20244-7

Date Collected: 10/11/22 10:27
Matrix: Solid

Date Received: 10/11/22 15:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			36774	KS	EET MID	10/12/22 15:57
Soluble	Analysis	300.0		1	37000	CH	EET MID	10/15/22 05:45

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

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: Ensolum Job ID: 880-20244-1
Project/Site: SEMU Permian South Header

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: Ensolum

Job ID: 880-20244-1

Project/Site: SEMU Permian South Header

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
880-20244-1	SS01	Solid	10/11/22 09:33	10/11/22 15:41	0.5
880-20244-2	SS02	Solid	10/11/22 09:35	10/11/22 15:41	0.5
880-20244-3	SS03	Solid	10/11/22 09:37	10/11/22 15:41	0.5
880-20244-4	SS04	Solid	10/11/22 09:38	10/11/22 15:41	0.5
880-20244-5	SS05	Solid	10/11/22 09:42	10/11/22 15:41	0.5
880-20244-6	SS06	Solid	10/11/22 09:45	10/11/22 15:41	0.5
880-20244-7	SS07	Solid	10/11/22 10:27	10/11/22 15:41	0.5

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: 20244

www.xenco.com Page 1 of 1

Project Manager:	KALEI JENNINGS	Bill to: (if different)	KALEI JENNINGS
Company Name:	Ensolum, LLC	Company Name.	
Address.	601 N Marienfeld Street, Suite 400	Address.	
City, State ZIP	Midland, TX 79701	City, State ZIP	
Phone:	917-693-7503 Email	KJENNINGS@ENSOLUM; HGREEN@ENSOLUM	

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project: NM
Reporting Level II ☒ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables. EDD ☒ ADaPT ☐ Other:

Project Name	SEMU PERMIAN SOUTH HEADER	Turn Around	☒ Routine ☐ Rush
Project Number:		Due Date.	
Project Location:		TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	HADLIE GREEN		
PO #:	03D2057025		

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	IR2
Cooler Custody Seals.	Yes No (N/A)	Correction Factor:	2C
Sample Custody Seals.	Yes No (N/A)	Temperature Reading	1.1
Total Containers.		Corrected Temperature:	1.3

Preservative Codes

None: NO; DI Water: H_2O; Cool: Cool; MeOH: Me; HCL: HC; HNO_3: HN; H_2SO_4: H_2; NaOH: Na; H_3PO_4: HP; $NaHSO_4$: NABIS; $Na_2S_2O_3$: $NaSO_3$; Zn Acetate+NaOH: Zn; NaOH+Ascorbic Acid: SAPC

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: TPH 8015	BTEX	CHLORIDES
SS01	SL	10-11-22	0933	0.5	G	1		X	X	X
SS02			0935							
SS03			0937							
SS04			0938							
SS05			0942							
SS06			0945							
SS07			1027							

Sample Comments

7-40Z

880-20244 Chain of Custody

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 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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Hadlie Green		10/11/22 1541	2		
3			4		
5			6		

Revised Date 08/25/2020 Rev 2020.2

Login Sample Receipt Checklist

Client: Ensolum Job Number: 880-20244-1

Login Number: 20244 **List Source: Eurofins Midland**
List Number: 1
Creator: Rodriguez, Leticia

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	

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 183547

CONDITIONS

Operator: Maverick Permian LLC 1111 Bagby Street Suite 1600 Houston, TX 77002	OGRID: 331199
	Action Number: 183547
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Closure Report Approved.	2/22/2023