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	
District RP	
Facility ID	
Application ID	

# **Release Notification**

# **Responsible Party**

Responsible	Party			OGRID			
Contact Nam	ne			Contact To	Contact Telephone		
Contact emai	il			Incident #	(assigned by OCD	9)	
Contact mail	ing address			•			
			Location	of Release S	ource		
Latitude Longitude (NAD 83 in decimal degrees to 5 decimal places)							
Site Name				Site Type			
Date Release	Discovered			API# (if app	plicable)		
Unit Letter	Section	Township	Range	Cour	nty		
Crude Oil		l(s) Released (Select al	ll that apply and attach	d Volume of l		e volumes provided below) overed (bbls)	
Produced	Water	Volume Release	ed (bbls)		Volume Recovered (bbls)		
		Is the concentrate produced water	tion of dissolved c >10,000 mg/l?	chloride in the	☐ Yes ☐ No		
Condensa	te	Volume Release			Volume Recovered (bbls)		
Natural G	las	Volume Release	ed (Mcf)		Volume Recovered (Mcf)		
Other (de	scribe)	Volume/Weight	Released (provide	e units)	Volume/Wei	ght Recovered (provide units)	
Cause of Rele	ease						

Received by OCD: 5/6/2024 8:21:50 AM Form C-141 State of New Mexico Page 2 Oil Conservation Division

Page	2	of	162
			_

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by	If YES, for what reason(s) does the	e responsible party consider this a major release?
19.15.29.7(A) NMAC?		
☐ Yes ☐ No		
If VEC was immediate to	otics siven to the OCD? Dr. whom?	To whom? When and by what means (phone, email, etc)?
II 1 ES, was ininediate no	once given to the OCD? By whom?	10 whom? when and by what means (phone, email, etc)?
	Initi	al Response
The responsible p	party must undertake the following actions im	mediately unless they could create a safety hazard that would result in injury
☐ The source of the rele	ase has been stopped.	
☐ The impacted area has	s been secured to protect human hea	Ith and the environment.
Released materials ha	we been contained via the use of ber	ms or dikes, absorbent pads, or other containment devices.
	ecoverable materials have been remo	
If all the actions described	d above have <u>not</u> been undertaken, ex	xplain why:
D 10.15.20.0 D (4) ND	404 71	
has begun, please attach a	a narrative of actions to date. If rer	nence remediation immediately after discovery of a release. If remediation nedial efforts have been successfully completed or if the release occurred IAC), please attach all information needed for closure evaluation.
regulations all operators are public health or the environm failed to adequately investigations.	required to report and/or file certain rele ment. The acceptance of a C-141 report ate and remediate contamination that pos	e to the best of my knowledge and understand that pursuant to OCD rules and ase notifications and perform corrective actions for releases which may endanger by the OCD does not relieve the operator of liability should their operations have se a threat to groundwater, surface water, human health or the environment. In rator of responsibility for compliance with any other federal, state, or local laws
Printed Name		Title:
Signature:	tan Esparge	Date:
email:		Telephone:
OCD Only		
Received by:		Date:

Received by OCD: 5/6/2024 Convert Irregular shape into a series of rectangles	8:21:50 Length (ft.)	AM VVidth (ft.)	Average Depth (in.)	Estimated <u>Pool</u> Area (sq. ft.)	Estimated volume of each pool area (bbl.)	Penetration allowance (ft.)	Total Estimated Volume of Spill (bbl.)	Percentage of Oil if Spilled Fluid is a Mixture (%.)	Total Estimated Volume of Spilled Oil (bbl.)	Total Estimated Volume of Spilled Liquid other than Oil (bbl.)
Rectangle A	43.00	21.00	0.40	903.00	5.36	0.00	5.37		1.34	4.03
Rectangle B				0.00	0.00	0.00	0.00		0.00	0.00
Rectangle C		100		0.00	0.00	0.00	0.00		0.00	0.00
Rectangle D		100		0.00	0.00	0.00	0.00		0.00	0.00
Rectangle E				0.00	0.00	0.00	0.00	25%	0.00	0.00
Rectangle F				0.00	0.00	0.00	0.00	2070	0.00	0.00
Rectangle G				0.00	0.00	0.00	0.00		0.00	0.00
Rectangle H				0.00	0.00	0.00	0.00		0.00	0.00
Rectangle I		(6)		0.00	0.00	0.00	0.00		0.00	0.00
Rectangle J				0.00	0.00	0.00	0.00		0.00	0.00
Released to Imaging: 5/20/2	2024 3:20	0:19 PM	Total Su	ırface Pool Volum	e Released, Release	to Soil/Caliche:	5.37		1.34	4.03



April 12, 2024

### **New Mexico Oil Conservation Division**

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

Re: Closure Request

Vast State 021H

**Incident Number NAPP2313140440** 

Lea County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of COG Operating, LLC (COG), has prepared the following *Closure Request* as a follow-up to the *Remediation Work Plan* (Work Plan) submitted to the New Mexico Oil Conservation Division (NMOCD) on July 31, 2023, and approved by NMOCD on October 24, 2023. This *Closure Request* documents the depth to groundwater determination and excavation activities performed at the Vast State 021H (Site), as outlined in the approved *Work Plan*. Based on the confirmed depth to groundwater and excavation soil sample laboratory analytical results, COG is requesting closure for Incident Number NAPP2313140440.

On October 24, 2023, the NMOCD approved the Work Plan with the following conditions:

Remediation plan is approved under the following conditions; 1. COG must provide supporting documentation toward the site assessment/characterization report and submit within its final closure report. 2. All other proposals approved as written. 3. Remediation Due date updated to January 22, 2024 (90-days) and to submit its appropriate or final closure report.

Details regarding the release, Site characterization, assessment and delineation activities, and proposed remediation activities can be referenced in the original *Work Plan*, which is included as an attachment to this report.

### **BACKGROUND**

The Site is located in Unit P, Section 17, Township 26 South, Range 33 East, in Lea County, New Mexico (32.0367°, 103.5889°) and is associated with oil and gas exploration and production operations on State Land managed by the New Mexico State Land Office (NMSLO).

On May 6, 2023, corrosion of the back pressure line resulted in the release of 4.03 barrels (bbls) of produced water and 1.34 bbls of crude oil onto the surface of the well pad. A vacuum truck was immediately dispatched to the Site to recover the free-standing fluids; approximately 1 bbl of produced water and 1 bbl of crude oil were recovered. COG reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification Form C-141 (Form C-141) on May 11, 2023. The release was assigned Incident Number NAPP2313140440.

Ensolum, LLC | Environmental, Engineering & Hydrogeologic Consultants 3122 National Parks Highway | Carlsbad, NM 88220 | ensolum.com

COG Operating, LLC Closure Request Vast State 021H

### DEPTH TO GROUNDWATER DETERMINATION

On March 12, 2024, a borehole (C-04810 POD 1) was advanced to a depth of 106 feet below ground surface (bgs) via air rotary drill rig. The borehole was located approximately 166 feet northeast of the Site and is depicted on Figure 1. A field geologist logged and described soils continuously. The borehole lithologic/soil sampling log is included in Appendix A. The borehole was left open for over 72 hours to allow for potential slow infill of groundwater. After the 72-hour waiting period, static groundwater was observed within the boring and it was confirmed that groundwater beneath the Site is 86.5 feet bgs. The borehole was properly abandoned using hydrated bentonite chips. Based on the confirmed depth to water between 51 feet and 100 feet bgs, 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

### **EXCAVATION ACTIVITIES AND ANALYTICAL RESULTS**

Between August 25, 2023, and April 1, 2024, Ensolum personnel were at the Site to oversee excavation activities based on laboratory analytical results for assessment soil sample SS07, as outlined in the approved *Work Plan*. Excavation activities were performed utilizing a hydrovac and back-hoe. To direct excavation activities, soil was screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride Hach® chloride QuanTab® test strips. The excavation was completed to a depth of 1-foot bgs.

Following removal of impacted soil, 5-point composite soil samples were collected every 200 square feet from the floor and sidewalls of 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. Confirmation soil samples FS01 and FS02 were collected from the floor of the excavation at a depth of 1-foot bgs. Confirmation soil samples SW01 and SW02 were collected from the sidewalls of the excavation at depths ranging from the ground surface to 1-foot bgs. The excavation soil samples were field screened for VOCs and chloride. The excavation extent and excavation 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 as Appendix B.

The 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 constituents of concern (COC): 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 excavation floor samples FS01 and FS02 indicated all COC concentrations were compliant with the Site Closure Criteria. Laboratory analytical results for excavation sidewall samples SW01 and SW02 indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria. Additionally, as described in the *Work Plan*, the release was laterally



COG Operating, LLC Closure Request Vast State 021H

and vertically delineated to below the most stringent Table I Closure Criteria by assessment samples SS01, SS02, SS03A, and SS04 and borehole delineation samples BH01E, BH02D, and BH03A. Laboratory analytical results are summarized in Table 1 and laboratory analytical reports are included as Appendix C.

The excavation area measured approximately 330 square feet. A total of approximately 12 cubic yards of impacted soil were removed during the excavation activities. The impacted soil was transported and properly disposed of at the Lea Land Landfill in Hobbs, New Mexico. The excavation will be backfilled with non-waste containing soil and re-contoured to match the surrounding topography.

### **CLOSURE REQUEST**

Site assessment and excavation activities were conducted at the Site to address the May 6, 2023, release of produced water and crude oil onto the well pad. Laboratory analytical results for the excavation soil samples, collected from the final excavation extent, indicated all COC concentrations were compliant with the Site Closure Criteria. Additionally, the release was laterally and vertically delineated to below the most stringent Table I Closure Criteria. Any soil remaining in place below the Site Closure Criteria but exceeding the reclamation requirements of NMAC 19.15.29.13.D (1) will be removed during plugging and abandonment of the wells and final reclamation of the well pad. Based on confirmed depth to groundwater between 51 feet and 100 feet bgs, and excavation and soil sampling activities completed as outlined in the approved *Work Plan*, no further remediation is required.

Initial response efforts and excavation of impacted soil have mitigated impacts at this Site. Depth to groundwater is greater than 51 feet bgs and no sensitive receptors were identified near the release extent. COG believes the remedial actions completed are protective of human health, the environment, and groundwater and respectfully requests closure for Incident Number NAPP2313140440.

If you have any questions or comments, please contact Ms. Hadlie Green at (432) 557-8895 or hgreen@ensolum.com.

Sincerely,

**Ensolum, LLC** 

Hadlie Green

**Project Geologist** 

Aimee Cole

Senior Managing Scientist

cc: Jacob Laird, COG

New Mexico State Land Office

### Appendices:

Figure 1 Site Receptor Map

Figure 2 Excavation Soil Sample Locations
Table 1 Soil Sample Analytical Results
Appendix A Lithologic Soil Sampling Log

Appendix B Photographic Log

Appendix C Laboratory Analytical Reports & Chain-of-Custody Documentation

Appendix D July 31, 2023, Remediation Work Plan



**FIGURES** 





# **Excavation Soil Sample Locations**

COG Operating, LLC Vast State 021H

Incident Number: NAPP2313140440

Unit P, Section 17, T26S, R33E Lea County,New Mexico FIGURE 2



**TABLES** 



### TABLE 1 **SOIL SAMPLE ANALYTICAL RESULTS** Vast State 021H **COG Operating, LLC** Lea County, New Mexico **Total BTEX TPH GRO TPH DRO TPH ORO GRO+DRO Total TPH** Sample Depth Benzene Chloride Date Designation (feet bgs) (mg/kg) (mg/kg) (mg/kg) (mg/kg) (mg/kg) (mg/kg) (mg/kg) (mg/kg) NMOCD Table I Closure Criteria (NMAC 19.15.29) 10 50 NE NE NE 1.000 2.500 10.000 **Assessment Soil Samples** SS01 05/22/2023 0.5 < 0.00199 < 0.00398 <49.9 <49.9 <49.9 <49.9 <49.9 565 <49.9 <49.9 SS02 05/22/2023 0.5 < 0.00201 < 0.00402 <49.9 <49.9 <49.9 571 SS03 05/22/2023 0.5 < 0.00200 < 0.00401 <49.9 <49.9 <49.9 <49.9 <49.9 1,050 SS03A 06/08/2023 0.5 < 0.00199 < 0.00398 <49.9 <49.9 159 27.9 27.9 27.9 SS04 05/22/2023 0.5 < 0.00199 < 0.00398 <50.0 <50.0 <50.0 <50.0 <50.0 477 SS05 <49.8 550 282 05/22/2023 0.5 <0.00198 < 0.00396 <49.8 550 550 SS06 05/22/2023 0.5 < 0.00199 < 0.00398 <50.0 684 <50.0 684 684 3,440 05/22/2023 0.5 < 0.00399 <50.0 1.920 < 50.0 1.920 1.920 3.530 SS08 05/22/2023 0.5 < 0.00201 < 0.00402 <49 9 903 <49.9 903 903 1.530 **Delineation Soil Samples** <0.0020 < 0.00400 <49.9 <49.9 3,670 BH01A 06/08/2023 <49.9 <49.9 <49.9 1 BH01D 06/08/2023 4 < 0.0200 < 0.00399 <49.8 <49.8 <49.8 <49.8 <49.8 1.240 BH01E 06/09/2023 5 < 0.00198 < 0.00397 <49.8 <49.8 <49.8 <49.8 <49.8 404 BH02A 06/08/2023 < 0.00201 < 0.00402 <50.0 156 <50.0 156 156 1,560 06/09/2023 4 < 0.00202 < 0.00404 <49.9 <49.9 <49.9 <49.9 <49.9 246 BH02D 06/09/2023 <50.0 BH03A 1 < 0.00199 < 0.00398 <50.0 <50.0 <50.0 <50.0 551 BH03B 06/09/2023 2 < 0.00200 < 0.00400 <50.0 <50.0 <50.0 <50.0 <50.0 250 **Excavation Soil Samples** FS01 08/25/2023 1 < 0.00198 0.0416 <50.0 200 <50.0 200 200 5,080 1 < 0.00202 < 0.00403 <49.9 <49.9 200 4,950 FS02 08/25/2023 200 200 SW01 04/01/2024 0 - 1 < 0.00200 < 0.00399 <49.8 <49.8 <49.8 <49.8 <49.8 146 SW02 04/01/2024 0 - 1 < 0.00202 < 0.00404 <50.0 56.8 <50.0 219 56.8 56.8

### Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

NMAC: New Mexico Administrative Code

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



**APPENDIX A** 

Lithologic Soil Sampling Log

# Sample Name: BH01 Date: 03/12/2024 Site Name: Vast State 21H Incident Number: NAPP2313140440 Job Number: 03D2024189 LITHOLOGIC / SOIL SAMPLING LOG Logged By: KS Method: Air Rotary Coordinates: 32.037106, -103.588733 Hole Diameter: 6.5" Total Depth: 106'

Comments: Soil boring was advanced to a total depth of 106' bgs. Static water was observed within the soil boring at 86.5' after at least 72 hours. On 11/14/2022 the soil boring was plugged and abandoned using hydrated bentonite chips.

II——								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						0 - -	SM	(0-30'), SAND, dry, tan, medium to fine grain, poorly graded with silt, no stain, no odor.
Dry	-	-	N	-	- - - -	10		
Dry	-	-	N	-	- - -	20		©351 calon should to brewe
					_	_		@25' color change to brown.
Dry	-	-	N	-	 - -	30 -	SW-SM	(30-60'), SAND, dry, brown, medium to fine grain, poorly graded with clay, non-plastic, noncohesive, some subround small
Dry	-	-	N	-	- - -	- _ 40 -		gravel, no stain, no odor.
Dry	-	-	N	-	- - - -	- - 50 -	SW-SC	(60-106'), SAND, dry, reddish brown, medium to fine grain, poorly graded with silt, no stain, no odor.
Dry	-	-	N	-	- - -	- _ 60 -		
Dry	-	-	N	-	- - -	- - 70 -		@70' color change to reddish brown, few caliche nodules,
Dry	-	-	N	-	- - -	- _ 80 -		
Dry	-	-	Ν	-	- - - -	- - 90 -		
Dry	-	-	Ν	-	- - - -	- _ 100		
					_	_		
Dry	-	-	Ν	-	-	106		
	Total Depth @ 106 feet bgs							



**APPENDIX B** 

Photographic Log

# **ENSOLUM**

### **Photographic Log**

COG Operating, LLC
Vast State 021H
Incident Number NAPP2313140440



Photograph 1

Date: June 8, 2023

Description: View of excavation activities facing north.



Photograph 2

Date: April 1, 2024

Description: View of excavation facing northwest.



**APPENDIX C** 

Laboratory Analytical Reports & Chain of Custody Documentation

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St. Suite 400

Midland, Texas 79701

Generated 8/31/2023 4:49:36 PM

# **JOB DESCRIPTION**

Vast State 021H SDG NUMBER 03D2024189

# **JOB NUMBER**

890-5160-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

### **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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 8/31/2023 4:49:36 PM

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

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

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Client: Ensolum Laboratory Job ID: 890-5160-1 Project/Site: Vast State 021H SDG: 03D2024189

# **Table of Contents**

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Client Sample Results	6
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QC Sample Results	9
QC Association Summary	13
Lab Chronicle	15
Certification Summary	16
Method Summary	17
Sample Summary	18
Chain of Custody	19
Receipt Checklists	20

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### **Definitions/Glossary**

Job ID: 890-5160-1 Client: Ensolum Project/Site: Vast State 021H SDG: 03D2024189

### **Qualifiers**

GC VOA	
Qualifier	Qualifier Description
F1	MS and/or MSD recov

MS and/or MSD recovery exceeds control limits.

F2 MS/MSD RPD exceeds control limits S1-Surrogate recovery exceeds control limits, low biased.

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

### **GC Semi VOA**

Qualifier	Qualifier Description
F1	MS and/or MSD recovery 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** 

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)

Estimated Detection Limit (Dioxin) **EDL** LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

EPA recommended "Maximum Contaminant Level" MCL Minimum Detectable Activity (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) MDC

MDL Method Detection Limit MI 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 Practical Quantitation Limit PQL

**PRES** Presumptive QC **Quality Control** 

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

**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: Vast State 021H

Job ID: 890-5160-1

SDG: 03D2024189

Job ID: 890-5160-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-5160-1

### Receipt

The samples were received on 8/25/2023 1:07 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 3.6°C

### Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: FS01 (890-5160-1) and FS02 (890-5160-2).

### GC VOA

Method 8021B: CCV was biased low for benzene. Another CCV was analyzed and acceptable within the method derived 12 hour window; therefore, the data was qualified and reported.(CCV 880-61519/33)

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-61602 and analytical batch 880-61519 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is 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 880-61457 and analytical batch 880-61504 was outside the upper control limits.

Method 8015MOD NM: Surrogate recovery for the following samples were outside control limits: FS01 (890-5160-1), FS02 (890-5160-2), (890-5162-A-1-A), (890-5162-A-1-B MS) and (890-5162-A-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD\_NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-61504/20) and (CCV 880-61504/5). Evidence of matrix interferences is not obvious.

Method 8015MOD\_NM: The matrix spike duplicate (MSD) recoveries for preparation batch 880-61457 and analytical batch 880-61504 were outside control limits. Non-homogeneity is 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.

Matrix: Solid

Lab Sample ID: 890-5160-1

# **Client Sample Results**

Client: Ensolum Job ID: 890-5160-1 Project/Site: Vast State 021H SDG: 03D2024189

**Client Sample ID: FS01** 

Date Collected: 08/25/23 10:20 Date Received: 08/25/23 13:07

Sample Depth: 1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
Toluene	<0.00198	U	0.00198	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
m-Xylene & p-Xylene	<0.00396	U	0.00396	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
o-Xylene	0.0416		0.00198	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
Xylenes, Total	0.0416		0.00396	mg/Kg		08/30/23 08:35	08/31/23 01:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		70 - 130			08/30/23 08:35	08/31/23 01:35	1
1,4-Difluorobenzene (Surr)	67	S1-	70 - 130			08/30/23 08:35	08/31/23 01:35	1
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	0.0416		0.00396	mg/Kg			08/31/23 10:48	1
Analyte Total TRH		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	200						20/04/20 40 05	
			50.0	mg/Kg			08/31/23 10:35	1
Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)		mg/Kg			08/31/23 10:35	1
		nics (DRO) Qualifier		mg/Kg Unit	D	Prepared	08/31/23 10:35  Analyzed	Dil Fac
Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10		Qualifier	(GC)		<u>D</u>	Prepared 08/29/23 12:00		
Analyte Gasoline Range Organics	Result	Qualifier	(GC)	Unit	<u>D</u>	<u>.</u>	Analyzed	Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	Result   <50.0	Qualifier U	(GC) RL 50.0	Unit mg/Kg	<u>D</u>	08/29/23 12:00	Analyzed 08/30/23 14:01	Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result <50.0	Qualifier U	(GC) RL 50.0	Unit mg/Kg mg/Kg	<u>D</u>	08/29/23 12:00 08/29/23 12:00	Analyzed 08/30/23 14:01 08/30/23 14:01	<b>Dil Fac</b> 1
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	Result <50.0 200 <50.0	Qualifier U	(GC) RL 50.0 50.0 50.0	Unit mg/Kg mg/Kg	<u>D</u>	08/29/23 12:00 08/29/23 12:00 08/29/23 12:00	Analyzed 08/30/23 14:01 08/30/23 14:01 08/30/23 14:01	Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate	Result   <50.0   200   <50.0     %Recovery   145	Qualifier U  Qualifier	(GC)  RL  50.0  50.0  50.0  Limits	Unit mg/Kg mg/Kg	<u>D</u>	08/29/23 12:00 08/29/23 12:00 08/29/23 12:00 <b>Prepared</b>	Analyzed 08/30/23 14:01 08/30/23 14:01 08/30/23 14:01 Analyzed	Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane	Result   <50.0   200   <50.0	Qualifier  U  Qualifier  S1+ S1+	RL 50.0 50.0 50.0 50.0 Limits 70 - 130 70 - 130	Unit mg/Kg mg/Kg	<u>D</u>	08/29/23 12:00 08/29/23 12:00 08/29/23 12:00 <b>Prepared</b> 08/29/23 12:00	Analyzed 08/30/23 14:01 08/30/23 14:01 08/30/23 14:01  Analyzed 08/30/23 14:01	Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane o-Terphenyl	Result	Qualifier  U  Qualifier  S1+ S1+	RL 50.0 50.0 50.0 50.0 Limits 70 - 130 70 - 130	Unit mg/Kg mg/Kg	<u>D</u>	08/29/23 12:00 08/29/23 12:00 08/29/23 12:00 <b>Prepared</b> 08/29/23 12:00	Analyzed 08/30/23 14:01 08/30/23 14:01 08/30/23 14:01  Analyzed 08/30/23 14:01	Dil Fac

**Client Sample ID: FS02** 

Date Collected: 08/25/23 10:30 Date Received: 08/25/23 13:07

Sample Depth: 1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
Toluene	<0.00202	U	0.00202	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
m-Xylene & p-Xylene	<0.00403	U	0.00403	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
Xylenes, Total	<0.00403	U	0.00403	mg/Kg		08/30/23 08:35	08/31/23 01:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)			70 - 130			08/30/23 08:35	08/31/23 01:56	1

Lab Sample ID: 890-5160-2

Matrix: Solid

# **Client Sample Results**

Client: Ensolum Job ID: 890-5160-1 Project/Site: Vast State 021H SDG: 03D2024189

**Client Sample ID: FS02** Lab Sample ID: 890-5160-2 Date Collected: 08/25/23 10:30

Matrix: Solid

Date Received: 08/25/23 13:07 Sample Depth: 1

Analyte

Chloride

Method: SW846 8021B - Volatile C	Organic Comp	ounds (GC)	) (Continued)					
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	58	S1-	70 - 130			08/30/23 08:35	08/31/23 01:56	1
- Method: TAL SOP Total BTEX - To	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403	mg/Kg			08/31/23 10:48	1
Method: SW846 8015 NM - Diesel	Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	200		49.9	mg/Kg			08/31/23 10:35	1
Method: SW846 8015B NM - Diese	el Range Orga	nics (DRO)	(GC)					
Analyte	•	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		08/29/23 12:00	08/30/23 14:22	1
Diesel Range Organics (Over C10-C28)	200		49.9	mg/Kg		08/29/23 12:00	08/30/23 14:22	1
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		08/29/23 12:00	08/30/23 14:22	1
Surrogate	0/5	Qualifier	Limits			Prepared	Analyzed	57.5
	%Recovery	Qualifier	LIIIIII			cpu. cu	Allulyzcu	Dil Fac
1-Chlorooctane	**************************************	S1+	70 - 130			08/29/23 12:00	08/30/23 14:22	DII Fac

25.0

Unit

mg/Kg

Prepared

Analyzed

08/31/23 05:17

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Result Qualifier

4950

# **Surrogate Summary**

Job ID: 890-5160-1 Client: Ensolum Project/Site: Vast State 021H SDG: 03D2024189

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Re
		BFB1	DFBZ1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
880-32558-A-1-C MS	Matrix Spike	87	76	
880-32558-A-1-D MSD	Matrix Spike Duplicate	90	73	
890-5160-1	FS01	107	67 S1-	
890-5160-2	FS02	101	58 S1-	
LCS 880-61602/1-A	Lab Control Sample	140 S1+	112	
LCSD 880-61602/2-A	Lab Control Sample Dup	146 S1+	113	
MB 880-61572/5-A	Method Blank	76	81	
MB 880-61602/5-A	Method Blank	80	80	
Surrogate Legend				
BFB = 4-Bromofluoroben	zene (Surr)			

DFBZ = 1,4-Difluorobenzene (Surr)

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

Matrix: Solid Prep Type: Total/NA

_			
		1001	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-5160-1	FS01	145 S1+	133 S1+
890-5160-2	FS02	146 S1+	134 S1+
890-5162-A-1-B MS	Matrix Spike	137 S1+	114
890-5162-A-1-C MSD	Matrix Spike Duplicate	141 S1+	118
LCS 880-61457/2-A	Lab Control Sample	109	123
LCSD 880-61457/3-A	Lab Control Sample Dup	111	116
MB 880-61457/1-A	Method Blank	136 S1+	137 S1+

**Surrogate Legend** 

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

Client: Ensolum Job ID: 890-5160-1

SDG: 03D2024189 Project/Site: Vast State 021H

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-61572/5-A

Analysis Batch: 61519

**Matrix: Solid** 

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 61602

Prep Batch: 61572

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		08/30/23 12:38	08/30/23 12:57	1
Toluene	<0.00200	U	0.00200	mg/Kg		08/30/23 12:38	08/30/23 12:57	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		08/30/23 12:38	08/30/23 12:57	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		08/30/23 12:38	08/30/23 12:57	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		08/30/23 12:38	08/30/23 12:57	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		08/30/23 12:38	08/30/23 12:57	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		70 - 130	08/30/23 12:38	08/30/23 12:57	1
1,4-Difluorobenzene (Surr)	81		70 - 130	08/30/23 12:38	08/30/23 12:57	1

Lab Sample ID: MB 880-61602/5-A Client Sample ID: Method Blank Matrix: Solid Prep Type: Total/NA

Analysis Batch: 61519

мв мв

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		08/30/23 08:35	08/31/23 00:13	1
Toluene	<0.00200	U	0.00200	mg/Kg		08/30/23 08:35	08/31/23 00:13	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		08/30/23 08:35	08/31/23 00:13	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		08/30/23 08:35	08/31/23 00:13	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		08/30/23 08:35	08/31/23 00:13	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		08/30/23 08:35	08/31/23 00:13	1

мв мв

Surrogate	%Recovery	Qualifier	Limits	Prepare	ed	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	80		70 - 130	08/30/23 0	8:35 08	8/31/23 00:13	1
1,4-Difluorobenzene (Surr)	80		70 - 130	08/30/23 0	8:35 08	8/31/23 00:13	1

Lab Sample ID: LCS 880-61602/1-A

**Matrix: Solid** 

**Analysis Batch: 61519** 

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 61602

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.07135		mg/Kg		71	70 - 130	
Toluene	0.100	0.08583		mg/Kg		86	70 - 130	
Ethylbenzene	0.100	0.09784		mg/Kg		98	70 - 130	
m-Xylene & p-Xylene	0.200	0.2168		mg/Kg		108	70 - 130	
o-Xylene	0.100	0.1101		mg/Kg		110	70 - 130	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	140	S1+	70 - 130
1,4-Difluorobenzene (Surr)	112		70 - 130

Lab Sample ID: LCSD 880-61602/2-A

Matrix: Solid

**Analysis Batch: 61519** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 61602

	Spike	LCSD LCSD				70 KeC		KPD
Analyte	Added	Result Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.07676	mg/Kg		77	70 - 130	7	35

LCCD LCCD

Cnika

Job ID: 890-5160-1 Client: Ensolum Project/Site: Vast State 021H SDG: 03D2024189

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

Lab Sample ID: LCSD 880-61602/2-A

**Matrix: Solid** 

**Analysis Batch: 61519** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 61602

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Toluene	0.100	0.09134		mg/Kg		91	70 - 130	6	35
Ethylbenzene	0.100	0.1034		mg/Kg		103	70 - 130	6	35
m-Xylene & p-Xylene	0.200	0.2307		mg/Kg		115	70 - 130	6	35
o-Xylene	0.100	0.1170		mg/Kg		117	70 - 130	6	35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	146	S1+	70 - 130
1,4-Difluorobenzene (Surr)	113		70 - 130

Lab Sample ID: 880-32558-A-1-C MS

**Matrix: Solid** 

**Analysis Batch: 61519** 

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 61602

MS MS %Rec Spike Sample Sample Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Benzene 0.0996 0.02565 F1 25 <0.00198 U F1 F2 mg/Kg 70 - 130 Toluene <0.00198 UF1F2 0.0996 0.03751 F1 38 70 - 130 mg/Kg Ethylbenzene 0.0996 29 70 - 130 <0.00198 U F1 F2 0.02878 F1 mg/Kg <0.00397 U F1 F2 0.199 0.05253 F1 26 70 - 130 m-Xylene & p-Xylene mg/Kg o-Xylene <0.00198 UF1F2 0.0996 0.02722 F1 mg/Kg 27 70 - 130

MS MS

Surrogate	%Recovery Qualif	ier Limits
4-Bromofluorobenzene (Surr)	87	70 - 130
1,4-Difluorobenzene (Surr)	76	70 - 130

Lab Sample ID: 880-32558-A-1-D MSD

**Matrix: Solid** 

**Analysis Batch: 61519** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 61602

MSD MSD RPD Sample Sample Spike %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Benzene <0.00198 U F1 F2 0.101 0.01712 F1 F2 16 70 - 130 40 35 mg/Kg Toluene <0.00198 UF1F2 0.101 0.01883 F1 F2 mg/Kg 19 70 - 130 66 35 Ethylbenzene <0.00198 UF1F2 0.101 0.01036 F1 F2 mg/Kg 10 70 - 130 94 35 0.202 0.01892 F1 F2 9 70 - 130 m-Xylene & p-Xylene <0.00397 U F1 F2 mg/Kg 94 35 o-Xylene <0.00198 U F1 F2 0.101 0.01024 F1 F2 mq/Kq 10 70 - 130 35

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		70 - 130
1,4-Difluorobenzene (Surr)	73		70 - 130

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

Lab Sample ID: MB 880-61457/1-A

Matrix: Solid

Analysis Batch: 61504

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

Prep Batch: 61457

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<50.0	U	50.0	mg/Kg		08/29/23 12:00	08/30/23 08:32	1
(GRO)-C6-C10								

Client: Ensolum Job ID: 890-5160-1
Project/Site: Vast State 021H SDG: 03D2024189

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

Lab Sample ID: MB 880-61457/1-A

Matrix: Solid

Analysis Batch: 61504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 61457

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		08/29/23 12:00	08/30/23 08:32	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		08/29/23 12:00	08/30/23 08:32	1
	МВ	MB						
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	136	S1+	70 - 130			08/29/23 12:00	08/30/23 08:32	1
o-Ternhenyl	137	S1+	70 130			08/29/23 12:00	08/30/23 08:32	1

Lab Sample ID: LCS 880-61457/2-A Client Sample ID: Lab Control Sample **Matrix: Solid** Prep Type: Total/NA Prep Batch: 61457 Analysis Batch: 61504 LCS LCS Spike Analyte Added Result Qualifier Unit %Rec Limits Gasoline Range Organics 1000 954.7 95 70 - 130 mg/Kg (GRO)-C6-C10 1000 982.2 Diesel Range Organics (Over mg/Kg 98 70 - 130 C10-C28)

 Surrogate
 %Recovery
 Qualifier
 Limits

 1-Chlorooctane
 109
 70 - 130

 o-Terphenyl
 123
 70 - 130

Lab Sample ID: LCSD 880-61457/3-A

Client Sample ID: Lab Control Sample Dup

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 61504 Prep Batch: 61457

	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Gasoline Range Organics	 1000	927.4		mg/Kg		93	70 - 130	3	20	
(GRO)-C6-C10										
Diesel Range Organics (Over	1000	918.9		mg/Kg		92	70 - 130	7	20	
C10-C28)										

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	111		70 - 130
o-Terphenyl	116		70 - 130

Lab Sample ID: 890-5162-A-1-B MS

Client Sample ID: Matrix Spike

Matrix: Solid Prep Type: Total/NA
Analysis Batch: 61504 Prep Batch: 61457

	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Gasoline Range Organics	<49.9	U	1010	930.3		mg/Kg		89	70 - 130
(GRO)-C6-C10									
Diesel Range Organics (Over	<49.9	U F1	1010	1335		mg/Kg		130	70 - 130

C10-C28)	10.0		1010	1000	g/itg	100	70210
	MS	MS					
Surrogate	%Recovery	Qualifier	Limits				
1-Chlorooctane	137	S1+	70 - 130				
o-Terphenyl	114		70 - 130				

Job ID: 890-5160-1 Client: Ensolum Project/Site: Vast State 021H SDG: 03D2024189

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

Sample Sample

<49.9 U

Result Qualifier

Lab Sample ID: 890-5162-A-1-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Solid** Prep Type: Total/NA

Spike

babbA

1010

Analysis Batch: 61504

Gasoline Range Organics

Prep Batch: 61457 MSD MSD RPD Limit Result Qualifier %Rec Limits RPD Unit 951.7 mg/Kg 91 70 - 130 2 20

Client Sample ID: Lab Control Sample Dup

**Prep Type: Soluble** 

**Prep Type: Soluble** 

**Prep Type: Soluble** 

Client Sample ID: Matrix Spike

Client Sample ID: Matrix Spike Duplicate

(GRO)-C6-C10 1010 1375 F1 70 - 130 Diesel Range Organics (Over <49.9 U F1 mg/Kg 134 3 20 C10-C28)

Analyte

MSD MSD %Recovery Qualifier Limits Surrogate 1-Chlorooctane S1+ 70 - 130 141 o-Terphenyl 118 70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-61436/1-A Client Sample ID: Method Blank **Prep Type: Soluble** 

**Matrix: Solid** 

**Analysis Batch: 61601** 

MB MB

Result Qualifier Unit Analyte RL Prepared Analyzed Dil Fac Chloride <5.00 5.00 mg/Kg 08/31/23 01:58

Lab Sample ID: LCS 880-61436/2-A **Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 61601** 

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits Chloride 250 258.1 90 - 110 mg/Kg 103

Lab Sample ID: LCSD 880-61436/3-A

**Matrix: Solid** 

Analysis Batch: 61601

	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Chloride	250	256.8		ma/Ka		103	90 - 110	1	20	

Lab Sample ID: 890-5157-A-13-C MS

**Matrix: Solid** 

**Analysis Batch: 61601** 

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	251		251	495.2		ma/Ka		97	90 - 110	

Lab Sample ID: 890-5157-A-13-D MSD

**Matrix: Solid** 

Analysis Batch: 61601											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	251		251	494.4		mg/Kg		97	90 - 110	0	20

# **QC Association Summary**

Client: Ensolum

Project/Site: Vast State 021H

Job ID: 890-5160-1 SDG: 03D2024189

**GC VOA** 

Analysis Batch: 61519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	8021B	61602
890-5160-2	FS02	Total/NA	Solid	8021B	61602
MB 880-61572/5-A	Method Blank	Total/NA	Solid	8021B	61572
MB 880-61602/5-A	Method Blank	Total/NA	Solid	8021B	61602
LCS 880-61602/1-A	Lab Control Sample	Total/NA	Solid	8021B	61602
LCSD 880-61602/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	61602
880-32558-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	61602
880-32558-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	61602

Prep Batch: 61572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-61572/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 61602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	5035	
890-5160-2	FS02	Total/NA	Solid	5035	
MB 880-61602/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-61602/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-61602/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-32558-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
880-32558-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

**Analysis Batch: 61630** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	Total BTEX	
890-5160-2	FS02	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 61457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	8015NM Prep	
890-5160-2	FS02	Total/NA	Solid	8015NM Prep	
MB 880-61457/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-61457/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-61457/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-5162-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-5162-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 61504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	8015B NM	61457
890-5160-2	FS02	Total/NA	Solid	8015B NM	61457
MB 880-61457/1-A	Method Blank	Total/NA	Solid	8015B NM	61457
LCS 880-61457/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	61457
LCSD 880-61457/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	61457
890-5162-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	61457
890-5162-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	61457

**Eurofins Carlsbad** 

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# **QC Association Summary**

Client: Ensolum

Project/Site: Vast State 021H

Job ID: 890-5160-1

### SDG: 03D2024189

### GC Semi VOA

### Analysis Batch: 61651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Total/NA	Solid	8015 NM	
890-5160-2	FS02	Total/NA	Solid	8015 NM	

### HPLC/IC

### Leach Batch: 61436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Soluble	Solid	DI Leach	
890-5160-2	FS02	Soluble	Solid	DI Leach	
MB 880-61436/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-61436/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-61436/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-5157-A-13-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-5157-A-13-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

### Analysis Batch: 61601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5160-1	FS01	Soluble	Solid	300.0	61436
890-5160-2	FS02	Soluble	Solid	300.0	61436
MB 880-61436/1-A	Method Blank	Soluble	Solid	300.0	61436
LCS 880-61436/2-A	Lab Control Sample	Soluble	Solid	300.0	61436
LCSD 880-61436/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	61436
890-5157-A-13-C MS	Matrix Spike	Soluble	Solid	300.0	61436
890-5157-A-13-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	61436

Client: Ensolum

Job ID: 890-5160-1 Project/Site: Vast State 021H SDG: 03D2024189

**Client Sample ID: FS01** 

Date Received: 08/25/23 13:07

Lab Sample ID: 890-5160-1 Date Collected: 08/25/23 10:20 Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	61602	08/30/23 08:35	AJ	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	61519	08/31/23 01:35	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			61630	08/31/23 10:48	AJ	EET MID
Total/NA	Analysis	8015 NM		1			61651	08/31/23 10:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	61457	08/29/23 12:00	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	61504	08/30/23 14:01	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	61436	08/29/23 10:08	SMC	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	61601	08/31/23 05:11	SMC	EET MID

**Client Sample ID: FS02** Lab Sample ID: 890-5160-2

Date Collected: 08/25/23 10:30 Matrix: Solid

Date Received: 08/25/23 13:07

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	61602	08/30/23 08:35	AJ	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	61519	08/31/23 01:56	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			61630	08/31/23 10:48	AJ	EET MID
Total/NA	Analysis	8015 NM		1			61651	08/31/23 10:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	61457	08/29/23 12:00	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	61504	08/30/23 14:22	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	61436	08/29/23 10:08	SMC	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	61601	08/31/23 05:17	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 Job ID: 890-5160-1 Project/Site: Vast State 021H

SDG: 03D2024189

### **Laboratory: Eurofins Midland**

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

Authority	Pr	rogram	Identification Number	Expiration Date
Texas	NI	ELAP	T104704400-23-26	06-30-24
The following analytes the agency does not of	. ,	ut the laboratory is not certif	ied by the governing authority. This list ma	ay include analytes fo
Analysis Method	is Method Prep Method		Analyte	
8015 NM		Solid	Total TPH	
Total BTEX		Solid	Total BTEX	

# **Method Summary**

Client: Ensolum

Project/Site: Vast State 021H

Job ID: 890-5160-1

SDG: 03D2024189

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	EPA	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

EPA = US Environmental Protection Agency

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

**Eurofins Carlsbad** 

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# **Sample Summary**

Client: Ensolum

Project/Site: Vast State 021H

Job ID: 890-5160-1

SDG: 03D2024189

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depti
890-5160-1	FS01	Solid	08/25/23 10:20	08/25/23 13:07	1
890-5160-2	FS02	Solid	08/25/23 10:30	08/25/23 13:07	1

Relinquished by: (Signature)

Received by: (Signature)

8-25-23

1007

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Revised Date: 08/25/2020 Rev. 2020.2

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# Chain of Custody

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

Work Order No:

				Dill to: // Jim		Ladiio C				Work C	Work Order Comments
Toject Manager.	olegi.			Dill to. (II dilleterity		i danc orcan	1001				_
Company Name: Ensolum, LLC	1, LLC			Company Name:		Ensolum, LLC	ו, נונכ			Program: USI/PSI   PRP   Brownilleius   NRC	Blowning   VVC   Suberraine
	601 N Marienfeld St Suite 400	uite 400		Address:		301 N M	larienfel	601 N Marienfeld St Suite 400		State of Project:	
e ZIP:	Midland, TX 79701			City, State ZIP:		Midland,	Midland, TX 79701	01		Reporting: Level II  Level III  PST/UST  TRRP	PST/UST TRRP Level IV
	-8895		Email.	hgreen@ensolum.com	olum.cor	B				Deliverables: EDD	ADaPT Other:
Orniect Name:	Vast State 021H	214	Turn	Turn Around					ANALYSIS F	REQUEST	Preservative Codes
roject Number:	03D2024189	89	Routine	Rush	Pres.		-				None: NO DI Water: H <sub>2</sub> O
	32.0367,-103.5889	5889	Due Date:								Cool: Cool MeOH: Me
	Peter Van Patten	atten	TAT starts the	TAT starts the day received by							
		)	the lab, if reci	the lab, if received by 4:30pm	rs				_	-	H <sub>2</sub> S0 <sub>4</sub> : H <sub>2</sub> NaOH: Na
SAMPLE RECEIPT	Temp Blank	Yes No	Wet Ice:	Yes No	nete	.0)					H <sub>3</sub> PO <sub>4</sub> : HP
Samples Received Intact:	Yes No	Thermometer ID:	ID: V	LOOM	ran	300					NaHSO <sub>4</sub> : NABIS
Cooler Custody Seals: Yo	Yes No, (N/A)	_	ctor:	6.0	Pa	PA:		*			Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub>
Sample Custody Seals: Yo	Yes No N/A	Temperature Reading:	Reading:	W.		S (E	1)		890-5160 Chai	nain of Custody	Zn Acetate+NaOH: Zn
otal Containers:		Corrected Temperature:	mperature:	3.6		-	_				NaCH+Ascorbic Acid: SAPC
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth Grab/	Grab/ # of Comp Cont	CHLOR	TPH (80				Sample Comments
FS01	Soil	8/25/2023	1020	1 Comp	2	×	×				
FS02	Soil	8/25/2023	1030	1 Comp	p 1	×	×				
							+	_ \			
						1					
				1		=					
				12/2	1						
			1	1							
	1		200				-				
\	1						-				
	1					-	-				
Total 200.7 / 6010 20			- 11	M Texas 11		AS B	Ba Be	B Cd Ca Cr	Co Cu Fe	Ph Mg Mn Mo Ni K Se Ag Si	g SiO <sub>2</sub> Na Sr Tl Sn U V Zn Ho: 1631/245.1/7470/7471
Virgle Mothers(a) and Motella) to be employed	200.8 / 6020:		8RCRA 13PPM	TOI B / SDI B 6010: 88084		2	מ כי	00 00			l

Sampler's Name:

# **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-5160-1 SDG Number: 03D2024189

Login Number: 5160 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	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: 890-5160-1 SDG Number: 03D2024189

Login Number: 5160 **List Source: Eurofins Midland** List Number: 2

List Creation: 08/28/23 09:44 AM

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	N/A	

<6mm (1/4").

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green

Ensolum

601 N. Marienfeld St.

Suite 400

Midland, Texas 79701

Generated 4/10/2024 1:22:28 PM Revision 1

# **JOB DESCRIPTION**

Vast State 021H Lea County, New Mexico

# **JOB NUMBER**

880-41651-1

Eurofins Midland 1211 W. Florida Ave Midland TX 79701

# **Eurofins Midland**

# **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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**

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

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Client: Ensolum Project/Site: Vast State 021H Laboratory Job ID: 880-41651-1 SDG: Lea County, New Mexico

# **Table of Contents**

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# **Definitions/Glossary**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H

SDG: Lea County, New Mexico

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** 

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** 

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

Duplicate Error Ratio (normalized absolute difference) **DER** 

Dil Fac **Dilution Factor** 

Detection Limit (DoD/DOE) DL

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) Minimum Detectable Concentration (Radiochemistry) MDC

MDL Method Detection Limit Minimum Level (Dioxin) ML MPN Most Probable Number Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

**Practical Quantitation Limit PQL** 

**PRES** Presumptive QC **Quality Control** 

**RER** Relative Error Ratio (Radiochemistry)

RI 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: 880-41651-1

Project: Vast State 021H

**Eurofins Midland** Job ID: 880-41651-1

> Job Narrative 880-41651-1

#### REVISION

The report being provided is a revision of the original report sent on 4/8/2024. The report (revision 1) is being revised due to Per client email, requesting BTEX to be added to report.

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

#### Receipt

The samples were received on 4/1/2024 3:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C.

#### Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: SW01 (880-41651-1) and SW02 (880-41651-2).

#### GC VOA

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

#### GC Semi VOA

Method 8015MOD NM: The surrogate recovery for the blank associated with preparation batch 880-77174 and analytical batch 880-77162 was outside the upper control limits.

Method 8015MOD NM: The method blank for preparation batch 880-77174 and analytical batch 880-77162 contained Diesel Range Organics (Over C10-C28) above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; 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

Method 300 ORGFM 28D - Soluble: The Chloride matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-77123 and analytical batch 880-77316 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

SW01 (880-41651-1)

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Method 300 ORGFM 28D - Soluble: The Chloride matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-77123 and analytical batch 880-77316 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

SW02 (880-41651-2), (880-41651-A-2-B MS) and (880-41651-A-2-C MSD)

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

# **Case Narrative**

Client: Ensolum Job ID: 880-41651-1

Project: Vast State 021H

Job ID: 880-41651-1 (Continued) Eurofins Midland

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**Matrix: Solid** 

Lab Sample ID: 880-41651-1

# **Client Sample Results**

Client: Ensolum

Job ID: 880-41651-1

Project/Site: Vast State 021H

SDG: Lea County, New Mexico

Client Sample ID: SW01

Date Collected: 04/01/24 10:20 Date Received: 04/01/24 15:00

Sample Depth: 0-1'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:49	1
Toluene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:49	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:49	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		04/09/24 09:21	04/09/24 11:49	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:49	1
Xylenes, Total	< 0.00399	U	0.00399	mg/Kg		04/09/24 09:21	04/09/24 11:49	1

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84	70 - 130	04/09/24 09:21	04/09/24 11:49	1
1,4-Difluorobenzene (Surr)	89	70 - 130	04/09/24 09:21	04/09/24 11:49	1

Method: TAL SC	OP Total BTEX - Total	BTEX Calculation
Amalusta		Descrit Orgalities

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399	mg/Kg			04/09/24 11:49	1

Method: SW846 8015	<b>NM</b> - Diesel Range Organics (	(DRO) (GC)
Amaluta	Decult Ovelifier	DI

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8 U	49.8	mg/Kg			04/03/24 13:40	1

	Method: SW846 8015B	NM - Diesel Range Organics	(DRO) (GC)
П	A 1 4	- " o ""	

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8	mg/Kg		04/03/24 08:52	04/03/24 13:40	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		04/03/24 08:52	04/03/24 13:40	1
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		04/03/24 08:52	04/03/24 13:40	1
	2/-					_		

Surrogate	%Recovery	Qualifier	Limits	Prepared Analyzed	Dil Fac
1-Chlorooctane	111		70 - 130	04/03/24 08:52 04/03/24 13:40	1
o-Terphenyl	98		70 - 130	04/03/24 08:52 04/03/24 13:40	1

Method: EPA 300.0 - Anions,	Ion Chromatography	- Soluble
A I 4 .	D 16 . O 1161	-

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	146	4.99	mg/Kg			04/06/24 06:55	1

Client Sample ID: SW02
Date Collected: 04/01/24 10:25

Date Received: 04/01/24 15:00

Sample Depth: 0-1'

	Mathadi CWOAC 000AD	Valatila Ormania	Compounds (CC)
ı	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		04/09/24 09:21	04/09/24 12:10	1
Toluene	<0.00202	U	0.00202	mg/Kg		04/09/24 09:21	04/09/24 12:10	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		04/09/24 09:21	04/09/24 12:10	1
m-Xylene & p-Xylene	<0.00404	U	0.00404	mg/Kg		04/09/24 09:21	04/09/24 12:10	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		04/09/24 09:21	04/09/24 12:10	1
Xylenes, Total	<0.00404	U	0.00404	mg/Kg		04/09/24 09:21	04/09/24 12:10	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorohenzene (Surr)	94		70 130			04/09/24 09:21	04/09/24 12:10	

**Eurofins Midland** 

**Matrix: Solid** 

Lab Sample ID: 880-41651-2

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**Matrix: Solid** 

Lab Sample ID: 880-41651-2

# **Client Sample Results**

Client: Ensolum Job ID: 880-41651-1 SDG: Lea County, New Mexico

Project/Site: Vast State 021H

Date Collected: 04/01/24 10:25 Date Received: 04/01/24 15:00

**Client Sample ID: SW02** 

Sample Depth: 0-1'

Chloride

	X Calculat Qualifier				04/09/24 09:21	04/09/24 12:10	1
Result							
	Qualifier	D.					
<0.00404		RL	Unit	D	Prepared	Analyzed	Dil Fac
	U	0.00404	mg/Kg			04/09/24 12:10	1
Range (	Organics (	DRO) (GC)					
		RL	Unit	D	Prepared	Analyzed	Dil Fac
56.8		50.0	mg/Kg			04/03/24 14:02	1
Result	Qualifier	RL	Unit	_ <u>D</u>	Prepared	Analyzed	Dil Fac
_	_		119	_	Danis	A l	D'' F
<50.0	U	50.0	mg/Kg		04/03/24 08:52	04/03/24 14:02	1
56.8		50.0	mg/Kg		04/03/24 08:52	04/03/24 14:02	1
<50.0	U	50.0	mg/Kg		04/03/24 08:52	04/03/24 14:02	1
Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
112		70 - 130			04/03/24 08:52	04/03/24 14:02	1
100		70 - 130			04/03/24 08:52	04/03/24 14:02	1
•	Result	Result   Qualifier	Sel Range Organics (DRO) (GC)   Result   Qualifier   RL	Result 56.8         Qualifier 50.0         RL mg/Kg           BI Range Organics (DRO) (GC) Result          Qualifier RL Unit mg/Kg           <50.0	Result 56.8         Qualifier Qualifier         RL Del Result Result Sel Result	Result 56.8         Qualifier 50.0         RL mg/Kg         Unit mg/Kg         D mg/Kg           El Range Organics (DRO) (GC) Result          Qualifier RL Unit mg/Kg         D mg/Kg         D mg/Kg           50.0         U 50.0         mg/Kg         04/03/24 08:52           56.8         50.0         mg/Kg         04/03/24 08:52           <50.0	Result 56.8         Qualifier 50.0         RL mg/Kg         Unit mg/Kg         D Prepared 04/03/24 14:02         Analyzed 04/03/24 14:02           Prepared 2 Sel Range Organics (DRO) (GC) Result 2 So.0         Qualifier RL Unit mg/Kg         D Prepared 04/03/24 08:52         Analyzed 04/03/24 14:02           56.8         50.0         mg/Kg         04/03/24 08:52         04/03/24 14:02           450.0         U         50.0         mg/Kg         04/03/24 08:52         04/03/24 14:02           460.0         Walifier Limits To - 130         Prepared 04/03/24 08:52         04/03/24 14:02         04/03/24 08:52         04/03/24 14:02           100         70 - 130         04/03/24 08:52         04/03/24 14:02         04/03/24 08:52         04/03/24 14:02

5.02

219 F1

mg/Kg

04/06/24 07:01

**Eurofins Midland** 

# **Surrogate Summary**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H SDG: Lea County, New Mexico

Method: 8021B - Volatile Organic Compounds (GC)

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

			Per
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-41651-1	SW01	84	89
880-41651-1 MS	SW01	106	121
880-41651-1 MSD	SW01	103	113
880-41651-2	SW02	94	90
LCS 880-77712/1-A	Lab Control Sample	111	119
LCSD 880-77712/2-A	Lab Control Sample Dup	113	114
MB 880-77712/5-A	Method Blank	75	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)					
		1CO1	OTPH1				
Lab Sample ID	Client Sample ID	(70-130)	(70-130)				
880-41651-1	SW01	111	98				
880-41651-2	SW02	112	100				
LCS 880-77174/2-A	Lab Control Sample	106	111				
LCSD 880-77174/3-A	Lab Control Sample Dup	105	105				
MB 880-77174/1-A	Method Blank	184 S1+	179 S1+				

1CO = 1-Chlorooctane OTPH = o-Terphenyl

# **QC Sample Results**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H SDG: Lea County, New Mexico

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-77712/5-A

**Matrix: Solid** 

**Analysis Batch: 77703** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

Prep Batch: 77712

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:28	1
Toluene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:28	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:28	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		04/09/24 09:21	04/09/24 11:28	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		04/09/24 09:21	04/09/24 11:28	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		04/09/24 09:21	04/09/24 11:28	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	75	70 - 130	04/09/24 09:21 04	4/09/24 11:28	
1,4-Difluorobenzene (Surr)	99	70 - 130	04/09/24 09:21 04	4/09/24 11:28	

Lab Sample ID: LCS 880-77712/1-A

Matrix: Solid

**Analysis Batch: 77703** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 77712

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.09546		mg/Kg		95	70 - 130	
Toluene	0.100	0.09038		mg/Kg		90	70 - 130	
Ethylbenzene	0.100	0.08439		mg/Kg		84	70 - 130	
m-Xylene & p-Xylene	0.200	0.1758		mg/Kg		88	70 - 130	
o-Xylene	0.100	0.08727		mg/Kg		87	70 - 130	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	111		70 - 130
1,4-Difluorobenzene (Surr)	119		70 - 130

Lab Sample ID: LCSD 880-77712/2-A

**Matrix: Solid** 

**Analysis Batch: 77703** 

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

Prep Batch: 77712

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.09794		mg/Kg		98	70 - 130	3	35
Toluene	0.100	0.09999		mg/Kg		100	70 - 130	10	35
Ethylbenzene	0.100	0.1009		mg/Kg		101	70 - 130	18	35
m-Xylene & p-Xylene	0.200	0.2284		mg/Kg		114	70 - 130	26	35
o-Xylene	0.100	0.1122		mg/Kg		112	70 - 130	25	35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	113		70 - 130
1,4-Difluorobenzene (Surr)	114		70 - 130

Lab Sample ID: 880-41651-1 MS

**Matrix: Solid** 

**Analysis Batch: 77703** 

**Client Sample ID: SW01** Prep Type: Total/NA

Prep Batch: 77712

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00200	U	0.0996	0.07093		mg/Kg		70	70 - 130	
Toluene	<0.00200	U	0.0996	0.07743		mg/Kg		77	70 - 130	

# QC Sample Results

Client: Ensolum Job ID: 880-41651-1 SDG: Lea County, New Mexico Project/Site: Vast State 021H

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

Lab Sample ID: 880-41651-1 MS

**Matrix: Solid** 

**Analysis Batch: 77703** 

**Client Sample ID: SW01** 

Prep Type: Total/NA Prep Batch: 77712

	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Ethylbenzene	<0.00200	U	0.0996	0.08423		mg/Kg		85	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.199	0.1676		mg/Kg		84	70 - 130
o-Xylene	< 0.00200	U	0.0996	0.08396		mg/Kg		84	70 - 130

MS MS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		70 - 130
1,4-Difluorobenzene (Surr)	121		70 - 130

Client Sample ID: SW01

Prep Type: Total/NA Prep Batch: 77712

**Matrix: Solid** 

**Analysis Batch: 77703** 

Lab Sample ID: 880-41651-1 MSD

Sample Sample Spike MSD MSD %Rec **RPD** Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Benzene <0.00200 U 0.101 0.07430 mg/Kg 73 70 - 130 5 Toluene <0.00200 U 0.101 0.08390 83 70 - 130 mg/Kg 8

Ethylbenzene <0.00200 U 0.101 0.09302 mg/Kg 92 70 - 130 10 m-Xylene & p-Xylene <0.00399 U 0.202 0.1785 mg/Kg 89 70 - 130 6 <0.00200 U 0.101 0.09019 89 70 - 130 o-Xylene mg/Kg MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,4-Difluorobenzene (Surr)	113		70 - 130

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

Lab Sample ID: MB 880-77174/1-A

**Matrix: Solid** 

**Analysis Batch: 77162** 

**Client Sample ID: Method Blank** Prep Type: Total/NA Prep Batch: 77174

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Gasoline Range Organics <50.0 U 50.0 04/03/24 08:52 04/03/24 09:39 mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over <50.0 U 50.0 mg/Kg 04/03/24 08:52 04/03/24 09:39 C10-C28) Oll Range Organics (Over C28-C36) <50.0 U 50.0 mg/Kg 04/03/24 08:52 04/03/24 09:39

MB MB

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	184	S1+	70 - 130	04/03/24 08:52	04/03/24 09:39	1
o-Terphenyl	179	S1+	70 - 130	04/03/24 08:52	04/03/24 09:39	1

Lab Sample ID: LCS 880-77174/2-A

**Matrix: Solid** 

**Analysis Batch: 77162** 

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Prep Batch: 77174

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	1000	934.1		mg/Kg		93	70 - 130	
(GRO)-C6-C10								
Diesel Range Organics (Over	1000	980.5		mg/Kg		98	70 - 130	
C10-C28)								

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Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H SDG: Lea County, New Mexico

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

LCS LCS

Lab Sample ID: LCS 880-77174/2-A

**Matrix: Solid** 

**Analysis Batch: 77162** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

Prep Batch: 77174

%Recovery Qualifier Surrogate Limits 1-Chlorooctane 106 70 - 130 o-Terphenyl 111 70 - 130

**Client Sample ID: Lab Control Sample Dup** Lab Sample ID: LCSD 880-77174/3-A

**Matrix: Solid** 

**Analysis Batch: 77162** 

Prep Type: Total/NA Prep Batch: 77174

LCSD LCSD RPD %Rec Spike Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Gasoline Range Organics 1000 998.8 mg/Kg 100 70 - 130 20 (GRO)-C6-C10 Diesel Range Organics (Over 1000 1027 mg/Kg 103 70 - 130 5 20 C10-C28)

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
1-Chlorooctane	105	70 - 130
o-Terphenyl	105	70 - 130

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-77123/1-A Client Sample ID: Method Blank **Prep Type: Soluble** 

**Matrix: Solid** 

**Analysis Batch: 77316** 

MB MB

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00 U	5.00	mg/Kg			04/06/24 05:13	1

Lab Sample ID: LCS 880-77123/2-A **Client Sample ID: Lab Control Sample Prep Type: Soluble** 

**Matrix: Solid** 

**Analysis Batch: 77316** 

		Spike	LCS	LCS				%Rec	
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	 	250	273 0		ma/Ka		109	90 - 110	

Lab Sample ID: LCSD 880-77123/3-A **Client Sample ID: Lab Control Sample Dup Prep Type: Soluble** 

**Matrix: Solid** 

**Analysis Batch: 77316** 

	Spik	e LCSD	LCSD				%Rec		RPD
Analyte	Adde	d Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride		0 273.8		mg/Kg	_	110	90 - 110	0	20

Lab Sample ID: 880-41651-2 MS **Client Sample ID: SW02 Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 77316

7 maryolo Batom 77010	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	219	F1	251	503.2	F1	mg/Kg		113	90 - 110	

Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	219	F1	251	503.2	F1	mg/Kg		113	90 - 110	

# **QC Sample Results**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H

SDG: Lea County, New Mexico

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-41651-2 MSD **Client Sample ID: SW02** 

**Matrix: Solid Prep Type: Soluble Analysis Batch: 77316** 

Sample Sample Spike MSD MSD %Rec **RPD** Result Qualifier Added Result Qualifier Unit RPD Limit Analyte D %Rec Limits Chloride 219 F1 251 502.0 F1 20 mg/Kg 113 90 - 110 0

# **QC Association Summary**

Client: Ensolum Job ID: 880-41651-1
Project/Site: Vast State 021H SDG: Lea County, New Mexico

# **GC VOA**

# **Analysis Batch: 77703**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Total/NA	Solid	8021B	77712
880-41651-2	SW02	Total/NA	Solid	8021B	77712
MB 880-77712/5-A	Method Blank	Total/NA	Solid	8021B	77712
LCS 880-77712/1-A	Lab Control Sample	Total/NA	Solid	8021B	77712
LCSD 880-77712/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	77712
880-41651-1 MS	SW01	Total/NA	Solid	8021B	77712
880-41651-1 MSD	SW01	Total/NA	Solid	8021B	77712

# Prep Batch: 77712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Total/NA	Solid	5035	
880-41651-2	SW02	Total/NA	Solid	5035	
MB 880-77712/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-77712/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-77712/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-41651-1 MS	SW01	Total/NA	Solid	5035	
880-41651-1 MSD	SW01	Total/NA	Solid	5035	

# **Analysis Batch: 77771**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Total/NA	Solid	Total BTEX	
880-41651-2	SW02	Total/NA	Solid	Total BTEX	

# **GC Semi VOA**

# **Analysis Batch: 77162**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method 8015B NM	Prep Batch
880-41651-1	SW01	Total/NA	Solid		77174
880-41651-2	SW02	Total/NA	Solid	8015B NM	77174
MB 880-77174/1-A	Method Blank	Total/NA	Solid	8015B NM	77174
LCS 880-77174/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	77174
LCSD 880-77174/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	77174

# Prep Batch: 77174

Lab Sample ID 880-41651-1	Client Sample ID SW01	Prep Type Total/NA	Matrix Solid	Method 8015NM Prep	Prep Batch
880-41651-2	SW02	Total/NA	Solid	8015NM Prep	
MB 880-77174/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-77174/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-77174/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

# **Analysis Batch: 77362**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Total/NA	Solid	8015 NM	
880-41651-2	SW02	Total/NA	Solid	8015 NM	

# HPLC/IC

# Leach Batch: 77123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Soluble	Solid	DI Leach	
880-41651-2	SW02	Soluble	Solid	DI Leach	

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# **QC Association Summary**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H SDG: Lea County, New Mexico

# **HPLC/IC (Continued)**

# Leach Batch: 77123 (Continued)

Lab Sample ID MB 880-77123/1-A	Client Sample ID  Method Blank	Prep Type Soluble	Matrix Solid	Method DI Leach	Prep Batch
LCS 880-77123/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-77123/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-41651-2 MS	SW02	Soluble	Solid	DI Leach	
880-41651-2 MSD	SW02	Soluble	Solid	DI Leach	

# **Analysis Batch: 77316**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-41651-1	SW01	Soluble	Solid	300.0	77123
880-41651-2	SW02	Soluble	Solid	300.0	77123
MB 880-77123/1-A	Method Blank	Soluble	Solid	300.0	77123
LCS 880-77123/2-A	Lab Control Sample	Soluble	Solid	300.0	77123
LCSD 880-77123/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	77123
880-41651-2 MS	SW02	Soluble	Solid	300.0	77123
880-41651-2 MSD	SW02	Soluble	Solid	300.0	77123

Date Collected: 04/01/24 10:20

Date Received: 04/01/24 15:00

# **Lab Chronicle**

Client: Ensolum Job ID: 880-41651-1 Project/Site: Vast State 021H SDG: Lea County, New Mexico

Lab Sample ID: 880-41651-1 **Client Sample ID: SW01** 

**Matrix: Solid** 

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			77712	EL	EET MID	04/09/24 09:21
Total/NA	Analysis	8021B		1	77703	MNR	EET MID	04/09/24 11:49
Total/NA	Analysis	Total BTEX		1	77771	SM	EET MID	04/09/24 11:49
Total/NA	Analysis	8015 NM		1	77362	SM	EET MID	04/03/24 13:40
Total/NA	Prep	8015NM Prep			77174	EL	EET MID	04/03/24 08:52
Total/NA	Analysis	8015B NM		1	77162	SM	EET MID	04/03/24 13:40
Soluble	Leach	DI Leach			77123	SA	EET MID	04/02/24 11:30
Soluble	Analysis	300.0		1	77316	SMC	EET MID	04/06/24 06:55

Lab Sample ID: 880-41651-2 **Client Sample ID: SW02** Date Collected: 04/01/24 10:25 **Matrix: Solid** 

Date Received: 04/01/24 15:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	5035			77712	EL	EET MID	04/09/24 09:21
Total/NA	Analysis	8021B		1	77703	MNR	EET MID	04/09/24 12:10
Total/NA	Analysis	Total BTEX		1	77771	SM	EET MID	04/09/24 12:10
Total/NA	Analysis	8015 NM		1	77362	SM	EET MID	04/03/24 14:02
Total/NA	Prep	8015NM Prep			77174	EL	EET MID	04/03/24 08:52
Total/NA	Analysis	8015B NM		1	77162	SM	EET MID	04/03/24 14:02
Soluble	Leach	DI Leach			77123	SA	EET MID	04/02/24 11:30
Soluble	Analysis	300.0		1	77316	SMC	EET MID	04/06/24 07:01

**Laboratory References:** 

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

# **Accreditation/Certification Summary**

Client: Ensolum Job ID: 880-41651-1
Project/Site: Vast State 021H SDG: Lea County, New Mexico

# **Laboratory: Eurofins Midland**

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

uthority	Progra	am	Identification Number	Expiration Date
exas	NELAI	Р	T104704400-23-26	06-30-24
The following analyte	:			This list
,	•	•	not certified by the governing authori	ty. This list may include
,	s are included in this repo does not offer certification	•	not certified by the governing authori	ty. This list may include
,	•	•	Analyte	ty. This list may include
for which the agency	does not offer certification	1.	, , ,	ty. This list may include

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# **Method Summary**

Client: Ensolum

Project/Site: Vast State 021H

Job ID: 880-41651-1

SDG: Lea County, New Mexico

Method	Method Description	Protocol	Laboratory
3021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
3015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
3015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
015NM Prep	Microextraction	SW846	EET MID
Ol Leach	Deionized Water Leaching Procedure	ASTM	EET MID

# **Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

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: Vast State 021H

Job ID: 880-41651-1

SDG: Lea County, New Mexico

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
880-41651-1	SW01	Solid	04/01/24 10:20	04/01/24 15:00	0-1'
880-41651-2	SW02	Solid	04/01/24 10:25	04/01/24 15:00	0-1'

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# Chain of Custody

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 Houston, TX (281) 240-4200 Dallas TX (214) 902-0300

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880-41651 Chain of Custody	www xenco com
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Project Manager:	Hadlie Green		Bill to: (if different)		Hadlie Green		Ň	ork Order	Work Order Comments	
Company Name:	Ensolum, LLC		Company Name:		Ensolum, LLC		Program: UST/PST   PRP   Brownfields   RBC   Superfund	RP Brow	nfields   BBC	Sunarfund
Address.	601 N Marienfeld St Suite 400		Address:				State of Project:			
City, State ZIP:	Midland, TX 79701		City, State ZIP:				Reporting Level II PST/UST TRRP Level IV	vel III 🗌 PS	T/UST   TRR	Level IV
Phone:	432-557-8895	Email:	Email: hgreen@ensolum.com	um.con			Deliverables EDD	ADaP	ADaPT   Other	1
Project Name.	Vast State 021H	Tur	Turn Around			ANAI YSIS RECIIEST	SECULEST		0	Section Constitution
Project Number:	03D2024189	X Routine	□ Rush	Pres.					None NO	NO DI Water H-O
Project Location:	Lea County, New Mexico	Due Date:							2 7	MOOH MO
Sampler's Name:	Noah Duker	TAT starts the	TAT starts the day received by							HNO HN
PO#:	03D2024189	the lab, if received by	eived by 4 30pm	•					2 - 2	N

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Company Name: E	Ensolum, LLC			Company Name:		Ensolum, LLC	LLC				Program: UST/PST	ST   PRP	Brownfi	ields RRC	☐ PRP☐ Brownfields ☐ RRC ☐ Superfund ☐
Address. 6(	601 N Marienfeld St Suite 400	Suite 400		Address:							State of Project:	: ]			
City, State ZIP: M	Midland, TX 79701			City, State ZIP:	, v						Reporting Level	Level	III 🗌 PST/L	UST    TRR	Reporting Level II
Phone: 43	432-557-8895		Email:	Email: hgreen@ensolum.com	olum.co	Ell					Deliverables EDD		ADaPT	Other	
Project Name.	Vast State 021H	21H	E	Turn Around					ANALY	ANALYSIS REQUEST	UEST			Droeory	Procenyative Codec
Project Number:	03D2024189	89	X Routine	□ Rush	Code		-			_		_		ON anon	DI Water H-O
Project Location:	Lea County, New Mexico	v Mexico	Due Date:							-			T		M-OH M-
Sampler's Name:	Noah Duker	ē	TAT starts the	TAT starts the day received by	T								<u> </u>		MeOn Me
PO#:	03D2024189	88	the lab, if rec	the lab, if received by 4 30pm						···········			<u> </u>	HSO. H.	Na CaN
SAMPLE RECEIPT		Yes (No	Wet Ice:	Yes No	letei	(0		<u> </u>					. I	H,PO, HP	
Samples Received Intact:	ict: Yes No	Thermometer ID:	¥.	7	men	.008							. 2	NaHSO, NABIS	<u>v</u>
Cooler Custody Seals:	Yes No / N/A	N/A Correction Factor	actor.	)  -   	e4	: •V							: Z	Nanson Nason	2 උ
Sample Custody Seats:	Yes No	Temperature Reading:	Reading:	7.7	T	43)		•••						razozog maor	- -
Total Containers:		Corrected Temperature:	emperature:		T								4 Z	Zn Acetate+NaOH Zn NaOH+Ascorbic Acid	Zn Acetate+tvaOH Zn NaOH+Ascorbic Acid SAPC
		Date	Time	Grab/	\$0 # J										
Sample identification	ication Matrix	Ű	Sampled	Depth Comp	and the beauty	тън сиг								Sample	Sample Comments
SW01	S	4/1/2024	(0 <u>7</u> 0)	1-0 آ	-	X									
SW02	S	4/1/2024	1025	0-1,	-	<b>人</b> 义						-			
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# **Login Sample Receipt Checklist**

Client: Ensolum

Job Number: 880-41651-1

SDG Number: Lea County, New Mexico

List Source: Eurofins Midland

Login Number: 41651 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	N/A	

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APPENDIX D

July 31, 2023, Remediation Work Plan



July 27, 2023

#### **New Mexico Oil Conservation Division**

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

Re: Remediation Work Plan

Vast State 021H

**Incident Number NAPP2313140440** 

Lea County, New Mexico

# To Whom It May Concern:

Ensolum, LLC (Ensolum) on behalf of COG Operating, LLC (COG), has prepared the following *Remediation Work Plan (Work Plan)* to document the site assessment and soil sampling activities completed to date and propose a work plan to address the impacted soil identified at the Vast State 021H (Site). The purpose of the site assessment and soil sampling activities was to delineate the lateral and vertical extent of impacted soil resulting from a release of produced water and crude oil at the Site. The following *Work Plan* proposes to install a soil boring to investigate depth to water to confirm the Closure Criteria at the Site and excavate the impacted soil.

#### SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit P, Section 17, Township 26 South, Range 33 East, in Lea County, New Mexico (32.0367°, 103.5889°) and is associated with oil and gas exploration and production operations on State Land managed by the New Mexico State Land Office (NMSLO).

On May 6, 2023, corrosion of the back pressure line resulted in the release of 4.03 barrels (bbls) of produced water and 1.34 bbls of crude oil onto the surface of the well pad. A vacuum truck was immediately dispatched to the Site to recover the free-standing fluids; approximately 1 bbl of produced water and 1 bbl of crude oil were recovered. COG reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification Form C-141 (Form C-141) on May 11, 2023. The release was assigned Incident Number NAPP2313140440.

Since the release remained on the active well pad, an assessment of cultural properties had already been completed prior to the construction of the well pad and as such, the Cultural Properties Protection Rule (CPP) has been followed. No additional cultural resource surveys were completed in connection with this release. The release area is not expected to be reclaimed until the oil and gas well is plugged and abandoned and the well pad is reclaimed. The Reclamation Plan for this release will default to the NMSLO-approved Reclamation Plan for the well pad per 19.2.100.67 of the New Mexico Administrative Code (NMAC).

COG Operating, LLC Remediation Work Plan Vast State 021H

#### SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was characterized according to Table I, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29 (19.15.29) NMAC. Results from the characterization desktop review are presented on page 3 of the Form C-141, Site Assessment/Characterization. Potential site receptors are identified on Figure 1.

Depth to groundwater at the Site is greater than 100 feet below ground surface (bgs) based on the nearest groundwater well data. The nearest groundwater well with depth to groundwater data is New Mexico Office of the State Engineer (NMOSE) well C-02273 located approximately 0.85 miles southeast of the Site. The groundwater well has a reported depth to groundwater of 120 feet bgs and a total depth of 160 feet bgs. All wells used for depth to water determination are depicted on Figure 1 and the referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is an intermittent stream, located approximately 4,876 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 (medium potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table 1 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: 20,000 mg/kg

## SITE ASSESSMENT AND DELINEATION ACTIVITIES

On May 22, 2023, Ensolum personnel completed a Site visit to evaluate the release extent based on information provided on the Form C-141 and visual observations. The stained soil from the release had been scraped up prior to Ensolum personnel visiting the Site. Eight assessment soil samples (SS01 through SS08) were collected within and around the release extent from a depth of 0.5 feet bgs. Assessment soil samples SS01 through SS04 were collected around the release to confirm the lateral release extent. Assessment soil samples SS05 through SS08 were collected within the release extent at an approximate depth of 0.5 feet bgs. The assessment soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride Hach® chloride QuanTab® test strips. The release extent and assessment 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 B.

The assessment 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 constituents of concern (COC): BTEX following United States

COG Operating, LLC Remediation Work Plan Vast State 021H

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.

On June 8, 2023, delineation activities were conducted at the Site to assess the vertical extent of impacted soil. Boreholes BH01 through BH03 were advanced via backhoe within the release extent. The boreholes were advanced to depths ranging from 2 feet to 5 feet bgs. Discrete delineation soil samples were collected from each borehole at depths ranging from 1-foot to 5 feet bgs. Soil from the boreholes was field screened for VOCs and chloride utilizing a calibrated PID and Hach® chloride QuanTab® test strips, respectively. Field screening results and observations for the boreholes were logged on lithologic/soil sampling logs, which are included in Appendix C. The delineation soil samples were handled and analyzed as described above. The delineation soil sample locations are depicted on Figure 3.

# LABORATORY ANALYTICAL RESULTS

Laboratory analytical results for assessment soil samples SS01, SS02, and SS04, collected around the release extent, indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria and defined the lateral extent of the release to the north, west, and south. Laboratory analytical results for assessment soil sample SS03, collected east of the release extent, indicated all COC concentrations were compliant with the Site Closure Criteria; however, chloride concentrations exceeded the most stringent Table I Closure Criteria. One additional assessment sample (SS03A) was collected east of the release extent at a depth of approximately 0.5 feet bgs to confirm the lateral extent of the release. The assessment soil sample location is presented on Figure 2. Laboratory analytical results for assessment soil sample SS03A indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria and successfully defined the lateral extent of the release to the east.

Laboratory analytical results for assessment soil samples SS05, SS06, and SS08, collected within the release extent, indicated all COC concentrations were compliant with the Site Closure Criteria. Laboratory analytical results for assessment soil sample SS07, collected within the release extent, indicated TPH-GRO/TPH-DRO concentrations exceeded the Site Closure Criteria.

Laboratory analytical results for the delineation soil samples collected from boreholes BH01 through BH03, indicated all COC concentrations were compliant with the Site Closure Criteria at depths ranging from 1-foot to 5 feet bgs, and successfully defined the vertical extent of the release. The laboratory analytical results are summarized on the attached Table 1 and the complete laboratory analytical reports are included in Appendix D. Based on the visible surface staining and laboratory analytical results for assessment sample SS07, excavation activities were warranted.

# PROPOSED REMEDIATION WORK PLAN

In order to confirm depth to groundwater is greater than 100 feet bgs at the Site, COG proposes to advance a soil boring to a depth of 105 feet bgs. The soil boring will be located within 0.5 miles of the Site and a field geologist will log and describe soils continuously. The soil boring will be left open for over 72 hours to allow for equilibration of groundwater levels within the temporary boring casing. After the 72-hour waiting period, depth to groundwater will be assessed and the soil boring will be backfilled following New Mexico Office of the State Engineer (NMOSE) approved procedures. A well record or soil boring log will be included in the follow up Closure Report.

Following confirmation of depth to groundwater, COG will proceed with excavation of impacted soil on pad to below the established Site Closure Criteria. Based on the soil sample analytical results, an



COG Operating, LLC Remediation Work Plan Vast State 021H

estimated 14 cubic yards of impacted soil will be excavated from the well pad in the vicinity of assessment soil sample SS07.

Following removal of the impacted soil, 5-point composite confirmation samples will be collected
at least every 200 square feet from the sidewalls and floor of the excavation. The 5-point
composite samples will be collected by placing five equivalent aliquots of soil into a 1-gallon,
resealable plastic bag and homogenizing the samples by thoroughly mixing. The excavation
samples will be submitted for laboratory analysis of BTEX, TPH, and chloride as described
above.

COG will complete the excavation activities within 90 days of the date of approval of this *Work Plan* by the NMOCD. The depth to water soil boring will be completed as soon as possible following approval from the surface landowner, receipt of the NMOSE drilling permit, and scheduling with a driller.

COG believes the scope of work described above will meet requirements set forth in 19.15.29.13 NMAC and is protective of human health, the environment, and groundwater. As such, COG respectfully requests approval of this *Work Plan* from NMOCD.

If you have any questions or comments, please contact Ms. Hadlie Green at (432) 557-8895 or hgreen@ensolum.com.

Sincerely, Ensolum, LLC

Hadlie Green

Project Geologist

Aimee Cole

Senior Managing Scientist

cc: Jacob Laird, COG

New Mexico State Land Office

#### Appendices:

Figure 1 Site Location Map

Figure 2 Assessment Soil Sample Locations
Figure 3 Delineation Soil Sample Locations
Table 1 Soil Sample Analytical Results
Appendix A Referenced Well Records

Appendix B Photographic Log

Appendix C Lithologic / Soil Sampling Logs

Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation

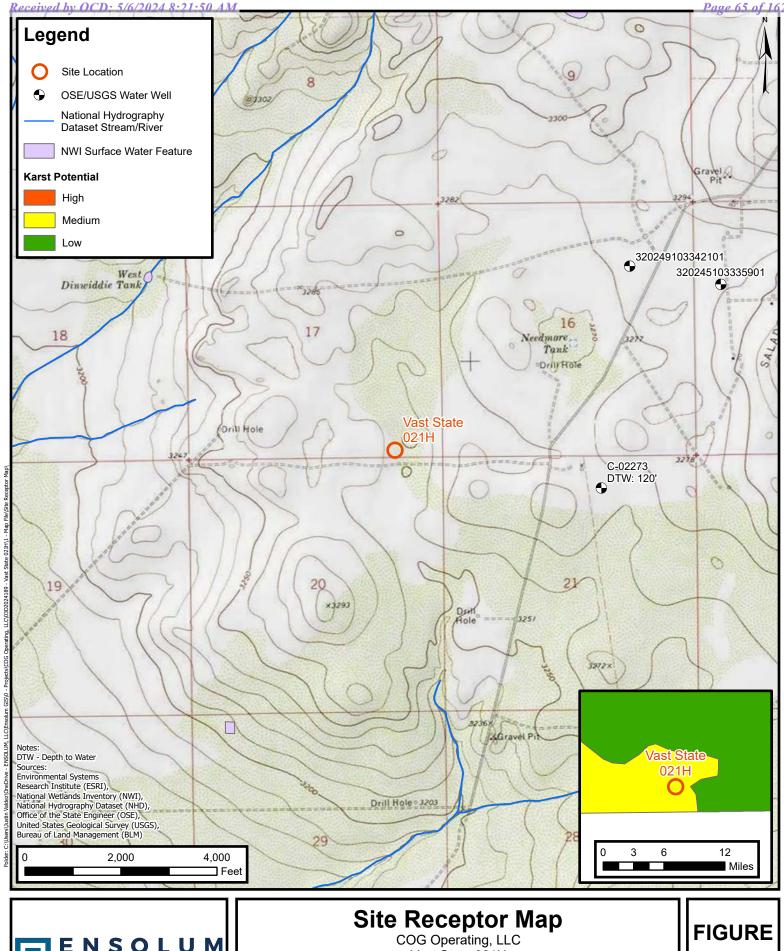
Appendix E NMOCD Notifications

Appendix F Final C-141





**FIGURES** 





Vast State 021H Incident Number: NAPP2313140440 Unit P Section 17 Township 26S Range 33E County Lea, New Mexico

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Notes: Sample ID @ Depth Below Ground Surface.

25

# **Assessment Soil Sample Locations**

COG Operating, LLC
Vast State 021H
Incident Number: NAPP2313140440
Unit P, Sec 17, T26S, R33E
Eddy County, New Mexico

FIGURE 2

Sources: Environmental Systems Research Institute (ESRI)

50 **□** Feet





# Delineation Soil Sample Locations COG Operating, LLC Vast State 021H Incident Number: NAPP2313140440

Unit P, Sec 17, T26S, R33E Eddy County, New Mexico

**FIGURE** 3



**TABLES** 

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# TABLE 1 SOIL SAMPLE ANALYTICAL RESULTS

Vast State 021H COG Operating, LLC Lea County, New Mexico

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	20,000
Assessment Soil Samples										
SS01	05/22/2023	0.5	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	565
SS02	05/22/2023	0.5	<0.00201	<0.00402	<49.9	<49.9	<49.9	<49.9	<49.9	571
SS03	05/22/2023	0.5	<0.00200	<0.00401	<49.9	<49.9	<49.9	<49.9	<49.9	1,050
SS03A	06/08/2023	0.5	<0.00199	<0.00398	<49.9	27.9	<49.9	27.9	27.9	159
SS04	05/22/2023	0.5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	477
SS05	05/22/2023	0.5	<0.00198	<0.00396	<49.8	550	<49.8	550	550	282
SS06	05/22/2023	0.5	<0.00199	<0.00398	<50.0	684	<50.0	684	684	3,440
SS07	05/22/2023	0.5	<0.00200	<0.00399	<50.0	1,920	<50.0	1,920	1,920	3,530
SS08	05/22/2023	0.5	<0.00201	<0.00402	<49.9	903	<49.9	903	903	1,530
				Delii	neation Soil Sam	ples				
BH01A	06/08/2023	1	<0.0020	<0.00400	<49.9	<49.9	<49.9	<49.9	<49.9	3,670
BH01D	06/08/2023	4	<0.0200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	1,240
BH01E	06/09/2023	5	<0.00198	<0.00397	<49.8	<49.8	<49.8	<49.8	<49.8	404
BH02A	06/08/2023	1	<0.00201	<0.00402	<50.0	156	<50.0	156	156	1,560
BH02D	06/09/2023	4	<0.00202	<0.00404	<49.9	<49.9	<49.9	<49.9	<49.9	246
BH03A	06/09/2023	1	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	551
BH03B	06/09/2023	2	<0.00200	<0.00400	<50.0	<50.0	<50.0	<50.0	<50.0	250

# Notes:

bgs: below ground surface mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

NMAC: New Mexico Administrative Code

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

GRO: Gasoline Range Organics DRO: Diesel Range Organics ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon

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Concentrations in **bold** exceed the NMOCD Table I Closure Criteria or reclamation standard where applicable.

Grey text represents samples that have been excavated



**APPENDIX A** 

Referenced Well Records



# 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** 

C 02273

Q64 Q16 Q4 Sec Tws Rng 21 26S 33E

634549 3545134\*

**Driller License:** 

122

**Driller Company:** 

UNKNOWN

**Driller Name:** 

**UNKNOWN** 

12/31/1930

Plug Date:

**Drill Start Date:** Log File Date:

**Drill Finish Date:** 

**PCW Rcv Date:** 

Source:

**Pump Type:** 

Pipe Discharge Size:

Estimated Yield: 5 GPM

**Casing Size:** 

6.00

Depth Well:

160 feet

Depth Water:

120 feet

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

7/26/23 7:18 AM

POINT OF DIVERSION SUMMARY

<sup>\*</sup>UTM location was derived from PLSS - see Help



USGS Home Contact USGS Search USGS

**National Water Information System: Web Interface** 

**USGS** Water Resources

Data Category:		Geographic Area:		
Groundwater	~	New Mexico	~	GO

#### Click to hideNews Bulletins

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

Groundwater levels for New Mexico

Click to hide state-specific text

Important: Next Generation Monitoring Location Page

# Search Results -- 1 sites found

Agency code = usgs site\_no list =

• 320245103335901

#### Minimum number of levels = 1

Save file of selected sites to local disk for future upload

## USGS 320245103335901 26S.33E.10.334343

Lea County, New Mexico

Table of data

Latitude 32°02'45", Longitude 103°33'59" NAD27

Land-surface elevation 3,291 feet above NAVD88

This well is completed in the Other aquifers (N9999OTHER) national aquifer.

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

# **Output formats**

<u>Tab-separat</u>	ed data									
Graph of da	<u>ita</u>									
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 measur
1970-12-0	7	D	62610		3162.10	NGVD29	Р	Z		
1970-12-0	7	D	62611		3163.68	NAVD88	Р	Z		
1970-12-0	7	D	72019	127.32			Р	Z		
1976-01-0	8	D	62610		3165.46	NGVD29	1	Z		
1976-01-0	8	D	62611		3167.04	NAVD88	1	Z		
1976-01-0	8	D	72019	123.96			1	Z		
1981-03-2	5	D	62610		3165.27	NGVD29	1	Z		
1981-03-2	5	D	62611		3166.85	NAVD88	1	Z		
1981-03-2	5	D	72019	124.15			1	Z		
1986-03-0	4	D	62610		3165.01	NGVD29	1	Z		
1986-03-0	4	D	62611		3166.59	NAVD88	1	Z		
1986-03-0	4	D	72019	124.41			1	Z		
1990-11-2	7	D	62610		3164.82	NGVD29	1	Z		
1990-11-2	7	D	62611		3166.40	NAVD88	1	Z		
1990-11-2	7	D	72019	124.60			1	Z		

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 measure
1996-03-05		D	62610		3164.92	NGVD29	1	S	;	
1996-03-05		D	62611		3166.50	NAVD88	1	S	;	
1996-03-05		D	72019	124.50			1	S	;	
2001-02-27		D	62610		3164.98	NGVD29	1	S	;	
2001-02-27		D	62611		3166.56	NAVD88	1	S	;	
2001-02-27		D	72019	124.44			1	S		

Explanation	Exp	lanatior	1
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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
Status	Р	Pumping
Method of measurement	S	Steel-tape measurement.
Method of measurement	Z	Other.
Measuring agency		Not determined
Source of measurement		Not determined
Water-level approval status	Α	Approved for publication Processing and review completed.

Questions or Comments
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility FOIA Privacy Policies and Notices U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for New Mexico: Water Levels

URL: https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?

Page Contact Information: New Mexico Water Data Maintainer Page Last Modified: 2023-07-26 09:21:22 EDT

0.28 0.25 nadww02

USA.gov



**APPENDIX B** 

Photographic Log



### **Photographic Log**

COG Operating, LLC Vast State 021H Incident Number NAPP2313140440





Photograph: 1

Date: 5/6/2023

Photograph: 2 Date: 5/22/2023

Description: Initial release extent

Description: Initial assessment activities

View: East

View: West





Photograph: 3

Date: 6/8/2023

Photograph: 4

Date: 6/8/2023

Description: Delineation activities

Description: Delineation activities

View: Northeast

View: Northwest



APPENDIX C

Lithologic Soil Sampling Logs

								Sample Name: BH01 Date: 6/9/2023
			N	C		_ U	RA	Site Name: Vast State 021H
								Incident Number: NAPP2313140440
								Job Number: 03D2024189
		LITHOL	OGIO	C / SOIL S	AMPLING		Logged By: Peter Van Patten Method: Trackhoe	
Coordin	nates: 32	.036731,-	-103.	589373				Hole Diameter: Total Depth: 5'
			_					PID for chloride and vapor, respectively. Chloride test factor included. ND - Non Detect
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					1	0		
Damp	3556	0.3	N	BH01A	1 - 1 -	- - - 1 -	SP-SM	Sand: brown, grey/brown, medium to fine grain, poorly graded, caliche gravel, trace odor
Damp	1730	3.5	Ν		_	_ 2	SP-SM	SAA (same as above) slight hydrocarbon odor
Damp	1389	1.0	N		- - - -	- - - 3	SP-SM	SAA trace hydrocarbon odor
Damp	1019	0.1	N	BH01D	4 _	4	СННЕ	Caliche: Light tan, grey/tan, some brown fine grain sand
Damp	319	0.6	Z	BH01E	5 -	5 6 7 7 8	СННЕ	SAA TD 5 feet bgs
						9 - - - - - - - - - - - - - - - - - - -		

								Sample Name: BH02 Date: 6/9/2023
			N	C	OL		M	Site Name: Vast State 021H
			I			- 0		Incident Number: NAPP2313140440
							Job Number: 03D2024189	
		LITHOL	OGIO	C / SOIL S	AMPLING	LOG		Logged By: Peter Van Patten Method: Trackhoe
		.036853,-						Hole Diameter: Total Depth: 4'
			_					PID for chloride and vapor, respectively. Chloride test factor included. ND - Non Detect
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					1	0		
Damp	1612	0.1	N	вно2А	1 -	- - - 1 -	SP-SM	Sand: brown, grey/brown, medium to fine grain, poorly graded, caliche gravel
Damp	940	0.1	Ν			2	SP-SM	SAA (same as above)
Damp	862	0.1	N		- -	- - - _ 3	SP-SM	SAA
Damp		0.3	z z	BH02D	4 -	- 3 - 4 - 4 - 7 - 7 - 8 - 9 - 10 - 11		Caliche: Light tan, grey/tan, some brown fine grain sand TD 4 feet bgs

								Sample Name: BH03 Date: 6/9/2023
			NI	C	OL	- 11	M	Site Name: Vast State 021H
			I	3		- 0		Incident Number: NAPP2313140440
							Job Number: 03D2024189	
		LITHOL	OGI	C / SOIL S	AMPLING	LOG		Logged By: Peter Van Patten Method: Trackhoe
		.036773,-						Hole Diameter: Total Depth: 3'
			_					PID for chloride and vapor, respectively. Chloride test factor included. ND - Non Detect
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					1	0		
Damp	448	0.4	N	вноза	1 1 -	- - - 1 -	SP-SM	Sand: brown, grey/brown, medium to fine grain, poorly graded, caliche gravel
Damp	212	0.3	N	внозв	2	2	SP-SM	SAA (same as above)
Damp	212	0.3	N			- _ 3 - - - - - - -	SP-SM	SAA TD 3 feet bgs
						6 - 7 - 8 - 9 - 10 - 11 - 12		



APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

**Environment Testing** 

# **ANALYTICAL REPORT**

## PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St. Suite 400

Midland, Texas 79701

Generated 5/31/2023 9:52:34 AM

## **JOB DESCRIPTION**

Vast State 21H SDG NUMBER 03D2024189

### **JOB NUMBER**

890-4710-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

### **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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 5/31/2023 9:52:34 AM

Authorized for release by Jessica Kramer, Project Manager <u>Jessica.Kramer@et.eurofinsus.com</u> (432)704-5440 3

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Client: Ensolum
Project/Site: Vast State 21H

Laboratory Job ID: 890-4710-1
SDG: 03D2024189

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### **Definitions/Glossary**

 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

02024189

#### **Qualifiers**

#### **GC VOA**

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

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

HPLC/IC

O......

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

LOD

LOQ

MCL

<u> </u>	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
n n	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)

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit

ML Minimum Level (Dioxin)

Limit of Detection (DoD/DOE)

Limit of Quantitation (DoD/DOE)

EPA recommended "Maximum Contaminant Level"

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: Vast State 21H

Job ID: 890-4710-1

SDG: 03D2024189

Job ID: 890-4710-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4710-1

#### Receipt

The samples were received on 5/23/2023 8:34 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 0.8°C

#### **Receipt Exceptions**

The following samples were received and analyzed from an unpreserved bulk soil jar: SS01 (890-4710-1), SS02 (890-4710-2), SS03 (890-4710-3), SS04 (890-4710-4), SS05 (890-4710-5), SS06 (890-4710-6), SS07 (890-4710-7) and SS08 (890-4710-8).

#### **GC VOA**

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-54106 and analytical batch 880-54208 was outside acceptance criteria. Re-extraction and/or re-analysis could not be performed; therefore, the data have been reported. The batch matrix spike/matrix spike duplicate (MS/MSD) was within acceptance limits and may be used to evaluate matrix performance.

Method 8021B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 880-54206 recovered outside control limits for the following analytes: Benzene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (CCV 880-54206/11). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-54098 and 880-54102 and analytical batch 880-54206 was outside the upper control limits.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-54206 recovered above the upper control limit for Benzene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (MB 880-54206/6). 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.

#### GC Semi VOA

Method 8015MOD\_NM: The surrogate recovery for the blank associated with preparation batch 880-54080 and analytical batch 880-54026 was outside the upper control limits.

Method 8015MOD\_NM: Surrogate recovery for the following samples were outside control limits: SS01 (890-4710-1), SS02 (890-4710-2), SS03 (890-4710-3) and SS04 (890-4710-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD\_NM: Surrogate recovery for the following samples were outside control limits: SS05 (890-4710-5), SS06 (890-4710-6), SS07 (890-4710-7) and SS08 (890-4710-8). 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.

#### HPLC/IC

Method 300\_ORGFM\_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-54056 and analytical batch 880-54097 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.

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#### **Case Narrative**

Client: Ensolum Job ID: 890-4710-1
Project/Site: Vast State 21H SDG: 03D2024189

Job ID: 890-4710-1 (Continued)

**Laboratory: Eurofins Carlsbad (Continued)** 

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

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 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Client Sample ID: SS01 Lab Sample ID: 890-4710-1

Date Collected: 05/22/23 11:30

Date Received: 05/23/23 08:34

Matrix: Solid

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 17:08	
Toluene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 17:08	•
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 17:08	•
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 17:08	
o-Xylene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 17:08	•
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 17:08	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	93		70 - 130			05/24/23 15:24	05/27/23 17:08	
1,4-Difluorobenzene (Surr)	99		70 - 130			05/24/23 15:24	05/27/23 17:08	
- Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Total BTEX	<0.00398	U	0.00398	mg/Kg			05/31/23 10:19	
Method: SW846 8015 NM - Diese Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Total TPH	<49.9	U						
-		_	49.9	mg/Kg			05/25/23 11:47	•
: Method: SW846 8015B NM - Dies				mg/Kg			05/25/23 11:47	
	sel Range Orga			mg/Kg <b>Unit</b>	D	Prepared	05/25/23 11:47  Analyzed	
Analyte Gasoline Range Organics	sel Range Orga	nics (DRO) Qualifier	(GC)		<u>D</u>	Prepared 05/24/23 12:56		Dil Fac
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	sel Range Orga Result	nics (DRO) Qualifier	(GC)	Unit	<u>D</u>	<u>·</u>	Analyzed	Dil Fa
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	sel Range Orga Result <49.9	nics (DRO) Qualifier U	(GC) RL 49.9	Unit mg/Kg	<u>D</u>	05/24/23 12:56	Analyzed 05/25/23 00:52	Dil Fa
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	sel Range Orga Result <49.9	nics (DRO) Qualifier U U	(GC) RL 49.9	Unit mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56	Analyzed 05/25/23 00:52 05/25/23 00:52	Dil Fa
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)  Surrogate	sel Range Orga Result <49.9 <49.9	nics (DRO) Qualifier U U	(GC) RL 49.9 49.9 49.9	Unit mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56	Analyzed 05/25/23 00:52 05/25/23 00:52 05/25/23 00:52	Dil Fa
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane	sel Range Orga Result <49.9 <49.9 <49.9 %Recovery	Nics (DRO) Qualifier U U Qualifier	(GC)  RL 49.9  49.9  49.9  Limits	Unit mg/Kg mg/Kg	<u> </u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 Prepared	Analyzed 05/25/23 00:52 05/25/23 00:52 05/25/23 00:52 Analyzed	Dil Fa
Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane o-Terphenyl	sel Range Orga           Result         <49.9	U  Qualifier  U  Qualifier  S1+	(GC)  RL 49.9  49.9  49.9  Limits 70 - 130 70 - 130	Unit mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 <b>Prepared</b> 05/24/23 12:56	Analyzed 05/25/23 00:52 05/25/23 00:52 05/25/23 00:52 Analyzed 05/25/23 00:52	Dil Fac
Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane o-Terphenyl  Method: EPA 300.0 - Anions, Ion Analyte	Result	U  Qualifier  U  Qualifier  S1+	(GC)  RL 49.9  49.9  49.9  Limits 70 - 130 70 - 130	Unit mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 <b>Prepared</b> 05/24/23 12:56	Analyzed 05/25/23 00:52 05/25/23 00:52 05/25/23 00:52 Analyzed 05/25/23 00:52	Dil Fac

Client Sample ID: SS02 Lab Sample ID: 890-4710-2

Date Collected: 05/22/23 11:45 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
Toluene	<0.00201	U	0.00201	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		05/24/23 15:24	05/27/23 17:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130			05/24/23 15:24	05/27/23 17:35	1

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**Matrix: Solid** 

 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Client Sample ID: SS02 Lab Sample ID: 890-4710-2

Date Collected: 05/22/23 11:45 Matrix: Solid

Date Received: 05/23/23 08:34 Sample Depth: 0.5'

Method: SW846 8021B	- Volatile Organic	Compounds (	GC)	(Continued)
moundar official course	Tolumo Organio	oompounae (	,	( Continuou,

Surrogate	%Recovery Qu	ıalifier Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	108	70 - 130	05/24/23 15:24	05/27/23 17:35	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	ma/Ka			05/31/23 10:19	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			05/25/23 11:47	1

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

		(,	\ <del>-</del> - /					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:14	1
(GRO)-C6-C10								
Diesel Range Organics (Over	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:14	1
C10-C28)								
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:14	1
Surrogato	%Pacayary	Qualifier	Limite			Propared	Analyzed	Dil Eac

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	137	S1+	70 - 130	05/24/23 12:56	05/25/23 01:14	1
o-Terphenyl	108		70 - 130	05/24/23 12:56	05/25/23 01:14	1

#### Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	571		4.99	mg/Kg			05/25/23 15:17	1

Client Sample ID: SS03 Lab Sample ID: 890-4710-3

Date Collected: 05/22/23 11:40 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

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

Modifica. Officero Control	organio comp	Julius (Ju	,					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		05/24/23 15:24	05/27/23 18:02	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		70 - 130			05/24/23 15:24	05/27/23 18:02	1

4-Bromofluorobenzene (Surr)	88	70 - 130	05/24/23 15:24
1,4-Difluorobenzene (Surr)	105	70 - 130	05/24/23 15:24

#### 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			05/31/23 10:19	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			05/25/23 11:47	1

**Eurofins Carlsbad** 

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**Matrix: Solid** 

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

**Client Sample ID: SS03** Lab Sample ID: 890-4710-3

Date Collected: 05/22/23 11:40 Matrix: Solid Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:35	1
(GRO)-C6-C10								
Diesel Range Organics (Over	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:35	1
C10-C28)								
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 01:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	138	S1+	70 - 130			05/24/23 12:56	05/25/23 01:35	1
o-Terphenyl	108		70 - 130			05/24/23 12:56	05/25/23 01:35	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
	1050		24.9	mg/Kg			05/25/23 15:49	5

Client Sample ID: SS04 Lab Sample ID: 890-4710-4 Matrix: Solid

Date Collected: 05/22/23 11:05 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
Toluene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
Ethylbenzene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
o-Xylene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 18:29	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130			05/24/23 15:24	05/27/23 18:29	1
1,4-Difluorobenzene (Surr)	104		70 - 130			05/24/23 15:24	05/27/23 18:29	1
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			05/31/23 10:19	1
Method: SW846 8015 NM - Diese	el Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte Total TPH	Result < 50.0		,	Unit mg/Kg	<u>D</u>	Prepared	Analyzed 05/25/23 11:47	Dil Fac
	<50.0	U	RL 50.0		<u>D</u>	Prepared		
Total TPH	<50.0	U	RL 50.0		<u>D</u> 	Prepared Prepared		
Total TPH  Method: SW846 8015B NM - Dies	<50.0	unics (DRO) Qualifier	RL 50.0	mg/Kg			05/25/23 11:47	1
Total TPH  Method: SW846 8015B NM - Dies Analyte	<50.0 sel Range Orga Result	unics (DRO) Qualifier	RL 50.0 (GC)	mg/Kg		Prepared	05/25/23 11:47  Analyzed	1 Dil Fac
Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	<50.0 sel Range Orga Result	unics (DRO) Qualifier	RL 50.0 (GC)	mg/Kg		Prepared	05/25/23 11:47  Analyzed	1 Dil Fac
Total TPH  Method: SW846 8015B NM - Dies Analyte  Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	<50.0  sel Range Orga Result <50.0 <50.0	unics (DRO) Qualifier U	RL 50.0 (GC) RL 50.0 50.0	mg/Kg  Unit  mg/Kg  mg/Kg		Prepared 05/24/23 12:56 05/24/23 12:56	05/25/23 11:47  Analyzed  05/25/23 01:56  05/25/23 01:56	1 Dil Fac
Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	<50.0 sel Range Orga Result <50.0	unics (DRO) Qualifier U	RL 50.0 (GC) RL 50.0	mg/Kg  Unit  mg/Kg		Prepared 05/24/23 12:56	05/25/23 11:47  Analyzed  05/25/23 01:56	Dil Fac
Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)  Surrogate	<50.0  sel Range Orga Result <50.0 <50.0 <50.0  %Recovery	Unics (DRO) Qualifier U U Qualifier	RL 50.0  (GC)  RL 50.0  50.0  50.0  Limits	mg/Kg  Unit  mg/Kg  mg/Kg		Prepared 05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 Prepared	05/25/23 11:47  Analyzed  05/25/23 01:56  05/25/23 01:56  05/25/23 01:56  Analyzed	1 Dil Fac
Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	<50.0  sel Range Orga Result <50.0 <50.0 <50.0	U unics (DRO) Qualifier U U Qualifier	RL 50.0 (GC) RL 50.0 50.0	mg/Kg  Unit  mg/Kg  mg/Kg		Prepared 05/24/23 12:56 05/24/23 12:56 05/24/23 12:56	05/25/23 11:47  Analyzed  05/25/23 01:56  05/25/23 01:56  05/25/23 01:56	1 Dil Fac 1 1

**Matrix: Solid** 

### **Client Sample Results**

 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Client Sample ID: SS04 Lab Sa

Lab Sample ID: 890-4710-4

Date Collected: 05/22/23 11:05

Date Received: 05/23/23 08:34

Matrix: Solid

Sample Depth: 0.5'

Method: EPA 300.0 - Anions, Ion Ch	romatography - S	Soluble					
Analyte	Result Qualif	ier RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	477	4.97	mg/Kg			05/25/23 15:55	1

Client Sample ID: SS05 Lab Sample ID: 890-4710-5

Date Collected: 05/22/23 11:10 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte

o-Terphenyl

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
Toluene	<0.00198	U	0.00198	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
m-Xylene & p-Xylene	<0.00396	U	0.00396	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
Xylenes, Total	<0.00396	U	0.00396	mg/Kg		05/24/23 15:24	05/27/23 18:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130			05/24/23 15:24	05/27/23 18:56	1
1,4-Difluorobenzene (Surr)	99		70 - 130			05/24/23 15:24	05/27/23 18:56	1

Total BTEX	<0.00396	U	0.00396	mg/Kg			05/31/23 10:19	1
Method: SW846 8015 NM - Diesel F	Range Organi	ics (DRO) (0	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	550		49.8	mg/Kg			05/25/23 11:47	1

RL

Unit

Prepared

05/24/23 12:56

Analyzed

05/25/23 02:39

Dil Fac

Result Qualifier

109

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8	mg/Kg		05/24/23 12:56	05/25/23 02:39	1
Diesel Range Organics (Over C10-C28)	550		49.8	mg/Kg		05/24/23 12:56	05/25/23 02:39	1
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		05/24/23 12:56	05/25/23 02:39	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chloroctane	141	S1+	70 130			05/24/23 12:56	05/25/23 02:30	

Method: EPA 300.0 - Anions, Ion C	hromatograp	hy - Soluble	<b>)</b>					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	282		5.03	mg/Kg			05/25/23 16:00	1

70 - 130

 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Client Sample ID: SS06 Lab Sample ID: 890-4710-6

Date Collected: 05/22/23 11:15

Date Received: 05/23/23 08:34

Matrix: Solid

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
Toluene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
o-Xylene	< 0.00199	U	0.00199	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		05/24/23 15:24	05/27/23 19:23	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130			05/24/23 15:24	05/27/23 19:23	1
1,4-Difluorobenzene (Surr)	109		70 - 130			05/24/23 15:24	05/27/23 19:23	1
Method: TAL SOP Total BTEX -	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			05/31/23 10:19	1
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	684		50.0	mg/Kg			05/25/23 11:47	1
		nice (DPO)		mg/Kg			05/25/23 11:47	
Method: SW846 8015B NM - Die	esel Range Orga		(GC)			Prepared		1
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics	esel Range Orga	Qualifier		mg/Kg  Unit  mg/Kg	D	Prepared 05/24/23 12:56	05/25/23 11:47  Analyzed  05/25/23 03:00	
	esel Range Orga Result	Qualifier	(GC)	Unit	<u>D</u>	<u>·</u>	Analyzed	1 Dil Fac
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	esel Range Orga Result <50.0	Qualifier U	(GC) RL 50.0	<mark>Unit</mark> mg/Kg	<u>D</u>	05/24/23 12:56	Analyzed 05/25/23 03:00	Dil Fac
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	esel Range Orga Result <50.0	Qualifier U	(GC) RL 50.0	<mark>Unit</mark> mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56	Analyzed 05/25/23 03:00 05/25/23 03:00	1 Dil Fac
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	Result   <50.0     684   <50.0	Qualifier U	(GC) RL 50.0 50.0	<mark>Unit</mark> mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56	Analyzed 05/25/23 03:00 05/25/23 03:00 05/25/23 03:00	1 Dil Fac 1 1
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Surrogate	Result   <50.0     684   <50.0     %Recovery	Qualifier U  Qualifier	(GC) RL 50.0 50.0 50.0 Limits	<mark>Unit</mark> mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 Prepared	Analyzed 05/25/23 03:00 05/25/23 03:00 05/25/23 03:00 Analyzed	Dil Fac  1  1  Dil Fac
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36) Surrogate 1-Chlorooctane	Result	Qualifier  U  Qualifier  S1+	RL 50.0 50.0 50.0 50.0 Limits 70 - 130 70 - 130	<mark>Unit</mark> mg/Kg mg/Kg	<u>D</u>	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 <b>Prepared</b> 05/24/23 12:56	Analyzed 05/25/23 03:00 05/25/23 03:00 05/25/23 03:00  Analyzed 05/25/23 03:00	1 Dil Fac 1 1 1 1 Dil Fac 1 1
Method: SW846 8015B NM - Die Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane o-Terphenyl	esel Range Orga Result <50.0 684 <50.0 %Recovery 144 113 n Chromatograp	Qualifier  U  Qualifier  S1+	RL 50.0 50.0 50.0 50.0 Limits 70 - 130 70 - 130	<mark>Unit</mark> mg/Kg mg/Kg	D_	05/24/23 12:56 05/24/23 12:56 05/24/23 12:56 <b>Prepared</b> 05/24/23 12:56	Analyzed 05/25/23 03:00 05/25/23 03:00 05/25/23 03:00  Analyzed 05/25/23 03:00	1 Dil Fac 1 1 1 1 Dil Fac 1 1

Client Sample ID: SS07 Lab Sample ID: 890-4710-7

Date Collected: 05/22/23 11:20 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		05/24/23 15:24	05/27/23 19:50	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130			05/24/23 15:24	05/27/23 19:50	

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Matrix: Solid

 Client: Ensolum
 Job ID: 890-4710-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Client Sample ID: SS07

Date Collected: 05/22/23 11:20

Lab Sample ID: 890-4710-7

Matrix: Solid

Date Collected: 05/22/23 11:20 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Method: SW846 8021B - Volatile	Organic Compounds	(GC) (Continued)
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Surrogate	%Recovery Qualifi	er Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	102	70 - 130	05/24/23 15:24	05/27/23 19:50	1

Method: TA	L 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			05/31/23 10:19	1

Mathada OMO40 0045 NM Disasi Damas Omenica (DDO) (OO	Α.
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC	. 1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1920		50.0	mg/Kg			05/25/23 11:47	1

Method: SW846 8015B NM - Diesel Range Organics	(DRO)	(GC)	١
motified. Offerto College Ithin Biodol Rungo Organico	(5.10)	, , , , ,	,

		, ,	<b>\</b> /					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		05/24/23 12:56	05/25/23 03:21	1
Diesel Range Organics (Over C10-C28)	1920		50.0	mg/Kg		05/24/23 12:56	05/25/23 03:21	1
Oll Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		05/24/23 12:56	05/25/23 03:21	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	137	S1+	70 - 130	05/24/23 12:5	6 05/25/23 03:21	1
o-Terphenyl	106		70 - 130	05/24/23 12:5	6 05/25/23 03:21	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3530	25.1	mg/Kg			05/25/23 16:11	5

Client Sample ID: SS08 Lab Sample ID: 890-4710-8

Date Collected: 05/22/23 11:25 Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Method: SW846 8021B -	M-1-4!1- O	0 (00)

Method. Syvoto 002 ID - Volat	nethod. 544646 6021B - Volatile Organic Compounds (GC)											
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac				
Benzene	<0.00201	U	0.00201	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
Toluene	<0.00201	U	0.00201	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
o-Xylene	<0.00201	U	0.00201	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		05/24/23 13:32	05/26/23 20:29	1				
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac				
4-Bromofluorobenzene (Surr)	95		70 - 130			05/24/23 13:32	05/26/23 20:29	1				

1,4-Difluorobenzene (Surr)	89	70 - 130	05/24/23 13:32	05/26/23 20:29
_				

wetnoa:	IAL SUP	iotal BIEX -	lotal B I EX	Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402	mg/Kg		_	05/30/23 09:08	1

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	903	49.9	mg/Kg			05/25/23 11:47	1

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Matrix: Solid

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

**Client Sample ID: SS08** 

Lab Sample ID: 890-4710-8 Date Collected: 05/22/23 11:25 Matrix: Solid

Date Received: 05/23/23 08:34

Sample Depth: 0.5'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 06:35	1
Diesel Range Organics (Over C10-C28)	903		49.9	mg/Kg		05/24/23 12:56	05/25/23 06:35	1
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		05/24/23 12:56	05/25/23 06:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	145	S1+	70 - 130			05/24/23 12:56	05/25/23 06:35	1
o-Terphenyl	111		70 - 130			05/24/23 12:56	05/25/23 06:35	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1530		25.2	mg/Kg			05/25/23 16:16	5

### **Surrogate Summary**

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

		BFB1	DFBZ1	Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4707-A-21-C MS	Matrix Spike	84	105	
890-4707-A-21-D MSD	Matrix Spike Duplicate	85	98	
890-4710-1	SS01	93	99	
890-4710-2	SS02	85	108	
890-4710-3	SS03	88	105	
890-4710-4	SS04	96	104	
890-4710-5	SS05	87	99	
890-4710-6	SS06	91	109	
890-4710-7	SS07	91	102	
890-4710-8	SS08	95	89	
890-4711-A-1-G MS	Matrix Spike	92	100	
890-4711-A-1-H MSD	Matrix Spike Duplicate	93	101	
LCS 880-54083/1-A	Lab Control Sample	97	105	
LCS 880-54098/1-A	Lab Control Sample	80	118	
LCS 880-54106/1-A	Lab Control Sample	92	95	
LCSD 880-54083/2-A	Lab Control Sample Dup	96	98	
LCSD 880-54098/2-A	Lab Control Sample Dup	81	107	
LCSD 880-54106/2-A	Lab Control Sample Dup	93	118	
MB 880-54083/5-A	Method Blank	87	104	
MB 880-54098/5-A	Method Blank	53 S1-	100	
	Method Blank	51 S1-	98	

DFBZ = 1,4-Difluorobenzene (Surr)

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

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Recovery (Acceptance Limits)
		1001	OTPH1	
o Sample ID	Client Sample ID	(70-130)	(70-130)	
)-4709-A-2-C MS	Matrix Spike	118	85	
-4709-A-2-D MSD	Matrix Spike Duplicate	121	87	
)-4710-1	SS01	135 S1+	106	
-4710-2	SS02	137 S1+	108	
-4710-3	SS03	138 S1+	108	
)-4710-4	SS04	136 S1+	107	
-4710-5	SS05	141 S1+	109	
4710-6	SS06	144 S1+	113	
-4710-7	SS07	137 S1+	106	
4710-8	SS08	145 S1+	111	
8 880-54080/2-A	Lab Control Sample	103	79	
SD 880-54080/3-A	Lab Control Sample Dup	103	79	
880-54080/1-A	Method Blank	170 S1+	138 S1+	

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

Client: Ensolum Job ID: 890-4710-1 SDG: 03D2024189 Project/Site: Vast State 21H

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

Lab Sample ID: MB 880-54083/5-A

**Matrix: Solid** Analysis Batch: 54208 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 54083

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/24/23 13:32	05/26/23 12:02	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/24/23 13:32	05/26/23 12:02	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/24/23 13:32	05/26/23 12:02	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/24/23 13:32	05/26/23 12:02	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/24/23 13:32	05/26/23 12:02	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/24/23 13:32	05/26/23 12:02	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130	05/24/23 13:	32 05/26/23 12:02	1
1,4-Difluorobenzene (Surr)	104		70 - 130	05/24/23 13:	32 05/26/23 12:02	1

Lab Sample ID: LCS 880-54083/1-A

**Matrix: Solid** 

Analysis Batch: 54208

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 54083

	<b>Spike</b>	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.1228		mg/Kg		123	70 - 130	
Toluene	0.100	0.1146		mg/Kg		115	70 - 130	
Ethylbenzene	0.100	0.1040		mg/Kg		104	70 - 130	
m-Xylene & p-Xylene	0.200	0.2201		mg/Kg		110	70 - 130	
o-Xylene	0.100	0.1007		mg/Kg		101	70 - 130	

LCS LCS

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

Lab Sample ID: LCSD 880-54083/2-A

Matrix: Solid

Analysis Batch: 54208

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA Prep Batch: 54083

	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1211		mg/Kg		121	70 - 130	1	35	
Toluene	0.100	0.1152		mg/Kg		115	70 - 130	1	35	
Ethylbenzene	0.100	0.1081		mg/Kg		108	70 - 130	4	35	
m-Xylene & p-Xylene	0.200	0.2237		mg/Kg		112	70 - 130	2	35	
o-Xylene	0.100	0.1018		mg/Kg		102	70 - 130	1	35	

LCSD LCSD

Surrogate	%Recovery Q	ualifier	Limits
4-Bromofluorobenzene (Surr)	96		70 - 130
1 4-Difluorobenzene (Surr)	98		70 - 130

Lab Sample ID: MB 880-54098/5-A

Matrix: Solid

Analysis Batch: 54206

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 54098

мв мв

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 07:23	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 07:23	1

**Eurofins Carlsbad** 

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Client: Ensolum Job ID: 890-4710-1 SDG: 03D2024189 Project/Site: Vast State 21H

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

Lab Sample ID: MB 880-54098/5-A **Matrix: Solid** 

Analysis Batch: 54206

Prep Type: Total/NA

Prep Batch: 54098

ı									
	Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 07:23	1
	m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/24/23 15:24	05/27/23 07:23	1
	o-Xylene	<0.00200	U	0.00200	mg/Kg		05/24/23 15:24	05/27/23 07:23	1
	Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/24/23 15:24	05/27/23 07:23	1
ı									

MB MB

MR MR

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	53	S1-	70 - 130	05/24/23 15:24 03	5/27/23 07:23	1
1,4-Difluorobenzene (Surr)	100		70 - 130	05/24/23 15:24 03	5/27/23 07:23	1

Lab Sample ID: LCS 880-54098/1-A **Client Sample ID: Lab Control Sample Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 54206

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.1225		mg/Kg		123	70 - 130	
Toluene	0.100	0.1063		mg/Kg		106	70 - 130	
Ethylbenzene	0.100	0.1001		mg/Kg		100	70 - 130	
m-Xylene & p-Xylene	0.200	0.1944		mg/Kg		97	70 - 130	
o-Xylene	0.100	0.09737		mg/Kg		97	70 - 130	

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	80	70 - 130
1,4-Difluorobenzene (Surr)	118	70 - 130

Lab Sample ID: LCSD 880-54098/2-A

**Matrix: Solid** 

Analysis Batch: 54206

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 54098

Prep Batch: 54098

	Spike	LCSD LCSD				%Rec		RPD
Analyte	Added	Result Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.1289	mg/Kg		129	70 - 130	5	35
Toluene	0.100	0.1105	mg/Kg		110	70 - 130	4	35
Ethylbenzene	0.100	0.1071	mg/Kg		107	70 - 130	7	35
m-Xylene & p-Xylene	0.200	0.2100	mg/Kg		105	70 - 130	8	35
o-Xylene	0.100	0.1070	mg/Kg		107	70 - 130	9	35

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	81	70 - 130
1,4-Difluorobenzene (Surr)	107	70 - 130

Lab Sample ID: 890-4707-A-21-C MS

Matrix: Solid

Analysis Batch: 54206

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 54098

•	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00199	U	0.0998	0.1210		mg/Kg		121	70 - 130	
Toluene	<0.00199	U	0.0998	0.1091		mg/Kg		109	70 - 130	
Ethylbenzene	<0.00199	U	0.0998	0.1058		mg/Kg		106	70 - 130	
m-Xylene & p-Xylene	<0.00398	U	0.200	0.2034		mg/Kg		102	70 - 130	

Job ID: 890-4710-1 Client: Ensolum Project/Site: Vast State 21H SDG: 03D2024189

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

Lab Sample ID: 890-4707-A-21-C MS

**Matrix: Solid** 

Analysis Batch: 54206

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

Prep Batch: 54098 %Rec

98

mg/Kg

70 - 130

Sample Sample Spike MS MS Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits D <0.00199 U 0.0998 0.1001 100 70 - 130 o-Xylene mg/Kg

MS MS %Recovery Qualifier Limits Surrogate 4-Bromofluorobenzene (Surr) 84 70 - 130 70 - 130 1,4-Difluorobenzene (Surr) 105

Lab Sample ID: 890-4707-A-21-D MSD Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 54206

Prep Batch: 54098 MSD MSD RPD Sample Sample Spike Result Qualifier RPD Analyte Added Result Qualifier Unit %Rec Limits Limit D Benzene <0.00199 U 0.100 0.1191 mg/Kg 119 70 - 130 2 35 Toluene < 0.00199 U 0.100 0.1091 mg/Kg 109 70 - 130 0 35 Ethylbenzene <0.00199 U 0.100 0.1025 mg/Kg 102 70 - 130 3 35 m-Xylene & p-Xylene <0.00398 U 0.201 0.1976 mg/Kg 98 70 - 130 35

0.09868

0.100

MSD MSD Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 85 70 - 130 1,4-Difluorobenzene (Surr) 98 70 - 130

<0.00199

U

Lab Sample ID: MB 880-54102/5-A Client Sample ID: Method Blank

**Matrix: Solid** 

o-Xylene

Analysis Batch: 54206

мв мв Result Qualifier RL D Prepared Dil Fac Analyte Unit Analyzed Benzene <0.00200 0.00200 mg/Kg 05/24/23 15:59 05/26/23 17:47 Toluene <0.00200 U 0.00200 05/24/23 15:59 05/26/23 17:47 mg/Kg Ethylbenzene <0.00200 U 0.00200 mg/Kg 05/24/23 15:59 05/26/23 17:47 m-Xylene & p-Xylene <0.00400 U 0.00400 mg/Kg 05/24/23 15:59 05/26/23 17:47 o-Xylene <0.00200 U 0.00200 mg/Kg 05/24/23 15:59 05/26/23 17:47 Xylenes, Total <0.00400 U 0.00400 mg/Kg 05/24/23 15:59 05/26/23 17:47

MB MB Qualifier Surrogate %Recovery Limits Prepared Analyzed 4-Bromofluorobenzene (Surr) 51 S1-70 - 13005/24/23 15:59 05/26/23 17:47 1,4-Difluorobenzene (Surr) 98 70 - 130 05/24/23 15:59 05/26/23 17:47

Lab Sample ID: LCS 880-54106/1-A Client Sample ID: Lab Control Sample **Matrix: Solid** 

Analysis Batch: 54208

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.1347	*+	mg/Kg		135	70 - 130	
Toluene	0.100	0.1126		mg/Kg		113	70 - 130	
Ethylbenzene	0.100	0.1119		mg/Kg		112	70 - 130	
m-Xylene & p-Xylene	0.200	0.2200		mg/Kg		110	70 - 130	
o-Xylene	0.100	0.09833		mg/Kg		98	70 - 130	

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35

Dil Fac

Prep Type: Total/NA

Prep Batch: 54102

Prep Type: Total/NA Prep Batch: 54106

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

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

Lab Sample ID: LCS 880-54106/1-A

**Matrix: Solid** 

Analysis Batch: 54208

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 54106

LCS LCS

%Recovery Qualifier Surrogate Limits 4-Bromofluorobenzene (Surr) 92 70 - 130 1,4-Difluorobenzene (Surr) 95 70 - 130

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 54106

Lab Sample ID: LCSD 880-54106/2-A

**Matrix: Solid** 

Analysis Batch: 54208

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.1464	*+	mg/Kg		146	70 - 130	8	35
Toluene	0.100	0.1194		mg/Kg		119	70 - 130	6	35
Ethylbenzene	0.100	0.1123		mg/Kg		112	70 - 130	0	35
m-Xylene & p-Xylene	0.200	0.2245		mg/Kg		112	70 - 130	2	35
o-Xylene	0.100	0.1025		mg/Kg		103	70 - 130	4	35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		70 - 130
1,4-Difluorobenzene (Surr)	118		70 - 130

Lab Sample ID: 890-4711-A-1-G MS Client Sample ID: Matrix Spike

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

Analysis Batch: 54208 Prep Batch: 54106

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00201	U *+	0.0998	0.1293		mg/Kg		130	70 - 130	
Toluene	<0.00201	U	0.0998	0.1087		mg/Kg		108	70 - 130	
Ethylbenzene	<0.00201	U	0.0998	0.1031		mg/Kg		103	70 - 130	
m-Xylene & p-Xylene	<0.00402	U	0.200	0.2005		mg/Kg		100	70 - 130	
o-Xylene	<0.00201	U	0.0998	0.08897		mg/Kg		89	70 - 130	

MS MS

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

Lab Sample ID: 890-4711-A-1-H MSD

Released to Imaging: 5/20/2024 3:20:19 PM

**Matrix: Solid** 

Analysis Batch: 54208

Client Sample ID: Matrix Spike Duplicate

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	<0.00201	U *+	0.100	0.1225		mg/Kg		122	70 - 130	5	35
Toluene	<0.00201	U	0.100	0.1038		mg/Kg		103	70 - 130	5	35
Ethylbenzene	<0.00201	U	0.100	0.09474		mg/Kg		95	70 - 130	8	35
m-Xylene & p-Xylene	<0.00402	U	0.200	0.1908		mg/Kg		95	70 - 130	5	35
o-Xvlene	<0.00201	U	0.100	0.08602		ma/Ka		86	70 - 130	3	35

MSD MSD

Surrogate	%Recovery Qualif	ier Limits
4-Bromofluorobenzene (Surr)	93	70 - 130
1,4-Difluorobenzene (Surr)	101	70 - 130

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Prep Type: Total/NA Prep Batch: 54106

Client: Ensolum Job ID: 890-4710-1 SDG: 03D2024189 Project/Site: Vast State 21H

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

Lab Sample ID: MB 880-54080/1-A

**Matrix: Solid** Analysis Batch: 54026 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 54080

	IVID	IVID						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<50.0	U	50.0	mg/Kg		05/24/23 12:56	05/24/23 20:56	1
(GRO)-C6-C10								
Diesel Range Organics (Over	<50.0	U	50.0	mg/Kg		05/24/23 12:56	05/24/23 20:56	1
C10-C28)								
Oll Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		05/24/23 12:56	05/24/23 20:56	1
	МВ	MB						
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	170	S1+	70 - 130			05/24/23 12:56	05/24/23 20:56	1

70 - 130

Lab Sample ID: LCS 880-54080/2-A

**Matrix: Solid** 

o-Terphenyl

Analysis Batch: 54026

Client Sample ID: Lab Control Sample

05/24/23 20:56

05/24/23 12:56

Prep Type: Total/NA

Prep Batch: 54080 %Rec

LCS LCS Spike Added Analyte Result Qualifier Unit D %Rec Limits Gasoline Range Organics 1000 916.4 mg/Kg 92 70 - 130 (GRO)-C6-C10 1000 Diesel Range Organics (Over 954.6 mg/Kg 95 70 - 130C10-C28)

LCS LCS

MD MD

138 S1+

Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	103		70 - 130
o-Terphenyl	79		70 - 130

Lab Sample ID: LCSD 880-54080/3-A

**Matrix: Solid** 

Analysis Batch: 54026

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 54080

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics	1000	853.2		mg/Kg		85	70 - 130	7	20
(GRO)-C6-C10									
Diesel Range Organics (Over	1000	878.9		mg/Kg		88	70 - 130	8	20
C10-C28)									

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	103		70 - 130
o-Terphenyl	79		70 - 130

Lab Sample ID: 890-4709-A-2-C MS

**Matrix: Solid** 

Analysis Batch: 54026

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 54080

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	<49.9	U	996	876.3		mg/Kg		88	70 - 130	
(GRO)-C6-C10										
Diesel Range Organics (Over	<49.9	U	996	788.5		mg/Kg		79	70 - 130	
C10-C28)										

Prep Batch: 54080

Prep Type: Total/NA

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

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

Lab Sample ID: 890-4709-A-2-C MS Client Sample ID: Matrix Spike Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 54026

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	118		70 - 130
o-Terphenyl	85		70 - 130

Lab Sample ID: 890-4709-A-2-D MSD Client Sample ID: Matrix Spike Duplicate

Matrix: Solid

Analysis Batch: 54026									Prep	Batch:	54080
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	996	888.8		mg/Kg		89	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<49.9	U	996	815.5		mg/Kg		82	70 - 130	3	20

MSD MSD Surrogate %Recovery Qualifier Limits 121 70 - 130 1-Chlorooctane 87 70 - 130 o-Terphenyl

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-54056/1-A Client Sample ID: Method Blank **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 54097

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00	mg/Kg			05/25/23 12:17	1

Lab Sample ID: LCS 880-54056/2-A Client Sample ID: Lab Control Sample **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 54097

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	 250	258.5		ma/Ka		103	90 - 110	 

Lab Sample ID: LCSD 880-54056/3-A Client Sample ID: Lab Control Sample Dup **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 54097

	\$	Spike	LCSD	LCSD				%Rec		RPD
Analyte	A	dded	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride		250	257.5		mg/Kg		103	90 - 110		20

Lab Sample ID: 890-4708-A-1-B MS Client Sample ID: Matrix Spike **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 54097

Analysis Batom 64007	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	53.3		249	282.6		mg/Kg		92	90 - 110	

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H

SDG: 03D2024189

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-4708-A-1-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 54097

١		Sample	Sample	Spike	MSD	MSD				%Rec		RPD
	Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
	Chloride	53.3		249	280.7		mg/Kg		91	90 - 110	1	20

Lab Sample ID: 890-4709-A-7-B MS Client Sample ID: Matrix Spike

**Prep Type: Soluble Matrix: Solid** 

Analysis Batch: 54097

	Sample Sample	Spike	MS MS				%Rec	
Analyte	Result Qualifier	Added	Result Qualifier	Unit	D	%Rec	Limits	
Chloride	11100 F1	4950	17090 F1	mg/Kg		121	90 - 110	

Lab Sample ID: 890-4709-A-7-C MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 54097

MSD MSD %Rec RPD Sample Sample Spike Limit Analyte Result Qualifier Added Result Qualifier Unit Limits **RPD** Chloride 11100 F1 4950 16850 F1 116 90 - 110 mg/Kg

# **QC Association Summary**

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

**GC VOA** 

Prep Batch: 54083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-8	SS08	Total/NA	Solid	5035	
MB 880-54083/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-54083/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-54083/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

#### Prep Batch: 54098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	5035	
890-4710-2	SS02	Total/NA	Solid	5035	
890-4710-3	SS03	Total/NA	Solid	5035	
890-4710-4	SS04	Total/NA	Solid	5035	
890-4710-5	SS05	Total/NA	Solid	5035	
890-4710-6	SS06	Total/NA	Solid	5035	
890-4710-7	SS07	Total/NA	Solid	5035	
MB 880-54098/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-54098/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-54098/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4707-A-21-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4707-A-21-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

#### Prep Batch: 54102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-54102/5-A	Method Blank	Total/NA	Solid	5035	

#### Prep Batch: 54106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 880-54106/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-54106/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4711-A-1-G MS	Matrix Spike	Total/NA	Solid	5035	
890-4711-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

#### Analysis Batch: 54206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	8021B	54098
890-4710-2	SS02	Total/NA	Solid	8021B	54098
890-4710-3	SS03	Total/NA	Solid	8021B	54098
890-4710-4	SS04	Total/NA	Solid	8021B	54098
890-4710-5	SS05	Total/NA	Solid	8021B	54098
890-4710-6	SS06	Total/NA	Solid	8021B	54098
890-4710-7	SS07	Total/NA	Solid	8021B	54098
MB 880-54098/5-A	Method Blank	Total/NA	Solid	8021B	54098
MB 880-54102/5-A	Method Blank	Total/NA	Solid	8021B	54102
LCS 880-54098/1-A	Lab Control Sample	Total/NA	Solid	8021B	54098
LCSD 880-54098/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	54098
890-4707-A-21-C MS	Matrix Spike	Total/NA	Solid	8021B	54098
890-4707-A-21-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	54098

#### Analysis Batch: 54208

Lab Sample ID	Client Sample ID SS08 Method Blank	Prep Type	Matrix	Method	Prep Batch
890-4710-8	SS08	Total/NA	Solid	8021B	54083
MB 880-54083/5-A	Method Blank	Total/NA	Solid	8021B	54083

### **QC Association Summary**

Client: Ensolum Job ID: 890-4710-1
Project/Site: Vast State 21H SDG: 03D2024189

**GC VOA (Continued)** 

### Analysis Batch: 54208 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 880-54083/1-A	Lab Control Sample	Total/NA	Solid	8021B	54083
LCS 880-54106/1-A	Lab Control Sample	Total/NA	Solid	8021B	54106
LCSD 880-54083/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	54083
LCSD 880-54106/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	54106
890-4711-A-1-G MS	Matrix Spike	Total/NA	Solid	8021B	54106
890-4711-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	54106

### Analysis Batch: 54349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	Total BTEX	-
890-4710-2	SS02	Total/NA	Solid	Total BTEX	
890-4710-3	SS03	Total/NA	Solid	Total BTEX	
890-4710-4	SS04	Total/NA	Solid	Total BTEX	
890-4710-5	SS05	Total/NA	Solid	Total BTEX	
890-4710-6	SS06	Total/NA	Solid	Total BTEX	
890-4710-7	SS07	Total/NA	Solid	Total BTEX	
890-4710-8	SS08	Total/NA	Solid	Total BTEX	

**GC Semi VOA** 

#### Analysis Batch: 54026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	8015B NM	54080
890-4710-2	SS02	Total/NA	Solid	8015B NM	54080
890-4710-3	SS03	Total/NA	Solid	8015B NM	54080
890-4710-4	SS04	Total/NA	Solid	8015B NM	54080
890-4710-5	SS05	Total/NA	Solid	8015B NM	54080
890-4710-6	SS06	Total/NA	Solid	8015B NM	54080
890-4710-7	SS07	Total/NA	Solid	8015B NM	54080
890-4710-8	SS08	Total/NA	Solid	8015B NM	54080
MB 880-54080/1-A	Method Blank	Total/NA	Solid	8015B NM	54080
LCS 880-54080/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	54080
LCSD 880-54080/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	54080
890-4709-A-2-C MS	Matrix Spike	Total/NA	Solid	8015B NM	54080
890-4709-A-2-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	54080

Prep Batch: 54080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	8015NM Prep	
890-4710-2	SS02	Total/NA	Solid	8015NM Prep	
890-4710-3	SS03	Total/NA	Solid	8015NM Prep	
890-4710-4	SS04	Total/NA	Solid	8015NM Prep	
890-4710-5	SS05	Total/NA	Solid	8015NM Prep	
890-4710-6	SS06	Total/NA	Solid	8015NM Prep	
890-4710-7	SS07	Total/NA	Solid	8015NM Prep	
890-4710-8	SS08	Total/NA	Solid	8015NM Prep	
MB 880-54080/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-54080/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-54080/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4709-A-2-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4709-A-2-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

# **QC Association Summary**

Client: Ensolum

Project/Site: Vast State 21H

Job ID: 890-4710-1 SDG: 03D2024189

### GC Semi VOA

### Analysis Batch: 54164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Total/NA	Solid	8015 NM	
890-4710-2	SS02	Total/NA	Solid	8015 NM	
890-4710-3	SS03	Total/NA	Solid	8015 NM	
890-4710-4	SS04	Total/NA	Solid	8015 NM	
890-4710-5	SS05	Total/NA	Solid	8015 NM	
890-4710-6	SS06	Total/NA	Solid	8015 NM	
890-4710-7	SS07	Total/NA	Solid	8015 NM	
890-4710-8	SS08	Total/NA	Solid	8015 NM	

HPLC/IC

#### Leach Batch: 54056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
890-4710-1	SS01	Soluble	Solid	DI Leach	
890-4710-2	SS02	Soluble	Solid	DI Leach	
890-4710-3	SS03	Soluble	Solid	DI Leach	
890-4710-4	SS04	Soluble	Solid	DI Leach	
890-4710-5	SS05	Soluble	Solid	DI Leach	
890-4710-6	SS06	Soluble	Solid	DI Leach	
890-4710-7	SS07	Soluble	Solid	DI Leach	
890-4710-8	SS08	Soluble	Solid	DI Leach	
MB 880-54056/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-54056/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-54056/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4708-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-4708-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
890-4709-A-7-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-4709-A-7-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 54097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4710-1	SS01	Soluble	Solid	300.0	54056
890-4710-2	SS02	Soluble	Solid	300.0	54056
890-4710-3	SS03	Soluble	Solid	300.0	54056
890-4710-4	SS04	Soluble	Solid	300.0	54056
890-4710-5	SS05	Soluble	Solid	300.0	54056
890-4710-6	SS06	Soluble	Solid	300.0	54056
890-4710-7	SS07	Soluble	Solid	300.0	54056
890-4710-8	SS08	Soluble	Solid	300.0	54056
MB 880-54056/1-A	Method Blank	Soluble	Solid	300.0	54056
LCS 880-54056/2-A	Lab Control Sample	Soluble	Solid	300.0	54056
LCSD 880-54056/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	54056
890-4708-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	54056
890-4708-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	54056
890-4709-A-7-B MS	Matrix Spike	Soluble	Solid	300.0	54056
890-4709-A-7-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	54056

Date Collected: 05/22/23 11:30

Date Received: 05/23/23 08:34

Job ID: 890-4710-1 SDG: 03D2024189

**Client Sample ID: SS01** Lab Sample ID: 890-4710-1

**Matrix: Solid** 

Batch Batch Dil Initial Final Batch Prepared Prep Type Туре Method Run Factor Amount Amount Number or Analyzed Analyst Lab 5035 54098 Total/NA Prep 5.02 g 5 mL 05/24/23 15:24 MNR **EET MID** 8021B Total/NA Analysis 1 5 mL 5 mL 54206 05/27/23 17:08 MNR **EET MID** Total/NA Analysis Total BTEX 54349 05/31/23 10:19 ΑJ **EET MID** Total/NA 8015 NM **EET MID** Analysis 1 54164 05/25/23 11:47 SM Total/NA 8015NM Prep 54080 05/24/23 12:56 EET MID Prep 10.02 g 10 mL A.I Total/NA Analysis 8015B NM 1 uL 1 uL 54026 05/25/23 00:52 SM **EET MID** Soluble 4.97 g 50 mL 54056 05/24/23 11:18 KS Leach DI Leach FFT MID Soluble Analysis 300.0 50 mL 50 mL 54097 05/25/23 15:11 СН **EET MID** 

**Client Sample ID: SS02** Lab Sample ID: 890-4710-2

Date Collected: 05/22/23 11:45 **Matrix: Solid** 

Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 17:35	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 01:14	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	54056	05/24/23 11:18	KS	EET MIC
Soluble	Analysis	300.0		1	50 mL	50 mL	54097	05/25/23 15:17	CH	EET MID

Lab Sample ID: 890-4710-3 **Client Sample ID: SS03** 

Date Collected: 05/22/23 11:40 **Matrix: Solid** Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 18:02	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 01:35	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	54097	05/25/23 15:49	CH	EET MID

Lab Sample ID: 890-4710-4 **Client Sample ID: SS04** Date Collected: 05/22/23 11:05 **Matrix: Solid** 

Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 18:29	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID

Client: Ensolum Job ID: 890-4710-1 SDG: 03D2024189 Project/Site: Vast State 21H

**Client Sample ID: SS04** Lab Sample ID: 890-4710-4

Date Collected: 05/22/23 11:05 Matrix: Solid Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 01:56	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	54097	05/25/23 15:55	СН	EET MID

**Client Sample ID: SS05** Lab Sample ID: 890-4710-5

Date Collected: 05/22/23 11:10 **Matrix: Solid** 

Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 18:56	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 02:39	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	54097	05/25/23 16:00	CH	EET MID

**Client Sample ID: SS06** Lab Sample ID: 890-4710-6

Date Collected: 05/22/23 11:15 Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 19:23	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 03:00	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		10	50 mL	50 mL	54097	05/25/23 16:06	CH	EET MID

**Client Sample ID: SS07** Lab Sample ID: 890-4710-7

Date Collected: 05/22/23 11:20 Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	54098	05/24/23 15:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54206	05/27/23 19:50	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/31/23 10:19	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 03:21	SM	EET MID

**Eurofins Carlsbad** 

**Matrix: Solid** 

**Matrix: Solid** 

Released to Imaging: 5/20/2024 3:20:19 PM

### **Lab Chronicle**

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

**Client Sample ID: SS07** Lab Sample ID: 890-4710-7

Matrix: Solid

Date Collected: 05/22/23 11:20 Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.98 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	54097	05/25/23 16:11	CH	EET MID

**Client Sample ID: SS08** Lab Sample ID: 890-4710-8

Date Collected: 05/22/23 11:25 **Matrix: Solid** 

Date Received: 05/23/23 08:34

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	54083	05/24/23 13:32	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54208	05/26/23 20:29	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			54349	05/30/23 09:08	AJ	EET MID
Total/NA	Analysis	8015 NM		1			54164	05/25/23 11:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	54080	05/24/23 12:56	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	54026	05/25/23 06:35	SM	EET MID
Soluble	Leach	DI Leach			4.96 g	50 mL	54056	05/24/23 11:18	KS	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	54097	05/25/23 16:16	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 Job ID: 890-4710-1 Project/Site: Vast State 21H

SDG: 03D2024189

### **Laboratory: Eurofins Midland**

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

Authority **Identification Number Expiration Date** Program NELAP T104704400-22-25 06-30-23 Texas 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 Total TPH Solid Total BTEX Solid Total BTEX

## **Method Summary**

Client: Ensolum Job ID: 890-4710-1 Project/Site: Vast State 21H SDG: 03D2024189

**Method Description** Protocol

Metrioa	Method Description	FIOLOCOI	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	EPA	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

EPA = US Environmental Protection Agency

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: Vast State 21H

Job ID: 890-4710-1

SDG: 03D2024189

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4710-1	SS01	Solid	05/22/23 11:30	05/23/23 08:34	0.5'
890-4710-2	SS02	Solid	05/22/23 11:45	05/23/23 08:34	0.5'
890-4710-3	SS03	Solid	05/22/23 11:40	05/23/23 08:34	0.5'
890-4710-4	SS04	Solid	05/22/23 11:05	05/23/23 08:34	0.5'
890-4710-5	SS05	Solid	05/22/23 11:10	05/23/23 08:34	0.5'
890-4710-6	SS06	Solid	05/22/23 11:15	05/23/23 08:34	0.5'
890-4710-7	SS07	Solid	05/22/23 11:20	05/23/23 08:34	0.5'
890-4710-8	SS08	Solid	05/22/23 11:25	05/23/23 08:34	0.5'

eurofins

**Environment Testing** 

Sampler's Name:

Ronni Hayes

32.0368619, -103.5894039

Due Date:

TAT starts the day received by the lab, if received by 4:30pm

Rush

Pres.

ANALYSIS REQUEST

HCL: HC H<sub>2</sub>SO<sub>4</sub>: H<sub>2</sub>

MeOH: Me HNO<sub>3</sub>: HN NaOH: Na

Cool: Coo None: NO

**Preservative Codes** 

DI Water: H<sub>2</sub>O

**Turn Around** 

Email: hgreen@ensolum.com

City, State ZIP: Address:

Cost Center #:

Project Location:

Project Number: Project Name:

> Vast State 21H 432-557-8895 Carlsbad, NM 88220

03D2024189

City, State ZIP:

Address:

3122 National Parks Hwy

Ensolum LLC

Project Manager: Company Name:

Hadlie Green

Bill to: (if different) Company Name:

Ensolum LLC Kalei Jennings

13 14

# **Chain of Custody**

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

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-3334	Work Order No:	
1296		
3199		
	www.xenco.com Page of (	
	Work Order Comments	
	Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐	
	State of Project:	
	Reporting: Level II  Level III  PST/UST TRRP Level IV	
	Deliverables: FDD ADaPT Other:	

Revised Date: 08/25/2020 Rev. 2020 2	20				1				0
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Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	D		Received by: (Signature)	Received	ature)	Relinquished by: (Signature)
	I heses are due to circumstances beyond the control These terms will be enforced unless previously negotiated.		losses or expenses in bmitted to Eurofins X	ity for any sample su	y responsibil f \$5 for each	shall not assume an roject and a charge c	it of samples and applied to each p	liable only for the cos arge of \$85.00 will be	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 cilent if stoff 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.
	standard terms and conditions	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	pany to Eurofins Xen	client con	e order from	itutes a valid purchas	of samples const	it and relinquishment	Notice: Signature of this docume
7470 / 7471	g TI U Hg: 1631/245.1/7470/7471	Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U	b As Ba Be Co	CRA S	3010: 8R	TCLP / SPLP 6010: 8RCRA	zed	al(s) to be analy:	Circle Method(s) and Metal(s) to be analyzed
Sn U V Zn	Fe Pb Mg Mn Mo Ni K Se Ag SiO <sub>2</sub> Na Sr Tl Sn U V Zn	B Cd Ca Cr Co Cu Fe Pb Mg Mn	Ba Be	Al Sb As	Texas 11	8RCRA 13PPM Texas 11	8 <del>8</del>	200.8 / 6020:	Total 200.7 / 6010
			XXX	-	Grab	1125 0.5	5/22/2023	on	8088
			×	-	Grab	1120 0.5'	5/22/2023	S	SS07
			×		Grab	1115 0.5'	5/22/2023	S	SS06
			×		Grab	1110 0.5'	5/22/2023	S	SS05
			×		Grab	1105 0.5'	5/22/2023	S	SS04
			×	_	Grab	1140 0.5'	5/22/2023	S	SS03
			×	-	Grab	1145 0.5'	5/22/2023	S	SS02
			×	-	Grab	1130 0.5'	5/22/2023	S	SS01
Sample Comments	<u>د</u>		BTEX TPH	# of	Grab/ Comp	Time Depth	Date Sampled	on Matrix	Sample Identification
NaCH+Ascorbic Acid: SAPC	NaCH+A		RIDE		2.0	nperature:	Corrected Temperature		Total Containers:
Zn Acetate+NaOH: Zn	Zn Aceta	Coo Conain of Custody	S (E		3.	Reading:	Temperature Reading:	Yes No W/A	Sample Custody Seals:
NacC <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub>		PA:		やる	ctor:	Correction Factor	Yes No (NA	Cooler Custody Seals:
NABIS	NaHSO4: NABIS		300	_	W-007	豆丈	Thermometer ID:	Yes No	Samples Received Intact:
4	H <sub>3</sub> PO <sub>4</sub> : HP		).0)	nete	No	Wet Ice: Xes	No No	Temp Blank:	SAMPLE RECEIPT
2 14001.140	12004			ers	y 4. Jupin	the lab, il received by 4.30piii	)		Cost Center #:

## **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4710-1

 SDG Number: 03D2024189

Login Number: 4710 List Source: Eurofins Carlsbad

List Number: 1

Creator: Stutzman, Amanda

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: 890-4710-1 SDG Number: 03D2024189

**List Source: Eurofins Midland** 

List Number: 2 Creator: Rodriguez, Leticia

Login Number: 4710

List Creation: 05/24/23 10:58 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 ampered 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	
s 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	

Released to Imaging: 5/20/2024 3:20:19 PM

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St.

Suite 400

Midland, Texas 79701

Generated 6/19/2023 3:22:03 PM

# **JOB DESCRIPTION**

Vast State 21H SDG NUMBER 03D2024189

# **JOB NUMBER**

890-4809-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220



# **Eurofins Carlsbad**

## **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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 6/19/2023 3:22:03 PM

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

Client: Ensolum
Project/Site: Vast State 21H

Laboratory Job ID: 890-4809-1
SDG: 03D2024189

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#### **Definitions/Glossary**

Job ID: 890-4809-1 Client: Ensolum Project/Site: Vast State 21H

SDG: 03D2024189

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** MS and/or MSD recovery exceeds control limits.

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.

S1-Surrogate recovery exceeds control limits, low biased. S1+ Surrogate recovery exceeds control limits, high biased. 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 Contains No Free Liquid **CNF** 

Duplicate Error Ratio (normalized absolute difference) DER

Dil Fac Dilution Factor

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) Limit of Quantitation (DoD/DOE) LOQ

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

Method Detection Limit MDL ML Minimum Level (Dioxin) MPN Most Probable Number MOI 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

**Practical Quantitation Limit PQL** 

**PRES** Presumptive **Quality Control** QC

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

#### Case Narrative

Client: Ensolum

Project/Site: Vast State 21H

Job ID: 890-4809-1

SDG: 03D2024189

Job ID: 890-4809-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4809-1

#### Receipt

The samples were received on 6/9/2023 3:30 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 0.8°C

#### **Receipt Exceptions**

The following samples were received and analyzed from an unpreserved bulk soil jar: SS03A (890-4809-1), BH01A (890-4809-2), BH01D (890-4809-3), BH01E (890-4809-4), BH02A (890-4809-5), BH02D (890-4809-6), BH03A (890-4809-7) and BH03B (890-4809-8).

#### GC VOA

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-55659 recovered below the lower control limit for Ethylbenzene, m-Xylene & p-Xylene and o-Xylene. An acceptable CCV was ran within the 12 hour window, therefore the data has been qualified and reported. The associated sample is impacted: (CCV 880-55659/64).

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-55616 and analytical batch 880-55659 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is 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 880-55423 and analytical batch 880-55544 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8015MOD NM: Surrogate recovery for the following samples were outside control limits: SS03A (890-4809-1) and (MB 880-55423/1-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 Job ID: 890-4809-1 SDG: 03D2024189 Project/Site: Vast State 21H

Client Sample ID: SS03A Lab Sample ID: 890-4809-1

Date Collected: 06/08/23 11:00 Matrix: Solid Date Received: 06/09/23 15:30

Sample Depth: 0.5

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Benzene	<0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 15:37	
Toluene	<0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 15:37	
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 15:37	
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		06/15/23 13:52	06/17/23 15:37	
o-Xylene	<0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 15:37	
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		06/15/23 13:52	06/17/23 15:37	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	97		70 - 130			06/15/23 13:52	06/17/23 15:37	
1,4-Difluorobenzene (Surr)	99		70 - 130			06/15/23 13:52	06/17/23 15:37	
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Total BTEX	<0.00398	U	0.00398	mg/Kg			06/19/23 15:39	
Mothod: SW946 9045 NM Dioce	I Panga Organ	ice (DBO) (	CC)					
Method: SW846 8015 NM - Diese Analyte	•	ics (DRO) ( Qualifier	GC) RL	Unit	D	Prepared	Analyzed	Dil Fa
	•	Qualifier	•	Unit mg/Kg	<u>D</u>	Prepared	Analyzed 06/16/23 15:39	
Analyte Total TPH	Result 27.9	Qualifier	RL 49.9		<u>D</u>	Prepared		Dil Fa
Analyte	Result 27.9 sel Range Orga	Qualifier	RL 49.9		<u>D</u>	Prepared Prepared		
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics	Result 27.9 sel Range Orga	Qualifier  nics (DRO) Qualifier	RL 49.9	mg/Kg			06/16/23 15:39	
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	Result 27.9  sel Range Orga Result	Qualifier  nics (DRO) Qualifier U	RL 49.9 (GC)	mg/Kg		Prepared	06/16/23 15:39  Analyzed	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10	Result 27.9  sel Range Orga Result <a href="#">&lt;49.9</a>	Qualifier  nics (DRO)  Qualifier  U	RL 49.9  (GC) RL 49.9	mg/Kg  Unit  mg/Kg		Prepared 06/13/23 13:17	06/16/23 15:39  Analyzed  06/16/23 02:44	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result 27.9  sel Range Orga Result <49.9  27.9	Qualifier  nics (DRO) Qualifier U	RL 49.9  (GC) RL 49.9  49.9	mg/Kg  Unit  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17	06/16/23 15:39  Analyzed 06/16/23 02:44 06/16/23 02:44	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	Result 27.9  sel Range Orga	Qualifier  nics (DRO) Qualifier  U	RL 49.9  (GC)  RL 49.9  49.9	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17	Analyzed 06/16/23 02:44 06/16/23 02:44	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH	Result 27.9  sel Range Orga Result <49.9  27.9  27.9  27.9	Qualifier  nics (DRO) Qualifier  U	RL 49.9 (GC) RL 49.9 49.9 49.9	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17	Analyzed 06/16/23 02:44 06/16/23 02:44 06/16/23 02:44 06/16/23 02:44	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH  Surrogate 1-Chlorooctane	Result   27.9	Qualifier  nics (DRO) Qualifier  U	RL 49.9 (GC) RL 49.9 49.9 49.9 Limits	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 Prepared	Analyzed 06/16/23 15:39  Analyzed 06/16/23 02:44 06/16/23 02:44 06/16/23 02:44 Analyzed	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH  Surrogate	Result   27.9	Qualifier  nics (DRO) Qualifier  U	RL 49.9 (GC) RL 49.9 49.9 49.9 Limits 70 - 130	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17  Prepared 06/13/23 13:17	Analyzed 06/16/23 02:44 06/16/23 02:44 06/16/23 02:44 06/16/23 02:44 Analyzed 06/16/23 02:44	Dil Fa

Client Sample ID: BH01A Lab Sample ID: 890-4809-2

Result Qualifier

159

Date Collected: 06/08/23 11:05 **Matrix: Solid** 

RL

4.95

Unit

mg/Kg

D

Prepared

Analyzed

06/14/23 15:22

Dil Fac

Date Received: 06/09/23 15:30

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Sample Depth: 1

Analyte

Chloride

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 15:58	1
Toluene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 15:58	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 15:58	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 15:58	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 15:58	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 15:58	1

Job ID: 890-4809-1

Matrix: Solid

Lab Sample ID: 890-4809-2

Lab Sample ID: 890-4809-3

Matrix: Solid

Client: Ensolum SDG: 03D2024189 Project/Site: Vast State 21H

Client Sample ID: BH01A

Date Collected: 06/08/23 11:05 Date Received: 06/09/23 15:30

Sample Depth: 1

Surrogate	%Recovery Qual	lifier Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103	70 - 130	06/15/23 13:52	06/17/23 15:58	1
1,4-Difluorobenzene (Surr)	103	70 - 130	06/15/23 13:52	06/17/23 15:58	1

**Method: TAL SOP Total BTEX - Total BTEX Calculation** 

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/Kg			06/19/23 15:39	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			06/16/23 15:39	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		06/13/23 13:17	06/16/23 04:12	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 04:12	1
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 04:12	1
Total TPH	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 04:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	121		70 - 130	06/13/23 13:17	06/16/23 04:12	1
o-Terphenyl	106		70 - 130	06/13/23 13:17	06/16/23 04:12	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3670		24.9	mg/Kg			06/14/23 15:28	5

Client Sample ID: BH01D

Date Collected: 06/08/23 11:20 Date Received: 06/09/23 15:30

Sample Depth: 4

e Organic Comp	ounus (GC)	)					
Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
<0.00399	U	0.00399	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
<0.00399	U	0.00399	mg/Kg		06/15/23 13:52	06/17/23 17:50	1
%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
84		70 - 130			06/15/23 13:52	06/17/23 17:50	1
103		70 - 130			06/15/23 13:52	06/17/23 17:50	1
	Result   <0.00200   <0.00200   <0.00200   <0.00200   <0.00399   <0.00200   <0.00399   <0.00399	Result   Qualifier	<0.00200	Result         Qualifier         RL         Unit           <0.00200	Result         Qualifier         RL         Unit         D           <0.00200	Result         Qualifier         RL         Unit         D         Prepared           <0.00200	Result         Qualifier         RL         Unit         D         Prepared         Analyzed           <0.00200

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			06/19/23 15:39	1

Job ID: 890-4809-1 SDG: 03D2024189

Project/Site: Vast State 21H

Client Sample ID: BH01D

Lat

Lab Sample ID: 890-4809-3

Date Collected: 06/08/23 11:20

Date Received: 06/09/23 15:30

Matrix: Solid

Sample Depth: 4

Client: Ensolum

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			06/16/23 15:39	1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8	mg/Kg		06/13/23 13:17	06/16/23 04:34	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		06/13/23 13:17	06/16/23 04:34	1
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		06/13/23 13:17	06/16/23 04:34	1
Total TPH	<49.8	U	49.8	mg/Kg		06/13/23 13:17	06/16/23 04:34	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	110		70 - 130			06/13/23 13:17	06/16/23 04:34	1
o-Terphenyl	100		70 - 130			06/13/23 13:17	06/16/23 04:34	1

Method: EPA 300.0 - Anions, Ion Ch	nromatography	/ - Soluble					
Analyte	Result Q	ualifier RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1240	5.04	mg/Kg			06/14/23 15:34	1

Client Sample ID: BH01E Lab Sample ID: 890-4809-4

Date Collected: 06/09/23 12:00
Date Received: 06/09/23 15:30

Sample Depth: 5

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
Toluene	<0.00198	U	0.00198	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
m-Xylene & p-Xylene	<0.00397	U	0.00397	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
Xylenes, Total	<0.00397	U	0.00397	mg/Kg		06/15/23 13:52	06/17/23 18:10	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130			06/15/23 13:52	06/17/23 18:10	1
1,4-Difluorobenzene (Surr)	102		70 - 130			06/15/23 13:52	06/17/23 18:10	1
Method: TAL SOP Total BTEX - 1 Analyte	Total BTEX Calc	Qualifier	RL	Unit	<u>D</u>	Prepared	Analyzed	
Method: TAL SOP Total BTEX - 1 Analyte Total BTEX	Total BTEX Cald Result <0.00397	<b>Qualifier</b> U	RL 0.00397	<b>Unit</b> mg/Kg	<u>D</u>			
Method: TAL SOP Total BTEX - TAL SOP Total BTEX - TAL SOP Total BTEX  Method: SW846 8015 NM - Diese	Total BTEX Calc Result <0.00397 el Range Organ	Qualifier U	RL 0.00397	mg/Kg		Prepared	Analyzed 06/19/23 15:39	Dil Fac
Method: TAL SOP Total BTEX - 1 Analyte Total BTEX	Total BTEX Calc Result <0.00397 el Range Organ	Qualifier U ics (DRO) (Control Qualifier	RL 0.00397		<u>D</u>		Analyzed	Dil Fac
Method: TAL SOP Total BTEX - TAL SOP Total BTEX - TOTAL BTEX  Method: SW846 8015 NM - Diese Analyte  Total TPH	Control   Cont	Qualifier U ics (DRO) ( Qualifier U	RL 0.00397  GC) RL 49.8	mg/Kg		Prepared	Analyzed 06/19/23 15:39 Analyzed	Dil Fac
Method: TAL SOP Total BTEX - TAL Analyte Total BTEX  Method: SW846 8015 NM - Diese Analyte	Total BTEX Calc Result <0.00397 el Range Organ Result <49.8 sel Range Orga	Qualifier U ics (DRO) ( Qualifier U	RL 0.00397  GC) RL 49.8	mg/Kg		Prepared	Analyzed 06/19/23 15:39 Analyzed	
Method: TAL SOP Total BTEX - TANAINTE Total BTEX  Method: SW846 8015 NM - Diese Analyte Total TPH  Method: SW846 8015B NM - Diese	Total BTEX Calc Result <0.00397 el Range Organ Result <49.8 sel Range Orga	Qualifier U  ics (DRO) (Compared to the property of the proper	RL 0.00397  GC)  RL 49.8	mg/Kg  Unit  mg/Kg	<u>D</u>	Prepared Prepared	Analyzed 06/19/23 15:39  Analyzed 06/16/23 15:39	Dil Fac
Method: TAL SOP Total BTEX - TANAL SOP Total BTEX - TOTAL BTEX  Method: SW846 8015 NM - Diese Analyte Total TPH  Method: SW846 8015B NM - Diese Analyte Gasoline Range Organics	Fotal BTEX Calc Result <0.00397  El Range Organ Result <49.8  sel Range Orga Result Result Result Result Result Result Result	Qualifier U  ics (DRO) (Compared to the property of the proper	RL 0.00397  GC)  RL 49.8  (GC)  RL	mg/Kg  Unit  mg/Kg  Unit	<u>D</u>	Prepared  Prepared	Analyzed 06/19/23 15:39  Analyzed 06/16/23 15:39  Analyzed	Dil Fac

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Matrix: Solid

Job ID: 890-4809-1 SDG: 03D2024189

Project/Site: Vast State 21H SDG: 03I

Client Sample ID: BH01E

Date Collected: 06/09/23 12:00

Matrix: Solid

Date Received: 06/09/23 15:30

Sample Depth: 5

Client: Ensolum

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	Ū	49.8	mg/Kg		06/13/23 13:17	06/16/23 04:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	116		70 - 130			06/13/23 13:17	06/16/23 04:56	1
o-Terphenyl	103		70 - 130			06/13/23 13:17	06/16/23 04:56	1

Client Sample ID: BH02A

Date Collected: 06/08/23 12:20

Lab Sample ID: 890-4809-5

Matrix: Solid

4.97

mg/Kg

404

Date Collected: 06/08/23 12:20 Date Received: 06/09/23 15:30

Sample Depth: 1

Chloride

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
Toluene	<0.00201	U	0.00201	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		06/15/23 13:52	06/17/23 18:31	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130			06/15/23 13:52	06/17/23 18:31	1
1,4-Difluorobenzene (Surr)	103		70 - 130			06/15/23 13:52	06/17/23 18:31	1
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402	mg/Kg			06/19/23 15:39	1
•								
Method: SW846 8015 NM - Diese	el Range Organ	ics (DRO) (	GC)					
Method: SW846 8015 NM - Diese Analyte	•	ics (DRO) ( Qualifier	GC) RL	Unit	D	Prepared	Analyzed	Dil Fac
	•	, , ,	*	Unit mg/Kg	<u>D</u>	Prepared	<b>Analyzed</b> 06/16/23 15:39	Dil Fac
Analyte Total TPH	Result 156	Qualifier	<b>RL</b> 50.0		<u>D</u>	Prepared		Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies	Result 156 sel Range Orga	Qualifier	<b>RL</b> 50.0		<u>D</u>	Prepared Prepared		Dil Fac  Dil Fac
Analyte Total TPH Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics	Result 156 sel Range Orga	Qualifier  nics (DRO) Qualifier	RL 50.0	mg/Kg			06/16/23 15:39	1
Analyte Total TPH Method: SW846 8015B NM - Dies Analyte	Result 156 sel Range Orga Result	Qualifier  nics (DRO) Qualifier	RL 50.0 (GC)	mg/Kg		Prepared	06/16/23 15:39  Analyzed	1 Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	Result 156 sel Range Orga Result <50.0	Qualifier  nics (DRO) Qualifier	RL 50.0 (GC) RL 50.0	mg/Kg  Unit  mg/Kg		Prepared 06/13/23 13:17	06/16/23 15:39  Analyzed  06/16/23 05:18	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result 156 sel Range Orga Result <50.0	Qualifier  nics (DRO)  Qualifier  U	RL 50.0 (GC) RL 50.0	mg/Kg  Unit  mg/Kg		Prepared 06/13/23 13:17	06/16/23 15:39  Analyzed  06/16/23 05:18	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	Result 156 sel Range Orga Result <50.0 156	Qualifier  nics (DRO)  Qualifier  U	RL 50.0  (GC)  RL 50.0  50.0	mg/Kg  Unit  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17	06/16/23 15:39  Analyzed 06/16/23 05:18 06/16/23 05:18	1 Dil Fac 1
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result   156	Qualifier  nics (DRO)  Qualifier  U	RL 50.0 (GC) RL 50.0 50.0	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17	06/16/23 15:39  Analyzed 06/16/23 05:18 06/16/23 05:18	1 Dil Fac 1 1 1
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH	Result   156	Qualifier  nics (DRO)  Qualifier  U	RL 50.0 (GC) RL 50.0 50.0 50.0	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg		Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17	Analyzed 06/16/23 05:18 06/16/23 05:18 06/16/23 05:18 06/16/23 05:18	1 Dil Fac 1 1 1 1 1

**Eurofins Carlsbad** 

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06/14/23 15:39

12

Client: Ensolum Project/Site: Vast State 21H

Job ID: 890-4809-1 SDG: 03D2024189

Client Sample ID: BH02A

Lab Sample ID: 890-4809-5

Date Collected: 06/08/23 12:20 Date Received: 06/09/23 15:30

Matrix: Solid

Sample Depth: 1

Meth	od: EPA 300.0 - Anions, Ion Chrom	atograp	hy - Soluble	•					
Analyt	e	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chlor	de	1560		25.0	mg/Kg	]		06/14/23 15:45	5

Client Sample ID: BH02D Lab Sample ID: 890-4809-6

Date Collected: 06/09/23 12:10 **Matrix: Solid** 

Date Received: 06/09/23 15:30

Sample Depth: 4

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
Toluene	<0.00202	U	0.00202	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
m-Xylene & p-Xylene	<0.00404	U	0.00404	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
Xylenes, Total	<0.00404	U	0.00404	mg/Kg		06/15/23 13:52	06/17/23 18:51	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	87		70 - 130			06/15/23 13:52	06/17/23 18:51	1
1,4-Difluorobenzene (Surr)	102		70 - 130			06/15/23 13:52	06/17/23 18:51	1
Method: TAL SOP Total BTEX - T	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00404	U	0.00404	mg/Kg			06/19/23 15:39	1
Method: SW846 8015 NM - Diese Analyte Total TPH		Qualifier	GC)  RL  49.9	Unitmg/Kg	<u>D</u>	Prepared	Analyzed 06/16/23 15:39	Dil Fac
-	10.0	· ·	10.0	g/i.tg			00/10/20 10:00	
Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)	(GC)					
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 05:39	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 05:39	1
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 05:39	1
Total TPH	<49.9	U	49.9	mg/Kg		06/13/23 13:17	06/16/23 05:39	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
	108		70 - 130			06/13/23 13:17	06/16/23 05:39	1
1-Chlorooctane	100							

**Eurofins Carlsbad** 

Analyzed

06/14/23 15:51

RL

5.00

Unit

mg/Kg

Prepared

Result Qualifier

246

Dil Fac

Analyte

Chloride

Matrix: Solid

Lab Sample ID: 890-4809-7

# **Client Sample Results**

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

Client Sample ID: BH03A

Date Collected: 06/09/23 12:25 Date Received: 06/09/23 15:30

Sample Depth: 1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 19:12	
Toluene	< 0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 19:12	1
Ethylbenzene	< 0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 19:12	,
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		06/15/23 13:52	06/17/23 19:12	
o-Xylene	< 0.00199	U	0.00199	mg/Kg		06/15/23 13:52	06/17/23 19:12	
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		06/15/23 13:52	06/17/23 19:12	•
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	86		70 - 130			06/15/23 13:52	06/17/23 19:12	1
1,4-Difluorobenzene (Surr)	99		70 - 130			06/15/23 13:52	06/17/23 19:12	1
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			06/19/23 15:39	
Analyte	Result	Qualifier	RL	Unit ma/Ka	<u>D</u>	Prepared	Analyzed 06/16/23 15:39	
Method: SW846 8015 NM - Diese Analyte Total TPH	Result < 50.0	Qualifier U	<b>RL</b> 50.0	Unit mg/Kg	<u>D</u>	Prepared	Analyzed 06/16/23 15:39	
Analyte Total TPH Method: SW846 8015B NM - Dies	Result  <50.0 sel Range Orga	Qualifier U	<b>RL</b> 50.0		<u>D</u>	Prepared	06/16/23 15:39	
Analyte Total TPH Method: SW846 8015B NM - Dies Analyte	Result  <50.0 sel Range Orga	Qualifier U	RL 50.0	mg/Kg	<u> </u>			Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics	Result <50.0 sel Range Orga	Qualifier Unics (DRO) Qualifier	RL	mg/Kg  Unit  mg/Kg	<u> </u>	Prepared	06/16/23 15:39  Analyzed	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte  Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	Result <50.0 sel Range Orga	Qualifier U  nics (DRO) Qualifier U	RL	mg/Kg	<u> </u>	Prepared	06/16/23 15:39  Analyzed	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result <50.0  sel Range Orga Result <50.0	Qualifier U  nics (DRO) Qualifier U	(GC) RL 50.0	mg/Kg  Unit  mg/Kg	<u> </u>	Prepared 06/13/23 13:17	06/16/23 15:39  Analyzed 06/16/23 06:01	Dil Fac
Analyte	Result   <50.0	Qualifier U  nics (DRO) Qualifier U  U	RL 50.0  (GC)  RL 50.0  50.0	mg/Kg  Unit  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17	06/16/23 15:39  Analyzed 06/16/23 06:01 06/16/23 06:01	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH	Result   <50.0	Qualifier U  nics (DRO) Qualifier U  U	RL 50.0  (GC)  RL 50.0  50.0  50.0	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17	Analyzed 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH	Result   <50.0	Qualifier U  nics (DRO) Qualifier U  U	RL 50.0  (GC)  RL 50.0  50.0  50.0  50.0	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17	Analyzed 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36) Total TPH  Surrogate	Result   <50.0	Qualifier U  nics (DRO) Qualifier U  U	RL 50.0  (GC)  RL 50.0  50.0  50.0  Limits	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 Prepared	Analyzed  06/16/23 15:39  Analyzed  06/16/23 06:01  06/16/23 06:01  06/16/23 06:01  Analyzed	Dil Fa
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36) Total TPH  Surrogate 1-Chlorooctane	Result   <50.0	Qualifier U  nics (DRO) Qualifier U  U  U  Qualifier	RL 50.0  (GC)  RL 50.0  50.0  50.0  50.0  Limits  70 - 130  70 - 130	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17  Prepared 06/13/23 13:17	Analyzed 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01 Analyzed 06/16/23 06:01	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36) Total TPH  Surrogate 1-Chlorooctane o-Terphenyl	Result	Qualifier U  nics (DRO) Qualifier U  U  U  Qualifier	RL 50.0  (GC)  RL 50.0  50.0  50.0  50.0  Limits  70 - 130  70 - 130	mg/Kg  Unit  mg/Kg  mg/Kg  mg/Kg	<u> </u>	Prepared 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17 06/13/23 13:17  Prepared 06/13/23 13:17	Analyzed 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01 06/16/23 06:01 Analyzed 06/16/23 06:01	Dil Face  Dil Face  Dil Face  Dil Face  Dil Face  Dil Face

Client Sample ID: BH03B

Sample Depth: 2

Lab Sample ID: 890-4809-8 Date Collected: 06/09/23 12:30 **Matrix: Solid** Date Received: 06/09/23 15:30

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

Welliou. Syvo46 6021B - Volatile	Organic Comp	ounus (GC)						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
Toluene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 19:33	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 19:33	1 1 1

Matrix: Solid

Lab Sample ID: 890-4809-8

06/14/23 16:13

## **Client Sample Results**

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

Client Sample ID: BH03B

Date Collected: 06/09/23 12:30 Date Received: 06/09/23 15:30

Chloride

Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130			06/15/23 13:52	06/17/23 19:33	
1,4-Difluorobenzene (Surr)	106		70 - 130			06/15/23 13:52	06/17/23 19:33	
Method: TAL SOP Total BTEX -	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Total BTEX	<0.00400	U	0.00400	mg/Kg			06/19/23 15:39	1
Method: SW846 8015 NM - Diese	el Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			06/16/23 15:39	1
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Method: SW846 8015B NM - Die Analyte		,	· /	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	O	50.0	mg/Kg		06/13/23 13:17	06/16/23 06:23	,
`	<50.0	U	50.0	mg/Kg		06/13/23 13:17	06/16/23 06:23	1
Diesel Range Organics (Over	<b>~30.0</b>							
<b>5 5</b> .	<b>\00.0</b>							
C10-C28)	<50.0	U	50.0	mg/Kg		06/13/23 13:17	06/16/23 06:23	1
C10-C28) Oll Range Organics (Over C28-C36)			50.0 50.0	mg/Kg mg/Kg		06/13/23 13:17 06/13/23 13:17	06/16/23 06:23 06/16/23 06:23	1
C10-C28) Oll Range Organics (Over C28-C36) Total TPH	<50.0	U						Dil Fac
C10-C28) Oll Range Organics (Over C28-C36) Total TPH  Surrogate	<50.0 <50.0	U	50.0			06/13/23 13:17	06/16/23 06:23	Dil Fac
Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36) Total TPH  Surrogate  1-Chlorooctane o-Terphenyl	<50.0 <50.0 %Recovery	U	50.0			06/13/23 13:17  Prepared	06/16/23 06:23  Analyzed	Dil Fac
C10-C28) OII Range Organics (Over C28-C36) Total TPH  Surrogate 1-Chlorooctane	<50.0 <50.0 <b>%Recovery</b> 120 107	<b>Qualifier</b>	50.0  Limits  70 - 130  70 - 130			06/13/23 13:17  Prepared  06/13/23 13:17	06/16/23 06:23  Analyzed  06/16/23 06:23	Dil Fac

4.95

mg/Kg

250

# **Surrogate Summary**

 Client: Ensolum
 Job ID: 890-4809-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Recovery (Acceptance Limit
		BFB1	DFBZ1	
_ab Sample ID	Client Sample ID	(70-130)	(70-130)	
390-4806-A-1-C MS	Matrix Spike	101	99	
390-4806-A-1-D MSD	Matrix Spike Duplicate	105	104	
390-4809-1	SS03A	97	99	
390-4809-2	BH01A	103	103	
390-4809-3	BH01D	84	103	
390-4809-4	BH01E	87	102	
390-4809-5	BH02A	91	103	
390-4809-6	BH02D	87	102	
390-4809-7	BH03A	86	99	
390-4809-8	внозв	91	106	
_CS 880-55616/1-A	Lab Control Sample	106	98	
_CSD 880-55616/2-A	Lab Control Sample Dup	99	98	
MB 880-55611/5-A	Method Blank	89	121	
MB 880-55616/5-A	Method Blank	84	118	
Surrogate Legend				
BFB = 4-Bromofluorobe	nzene (Surr)			<del></del>

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)	
890-4809-1	SS03A	112	100	
890-4809-1	SS03A	146 S1+	144 S1+	
890-4809-1 MS	SS03A	118	98	
890-4809-1 MSD	SS03A	115	95	
890-4809-2	BH01A	121	106	
890-4809-3	BH01D	110	100	
890-4809-4	BH01E	116	103	
890-4809-5	BH02A	121	105	
890-4809-6	BH02D	108	91	
890-4809-7	вноза	118	100	
890-4809-8	внозв	120	107	
LCS 880-55423/2-A	Lab Control Sample	106	93	
LCSD 880-55423/3-A	Lab Control Sample Dup	102	85	
MB 880-55423/1-A	Method Blank	0.03 S1-	0.02 S1-	

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-55611/5-A

Lab Sample ID: MB 880-55616/5-A

**Matrix: Solid** Analysis Batch: 55659 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 55611

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:27	06/17/23 00:44	1
Toluene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:27	06/17/23 00:44	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:27	06/17/23 00:44	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		06/15/23 13:27	06/17/23 00:44	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:27	06/17/23 00:44	1
Xylenes, Total	< 0.00400	U	0.00400	mg/Kg		06/15/23 13:27	06/17/23 00:44	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepare	∍d	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	89		70 - 130	06/15/23 1	3:27	06/17/23 00:44	1	
1,4-Difluorobenzene (Surr)	121		70 - 130	06/15/23 1	3:27	06/17/23 00:44	1	

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 55616

Analysis Batch: 55659 мв мв

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 12:23	1
Toluene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 12:23	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 12:23	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 12:23	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		06/15/23 13:52	06/17/23 12:23	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		06/15/23 13:52	06/17/23 12:23	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		70 - 130	06/15/23 13:52	06/17/23 12:23	1
1,4-Difluorobenzene (Surr)	118		70 - 130	06/15/23 13:52	06/17/23 12:23	1

Lab Sample ID: LCS 880-55616/1-A

**Matrix: Solid** 

**Matrix: Solid** 

**Analysis Batch: 55659** 

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

Prep Batch: 55616

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit %Rec Limits Benzene 0.100 0.1053 mg/Kg 105 70 - 130 Toluene 0.100 0.1004 mg/Kg 100 70 - 130 0.100 Ethylbenzene 0.08314 mg/Kg 83 70 - 130 0.200 0.1692 70 - 130 m-Xylene & p-Xylene mg/Kg 85 0.100 0.08598 70 - 130 o-Xylene mg/Kg 86

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	106	70 - 130
1.4-Difluorobenzene (Surr)	98	70 - 130

Lab Sample ID: LCSD 880-55616/2-A

Matrix: Solid

**Analysis Batch: 55659** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 55616

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.1164		mg/Kg		116	70 - 130	10	35

Job ID: 890-4809-1 Client: Ensolum Project/Site: Vast State 21H SDG: 03D2024189

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

Lab Sample ID: LCSD 880-55616/2-A **Matrix: Solid** 

Analysis Batch: 55659

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 55616

Spike LCSD LCSD %Rec **RPD** Analyte Added Result Qualifier Unit %Rec Limits **RPD** Limit D Toluene 0.100 0.1102 110 70 - 130 35 mg/Kg 9 Ethylbenzene 0.100 0.08964 mg/Kg 90 70 - 130 8 35 0.200 m-Xylene & p-Xylene 0.1813 mg/Kg 91 70 - 130 35 o-Xylene 0.100 0.09179 mg/Kg 92 70 - 130 35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		70 - 130
1,4-Difluorobenzene (Surr)	98		70 - 130

Lab Sample ID: 890-4806-A-1-C MS Client Sample ID: Matrix Spike

**Matrix: Solid** 

Analysis Batch: 55659

Prep Type: Total/NA

Prep Batch: 55616

MS MS %Rec Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Benzene <0.00199 U 0.101 0.09362 mg/Kg 93 70 - 130 Toluene <0.00199 UF1 0.101 0.08002 79 70 - 130 mg/Kg Ethylbenzene 0.101 0.06203 F1 70 - 130 <0.00199 UF1 mg/Kg 62 0.202 m-Xylene & p-Xylene 0.1311 F1 65 70 - 130 <0.00398 UF1 mg/Kg o-Xylene <0.00199 UF1 0.101 0.06901 F1 mg/Kg 68 70 - 130

MS MS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	101	70 - 130
1,4-Difluorobenzene (Surr)	99	70 - 130

Lab Sample ID: 890-4806-A-1-D MSD

**Matrix: Solid** 

**Analysis Batch: 55659** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 55616

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	<0.00199	U	0.0996	0.07660		mg/Kg		77	70 - 130	20	35
Toluene	<0.00199	U F1	0.0996	0.06322	F1	mg/Kg		63	70 - 130	23	35
Ethylbenzene	<0.00199	U F1	0.0996	0.04535	F1	mg/Kg		46	70 - 130	31	35
m-Xylene & p-Xylene	<0.00398	U F1	0.199	0.1022	F1	mg/Kg		51	70 - 130	25	35
o-Xylene	<0.00199	U F1	0.0996	0.06206	F1	mg/Kg		62	70 - 130	11	35

MSD MSD

Surroyate	76Recovery	Qualifier	Lillits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,4-Difluorobenzene (Surr)	104		70 - 130

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

Lab Sample ID: MB 880-55423/1-A

**Matrix: Solid** 

Analysis Batch: 55544

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

Prep Batch: 55423

(GRO)-C6-C10

MB MB Analyte Result Qualifier RL Unit Prepared <50.0 U 50.0 mg/Kg 06/13/23 13:17 06/16/23 00:51 Gasoline Range Organics

Client: Ensolum Job ID: 890-4809-1 SDG: 03D2024189 Project/Site: Vast State 21H

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

Lab Sample ID: MB 880-55423/1-A **Matrix: Solid** 

Analysis Batch: 55544

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

Prep Batch: 55423

	MB	MR						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over	<50.0	U	50.0	mg/Kg		06/13/23 13:17	06/16/23 00:51	1
C10-C28) OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		06/13/23 13:17	06/16/23 00:51	1
Total TPH	<50.0	U	50.0	mg/Kg		06/13/23 13:17	06/16/23 00:51	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	0.03	S1-	70 - 130	06/13/23 13:17	06/16/23 00:51	1
o-Terphenyl	0.02	S1-	70 - 130	06/13/23 13:17	06/16/23 00:51	1

Lab Sample ID: LCS 880-55423/2-A **Client Sample ID: Lab Control Sample** 

**Matrix: Solid** 

Analysis Batch: 55544

Prep Type: Total/NA

Prep Batch: 55423

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	1000	1029		mg/Kg		103	70 - 130	
(GRO)-C6-C10								
Diesel Range Organics (Over	1000	762.4		mg/Kg		76	70 - 130	
C10-C28)								

LCS LCS

Surrogate	%Recovery Qualifier	Limits
1-Chlorooctane	106	70 - 130
o-Terphenyl	93	70 - 130

Lab Sample ID: LCSD 880-55423/3-A

**Matrix: Solid** 

Analysis Batch: 55544

Client Sample	ID: I ah (	Control	Sample	Dun

Prep Type: Total/NA

Prep Batch: 55423

•	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics	1000	1035		mg/Kg		103	70 - 130	1	20
(GRO)-C6-C10									
Diesel Range Organics (Over	1000	723.0		mg/Kg		72	70 - 130	5	20
C10-C28)									

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	102		70 - 130
o-Terphenyl	85		70 - 130

Lab Sample ID: 890-4809-1 MS

**Matrix: Solid** 

Analysis Batch: 55544

Client Sam	ple ID: SS03A

Prep Type: Total/NA

Prep Batch: 55423

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	1057		mg/Kg		103	70 - 130	
Diesel Range Organics (Over C10-C28)	<49.9	U F1	999	721.6		mg/Kg		72	70 - 130	

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	118		70 - 130

Job ID: 890-4809-1 Client: Ensolum Project/Site: Vast State 21H SDG: 03D2024189

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

Lab Sample ID: 890-4809-1 MS **Matrix: Solid** 

Analysis Batch: 55544

Client Sample ID: SS03A Prep Type: Total/NA

Prep Batch: 55423

MS MS

Surrogate %Recovery Qualifier Limits o-Terphenyl 98 70 - 130

Lab Sample ID: 890-4809-1 MSD Client Sample ID: SS03A

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

Analysis Batch: 55544 Prep Batch: 55423

MSD MSD RPD Sample Sample Spike %Rec Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Gasoline Range Organics <49.9 U 997 1243 mg/Kg 122 70 - 130 16 20 (GRO)-C6-C10 Diesel Range Organics (Over <49.9 UF1 997 692.5 F1 mg/Kg 69 70 - 130 4 20

C10-C28)

MSD MSD %Recovery Qualifier Limits Surrogate 1-Chlorooctane 70 - 130 115

95 70 - 130 o-Terphenyl

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-55384/1-A Client Sample ID: Method Blank **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 55505

MB MB

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Chloride <5.00 U 5.00 06/14/23 10:57 mg/Kg

Lab Sample ID: LCS 880-55384/2-A **Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 55505** 

LCS LCS Spike %Rec Analyte Added Qualifier Result Unit %Rec Limits Chloride 250 248.8 100 90 - 110 mg/Kg

Lab Sample ID: LCSD 880-55384/3-A

**Matrix: Solid** 

Analysis Batch: 55505

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec RPD Limit D Limits Chloride 250 100 20 249.4 90 - 110 mg/Kg

Lab Sample ID: 890-4809-6 MS Client Sample ID: BH02D Matrix: Solid **Prep Type: Soluble** 

**Analysis Batch: 55505** 

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier D %Rec Limits Unit Chloride 246 250 489.1 mg/Kg 97 90 \_ 110

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**Prep Type: Soluble** 

Client Sample ID: Lab Control Sample Dup

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-4809-6 MSD Client Sample ID: BH02D **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 55505

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	246		250	490.1		mg/Kg		97	90 - 110	0	20

## **QC Association Summary**

Client: Ensolum

Project/Site: Vast State 21H

Job ID: 890-4809-1

SDG: 03D2024189

#### **GC VOA**

Prep Batch: 55611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-55611/5-A	Method Blank	Total/NA	Solid	5035	

#### Prep Batch: 55616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	5035	
890-4809-2	BH01A	Total/NA	Solid	5035	
890-4809-3	BH01D	Total/NA	Solid	5035	
890-4809-4	BH01E	Total/NA	Solid	5035	
890-4809-5	BH02A	Total/NA	Solid	5035	
890-4809-6	BH02D	Total/NA	Solid	5035	
890-4809-7	BH03A	Total/NA	Solid	5035	
890-4809-8	внозв	Total/NA	Solid	5035	
MB 880-55616/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-55616/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-55616/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4806-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4806-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

#### Analysis Batch: 55659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	8021B	55616
890-4809-2	BH01A	Total/NA	Solid	8021B	55616
890-4809-3	BH01D	Total/NA	Solid	8021B	55616
890-4809-4	BH01E	Total/NA	Solid	8021B	55616
890-4809-5	BH02A	Total/NA	Solid	8021B	55616
890-4809-6	BH02D	Total/NA	Solid	8021B	55616
890-4809-7	BH03A	Total/NA	Solid	8021B	55616
890-4809-8	внозв	Total/NA	Solid	8021B	55616
MB 880-55611/5-A	Method Blank	Total/NA	Solid	8021B	55611
MB 880-55616/5-A	Method Blank	Total/NA	Solid	8021B	55616
LCS 880-55616/1-A	Lab Control Sample	Total/NA	Solid	8021B	55616
LCSD 880-55616/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	55616
890-4806-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	55616
890-4806-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	55616

#### Analysis Batch: 55855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	Total BTEX	
890-4809-2	BH01A	Total/NA	Solid	Total BTEX	
890-4809-3	BH01D	Total/NA	Solid	Total BTEX	
890-4809-4	BH01E	Total/NA	Solid	Total BTEX	
890-4809-5	BH02A	Total/NA	Solid	Total BTEX	
890-4809-6	BH02D	Total/NA	Solid	Total BTEX	
890-4809-7	вноза	Total/NA	Solid	Total BTEX	
890-4809-8	BH03B	Total/NA	Solid	Total BTEX	

#### **GC Semi VOA**

#### Prep Batch: 55423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	8015NM Prep	

# **QC Association Summary**

Client: Ensolum Job ID: 890-4809-1
Project/Site: Vast State 21H SDG: 03D2024189

GC Semi VOA (Continued)

#### Prep Batch: 55423 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-2	BH01A	Total/NA	Solid	8015NM Prep	
890-4809-3	BH01D	Total/NA	Solid	8015NM Prep	
890-4809-4	BH01E	Total/NA	Solid	8015NM Prep	
890-4809-5	BH02A	Total/NA	Solid	8015NM Prep	
890-4809-6	BH02D	Total/NA	Solid	8015NM Prep	
890-4809-7	ВН03А	Total/NA	Solid	8015NM Prep	
890-4809-8	ВН03В	Total/NA	Solid	8015NM Prep	
MB 880-55423/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-55423/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-55423/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4809-1 MS	SS03A	Total/NA	Solid	8015NM Prep	
890-4809-1 MSD	SS03A	Total/NA	Solid	8015NM Prep	

#### Analysis Batch: 55544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	8015B NM	55423
890-4809-1	SS03A	Total/NA	Solid	8015B NM	55423
890-4809-2	BH01A	Total/NA	Solid	8015B NM	55423
890-4809-3	BH01D	Total/NA	Solid	8015B NM	55423
890-4809-4	BH01E	Total/NA	Solid	8015B NM	55423
890-4809-5	BH02A	Total/NA	Solid	8015B NM	55423
890-4809-6	BH02D	Total/NA	Solid	8015B NM	55423
890-4809-7	ВН03А	Total/NA	Solid	8015B NM	55423
890-4809-8	ВН03В	Total/NA	Solid	8015B NM	55423
MB 880-55423/1-A	Method Blank	Total/NA	Solid	8015B NM	55423
LCS 880-55423/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	55423
LCSD 880-55423/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	55423
890-4809-1 MS	SS03A	Total/NA	Solid	8015B NM	55423
890-4809-1 MSD	SS03A	Total/NA	Solid	8015B NM	55423

#### Analysis Batch: 55707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Total/NA	Solid	8015 NM	
890-4809-2	BH01A	Total/NA	Solid	8015 NM	
890-4809-3	BH01D	Total/NA	Solid	8015 NM	
890-4809-4	BH01E	Total/NA	Solid	8015 NM	
890-4809-5	BH02A	Total/NA	Solid	8015 NM	
890-4809-6	BH02D	Total/NA	Solid	8015 NM	
890-4809-7	ВН03А	Total/NA	Solid	8015 NM	
890-4809-8	BH03B	Total/NA	Solid	8015 NM	

#### HPLC/IC

#### Leach Batch: 55384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Soluble	Solid	DI Leach	
890-4809-2	BH01A	Soluble	Solid	DI Leach	
890-4809-3	BH01D	Soluble	Solid	DI Leach	
890-4809-4	BH01E	Soluble	Solid	DI Leach	
890-4809-5	BH02A	Soluble	Solid	DI Leach	
890-4809-6	BH02D	Soluble	Solid	DI Leach	

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# **QC Association Summary**

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

## **HPLC/IC** (Continued)

#### Leach Batch: 55384 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-7	ВН03А	Soluble	Solid	DI Leach	
890-4809-8	внозв	Soluble	Solid	DI Leach	
MB 880-55384/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-55384/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-55384/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4809-6 MS	BH02D	Soluble	Solid	DI Leach	
890-4809-6 MSD	BH02D	Soluble	Solid	DI Leach	

#### Analysis Batch: 55505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4809-1	SS03A	Soluble	Solid	300.0	55384
890-4809-2	BH01A	Soluble	Solid	300.0	55384
890-4809-3	BH01D	Soluble	Solid	300.0	55384
890-4809-4	BH01E	Soluble	Solid	300.0	55384
890-4809-5	BH02A	Soluble	Solid	300.0	55384
890-4809-6	BH02D	Soluble	Solid	300.0	55384
890-4809-7	BH03A	Soluble	Solid	300.0	55384
890-4809-8	внозв	Soluble	Solid	300.0	55384
MB 880-55384/1-A	Method Blank	Soluble	Solid	300.0	55384
LCS 880-55384/2-A	Lab Control Sample	Soluble	Solid	300.0	55384
LCSD 880-55384/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	55384
890-4809-6 MS	BH02D	Soluble	Solid	300.0	55384
890-4809-6 MSD	BH02D	Soluble	Solid	300.0	55384

Client: Ensolum

Project/Site: Vast State 21H

Job ID: 890-4809-1 SDG: 03D2024189

Lab Sample ID: 890-4809-1

Client Sample ID: SS03A Date Collected: 06/08/23 11:00 Date Received: 06/09/23 15:30

Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 15:37	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 02:44	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 03:50	AJ	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		1			55505	06/14/23 15:22	CH	EET MID

Client Sample ID: BH01A Date Collected: 06/08/23 11:05 Lab Sample ID: 890-4809-2

Matrix: Solid

Date Received: 06/09/23 15:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 15:58	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 04:12	AJ	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		5			55505	06/14/23 15:28	CH	EET MID

**Client Sample ID: BH01D** 

Lab Sample ID: 890-4809-3

Matrix: Solid

Date Collected: 06/08/23 11:20 Date Received: 06/09/23 15:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 17:50	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.05 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 04:34	AJ	EET MID
Soluble	Leach	DI Leach			4.96 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		1			55505	06/14/23 15:34	CH	EET MID

#### **Lab Chronicle**

Client: Ensolum Job ID: 890-4809-1 SDG: 03D2024189 Project/Site: Vast State 21H

Client Sample ID: BH01E

Date Collected: 06/09/23 12:00 Date Received: 06/09/23 15:30 Lab Sample ID: 890-4809-4

Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.04 g	5 mL	55616	06/15/23 13:52	EL	EET MIC
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 18:10	SM	EET MIC
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MI
Total/NA	Prep	8015NM Prep			10.05 g	10 mL	55423	06/13/23 13:17	AJ	EET MI
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 04:56	AJ	EET MI
Soluble	Leach	DI Leach			5.03 g	50 mL	55384	06/13/23 10:11	KS	EET MI
Soluble	Analysis	300.0		1			55505	06/14/23 15:39	CH	EET MII

Client Sample ID: BH02A Date Collected: 06/08/23 12:20

Date Received: 06/09/23 15:30

Lab Sample ID: 890-4809-5

Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 18:31	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 05:18	AJ	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		5			55505	06/14/23 15:45	CH	EET MID

Client Sample ID: BH02D Lab Sample ID: 890-4809-6 Date Collected: 06/09/23 12:10

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.95 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 18:51	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 05:39	AJ	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		1			55505	06/14/23 15:51	CH	EET MID

Client Sample ID: BH03A Lab Sample ID: 890-4809-7 Date Collected: 06/09/23 12:25 **Matrix: Solid** 

Date Received: 06/09/23 15:30

Released to Imaging: 5/20/2024 3:20:19 PM

Date Received: 06/09/23 15:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 19:12	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID

**Eurofins Carlsbad** 

Page 23 of 30

**Matrix: Solid** 

#### **Lab Chronicle**

Client: Ensolum Job ID: 890-4809-1 Project/Site: Vast State 21H SDG: 03D2024189

Client Sample ID: BH03A

Date Received: 06/09/23 15:30

Lab Sample ID: 890-4809-7 Date Collected: 06/09/23 12:25 Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 06:01	AJ	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		1			55505	06/14/23 16:07	CH	EET MID

Client Sample ID: BH03B Lab Sample ID: 890-4809-8

Date Collected: 06/09/23 12:30 Matrix: Solid

Date Received: 06/09/23 15:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	55616	06/15/23 13:52	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	55659	06/17/23 19:33	SM	EET MID
Total/NA	Analysis	Total BTEX		1			55855	06/19/23 15:39	SM	EET MID
Total/NA	Analysis	8015 NM		1			55707	06/16/23 15:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	55423	06/13/23 13:17	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	55544	06/16/23 06:23	AJ	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	55384	06/13/23 10:11	KS	EET MID
Soluble	Analysis	300.0		1			55505	06/14/23 16:13	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: Vast State 21H
SDG: 03D2024189

**Laboratory: Eurofins Midland** 

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

Authority	<u> </u>		Identification Number	Expiration Date
Texas			T104704400-22-25	06-30-23
the agency does not of	fer certification.		ied by the governing authority. This list ma	ay include analytes for which
Analysis Method	Prep Method	Matrix	Analyte	
8015 NM		Solid	Total TPH	
8015B NM	8015NM Prep	Solid	Total TPH	
Total BTEX		Solid	Total BTEX	

Eurofins Carlsbad

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#### **Method Summary**

 Client: Ensolum
 Job ID: 890-4809-1

 Project/Site: Vast State 21H
 SDG: 03D2024189

Method **Method Description** Protocol Laboratory 8021B Volatile Organic Compounds (GC) SW846 EET MID Total BTEX Calculation TAL SOP Total BTEX 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 EPA **EET MID** 5035 **EET MID** Closed System Purge and Trap SW846 8015NM Prep Microextraction SW846 EET MID

#### **Protocol References:**

DI Leach

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

**Deionized Water Leaching Procedure** 

#### Laboratory References:

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

**Eurofins Carlsbad** 

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**EET MID** 

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## Sample Summary

Client: Ensolum

Project/Site: Vast State 21H

Job ID: 890-4809-1 SDG: 03D2024189

Client Sample ID Collected Lab Sample ID Matrix Received Depth Solid 890-4809-1 SS03A 06/08/23 11:00 06/09/23 15:30 0.5 890-4809-2 BH01A Solid 06/08/23 11:05 06/09/23 15:30 890-4809-3 BH01D Solid 06/09/23 15:30 06/08/23 11:20 890-4809-4 BH01E Solid 06/09/23 12:00 06/09/23 15:30 5 890-4809-5 BH02A Solid 06/08/23 12:20 06/09/23 15:30 1 890-4809-6 BH02D Solid 06/09/23 12:10 06/09/23 15:30 890-4809-7 ВН03А Solid 06/09/23 12:25 06/09/23 15:30 1 внозв 890-4809-8 Solid 06/09/23 12:30 06/09/23 15:30

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Circle Method(s)

Relinquished by: (Signature)

Received by: (Signature)

50,23 Date/Time

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Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Revised Date: 08/25/2020 Rev. 2020.2

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Envir		eurofins
onment Testing	Xenco	ent

Sampler's Name:

City, State ZIP:

Midland, TX 79701

City, State ZIP:

601 N Marienfeld St Suite 400

\ddress:

Company Name: Project Manager:

Ensolum, LLC Hadlie Green

Bill to: (if different)

Company Name:

Ensolum, LLC Kalei Jennings

601 N Marienfeld St Suite 400

State of Project:

Reporting: Level II Level III PST/UST TRRP

Level IV

Program: UST/PST | PRP | Brownfields | RRC | Superfund |

**Work Order Comments** 

www.xenco.com

Deliverables: EDD

ADaPT [

Midland, TX 79701

Samples Received SAMPLE REC

# Chain of Custody

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

Phone: 432	432-557-8895	21H	Email:	Email:   ngreen@ensolum.com, kjennings@ensolum.com	olum.c	om, kje	enning	ls@er	ANALYSIS REQU	JEST	Preservative Codes
roject Number:	03D2024189	189	☑ Routine	Rush	Pres.						None: NO DI Water: H <sub>2</sub> O
Project Location:	32.0367,_1032.5889	32.5889	Due Date:								<u></u>
sampler's Name:	Peter Van Patten	atten	TAT starts the	TAT starts the day received by							
Ŏ #			the lab, if rec	the lab, if received by 4:30pm	rs						H <sub>2</sub> SO <sub>4</sub> : H <sub>2</sub> NaOH: Na
SAMPLE RECEIPT	Terqp Blank:	No No	Wet ice:	Yes No	nete	.0)					H <sub>3</sub> PO <sub>4</sub> : HP
amples Received Intact:	teg No	Thermometer ID:	er ID:	FOW I'M	ıran	300			800		NaHSO4: NABIS
Cooler Custody Seals:	Yes No (N/)	Correction Factor:	actor:	-0.2	Pa	PA:			Chain of C		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub>
sample Custody Seals:	Yes No NIA	A Temperature Reading:	e Reading:	0		S (E		)	Sustody	ustody	Zn Acetate+NaOH: Zn
otal Containers:		Corrected Temperature	emperature:	5.3		IDE	)15)	8021			NaOH+Ascorbic Acid: SAPC
Sample Identification	ation Matrix	Date Sampled	Time Sampled	Depth Grab/	Cont	CHLOR	TPH (80	BTEX (			Sample Comments
SS03A	Soil	6/8/2023	3 1100	0.5' Comp	1	×	×	×			
BH01A	Soil	6/8/2023	3 1105	1' Comp	1	×	×	×			
BH01D	Soil	6/8/2023	3 1120	4' Comp	1	×	×	×			
BH01E	Soil	6/9/2023	1200	5' Comp	_	×	×	×			
BH02A	Soil	6/8/2023	3 1220	1' Comp	7	×	×	×			
BH02D	Soil	6/9/2023	1210	4' Comp	-7	×	×	×			
вноза	Soil	6/9/2023	3 1225	1' Comp	1	×	×	×			
внозв	Soil	6/9/2023	1230	2' Comp	4	×	×	X			
			1								
		ter	7	2774	1						
Total 200.7 / 6010	200.8 / 6020:		8RCRA 13PPM	PM Texas 11		Al Sb As Ba	Ва Е	Ве В	Cd Ca Cr Co Cu Fe Pb Mo	ㅈ	Se Ag SiO <sub>2</sub> Na Sr Tl Sn U V Zn
ircle Method(s) and Metal(s) to be analyzed	Metal(s) to be ana	lyzed	TCLP / S	PLP 6010: 8F	CRA	Sb A	s Ba	Be C	TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni	Mo Ni Se Ag TI U Hg	Hg: 1631 / 245.1 / 7470 / 7471
otice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontra service. Furofins Xenco will be lishle only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such los	ment and relinquishme	ent of samples con	stitutes a valid pu	rchase order from	client co	mpany t	to Eurof	ins Xen	otice: 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 service. Furofins 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	ctors. It assigns standard terms and conditions uses are due to circumstances beyond the contro	tions ontrol
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	n charge of \$85.00 will	be applied to each	project and a cha	arge of \$5 for each	sample	submitte	d to Eur	ofins X	), but not analyzed. These terms will	erms will be enforced unless previously negotiated	gotiated.

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## **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4809-1

 SDG Number: 03D2024189

Login Number: 4809 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	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	

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## **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4809-1

 SDG Number: 03D2024189

List Source: Eurofins Midland

List Source: Eurofins Midland
List Number: 2
List Creation: 06/13/23 10:37 AM

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	

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APPENDIX E

**NMOCD Notifications** 

#### **Hadlie Green**

From: Buchanan, Michael, EMNRD < Michael.Buchanan@emnrd.nm.gov>

Sent: Friday, June 2, 2023 4:54 PM
To: Hadlie Green; Enviro, OCD, EMNRD
Cc: Kalei Jennings; Peter Van Patten

**Subject:** RE: [EXTERNAL] COP - Sampling Notification (Week of 6/5/2023)

#### [ \*\*EXTERNAL EMAIL\*\*]

#### Received.

Thank you for the notification. Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

Mike Buchanan • Environmental Specialist

Environmental Bureau
EMNRD - Oil Conservation Division
8801 Horizon Blvd. NE | Albuquerque, NM 87113

| michael.buchanan@emnrd.nm.gov http://www.emnrd.nm.gov/ocd



From: Hadlie Green <hgreen@ensolum.com>

Sent: Friday, June 2, 2023 9:18 AM

To: Enviro, OCD, EMNRD < OCD. Enviro@emnrd.nm.gov>

Cc: Kalei Jennings <kjennings@ensolum.com>; Peter Van Patten <pvanpatten@ensolum.com>

**Subject:** [EXTERNAL] COP - Sampling Notification (Week of 6/5/2023)

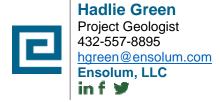
CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

All,

ConocoPhillips Company (COP) plans to complete sampling activities at the following site the week of June 5, 2023.

- Vast State 21H / NAPP2313140440
  - o Sampling Date: 6/9/2023 @ 10:00 AM MST
- Stratojet 31 State Com 8H / NAPP2314235805
  - o Sampling Date: 6/8/2023 @ 10:00 AM MST

Thank you,





**APPENDIX F** 

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	NAPP2313140440
District RP	
Facility ID	fAPP2202347033
Application ID	

# **Release Notification**

## **Responsible Party**

Responsible Party	COG Operating, LLC	OGRID	217817
Contact Name	Jacob Laird	Contact Telephone	(575) 703-5482
Contact email	Jacob.Laird@ConocoPhillips.com	Incident # (assigned by OCD)	NAPP2313140440
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

			Location	of Release Sou	rce		
Latitude	32.036	57		Longitude	-103.5	889	
			(NAD 83 in dec	imal degrees to 5 decimal p	places)		
Site Name		Vast State (	021H	Site Type	Tank	Battery	
Date Release	Discovered	May 6, 202	3	API# (if applica	able) 30-02	25-43550	
						-	
Unit Letter	Section	Township	Range	County			
Р	17	26S	33E	Lea			

Surface Owner:	State	☐ Federal ☐ Tı	ribal Private ( <i>Name</i> :	)

### 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) 1.34	Volume Recovered (bbls) 1
Produced Water	Volume Released (bbls) 4.03	Volume Recovered (bbls) 1
	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)
~ ^- 1	·	The state of the s

Cause of Release

The release was caused by a pin hole in back pressure due to corrosion.

The release was on the pad.

Evaluation will be made of the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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Page.	11/4	<i></i>	, ,	112
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Incident ID	NAPP2313140440
District RP	
Facility ID	fAPP2202347033
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  ☐ Yes ■ No  If YES, was immediate no		sponsible party consider this a major release?  o whom? When and by what means (phone, email, etc)?			
	Initial	Response			
The responsible p	party must undertake the following actions immed	diately unless they could create a safety hazard that would result in injury			
■ The impacted area ha ■ Released materials ha	ease has been stopped.  s been secured to protect human health are been contained via the use of berms ecoverable materials have been removed.	or dikes, absorbent pads, or other containment devices.			
	d above have <u>not</u> been undertaken, expl				
has begun, please attach	a narrative of actions to date. If remed	ce remediation immediately after discovery of a release. If remediation dial efforts have been successfully completed or if the release occurred C), 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 Brittar	ny N. Esparza	Title: Environmental Technician			
Signature:	tanteparge	Date: 5/11/2023			
email: Brittany.Espar.	za@ConocoPhillips.com	Date: 5/11/2023 Telephone: (432) 221-0398			
OCD Only  Received by: Jocely	n Harimon	Date:05/11/2023			

RNARP23131494491/2023 11:17:31 AM Convert Inegular shape into a Length Width series of rectangles (ft.) (ft.)	. 11:17:5 ength (ft.)	31.AM VVidth (ft.)	Average Depth (in.)	Estimated Pool Area (sq. ft.)	Estimated Pool Estimated volume Area of each pool area (sq. ft.)	Penetration allowance (ft.)	Total Estimated Volume of Spill (bbl.)	Percentage of Oil if Spilled Fluid is a Mixture (%.)	Total Estimated Volume of Spilled Oil (bbl.)	Totalpagingspat Volume of Spilled Liquid other than Oil (bbl.)
Rectangle A	43.00 21.00	21.00	0.40	903.00	5.36	0.00	5.37		1.34	4.03
Rectangle B				00.0	0.00	0.00	0.00		0.00	0.00
Rectangle C				0.00	0.00	0.00	0.00		00.00	0.00
Rectangle D				0.00	00.00	0.00	0.00		00.00	0.00
Rectangle E				00.0	0.00	00.00	0.00	760/	0.00	0.00
Rectangle F				00.00	00.0	0.00	0.00	9/.07	0.00	00.00
Rectangle G				0.00	0.00	0.00	0.00		0.00	0.00
Rectangle H				0.00	0.00	0.00	0.00		00.00	00.00
Rectangle I				00.0	00.00	00.00	00.0		00.00	00.00
Rectangle J				0.00	0.00	0.00	00.0	(# - ) \$	0.00	00.00
Released to Imaging: 5/11/2023 1:25:08 PM	923 1:25	:08 PM	Total St	Total Surface Pool Volume Released	100	Release to Soil/Caliche.	5.37		1.34	4.03

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District III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

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 215966

#### CONDITIONS

Operator:	OGRID:
COG OPERATING LLC	229137
	Action Number:
Midland, TX 79701	215966
	Action Type:
	[C-141] Release Corrective Action (C-141)

#### CONDITIONS

Cre	eated By		Condition Date
jh	arimon	None	5/11/2023

of New Mexico

Incident ID	NAPP2313140440
District RP	
Facility ID	fAPP22023447033
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?	<u>&gt;100</u> (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?		
Did the release impact areas <b>not</b> 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.		
<ul> <li>         \infty Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring well         \infty Field data     </li> </ul>	ls.	
☐ 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.

Received by OCD: 5/6/2024 8:21:50 AM Form C-141 State of New Mexico Page 4 Oil Conservation Division

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Incident ID	NAPP2313140440
District RP	
Facility ID	fAPP2202347033
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:Jacob Laird	Title:Environmental Engineer	
Signature: Jacob Laird	Date:5/2/2024	
email:Jacob.Laird@conocophillips.com	Telephone:575-703-5482	
OCD Only		
Received by:	Date:	

Page 154 of 162
State of New Mexico

Incident ID	NAPP2313140440
District RP	
Facility ID	fAPP2202347033
Application ID	

# **Remediation Plan**

Remediation Plan Checklist: Each of the following items must b	e included in the plan.	
<ul> <li>Detailed description of proposed remediation technique</li> <li>Scaled sitemap with GPS coordinates showing delineation points</li> <li>Estimated volume of material to be remediated</li> <li>Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC</li> <li>Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)</li> </ul>		
<u>Deferral Requests Only</u> : Each of the following items must be con	nfirmed as part of any request for deferral of remediation.	
Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.		
Extents of contamination must be fully delineated.		
Contamination does not cause an imminent risk to human health, the environment, or groundwater.		
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:Jacob Laird	Title:Environmental Engineer	
Signature: Jacob Laird	Date:5/2/2024	
email:Jacob.Laird@conocophillips.com	Telephone:575-703-5482	
OCD Only		
Received by:	Date:	
Approved	Approval Denied Deferral Approved	
Signature:	Date:	

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

1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505** 

QUESTIONS

Action 340992

#### **QUESTIONS**

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2313140440
Incident Name	NAPP2313140440 VAST STATE 021H @ 0
Incident Type	Release Other
Incident Status	Remediation Closure Report Received
Incident Facility	[fAPP2202347033] Vast East Battery

Location of Release Source	
Please answer all the questions in this group.	
Site Name	VAST STATE 021H
Date Release Discovered	05/06/2023
Surface Owner	State

Incident Details	
Please answer all the questions in this group.	
Incident Type	Release Other
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Corrosion   Other (Specify)   Crude Oil   Released: 1 BBL   Recovered: 1 BBL   Lost: 0 BBL.
Produced Water Released (bbls) Details	Cause: Corrosion   Other (Specify)   Produced Water   Released: 4 BBL   Recovered: 1 BBL   Lost: 3 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	The release was caused by a pin hole in back pressure due to corrosion. The release was on the pad.

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

# **State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505**

QUESTIONS, Page 2

Action 340992

Phone: (505) 476-3470 Fax: (505) 476-3462	,
QUEST	IONS (continued)
Operator:  COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID:  229137  Action Number: 340992  Action Type:  [C-141] Remediation Closure Request C-141 (C-141-v-Closure)
QUESTIONS	
Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	More info needed to determine if this will be treated as a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	No
Reasons why this would be considered a submission for a notification of a major release	Unavailable.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.	e. gas only) are to be submitted on the C-129 form.
Initial Response The responsible party must undertake the following actions immediately unless they could create as	safety hazard that would result in injury.
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	Not answered.
	niation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative o eted or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of evaluation in the follow-up C-141 submission.
to report and/or file certain release notifications and perform corrective actions for relethe OCD does not relieve the operator of liability should their operations have failed to	knowledge and understand that pursuant to OCD rules and regulations all operators are required asses which may endanger public health or the environment. The acceptance of a C-141 report by adequately investigate and remediate contamination that pose a threat to groundwater, surface rt does not relieve the operator of responsibility for compliance with any other federal, state, or
I hereby agree and sign off to the above statement	Name: Brittany Esparza Title: Environmental Technician

Email: brittany.Esparza@ConocoPhillips.com

Date: 05/06/2024

811 S. First St., Artesia, NM 88210 Phone:(575) 748-1283 Fax:(575) 748-9720 District III

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**State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505** 

QUESTIONS, Page 3

Action 340992

#### **QUESTIONS** (continued)

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

Site Characterization		
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.		
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 75 and 100 (ft.)	
What method was used to determine the depth to ground water	Direct Measurement	
Did this release impact groundwater or surface water	No	
What is the minimum distance, between the closest lateral extents of the release ar	nd the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 100 and 200 (ft.)	
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between ½ and 1 (mi.)	
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)	
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Greater than 5 (mi.)	
Any other fresh water well or spring	Between 1 and 5 (mi.)	
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)	
A wetland	Between 1 and 5 (mi.)	
A subsurface mine	Greater than 5 (mi.)	
An (non-karst) unstable area	Greater than 5 (mi.)	
Categorize the risk of this well / site being in a karst geology	Medium	
A 100-year floodplain	Greater than 5 (mi.)	
Did the release impact areas not on an exploration, development, production, or storage site	No	

Remediation Plan		
Please answer all the questions to	hat apply or are indicated. This information must be provided to	o the appropriate district office no later than 90 days after the release discovery date.
Requesting a remediation	plan approval with this submission	Yes
Attach a comprehensive report de	emonstrating the lateral and vertical extents of soil contamination	on associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.
Have the lateral and vertical	al extents of contamination been fully delineated	Yes
Was this release entirely o	ontained within a lined containment area	No
Soil Contamination Sampling	g: (Provide the highest observable value for each, in m	nilligrams per kilograms.)
Chloride	(EPA 300.0 or SM4500 CI B)	5080
TPH (GRO+DRO+MRO)	(EPA SW-846 Method 8015M)	1920
GRO+DRO	(EPA SW-846 Method 8015M)	1920
BTEX	(EPA SW-846 Method 8021B or 8260B)	0
Benzene	(EPA SW-846 Method 8021B or 8260B)	0
	NMAC unless the site characterization report includes complete nelines for beginning and completing the remediation.	ed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC,
On what estimated date will the remediation commence		05/22/2023
On what date will (or did) the final sampling or liner inspection occur		04/01/2024
On what date will (or was) the remediation complete(d)		04/01/2024
What is the estimated surface area (in square feet) that will be reclaimed		2900
What is the estimated volume (in cubic yards) that will be reclaimed		14000
What is the estimated surface area (in square feet) that will be remediated		330
What is the estimated volume (in cubic yards) that will be remediated		12
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.		

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

District I

1625 N. French Dr., Hobbs, NM 88240 Phone:(575) 393-6161 Fax:(575) 393-0720 **District II** 

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1220 S. St Francis Dr., Santa Fe, NM 87505 Phone: (505) 476-3470 Fax: (505) 476-3462 State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS, Page 4

Action 340992

#### **QUESTIONS** (continued)

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

Remediation Plan (continued)		
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.		
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:		
(Select all answers below that apply.)		
(Ex Situ) Excavation and off-site disposal (i.e. dig and haul, hydrovac, etc.)	Yes	
Which OCD approved facility will be used for off-site disposal	LEA LAND LANDFILL [fEEM0112342028]	
OR which OCD approved well (API) will be used for off-site disposal	Not answered.	
OR is the off-site disposal site, to be used, out-of-state	Not answered.	
OR is the off-site disposal site, to be used, an NMED facility	Not answered.	
(Ex Situ) Excavation and on-site remediation (i.e. On-Site Land Farms)	No	
(In Situ) Soil Vapor Extraction	Not answered.	
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	Not answered.	
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	Not answered.	
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	Not answered.	
Ground Water Abatement pursuant to 19.15.30 NMAC	Not answered.	
OTHER (Non-listed remedial process)	Not answered.	

Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement

Name: Brittany Esparza
Title: Environmental Technician

Email: brittany.Esparza@ConocoPhillips.com Date: 05/06/2024

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

Released to Imaging: 5/20/2024 3:20:19 PM

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District III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

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**State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505** 

QUESTIONS, Page 5

Action 340992

#### **QUESTIONS** (continued)

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

#### Deferral Requests Only Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation. Requesting a deferral of the remediation closure due date with the approval of this No submission

District I

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# State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 S. St Francis Dr. Santa Fe, NM 87505

QUESTIONS, Page 6

Action 340992

Ωl	JFS1	TIONS	(continued)	۱

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	326776
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	04/01/2024
What was the (estimated) number of samples that were to be gathered	3
What was the sampling surface area in square feet	330

Remediation Closure Request		
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.		
Requesting a remediation closure approval with this submission	Yes	
Have the lateral and vertical extents of contamination been fully delineated	Yes	
Was this release entirely contained within a lined containment area	No	
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes	
What was the total surface area (in square feet) remediated	330	
What was the total volume (cubic yards) remediated	12	
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes	
What was the total surface area (in square feet) reclaimed	0	
What was the total volume (in cubic yards) reclaimed	0	
Summarize any additional remediation activities not included by answers (above)	N/A	

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Name: Brittany Esparza
Title: Environmental Technician
Email: brittany.Esparza@ConocoPhillips.com
Date: 05/06/2024

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**State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505** 

QUESTIONS, Page 7

Action 340992

**QUESTIONS** (continued)

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission No	

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CONDITIONS

Action 340992

#### **CONDITIONS**

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	340992
	Action Type:
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

#### CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	Remediation has met 19.15.29 NMAC requirements. Soil impacts exceeding the reclamation standards have been left in place and are required to meet 19.15.29.13D (1) NMAC once the site is no longer reasonably needed for production or subsequent drilling operations.	5/20/2024
scott.rodgers	The reclamation report will need to include: Executive Summary of the reclamation activities; Scaled Site Map including sampling locations; Analytical results including, but not limited to, results showing that any remaining impacts meet the reclamation standards and results to prove the backfill is non-waste containing; At least one (1) representative 5-point composite sample will need to be collected from the backfill material that will be used for the reclamation of the top four feet of the excavation. OCD reserves the right to request additional sampling if needed; pictures of the backfilled areas showing that the area is back, as nearly as practical, to the original condition or the final land use and maintain those areas to control dust and minimize erosion to the extent practical; pictures of the top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater; and a revegetation plan.	5/20/2024